

TEAD-S STORAGE PERMIT

MODULES:

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MODULE VI POST-CLOSURE CONDITIONS AND STANDARDS FOR SOLID WASTE MANAGEMENT UNITS (SWMUs)

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**LIST OF FORMS
(POST-CLOSURE SITE INSEPCTION FORMS)**

- FORM A – General Post-Closure Site Inspection Checklist, Industrial Closure/Industrial Use Sites
FORM B – ~~Reserved~~ [General Post-Closure Site Inspection Checklist, Landfill Sites](#)
FORM C – Reserved
FORM D – Excavation Permit Coordination

LIST OF ATTACHMENTS

<u>DESCRIPTION</u>	<u>ATTACMENT NO.</u>
SWMU 9 Post Closure Plan.....	1
SWMU 19 Post Closure Plan.....	2
SWMU 33 Post Closure Plan.....	3
SWMU 28 Post Closure Plan.....	4
SWMU 39 Post Closure Plan.....	5
SWMU 13 Post Closure Plan.....	6
SWMU 26 Post Closure Plan.....	7

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**MODULE VI
POST-CLOSURE CONDITIONS AND STANDARDS
FOR SOLID WASTE MANAGEMENT UNITS (SWMUs)**

VI.A SOLID WASTE MANAGEMENT UNITS (SWMU) and HAZARDOUS WASTE MANAGEMENT UNITS (HWMU)

- VI.A.1 The Permittee shall comply with post-closure requirements for the SWMUs and HWMUs listed in Module VI, Table 1.
- VI.A.2 The Permittee shall comply with the general requirements applicable to all sites requiring post closure care as found in Module VI. Site-specific requirements for each SWMU/HWMU are provided in each site-specific post closure plan.

VI.B PERMIT CONDITIONS

- VI.B.1 Failure to submit the information required by the conditions in Module VI or falsification of any submitted information is grounds for termination of this permit in accordance with Condition I.D.1.
- VI.B.2 All plans, reports, notifications and other submissions to the Director of the Division of Waste Management and Radiation Control (Director) as required by the conditions in Module VI shall be signed and certified in accordance with Condition I.AA.
- VI.B.3 The Permittee shall submit two paper copies and one electronic copy of each plan, report, notification or other submissions, required Module VI to the Director by mail or hand delivery to the address specified in Condition I.DD.
- VI.B.4 All plans and schedules, as required by Module VI, upon written approval from the Director, shall be incorporated into Module VI. Any noncompliance with such approved plans and schedules shall be deemed noncompliance with this Permit.
- VI.B.5 The Permittee can only receive extension(s) of the specified compliance schedule due date(s) for the submittal(s) required by Module VI, upon written approval from the Director in accordance with Condition V.I.
- VI.B.6 All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data and other supporting information gathered or generated during activities undertaken pursuant to Module VI shall be maintained at the Facility during the effective term of this Permit. The Permittee shall provide copies of reports, logs, etc., to the Director upon request.
- VI.B.7 The Permittee shall provide ~~seven~~ seven-day advance notice of field activities associated with approved workplans. This notice may be provided by telephone, but shall be followed-up in writing within 72 hours.
- VI.B.8 The Permittee shall inspect, monitor and maintain any landfill, caps, fences, signs, treatment systems or other items at the SWMUs/HWMUs listed in Table 1 and as specified in the post closure permit attachments in accordance with the conditions of this Permit.
- VI.B.9 The Permittee shall give notice to the Director 60 days prior to a planned alteration to the closed HWMU or SWMU or permitted activity.

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VI.C MONITORING AND RECORDS

VI.C.1 Monitoring and Records

- VI.C.1.a Samples and measurements taken for the purpose of monitoring shall be accurate and representative of the monitored activity. The method used to obtain representative samples shall be described in an approved Quality Assurance Project Plan (QAPP). The analysis of all samples, except chemical agents shall be conducted by State certified laboratories.
- VI.C.1.b The Permittee shall retain as part of the Operating Record all records or reports required by this Permit for the duration of the post-closure period. This period may be extended by request of the Director at any time and is automatically extended during the course of any unresolved enforcement action.

VI.D RESERVED

VI.E DOCUMENTS TO BE MAINTAINED AT FACILITY SITE

- VI.E.1 The Permittee shall maintain for the duration of the post-closure care period the following documents and amendments, revisions and modifications to these documents:
- VI.E.1.a Post-closure Permit and any amendments.
- VI.E.1.b Post-closure monitoring records, to include monitoring of environmental media and analytical results, any environmental media treatment system unit records and analytical results and records of the effectiveness of any environmental media treatment systems as required by this Permit.
- VI.E.1.c Certification of Closure for each SWMU/HWMU as required by Utah Admin. Code R315-265-115.
- VI.E.1.d Inspection forms and schedules as required by Utah Admin. Code R315-264-15(b)(2) and this Permit.
- VI.E.1.e Operating Records required by Utah Admin. Code R315-264-73 and this Permit.
- VI.E.1.f Copies of all required submittals.
- VI.E.1.g Copies of the Facility's Post-Closure Excavation Permit and any other related land use documents and requirements, including records showing removal of soils or construction at any HWMUs or SWMUs listed in Table 1.
- VI.E.2 The Permittee shall follow the Excavation Permit process as described in Form D. The Permittee shall use the Excavation Permit and [either](#) Form A [or](#) Form B to verify land use, compliance with institutional controls and management of environmental media at the SWMUs/HWMUs listed in Table-1.

VI.F SWMUs and HWMUs SUBJECT TO POST-CLOSURE REQUIREMENTS

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TABLE - 1				
Post Closure Permit SWMUs and HWMUs.				
MODULE VI ATTACHMENT NO.	SITE	TYPE OF CLOSURE	REQUIRED INSPECTION FORM	
			FORM NO.	FORM TYPE
1	SWMU 9	Industrial	A	Industrial Post Closure
2	SWMU 19	Industrial	A	Industrial Post Closure
3	SWMU 33	Industrial	A	Industrial Post Closure
4	SWMU 28	Industrial	A	Industrial Post Closure
<u>5</u>	<u>SWMU 39^a</u>	<u>Industrial</u>	<u>A</u>	<u>Industrial Post Closure</u>
<u>6</u>	<u>SWMU 13</u>	<u>Industrial</u>	<u>A</u>	<u>Industrial Post Closure</u>
<u>7</u>	<u>SWMU 26</u>	<u>Landfill</u>	<u>B</u>	<u>Landfill Post Closure</u>
^a SWMU 39 is the former AOC 24, Building 1873 and Dry Well				

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VI.F.1 SWMUs where site controls are not required for soils within 0 to 10 feet below ground surface (ft bgs) but other “special restrictions” are required are listed in Table 2. Special restrictions may include prevention of installation of drinking water wells, required groundwater monitoring, and/or notice of industrial levels of contamination in soils greater than 10 ft bgs and/or restricted use due to presence of Munitions of Explosive Concern (MEC).

TABLE – 2		
Special Restrictions for Post Closure SWMUs/HWMUs		
SWMU/HWMU NUMBER	SWMU/HWMU DESCRIPTION	INSPECTIONS/RESTRICTIONS
SWMU 2	Discarded military munitions burial pit	<ul style="list-style-type: none"> Groundwater monitoring shall be conducted in accordance with the recommendations outlined in the “Final Long term Monitoring of SWMU 2, SWMU 5 and HWMU 1 and Implementation of the Hydrogeologic Assessment and Recommendations Plan” March/April 2017.
SWMU 5	Building 600 foundation, drainage pond and ditch	<ul style="list-style-type: none"> Soil at depths greater than 10 ft bgs may include hexavalent chromium at levels exceeding industrial risk levels.
SWMU 25	Open Burn/Open Detonation (OB/OD) Treatment Areas from Surface Stabilization	<ul style="list-style-type: none"> The OBOD treatment areas within SWMU 25 were certified closed under industrial closure. These areas are located within SWMU 25 and will be included in the SWMU 25 post closure plan.
SWMU 29	Immediate areas bordering the former SWMU	<ul style="list-style-type: none"> The area immediately outside the boundary of the former SWMU may

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TABLE – 2		
Special Restrictions for Post Closure SWMUs/HWMUs		
		contain buried debris and/or drums. The Permittee shall ensure that any intrusive activities include anomaly avoidance to ensure protection of workers.

VI.G COMPLIANCE SCHEDULE

- VI.G.1 The Permittee shall submit a post closure plan within 180 days after the Director approves the CMI Completion Report.

VI.H POST-CLOSURE MAINTENANCE AND MONITORING

- VI.H.1 The Permittee shall inspect, maintain, monitor and track activities at the SWMUs listed in Table 1 throughout the post-closure care period in a manner that will ensure detection of a release of hazardous waste, hazardous waste constituents, leachate, contaminated runoff or hazardous waste decomposition products to the air, soil, groundwater, or surface water from the closed unit, and in a manner that will prevent unauthorized site use or unauthorized use of any excavated soil. The Permittee shall maintain any inspection, monitoring, security, treatment and other necessary equipment throughout the post-closure care period in a manner that will ensure detection of a release from the closed unit and minimize the possibility of fire, explosion, or any sudden or non-sudden release of hazardous waste constituents to air, soil, surface water or groundwater which could threaten human health or the environment.
- VI.H.2 The Permittee shall ensure that installation of drinking water wells is prohibited at the SWMUs/HWMUs without prior approval of the Director.
- VI.H.3 The Permittee shall follow the existing Facility excavation permit coordination procedures as contained in Form D prior to initiating any intrusive actives at the SWMU/HWMU. Applications for excavation permits shall be documented using Form D, Excavation Permit.

VI.I SECURITY

- VI.I.1 Specific security requirements for each SWMU/HWMU listed in Table 1 are presented in the post closure permit attachments.

VI.J GENERAL INSPECTION REQUIREMENTS

- VI.J.1 The Permittee shall follow the inspection schedules as specified in the post closure permit attachments. All records of inspections and remedial actions shall be retained in the Operating Record throughout the post-closure care period.
- VI.J.2 Inspections shall be documented on required forms as provided in Module VI and as indicated in the post closure permit attachments and as summarized in Table 3.

Table -3 - General Site Inspection Checklists, TEAD-S Post-Closure Plans:

TABLE - 3

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Required Inspection Form(s)		
SWMU NUMBER	Type of Closure	Form Type
9	Risk-based, Industrial	Form A
19	Risk-based, Industrial	Form A
28	Risk-based, Industrial	Form A
33	Risk-based, Industrial	Form A
<u>39</u>	<u>Risk-based, Industrial</u>	<u>Form A</u>
<u>13</u>	<u>Risk-based, Industrial</u>	<u>Form A</u>
<u>26</u>	<u>Landfill</u>	<u>Form B</u>

VI.J.3 Upon discovering any deterioration or malfunction, the Permittee shall perform corrective action as required by Utah Admin. Code R315-264-15(c). Corrective action shall be conducted as soon as practicable from the time the problem is discovered. If corrective action is extensive or will require more than 30 days to complete, the Permittee shall provide a corrective action schedule for approval by the Director.

VI.J.4 If either the Director or the Permittee determines that any corrective action could endanger human health or the environment, the Permittee shall cease the activity until the problem has been corrected.

VI.J.5 Records of inspections shall be kept at the Facility, as required by Utah Admin. Code R315-264-15(d).

VI.J.6 The Permittee shall inspect post-closure groundwater-monitoring wells at the frequency specified in each site-specific post closure plan as specified below:

VI.J.6.a Inspect for damage to the above ground casing of the well.

VI.J.6.b Inspect for damage to cement apron and ensure that the annulus is properly sealed.

VI.J.6.c Check for visible damage and any tampering to locks and monitoring well caps.

VI.J.6.d Ensure that the wells are accessible and visible.

VI.K TRAINING REQUIREMENTS

VI.K.1 The Permittee shall comply with the personnel qualification, training, and training documentation requirements, where applicable, listed in this Permit. Additionally, inspectors of any post-closure care units shall be trained (documentation required), at a minimum, in the following:

VI.K.1.a Attachment 4 (Contingency Plan),

VI.K.1.b Site-specific Post-Closure Plans,

VI.K.1.c General Post-Closure Site Inspection Checklists (Forms A and B)

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- VI.K.1.d Site-specific SWMU/HWMU Post-Closure Inspection Checklists (included in site-specific post-closure permit attachments).

VI.L PREPAREDNESS AND PREVENTION

- VI.L.1 Preparedness and Prevention measures, for each site listed in Table 1, shall be specified in the post closure permit attachments, or in Attachment 4 (Contingency Plan), where applicable to each site. Any modifications of this provision shall be made in accordance with Condition I.D.3.

VI.M SAMPLING, ANALYTICAL AND QA/QC PROCEDURES

- VI.M.1 Analytical data obtained from samples collected for compliance with this Module shall be obtained using procedures specified in an approved QAPP.

VI.N RECORDKEEPING AND REPORTING

- VI.N.1 The Permittee shall submit reports and notifications as required by this Module and as specified in the post closure permit attachments for each site to the Director documenting post-closure inspection and monitoring activities and results from analyses of samples. Copies of all Permit-related records will be maintained in the Operating Record.

VI.O POST-CLOSURE CARE

- VI.O.1 For each site listed in Table 1, the Permittee shall conduct all post-closure activities in accordance with the post-closure plans as specified in the post closure attachments. Each post-closure plan shall include information and requirements to satisfy the requirements of Utah Admin. Code R315-101 through Utah Admin. Code R315-273 for closure of landfills, surface impoundments, storage areas, tanks and other units. Types of site inspections required for each SWMU are outlined in Table 3 and the corresponding post-closure inspection forms are provided as Form A of Module VI.

- VI.O.2 Unless specified in a schedule included in the site-specific post closure attachment, the Permittee shall submit analytical results from all sampling activities required under Module VI within 180 days of receipt of the analytical results from the laboratory. All groundwater elevation data shall be submitted to the Director within 60 days of receipt of the analytical results from the laboratory. A report briefly describing analytical data quality shall be included with the results. If the Permittee cannot meet the 180-day requirement, the Permittee shall contact the Director and propose an alternate schedule for approval. The proposal shall include justification for not submitting the information within 180 days.

VI.P GROUNDWATER

Reserved

VI.Q AREAS IMPACTED BY MERCUR OUTWASH

- VI.Q.1 The Permittee shall ensure that areas potentially impacted by the Mercur Outwash, namely the eastern half and southeastern corner of the Facility (refer to Figure 1 of Module V) are evaluated in the excavation permit process prior to development or other intrusive work and

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to ensure controls are in place to ensure adequate worker protection from potential exposure to metals in soil that have been impacted by the Mercur Outwash.

VI.R. AREAS IMPACTED BY MEC

VI.R.1. The Permittee shall ensure that areas potentially impacted by MEC from historical operations at the former HWMU 31 (refer to Figure 1) are evaluated in the excavation permit process prior to development or other intrusive work to ensure controls are in place to ensure adequate worker protection.

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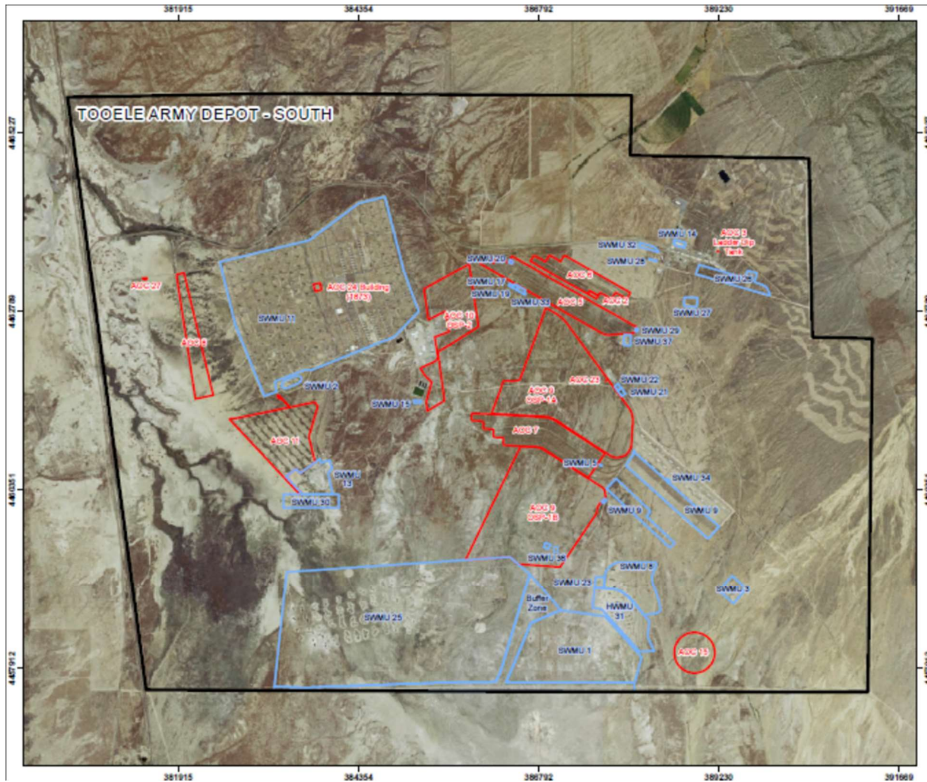


Figure 1. Area of highest probability for MEC from historical operations at the former HWMU 31.

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FORM A
GENERAL POST-CLOSURE SITE INSEPCION CHECKLIST
Industrial Closure/Industrial Use Sites

Site: _____

Date: _____

1. List any site-specific inspection requirements outlined in the Site Post Closure Plan and any special tracking conditions in Module VI Table 2.

2. Inspect the site and surrounding land use. Does the area remain in industrial use?

☐ Yes

☐ No*

**If no, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

3. Were any dig permits issued for this site since the last inspection?

☐ Yes*

☐ No

**If yes, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

4. Are posted warning signs, security measures, and/or perimeter fencing and locks in good condition and in place?

☐ Yes

☐ No*

**If no, notify the TEAD-S Environmental Office to determine the appropriate course of action. If the fence is damaged; mark the area of fence needing repair.*

5. Is there any soil disturbance in the vicinity of the site? (This may also include conditions of roads up to site: significant potholes and/or erosion.)

☐ Yes*

☐ No

**If yes, verify any change to the site and describe excavation or other activities.*

Notify the TEAD-S Environmental Office to determine the appropriate course of action.

Comments: _____

6. Is there any orphan waste at the site?

☐ Yes*

☐ No

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**If yes, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

7. Verify the security of Groundwater Monitoring Wells – (are caps intact, securely locked, etc.)

Comments: _____

Name of Inspector: _____

Company: _____

Signature of Inspector: _____

Time and Date of Inspection: _____ Site Location: _____

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FORM B – RESERVED
FORM B - GENERAL POST-CLOSURE SITE INSEPCION CHECKLIST
Landfill Sites

Site: _____
Date: _____

1. List any site-specific inspection requirements outlined in the Site Post Closure Plan.

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ATTENTION: Verbal notification (direct communication or voice mail) within 24-Hours **MUST** be provided to the TEAD-S Environmental Office on information concerning any non-compliance (for example: extreme erosion, burrowing into buried debris, or ponding on landfill cover footprint), which may endanger public drinking water supplies, human health, or the environment.

2. Purpose of Inspection:

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a. Routine ☐ Annual

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b. Contingency ☐ (Storm Event, Fire, Earthquake, etc.) circle one.

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c. Other ☐ _____

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3. Have the inspectors completed training as required by permit condition VI.K?

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☐ Yes

☐ No

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4. Are there open holes in the soil of the landfill cover footprint that may be caused by burrowing animals and potentially lead to a compromise of the integrity of the system that can not be mitigated during the site inspection?

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☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

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5. Are there noticeable depressions or ponding of surface water on the landfill cover footprint that could compromise the integrity of the landfill cover system?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

6. Are there large (more than two inches wide) cracks or rills in the soil cover that may lead to a compromise in the integrity of the cover system?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.
Corrective action may include placing a "watch status" on the area for future evaluation, filling in the eroded or cracked area, investigating the cause of erosion, and regrading slopes.*

Comments: _____

7. Inspect the survey monuments. Are they intact and legible?

☐ Yes

☐ No *

** If no, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

8. Inspect the survey monuments. Is there evidence of erosion or subsidence in the vicinity of the monument (ponding, cracks, rills, or uneven terrain)?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

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9. Is re-surveying of monuments necessary, based on the time since the cover was installed or the answer to Questions 7 & 8 above (i.e, is there visual evidence of significant settling)?

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☐ Yes *

☐ No

**If yes, coordinate with the TEAD-S Environmental Office to arrange resurvey the monument and note if the survey monument position is significantly different in any direction from the coordinates listed in the appropriate site-specific Module VI attachment and to establish magnitude of movement.*

Comments: _____

10. Are any trees, shrubs or other vegetation present on the landfill cover that can not be mitigated (removed) during the inspection?

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☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

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Comments: _____

11. Are posted signs in place and in good condition (legible)?

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☐ Yes

☐ No *

** If no, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

12. Inspect areas that channel water runoff at the site, including ditches and slope edges. Are there signs of excessive erosion (rutting 1-ft wide by 1-ft deep) from storm water runoff?

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☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

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Comments: _____

13. Inspect the access road leading to the site. Are there significant potholes and/or erosion preventing access to the site?

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☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

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Comments: _____

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14. Were there any problems obtaining access to the site?

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☐ Yes

☐ No

Comments: _____

15. Were any orphan wastes found inside or nearby the site?

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☐ Yes *

☐ No

** If yes, notify the TEAD-S Environmental Office immediately (within 24-hours) to determine appropriate measures for management of the waste.*

Comments: _____

16. Additional Notes (Sketches, time, temperature, wind direction, and other observations), attach additional sheets as needed.

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Is a location map showing location of deficiencies and/or watch items attached? ☐ Yes ☐ No

Name of Inspector: _____
Company: _____
Signature of Inspector: _____
Time and Date of Inspection: _____ Site Location: _____

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FORM C - RESERVED

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FORM D EXCAVATION PERMIT COORDINATION

This Excavation Permit form shall be used by the Facility contractor or Facility personnel prior to beginning any excavations.

I. Procedures:

- a. The Excavation Requester shall begin the process for an excavation permit as early in the development of the project as possible to assure the acceptability of the proposed work and site and to avoid complications from approval delay.
- b. The request will indicate any critical time constraints and be accompanied by three items:
 - 1) A detailed map of the area showing where the undertaking will occur.
 - 2) A larger scale small map or sketch showing dimensions and depth of the proposed excavation along with distances and orientations from local landmarks.
 - 3) Name, telephone number and email (if applicable of a point of contact designated by the Excavation Requester).
- c. These documents shall be forwarded to appropriate reviewers with suspense for comments.
- d. The reviewers will be provided two weeks to review the request documents. At the end of that time, a signed approval form or detailed explanation of the problems and issues will be due back to the requester.
- e. After notification of approval of the excavation permit, the excavation requestor will notify the blue stake teams of the projected start dates. A 48-hour advance notice is needed so that the blue staking can be in place prior to start of the excavation. The excavation requestor has the responsibility to mark the extents of the excavation and to protect the markings through blue stake procedures and excavation.
- f. An approved Excavation Permit will be valid for the period of the project as identified.
- g. An excavation permit for a new project within the limits of a previous metal sweep can be granted without an additional metal sweep if a site visit produces no indications of additional hazards having been introduced to the site.

Exemptions: The following are the only approved excavations that can be performed without an approved Excavation Permit.

- a. Removal of material from existing gravel or borrow pits, within the marked limits of a previously cleared Excavation Permit.
- b. Excavations within the marked limits of a previously cleared excavation permit are exempt from the requirement to obtain an additional metal sweep.

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- c. Repairs to a broken underground utility line where the location is clearly indicated and no additional utilities have been placed over the line and no hazards have been introduced to the area since the construction of the line.

FORM D – TEAD-S EXCAVATION PERMIT

APPENDIX A

EXCAVATION PERMIT

(Proponent Agency is Engineering Services Division)
(TEAD-R 420-16)

PERMIT EFFECTIVE DATE FROM TO

EXCAVATION REQUEST BY PHONE

LOCATION OF EXCAVATION

PURPOSE OF EXCAVATION

EXCAVATOR IS RESPONSIBLE TO MAINTAIN UTILITY MARKINGS AND IS LIABLE FOR ANY DAMAGE CAUSED THROUGH THE FAILURE TO MAINTAIN MARKINGS

BASED UPON DRAWINGS AVAILABLE, AND PERSONAL KNOWLEDGE OF THE AREA FOR WHICH I AM RESPONSIBLE, THE SITE IS FREE OF UNDERGROUND FACILITIES OR SYSTEMS EXCEPT AS NOTED. IF YES IS CHECKED THE CONTRACTOR IS REQUIRED TO NOTIFY THE UNDERSIGNED 24 HOURS IN ADVANCE OF EXCAVATION.

	NOTIFICATION REQUIRED	YES	NO
FACILITY SUPPORT DIVISION	BLDG 502 (435) 833-2603 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
ELECTRICAL	BLDG 502 (435) 833-2603 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
WATER	BLDG 502 (435) 833-2603 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
TELEPHONE CONTRACTOR	BLDG 10 (435) 833-3200/2000 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
ENVIRONMENTAL OFFICE	BLDG 8 (435) 833-2761 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAFETY OFFICE	BLDG 516 (435) 833-3888 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIRE DEPARTMENT	BLDG 8 (435) 833-2015 <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>

BLUE STAKES Notification Required ☐ YES ☒ NO Confirmation Number

If "yes" is checked privately owned utilities exist in the excavation area. In addition to notifying the required Government organizations listed above, the excavator is required to notify BLUE STAKES (801) 983-1555, and coordinate marking of utilities by BLUE STAKES, and the Government in the excavation area. this permit is not valid if yes is checked and the confirmation number is missing.

ENGINEERING SERVICES DIVISION CHIEF OR CONTRACTING OFFICERS REPRESENTATIVE (COR)-BLDG 501 OR FOR IN-HOUSE PROJECTS FACILITY SUPPORT DIVISION REPRESENTATIVE.

SIGNATURE: DATE:

NOTE: THIS PERMIT IS TO BE COMPLETED AND ATTACHED TO THE WORK ORDER PRIOR TO THE WORK ORDER BEING ISSUED. AFTER HOUR EMERGENCIES? CALL (435) 833-2911 OR (435) 833-2015. EXCAVATOR MUST HAVE A VALID PERMIT IN POSSESSION BEFORE/DURING EXCAVATION.

COMMENTS

**TOOELE ARMY DEPOT - SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 1**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 9
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
IMPA	Isopropyl Methylphosphonic Acid
MPA	Methylphosphonic Acid
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD-S	Tooele Army Depot South Area
UAC	Utah Administrative Code

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure that future land use is industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria and post-closure inspections at SWMU 9. Post-closure requirements shall continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary by the Director.

In accordance with Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP shall include specific information for a closed facility. As applicable to SWMU 9, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 9 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI Permit Attachment 4 <u>6</u>
UAC R315- 270-143.2.5 (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI. HI)
UAC R315- 270-143.2.5 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 270-143.2.5 (b)(12)	Training Requirements	Module VI (VI. JK)
UAC R315- 270-143.2.5 (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K) Permit Attachment 10 <u>10</u>
UAC R315- 270-143.2.5 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Permit Attachment 1-6 <u>6.14.4</u> (Section 6.14.4)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Permit Attachment 1-6 (Section 6.2 14.5)
UAC R315- 270-143.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-143.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Permit Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to TEAD-S Permit Attachment 6 (Section 14.5)
UAC R315- 270-143.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Permit Attachment 1-6 (Section 10.0)
UAC R315- 270-143.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Module VI Attachment 1-6 (Section 2.0 11.0)
UAC R315- 270-143.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Module VI Attachment 1-6 (Section 4.0 12.0)
UAC R315- 270-143.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Module VI Attachment 1-6 (Section 7.09.0)
UAC R315- 270-143.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Module VI Attachment 1-6 (Section 5.0 11.1)
UAC R315- 270-143.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Module VI Attachment 1-6 (Sections 6.29.0 and 14.0)
UAC R315- 270-143.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-143.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-143.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.
UAC R315- 270-143.2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-143.2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-143.2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-143.2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-143.2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 9, as required by UAC R315-~~3-2.5~~270.14(b)(1).

2.1 SWMU 9 LOCATION AND HISTORY

SWMU 9 encompasses approximately 145 acres (USATHAMA, 1979) and includes the former open-storage portion of the Area 2 chemical munitions safeguarding area and the Old Area 2, which is southwest of the current Area 2. The SWMU also includes an area southeast of Old Area 2 that reportedly contained burn pits. SWMU 9 is no longer used for agent storage (Foster Wheeler, 1999a).

2.2 PAST OPERATIONS

This site was used for chemical munitions storage (GB, VX, and mustard containers). One-ton containers were stored on rail lines. Munitions were also stored in tin sheds in the area. The site was used for munitions storage from the 1960s to the early 1980s. Known minor mustard releases have occurred at this site and other releases are probable. Burn pits have also been discovered in the area.

2.2.1 Area 2

Area 2 stored munitions containing mustard, nerve agents, chemical agent identification sets and war gas identification sets. Area 2 consisted of 23 chemical munitions storage buildings and an open area where one-ton containers of mustard, GB and VX were stored on rails (Foster Wheeler, 1999a; Weston, 1991). The rails were placed in 1967 to hold canisters from Area 10. VX spray tanks were reportedly stored on ties between the buildings in Area 2, while the GB and mustard containers were stored on 10 pairs of rails

south of the buildings in an area that was approximately 0.75 mile long. Open storage continued in Area 2 until 1974, when the containers were transferred back to Area 10 (Foster Wheeler, 1999a).

2.2.2 Old Area 2

Old Area 2, southwest of Area 2, stored M70 bombs, mustard, chemical agent identification sets and a limited number of one-ton containers of mustard and lewisite prior to 1967. Two to three sheds at the south end of Old Area 2 contained one-ton containers of mustard and CG. Several of the mustard containers leaked onto the ground by the sheds. The locations of the leaks were decontaminated by treating the area with bleach and plowing the surface soil. Old Area 2 reportedly also contained burn pits in the southern portion of the site. Open storage continued in Old Area 2 until the mid-1980s (Foster Wheeler, 1999a).

A Corrective Measure Study (CMS) was conducted in 1996 to address the human health risks found in the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) (Foster Wheeler, 1999b). The CMS proposed that institutional controls would prevent residential use of land and shallow groundwater (Foster Wheeler, 1999b). The decision document accepts the CMS preferred alternative of institutional controls (Foster Wheeler, 1999c). The decision document has been submitted to the state and approved.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Pre-RFI	Phase I RFI	Phase II RFI	CMS	Decision Document	Corrective Measure Implementation (CMI)
<ul style="list-style-type: none"> • USATHAMA 1979: Report 141; • NUS 1987: Interim RFI; • USATHAMA 1988, Performance Assessment/Site Investigation 	EBASCO 1993	Foster Wheeler 1999	Foster Wheeler 1999	Foster Wheeler 1999	North Wind 2004

2.4 CLOSURE ACTIVITIES

The 1999 Foster Wheeler CMS established the following controls:

1. Site control – fencing and posting of warning signs to restrict entry and activity at the site is complete.
2. Form D TEAD-S Excavation Permit process shall be enforced.
3. Land use restriction (deed restriction) – restrictions to prevent shallow groundwater use and future development has not been implemented.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Soil samples collected during the RFI revealed the presence of arsenic and low concentrations of two agent breakdown products (ABPs), methylphosphonic acid (MPA) and isopropyl methylphosphonic acid (IMPA).

Groundwater samples collected during 1993 indicated the presence of methylene chloride and metals contamination. The presence of methylene chloride is likely due to contamination in the laboratory.

The results of the human health risk assessment indicate residential risk levels were not met, but that there were negligible potential health risks to industrial workers associated with exposure to SWMU 9 soils. There is no significant ecological risk at SWMU 9.

2.6 SURFACE WATER AND GROUNDWATER

There are no defined surface water features within or near SWMU 9. The general direction of surface water drainage in the area surrounding this unit is southerly toward the low portion of Rush Valley.

Groundwater quality at SWMU 9 is primarily defined as Class IA, with the western portion defined as Class II. Groundwater contours show a slight “divide” through the center of the site; groundwater within the southwest half of the SWMU flows to the south-southwest at a gradient of 0.0133 feet/foot while groundwater within the northeastern half of the SWMU flows to the south-southeast at a gradient of 0.0100 feet/foot.

Groundwater in the vicinity is not currently used for drinking water, irrigation or other purposes. The nearest potable groundwater wells (there are two) are located approximately three miles northwest (up gradient) of SWMU 9, inside the TEAD-S boundary.

Groundwater monitoring is not required for SWMU 9 (Parsons, 2012).

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Security features shall be maintained and inspected throughout the post-closure care period.

The following security conditions have been implemented at SWMU 9:

Signs are present warning against unauthorized entry. This SWMU is fenced and contact with contamination is not expected during normal Facility operations.

The security features (i.e., posted warning signs) will be inspected according to the frequency in Module VI, Condition 2.2. The Permittee shall report to the Director any decrease of TEAD-S Base Security, which could affect the security conditions as applicable to SWMU 9.

Damaged or missing security features shall be noted in the inspection checklist. Repairs shall be completed as soon as practicable after the problem is discovered, in compliance with UAC R315-~~8-2-6264-15~~(c).

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 9 post closure care shall be in accordance with the Module VI. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report are required. Removal and reuse of soil from this site shall not be allowed unless approved by both the TEAD-S Environmental Office (EO) in accordance with Condition VI.H.3 and the Director.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 9 site shall be conducted as required by Module VI annually by November 1st to ensure the site remains under industrial use. Any modifications to the frequency of inspections shall be in accordance with Condition I.D.3.

Site inspections consist of a complete walkthrough and visual inspection of the areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO as part of the Facility Operating Record.

At a minimum, the site inspector shall have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem or as directed by the Permittee. If corrective action is required 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 by Module V and Module VI. This plan requires Director approval prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-~~3-3.1270-30~~(1)(9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1st of the reporting year. The SWMU 9, ~~the~~ Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2012, for the duration of the Post-Closure Monitoring Period.

3.6.1 Non-Compliance Reporting:

- The Permittee shall notify the Director orally within 24-hours of any noncompliance that may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any non-compliance which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues.
- The Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Deseret Chemical Depot 2012- Evaluation of Potential for Migration of Contaminants to Groundwater at Solid Waste Management Unit (SWMU) 9. July.

Division of ~~Solid and Hazardous Waste~~ Waste Management and Radiation Control (DSHWDWMRC), ~~2001~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

EBASCO, 1993. *Tooele Army Depot – South Area Suspected Releases Unit RCRA Facility Investigation – Phase I Revised Final Report*. July

Foster Wheeler 1999. *Deseret Chemical Depot Suspected Releases Units RCRA Facility Investigation, Phase II Group 2 SWMUs (SWMUs 3, 5, 8, 9, 30, and 31)*.

Foster Wheeler, 1999. *Deseret Chemical Depot Suspected Releases Units RCRA Corrective Measures, Phase II Group 2 SWMUs (SWMUs 3, 5, 8, 9, 30, and 31)*.

North Wind 2004 - Corrective Measure Implementation

NUS Corporation (NUS), 1987. *Interim RCRA Facility Assessment*, Tooele Army Depot South Area.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*, Deseret Chemical Depot. July.

United States Army Toxics and Hazardous Materials Agency (USATHAMA), 1979. *Installation Assessment of Tooele Army Depot. Report No. 141*, Aberdeen Proving Ground.

USATHAMA, 1988. *Performance Assessment/Site Investigation*, Tooele Army Depot South Area.

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 2**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 19
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CMS	Corrective Measures Study
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
HWMU	Hazardous Waste Management Unit
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD	Tooele Army Depot
UAC	Utah Administrative Code

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 19. Post-closure requirements shall continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary by the Director.

In accordance with Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP shall include specific information for a closed facility. As applicable to SWMU 19, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 19 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI Permit Attachment 4 <u>6</u>
UAC R315- 270-143.2.5 (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI. HI)
UAC R315- 270-143.2.5 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 270-143.2.5 (b)(12)	Training Requirements	Module VI (VI. JK)
UAC R315- 270-143.2.5 (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K) Permit Attachment 10 <u>10</u>
UAC R315- 270-143.2.5 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Permit Module VI Attachment 1-6 (Section 6.1 <u>14.4</u>)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Permit Module VI Attachment 1-6 (Section 6.214.5)
UAC R315- 270-143.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-143.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315-3.2.5(b)(19)(ii)	Topographic Map - 100-year floodplain area	Permit Attachment 6 (Section 14.5) Not applicable to TEAD-S
UAC R315- 270-143.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Permit Module VI Attachment 1-6 (Section 10.0)
UAC R315- 270-143.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Module VI Attachment 1-6 (Section 2.011.0)
UAC R315- 270-143.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Module VI Attachment 1-6 (Section 4.012.0)
UAC R315- 270-143.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Module VI Attachment 1-6 (Section 7.09.0)
UAC R315- 270-143.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Module VI Attachment 1-6 (Section 5.011.1)
UAC R315- 270-143.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Module VI Attachment 1-6 (Sections 6.29.0 and 14.0)
UAC R315- 270-143.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-143.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-143.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.
UAC R315- 270-143.2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-143.2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-143.2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-143.2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-143.2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 19, as required by UAC R315-~~3-2.5~~~~270-14~~(b)(1).

2.1 SWMU 19 LOCATION AND HISTORY

SWMU 19 is also known as the Building 533 Foundation (Empty Drum Storage Area) and consists of the concrete foundation of the former Building 533. Site features include an adjacent liquid and dry sump in the concrete floor/foundation, abandoned railroad tracks, and a septic tank. Building 533 was demolished by the Army in 1992.

SWMU 19 was investigated under a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) in 1992 (Ebasco). Volatile organic compounds (VOCs) were identified in sufficient concentrations to warrant a Phase II RFI. The Phase II RFI was conducted in 1994, 1995, and 1998 by SAIC that included soil gas surveys, sampling of the septic tanks and groundwater sampling. The results of the Phase II RFI were consistent with the results of the Phase I RFI showing soil gas with fuel-related VOCs and chlorinated solvents. A Corrective Measure Study (CMS) was conducted by URS-Dames and Moore in 2002; the CMS only evaluated site management measures. An additional soil gas survey was conducted in 2011 (Parsons) with results showing exceedances for trichloroethylene and chloroform. Follow up work was conducted in 2013 (Parsons) that consisted of soil borings and installation and sampling of a new groundwater well. The results of the 2013 Parsons work demonstrated the site met industrial closure.

2.2 PAST OPERATIONS

Building 533 was originally used for railroad car maintenance and later for storage of empty drums and other materials. The SWMU 19 area is currently used for storage of recyclable materials.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Phase I RFI	Phase II RFI	Phase II-A RFI	CMS	Soil Gas	RFI Addendum
Ebasco (1995)	SAIC (2001)	SAIC (2001)	URS (2002)	Parsons (2011)	Parsons (2014)

2.4 CLOSURE ACTIVITIES

The 2014 Phase II RFI Addendum (Parsons, 2014) established the following controls:

1. Form D TEAD-S Excavation Permit process shall be enforced.
2. Industrial closure with no groundwater monitoring.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The results of the risk assessment from the Phase II RFI Addendum show that the site did not meet risk-based levels for residential receptors but that risk levels are met for industrial workers. The primary pathway driving risk is inhalation of vapors migrating from soil to indoor air. No pathways were identified as complete for ecological receptors due to the industrial setting of the area.

2.6 SURFACE WATER AND GROUNDWATER

There is no surface water at this site. Groundwater sampling showed no chemicals were detected in the new source area well (Parsons, 2014). A thick clay unit (greater than 120 feet) also exists between the sump sources area and the first water-bearing zone, preventing migration of VOCs detected in subsurface soils down to groundwater. No groundwater monitoring was proposed for this site.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the human health risk assessment, only management measures are required at SWMU 19.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 19 post closure care shall be in accordance with Module VI. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report are

required. Removal and reuse of soil from this site shall not be allowed unless approved by both the TEAD-S Environmental Office (EO) in accordance with Condition VI.H.3. and the Director; removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 19 site shall be conducted as required by Module VI annually by November 1st to ensure the site remains under industrial use. Any modifications to the frequency of inspections shall be in accordance with Condition I.D.3.

Site inspections consist of a complete walkthrough and visual inspection of the areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO as part of the Facility Operating Record.

At a minimum, the site inspector shall have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by the Permittee. If corrective action is required 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 by Module V and Module VI. This plan requires Director approval prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

The Permittee shall submit in accordance with UAC R315-~~3-3-1270-30~~(1)(9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 19, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due.

3.6.1 *Non-Compliance Reporting:*

- The Permittee shall notify the Director orally within 24 hours of any noncompliance that may endanger public drinking water supplies or human health or the environment.

- The Permittee shall notify the Director in writing within five days of any non-compliance, which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues. The Facility shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

4.0 POST-CLOSURE CERTIFICATION

No later than 60 days after post-closure period has been completed, the Permittee shall submit a certification to the Director, signed by the Permittee and an independent professional engineer registered in the State of Utah, stating why post-closure care is no longer needed.

5.0 REFERENCES

Division of ~~Solid and Hazardous Waste~~Waste Management and Radiation Control (~~DSHWDWMRC~~), ~~2001~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Ebasco, 1993. *RCRA Facility Investigation – Phase I Suspected Release Units, Revised Final*. Deseret Chemical Depot, Stockton, Utah. July.

Parsons, 2001. *Final Completion report for Soil Gas Survey at SWMU 19*. August.

Parsons, 2014. *Final RCRA Facility Investigation Addendum Report for Solid Waste Management Unit 19*. January.

SAIC, 2011. *Final Phase II RCRA RFI Report, Group 3 Suspected Releases SWMUs, Volume 1*. August.

URS, 2002. *Final Corrective Measures Study SWMU 19 – Building 533 Foundations (Empty Drum Storage Area) group 3 Suspected Release SWMUs*. July.

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 3**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 33
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CMS	Corrective Measures Study
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
HWMU	Hazardous Waste Management Unit
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
XRF	X-ray fluorescence

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 33. Post-closure requirements shall continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary by the Director.

In accordance with Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP shall include specific information for a closed facility. As applicable to SWMU 33, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 33 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 270-14(b)(1)	General Description of the Facility	Section 2 and Module VI Permit Attachment 1
UAC R315- 270-143.2.5 (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.HI)
UAC R315- 270-143.2.5 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 270-143.2.5 (b)(12)	Training Requirements	Module VI (VI.JK)
UAC R315- 270-143.2.5 (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K) Permit Attachment 10
UAC R315- 270-143.2.5 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Permit Module VI Attachment 4-6 (Section 6-14.4)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Permit Module VI Attachment 1-6 (Section 6.214.5)
UAC R315- 270-143.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-143.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Permit Attachment 6 (Section 14.5) Not applicable to DCD
UAC R315- 270-143.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Permit Module VI Attachment 1-6 (Section 10.0)
UAC R315- 270-143.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Module VI Attachment 1-6 (Section 2.011.0)
UAC R315- 270-143.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Module VI Attachment 1-6 (Section 4.012.0)
UAC R315- 270-143.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Module VI Attachment 1-6 (Section 7.09.0)
UAC R315- 270-143.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Module VI Attachment 1-6 (Section 5.011.1)
UAC R315- 270-143.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Module VI Attachment 1-6 (Sections 6.29.0 and 14.0)
UAC R315- 270-143.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-143.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-143.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.
UAC R315- 270-143.2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-143.2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-143.2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-143.2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-143.2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 33, as required by UAC R315-~~3-2.5~~~~270-14~~(b)(1).

2.1 SWMU 33 LOCATION AND HISTORY

SWMU 33 is associated with Building 536 and is located in the north-central part of the Facility. Building 536 was the old CAMDS salt storage building. This building has been investigated as a Hazardous Waste Management Unit (HWMU) and closure documentation will be provided separately. The land outside of Building 536 is associated with the SWMU.

SWMU 33 was investigated under a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) with results provided in the Interim Final RFI report (SAIC, 2001). Under the RFI, the outside areas consisted of SWMU 33B and SWMU 33C. Area B is considered all of the soil surrounding Building 536 and extending north/northeast to Blume Street. Area C was identified as a drainage swale to the southeast of Building 536. The RFI risk assessment concluded that SWMUs 33B and 33C met industrial risk and could be closed with controls.

2.2 PAST OPERATIONS

The Building 536 exterior site is characterized by unpaved soil covered with sparse vegetation, including grasses, weeds, and rabbit brush. It is relatively flat, but slopes very gradually from the northeast to the southwest. According to the Phase II RFI Report (SAIC, 2001), no materials are stored at the Building 536 Exterior Site.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Phase II RFI	Phase IIA RFI	Phase IIB RFI	CMS	Decision Document	Corrective Measure Implementation (CMI)
SAIC 1994 to 1995 (SAIC, 2001)	SAIC 1998 to 1999 (SAIC, 2001)	SAIC 2000 (SAIC, 2001)	URS, 2002	URS, 2002	DCD, 2013

2.4 CLOSURE ACTIVITIES

The 2002 URS CMS established the following controls:

1. The Form D TEAD-S Excavation Permit process shall be enforced.
2. Land use restriction (deed restriction) – restrictions to prevent shallow groundwater use and future development has not been implemented.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

A re-evaluation of SWMU 33B and C was conducted in 2013 in conjunction with the State of Utah. Metals were evaluated using a handheld X-ray fluorescence (XRF) detector. The results of the XRF survey confirmed that both areas meet criteria for industrial closure as originally presented in the Phase II RFI.

However, the soil pile outside the building is an isolated hot spot. In order to ensure overall protection of future workers at this area, the Permittee recommends that when contracting and funding become available, this soil pile be removed and disposed of at an appropriate facility. As it is unclear when this action may occur, closure of SWMU 33 is restricted to industrial use with special control for the soil pile.

2.6 SURFACE WATER AND GROUNDWATER

Groundwater monitoring data was not collected at SWMU 33. The RFI included a chemical transport model to determine if the contaminants identified in the SWMU 33 soil could potentially reach the groundwater table. The model did not find any contaminants that could affect groundwater and did not include a quantitative risk assessment for groundwater at SWMU 33 as a consequence.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the Human Health Risk Assessment, only management measures are required at SWMU 33.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 33 post closure care shall be in accordance with Module VI. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site shall not be allowed unless approved by both the TEAD-S Environmental Office (EO) in accordance with Condition VI.H.3. and the Director; removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 33 site shall be conducted as required by Module VI annually by November 1st to ensure the site remains under industrial use. Any modifications to the frequency of inspections shall be in accordance with Condition I.D.3.

Site inspections shall consist of a complete walkthrough and visual inspection of the areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO as part of the Facility Operating Record.

At a minimum, the site inspector shall have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem or as directed by the Permittee. If corrective action is required 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 by Module V and Module VI. This plan requires Director approval prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

The Permittee shall submit in accordance with UAC R315-~~3-3-1270-30~~(1)(9), a Biennial Post-Closure Report for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 33, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2012, for the duration of the Post-Closure Monitoring Period.

3.6.1 Non-Compliance Reporting:

- The Permittee shall notify the Director orally within 24-hour concerning the noncompliance that may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any non-compliance which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues. The Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Division of ~~Solid and Hazardous Waste~~ Waste Management and Radiation Control (DSHWDMRC), ~~2001~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Ebasco, 1993. *RCRA Facility Investigation – Phase I Suspected Release Units, Revised Final*. Deseret Chemical Depot, Stockton, Utah. July.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*. July.

SAIC, 2001. *Final Phase II RCRA RFI Report, Group 3 Suspected Releases SWMUs, Volume I*. August.

URS, 2002. *Final Corrective Measures Study SWMU 19 – Building 533 Foundations (Empty Drum Storage Area) group 3 Suspected Release SWMUs*. July.

Deseret Chemical Depot, 2013. *Final Evaluation of Solid Waste Management Unit 33 to Support Closure, Tooele Army Depot South Area*. July 2013

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 4

**SOLID WASTE MANAGEMENT UNIT (SWMU) 28
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
DCD	Deseret Chemical Depot
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
ft	feet
PA/SI	Preliminary Assessment / Site Investigation
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD-S	Tooele Army Depot South Area
UAC	Utah Administrative Code

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 28. Post-closure requirements shall continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary by the Director.

In accordance with Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP shall include specific information for a closed facility. As applicable to SWMU 28, the information requirements shall 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 9 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI <u>Permit Attachment 16</u>
UAC R315- 270-143.2.5 (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI. H <u>I</u>)
UAC R315- 270-143.2.5 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 270-143.2.5 (b)(12)	Training Requirements	Module VI (VI. J <u>K</u>)
UAC R315- 270-143.2.5 (b)(6)	Preparedness and Prevention	Permit Attachment 10 <u>Section 2.8 and Module VI (VI.K<u>L</u>)</u>
UAC R315- 270-143.2.5 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI <u>Permit Attachment 16</u> (Section 6.1 <u>14.4</u>)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Permit Attachment 1-6 (Section 6.2 14.5)
UAC R315- 270-143.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-143.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-143.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Permit Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to TEAD-S Permit Attachment 6 (Section 14.5)
UAC R315- 270-143.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Permit Attachment 1-6 (Section 10.0)
UAC R315- 270-143.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Module VI Attachment 1-6 (Section 2.0 11.0)
UAC R315- 270-143.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Module VI Attachment 1-6 (Section 4.0 12.0)
UAC R315- 270-143.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Module VI Attachment 1-6 (Section 10.09.0)
UAC R315- 270-143.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Module VI Attachment 1-6 (Section 7.09.0)
UAC R315- 270-143.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Module VI Attachment 1-6 (Section 5.0 11.1)
UAC R315- 270-143.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Module VI Attachment 1-6 (Sections 6.29.0 and 14.0)
UAC R315- 270-143.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-143.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-143.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-143.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.
UAC R315- 270-143.2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-143.2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-143.2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-143.2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-143.2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 28, as required by UAC R315-~~3-2.5~~~~270-14~~(b)(1).

2.1 SWMU 28 LOCATION AND HISTORY

SWMU 28 is an inactive (abandoned) landfill encompassing approximately 0.3 acres, and is located approximately 1,000 feet (ft) southwest of the Administrative Area in the northeast region of the Facility (Figure 2.3; Inset 1). The landfill was used between 1963 and 1972 for the disposal of solid waste, paper, and building debris. Reportedly, no noxious or hazardous materials were disposed of at this site, and the landfill was filled to grade and revegetated in 1972, although details of the cover/cap are unknown (Ebasco, 1993).

Based on test pitting conducted by the Permittee in October 2012, the thickness of overburden at the landfill ranges from approximately one to two ft, and buried debris is present to a maximum depth of approximately 11 to 14 ft below ground surface (bgs). No landfill liner was observed during the test pit operations; as such, the landfill at SWMU 28 was likely an unlined disposal area.

A range fire in 2012 burned and removed all vegetation at the SWMU 28 site and exposed the landfill cover materials. The cover, comprised of gravel and cobble rich materials, is similar to the fill/cover material commonly seen at the Facility sites and is therefore believed to have originated from the installation's primary borrow pit.

2.2 PAST OPERATIONS

Previous investigations at SWMU 28 include a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA), Preliminary Assessment/Site Investigation (PA/SI), Phase I RCRA Facility Investigation (RFI) field investigation, 2012 test pit investigation, and a RCRA RFI Addendum in 2012. The Phase I RFI only included the installation and sampling of three groundwater monitoring wells. No soil or soil gas samples were collected during the Phase I RFI or during the test pitting operation conducted in 2012. The scope of the RFI addendum included completion of the nature and extent of potential contamination within and around the landfill and included additional sampling of surface and subsurface soils and soil gas (active). The conclusions of the RFI addendum were that the site met industrial use and risks, groundwater monitoring was not required.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

RFA	PA/SI	Phase I RFI	Phase IIA RFI	Phase IIB RFI (Addendum)
NUS Corp 1987	EA Engineering Science & Tech inc 1988	Ebasco 1992	DCD ^a 2012 Test Trench Investigation	Parsons, 2013a
^a Deseret Chemical Depot (now the TEAD-S)				

2.4 CLOSURE ACTIVITIES

Based on the RFI Addendum (Parsons, 2013a) the following controls are to be established:

1. Form D TEAD-S Excavation Permit process shall be enforced.
2. Land use restriction – restrictions to prevent shallow groundwater use and future development.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

A risk assessment was conducted using residential (hypothetical) and industrial (actual) land use exposure scenarios to determine potential risks and hazards to receptors from exposure to contaminants at SWMU 28. The carcinogenic risks estimated for residents exceeded the point of departure of 1E-06. This risk estimate is almost entirely due to assumed exposures to benzo(a)pyrene in soils and assumed inhalation exposures to chloroform in indoor air from soil gas. However, the risk estimates for industrial and construction workers are within the USEPA (1990) risk management range of 1E-06 to 1E-04. The noncarcinogenic hazard index estimated for residents, industrial workers, and construction workers are less than or equal to 1.0, the benchmark level of concern for noncarcinogenic effects. An ecological risk assessment was also conducted and no chemicals of concern were identified that may pose potential hazards to populations of ecological receptors at the site. Soil-to-groundwater analysis also indicates that future impacts to groundwater from chemicals in soil are not expected. Therefore, based on the results from the soil-to-groundwater evaluation, detections in soils are not present at concentrations that will significantly impact groundwater in the future and degradation of natural resources is not likely.

2.6 SURFACE WATER AND GROUNDWATER

No surface water is present at SWMU 28. Previous investigations at SWMU 28 were limited to the installation and sampling of three groundwater monitoring wells. Periodic sampling of these wells over the last 20 years has shown no impacts to site groundwater. The RFI addendum (Parsons, 2013a) recommended the discontinuation of groundwater monitoring for this site.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the human health risk assessment, only land use management measures are required at SWMU 28.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 28 post closure care shall be in accordance with Module VI. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report are required. Removal and reuse of soil from this site shall not be allowed unless approved by both the TEAD-S Environmental Office (EO) in accordance with Condition VI.H.3. and the Director; removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 28 site shall be conducted as required by Module VI annually by November 1st to ensure the site remains under industrial use. Any modifications to the frequency of inspections shall be in accordance with Condition I.D.3.

Site inspections shall consist of a complete walkthrough and visual inspection of the areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO as part of the Facility Operating Record.

At a minimum, the site inspector shall have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by the Permittee. If corrective action is required 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 by Module V and Module VI. This plan requires Director approval prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

The Permittee shall submit in accordance with UAC R315-~~3-3-1270-30~~(1)(9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 28, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2012, for the duration of the Post-Closure Monitoring Period.

3.6.1 Non-Compliance Reporting:

- The Permittee shall notify the Director orally within 24-hours of any noncompliance, which may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any 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 Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Division of ~~Solid and Hazardous Waste~~ Waste Management and Radiation Control (DSHWDWMRC), ~~2004~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Analytical Quality Solutions (AQS), 2013. *Final Risk Assumptions Document Solid Waste Management Units and Other Corrective Action Sites*. Deseret Chemical Depot, Tooele, Utah. Revision 1. January.

Department of Defense, 2010. *Department of Defense, Quality Systems Manual for Environmental Laboratories*, prepared by Department of Defense Environmental Data

Quality Workgroup, Final, Version 4.2, October 25.

~~Division of Solid and Hazardous Waste (DSHW), 2011. Utah Administrative Code (UAC). R315-101.~~

Ebasco, 1993. *RCRA Facility Investigation – Phase I, Suspected Release Units, Revised Final*. Deseret Chemical Depot (DCD), Stockton UT. July.

Gardner, P.M., and Kirby, S.M., 2011. *Hydrogeologic and Geochemical Characterization of Groundwater Resources in Rush Valley, Tooele County, Utah*: U.S. Geological Survey Scientific Investigations Report 2011–5068, 68 p.

Kleinfelder, 1999. *Final Groundwater Monitoring Report, Fall 1998, Deseret Chemical Depot, Tooele, Utah*. May.

Parsons, 2013a. *Final Work Plan - RCRA Facility Investigation Addendum for Solid Waste Management Units 19 and 28 at Deseret Chemical Depot, Utah*. February.

Parsons, 2013b. *SWMU 28 Final Work Plan Addendum- Plan for Additional Subsurface Soil Sampling*. Tooele Army Depot-South Area, Utah. September.

Parsons, 2013c. *Final Hydrogeological Assessment and Recommendations Report, Deseret Chemical Depot, Utah*. July.

U.S. Army Corps of Engineers (USACE), 2005. *Environmental Quality-Guidance for Evaluating Performance-Based Chemical Data*. EM-200-1-10. June.

United States Environmental Protection Agency (USEPA), 1989. *Risk Assessment Guidance for Superfund (RAGS). Human Health Evaluation Manual Part A*. Interim Final. Office of

Emergency and Remedial Response Washington, D.C. OSWER 9285.701A. EPA/540/1-89/002.

USEPA, 1990. *National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Final Rule)*. 40 CFR Part 300: 55 Federal Register 8666.

USEPA, 1992a. *Guidance for Data Usability in Risk Assessment (Part A) Final*. Publication Number 9285.7-09A. April.

**TOOELE ARMY DEPOT - SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 5**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 39
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COPC	Constituent of Potential Concern
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
ft bgs	feet below ground surface
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compound
SWMU	Solid Waste Management Unit
TEAD-S	Tooele Army Depot South Area
UAC	Utah Administrative Code
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The two objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Permit; and 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and to ensure that future land use is industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 39. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary.

In accordance with Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 39, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

Table 1: Summary of SWMU 39 Post-Closure Information Requirements under UAC R315-270-14

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(1)	General Description of the Facility	Section 2 and Permit Attachment 6
UAC R315-270-14(b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.I)
UAC R315-270-14(b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315-270-14(b)(12)	Training Requirements	Module VI (VI.K)
UAC R315-270-14(b)(6)	Preparedness and Prevention	Permit Attachment 10
UAC R315-270-14(b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Permit Attachment 6 (Section 14.4)

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Permit Attachment 6 (Section 14.5)
UAC R315-270-14(b)(14)	Closure Certification and Notification	Section 2.7
UAC R315-270-14(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(19)(i)	Topographic Map - Map Scale and Date	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(ii)	Topographic Map - 100-year floodplain area	Permit Attachment 6 (Section 14.5)
UAC R315-270-14(b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Permit Attachment 6 (Section 10.0)
UAC R315-270-14(b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Attachment 6 (Section 11.0)
UAC R315-270-14(b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Attachment 6 (Section 12.0)
UAC R315-270-14(b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Attachment 6 (Section 11.1)
UAC R315-270-14(b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Attachment 6 (Sections 9.0 and 14.0)
UAC R315-270-14(c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315-270-14(c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.
UAC R315-270-14(c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315-270-14(c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315-270-14(c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315-270-14(c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315-270-14(c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315-270-14(c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 39, as required by UAC R315-270-14(b)(1).

2.1 SWMU 39 Location and History

SWMU 39 is a dry well that occupies less than 0.1 acres and is located in the northwestern quadrant of TEAD-S outside and along the east side of Building 1873, also known as Building 2005. The Buildings and SWMU are located within Area 10. Based on historical drawings dating back to 1951, the dry well was approximately four feet by four feet by four feet. The base of the well was located at a depth of six feet below ground surface (ft bgs) with two feet of earth fill on top of the well, rendering the ground surface slightly above the well level. The dry well was connected via a cast iron pipe to two paint booths inside of Building 1873. Geophysical surveys were conducted as part of the Phase I Resource Conservations and Recovery Act (RCRA) Facility Investigation (RFI) to define the feature. The site was identified as Area of Concern (AOC) 27 in the RFI process. However, as industrial closure and land use controls were recommended, the AOC was named a SWMU for inclusion in the post closure permit.

2.2 Past Operations

Historically, the paint booths were used for sand blasting and painting containers. Based on the review of historical drawings and understanding the operations of pain booths, the chemical agent containers were likely sandblasted within an enclosed room or “booth” and then remotely spray painted in either the same booth or a different one. Solid particulate matter and waste fluids would have been captured within the paint booths. It is unclear whether liquid waste (treated or untreated) from the pain booths drained to the dry well.

Building 1873 has undergone renovations since its initial construction. The paint booths first appear on a historical drawing dated 1951, and no longer appear on plans dated after 1975. Because activities conducted in the building included painting of chemical agent containers, all activities were monitored for chemical agent. There is no history of agent detections during active operations (Parsons 2019). Consistent with painting operations, the potential for contamination would be a release of the rinse down fluids from painting operations.

2.3 Previous Investigations Documentation

Table 2: Summary of Previous Investigations

Pre-RFI	Phase I RFI	Phase II RFI	CMS	Decision Document	CMI
TEAD-S, 2013	Parsons, 2017	Parsons, 2019	NA	NA	NA
CMI – Corrective Measure Implementation CMS – Corrective Measures Study NA – Not Applicable					

2.4 Closure Activities

The 2019 Phase II RFI (Parsons, 2019) established the following controls:

1. The TEAD-S Excavation Permit process will be enforced.
2. Land use restriction (post closure) – activities limited to industrial use only.

2.5 Human Health and Ecological Risk Assessment

A screening level human health and ecological risk assessment were performed using data from the soil samples collected as part of the RFI process. Several metals, volatile organic compounds (VOCs), polycyclic aromatic compounds (PAHs), and semi-volatile organic compounds (SVOCs) were selected as contaminants of potential concern (COPCs).

The results of the human health risk assessment indicated that residential risk levels are met for lead and total site risk and hazard to all other COPCs are below industrial target risk levels of 1×10^{-6} (cancer) and 1.0 (noncancer).

There is no significant ecological risk at SWMU 39.

2.6 Surface Water and Groundwater

There are no defined surface water features within or near SWMU 39. The general direction of surface water drainage in the area surrounding this unit is southerly toward the low portion of Rush Valley.

Groundwater quality at SWMU 39 is primarily defined as Class II, drinking water quality. Depth to groundwater ranges from 8 to 28 ft bgs (Parsons, 2019). Groundwater flow is to the west, southwest.

Groundwater in the vicinity is not currently used for drinking water, irrigation, or other purposes. The nearest potable groundwater wells (2) are located approximately 3.5 miles northeast (upgradient) of SWMU 39, inside the TEAD-S boundary.

Groundwater monitoring is not required for SWMU 39 (Parsons, 2019).

2.7 Closure Notifications

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-264-110 through 120.

2.8 Security Requirements

No specific security features are needed throughout the post-closure care period with the exception of tracking the location of the SWMU in the TEAD Land Use Management Plan and ensure industrial land use.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 Introduction

SWMU 39 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO). Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 Routine Site Inspections

During the Post-Closure period, general inspections of the SWMU 39 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 area. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

3.3 Inspection Follow-Up

Copies of completed site inspection checklists (Module VI, Form A) shall be forwarded to the TEAD-S EO. The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Director prior to implementing corrective action.

3.4 Non-Compliance Reporting

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 Biennial Post-Closure Report

In accordance with UAC R315-270-30(1)(9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1 of the reporting year. The SWMU 39 Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 Required Submittals

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2020, for the duration of the Post-Closure Monitoring Period.

3.6.1 Non-Compliance Reporting:

- The Permittee shall notify the Director orally within 24-hours of any noncompliance that may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any non-compliance which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues.
- The Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

3.6.2 Anticipated Non-Compliance:

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Analytical Quality Solutions (AQS), 2017. *Final Risk Assumptions Document, Revision 5*, Deseret Chemical Depot, March.

Division of Waste Management and Radiation Control (DWMRC), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*, Deseret Chemical Depot. July.

Parsons, 2017. *Final Phase I RCRA Facility Investigation Report of Select Areas of Concern*, Tooele Army Depot South Area, November.

Parsons, 2019. *Final Phase II RCRA Facility Investigation Report of Select Areas of Concern*, Tooele

Army Depot South Area, February.

Tooele Army Depot South Area (TEAD-S), 2013. *Final Report for Identification of Sites of Potential Concern (SPC)*, Tooele Army Depot South Area, November.

TEAD-S
Module VI Attachment 6
SWMU 13 Post Closure Plan
April XXZ, 2020

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**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 6**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 13
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CAMDS	Chemical Agent Munitions Disposal System
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DWMRC	Division of Waste management and Radiation Control
EO	Environmental Office
LNAPL	Light Non-aqueous Phase Liquid
LTM	Long Term Monitoring
OM&M	Operations Monitoring and Maintenance
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
VOC	Volatile Organic Compounds

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1.0 INTRODUCTION

The four objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); 3) to ensure industrial use only; and 4) to ensure any buildings are constructed to prevent exposure via the vapor intrusion pathway. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 13. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary.

In accordance with Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 13, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 13 Post-Closure Information Requirements
Under UAC R315-270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(1)	General Description of the Facility	Section 2 and Permit Attachment 6
UAC R315-270-14(b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.I)
UAC R315-270-14(b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315-270-14(b)(12)	Training Requirements	Section 2.8 and Module VI (VI.K)
UAC R315-270-14(b)(6)	Preparedness and Prevention	Permit Attachment 10
UAC R315-270-14(b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Permit Attachment 6 (Section 14.4)

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Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Permit Attachment 6 (Section 14.5)
UAC R315-270-14(b)(14)	Closure Certification and Notification	Section 2.7
UAC R315-270-14(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(19)(i)	Topographic Map - Map Scale and Date	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(ii)	Topographic Map - 100-year floodplain area	Permit Attachment 6 (Section 14.5)
UAC R315-270-14(b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Permit Attachment 6 (Section 10.0)
UAC R315-270-14(b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Attachment 6 (Section 11.0)
UAC R315-270-14(b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Attachment 6 (Section 12.0)
UAC R315-270-14(b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Attachment 6 (Section 9.0)
UAC R315-270-14(b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Attachment 6 (Section 11.1)
UAC R315-270-14(b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Attachment 6 (Sections 9.0 and 14.0)
UAC R315-270-14(c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(4)	Groundwater Monitoring Information - Extent of plume	Final OM&M Report (Plexus, 2019)

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Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(iii)	Groundwater Monitoring Information - Background values	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 13, as required by UAC R315-270-14(b)(1).

2.1 SWMU 13 LOCATION AND HISTORY

SWMU 13 is located within the southwestern quadrant of TEAD-S. It includes the former Chemical Agent Munitions Disposal System (CAMDS) within a ten-acre fenced area. The CAMDS facility operated from 1979 to 2005 to develop and demonstrate methods for chemical munitions handling, demilitarizing chemical munitions, waste incineration, and treating wastes from the demilitarization process. When operational, CAMDS consisted of incinerators, munitions handling areas, waste handling areas, chemical storage areas, hazardous waste storage areas, laboratories, control rooms, maintenance facilities, and support buildings (Rust 1997, URS 2002, Parsons 2013a).

Upon completion of the CAMDS mission in 2005, operations ceased, the facility was decommissioned and all facilities were demolished. The closure of CAMDS has been approved by the Utah DWMRC with respect to past chemical releases (URS 2012), with the exception of the remnants of a historical fuel spill and minor releases of chlorinated solvents. The historic fuel spill was the result of a leak in an underground diesel fuel line that occurred sometime between 1980 and 1985 in the vicinity of three aboveground storage tanks (ASTs) near the western perimeter of CAMDS. The leak went undetected for an unknown period of time and up to 38,000 gallons of fuel may have been released (Rust 1997). As part

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of the closure verification, URS (2012) collected soil and sump-water samples that were analyzed for metals, explosives, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), chemical agents, and agent breakdown products (ABPs) based on the history of individual facilities and their potential for contamination.

2.2 PAST OPERATIONS

SWMU 13 is characterized by former building cement pads and unpaved soil covered with sparse vegetation, including grasses, weeds, and rabbit brush. It is relatively flat but slopes very gradually from the northeast to the southwest. The site is a result of a long-term fuel oil leak from below ground storage tanks, which have been removed.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Several investigations and corrective measure studies of SWMU 13 have occurred over the past several years to include:

- Installation Assessment (USATHAMA 1979),
- Exploratory Survey (ErTech, 1992),
- Installation Environmental Assessment (Ebasco, 1993),
- Preliminary Assessment/Site Investigation (EA, 1988),
- Resource Conservation and Recovery Act (RCRA) Phase I RCRA Facility Investigation (RFI) (Donohue and Associates, 1990),
- Remedial Investigation Report (Weston, 1991),
- RCRA Phase II RFI (Rust, 1997),
- Decision Document (URS, 2001),
- Corrective Measure Study (URS/Dames and Moore, 2002),
- Product Thickness Monitoring (SC Environmental, 2009),
- CAMDS Closure Verification Sampling Report (URS, 2012),
- Base-wide groundwater monitoring (Klienfelder 1999 and 2006 and Jacobs, 2011),
- RCRA Data Gap Investigation (Parsons 2014),
- Corrective Measure Study (CMS) and Decision Document (Parsons, 2016),
- Corrective Measure Implementation (CMI) Plan (Plexus, 2017), and
- Operation, Maintenance and Monitoring (OM&M) Plan (Plexus, 2018).

The implemented corrective measure remedy at SWMU 13 consists of the following:

- Installation of extraction trenches to recover light non-aqueous phase liquid (LNAPL),
- Monitoring of petroleum constituents in groundwater and soil gas,
- Groundwater use restrictions,
- Excavation restrictions,
- Land use restrictions, and
- Long-term monitoring.

The system consists of three LNAPL recovery trenches, 14 sumps, eight skimmer pumps, and eight 55-gallon drum recovery systems and was installed in 2017/2018 in accordance with the CMS Implementation Work Plan (Plexus, 2017). A product recovery system prove-out and a baseline OM&M evaluation were also completed in 2018.

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2.4 CLOSURE ACTIVITIES

Due to technical inefficiency of the implemented system, TEAD-S requested a Technical Impracticality (TI) variance, proposing a shutdown of the existing system and an alternative remediation strategy consisting of long-term monitoring (LTM) and land use controls. LTM will consist of horizontal and vertical plume monitoring and updating the potentiometric surface maps. The TI variance was approved by the State (TEAD, 2019)

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The protection of human health and the environment will be ensured by site-specific measures outlined below, rather than by achieving the Utah criteria for groundwater or soil vapor. In addition, to ensure protection of human health and the environment, the following land use controls are required:

- Industrial use only.
- Limitation on buildings. The RFI concluded that the vapor intrusion pathway was complete and that it was assumed a priori that adverse risks were present from the vapor intrusion pathway. Any construction of buildings near the footprint of SWMU 13 and near the groundwater plume associated with SWMU 13 will require adequately ventilation for VOCs and periodic testing.
- Dig permit process. Intrusive activities should be limited to near ground surface, to prevent contact with any LNAPL present in shallow groundwater.

2.6 SURFACE WATER AND GROUNDWATER

Groundwater at TEAD-S is part of the regional flow system within Rush Valley. The groundwater underlying TEAD-S is recharged by intermittent streams and subsurface flow coming from the Oquirrh Mountains northeast of the facility. Groundwater flow at TEAD-S is influenced by the presence of a notable groundwater divide that crosses the facility from the northeast to the southwest.

North of this divide, groundwater flow is generally to the west toward discharge points near the center of Rush Valley. South of the divide, groundwater is directed southeastward toward Cedar Valley. Shallow groundwater at TEAD-S generally occurs under unconfined conditions, although semi-confined and confined conditions exist in localized areas. Depth to groundwater beneath TEAD-S ranges from greater than 200 feet bgs at sites closer to the recharge areas in the northeast, to less than 10 feet bgs near discharge areas located along the TEAD-S western boundary (Parsons, 2017).

SWMU 13 lies on the south side of the regional groundwater divide and groundwater flows to the south-southeast. The horizontal groundwater gradient across SWMU 13 is measured by comparison of groundwater elevations in shallow wells across the site. Historically, from just outside the upgradient area where the diesel product is present at monitoring well S-26-88 to the downgradient south side at monitoring well S-30-88 there is an elevation difference of 1.3 feet across a distance of 650 feet. This equates to a slight horizontal gradient of 0.001 feet per foot or about five feet per mile. The slight horizontal gradient is further confirmed by the site-wide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report, which shows a groundwater high and large, flat area beneath SWMU 13 (Parsons, 2017).

Shallow groundwater conditions were further investigated beneath SWMU 13 with the drilling, installation and sampling of monitoring well S13-CAM-DW1. The well is sited at the former location of

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the diesel fuel storage tanks that leaked and released the diesel fuel and is paired with S-CAM-2, where residual diesel fuel remains as an LNAPL on top of the water table. The location was selected to be representative of the area where impacts from the diesel fuel are the greatest.

An evaluation of the boring log and the CPT data for S13-CAM-DW1 finds fine-grained soils that are a mixture of clays, silts and fine sands to a depth of 54.8-feet bgs, where a silty gravel was encountered. This coarser layer was found to be about two-feet in thickness and was the interval selected to be screened. According to Freeze and Cherry (1979) horizontal hydraulic conductivity in the type of soil between the shallow groundwater and the coarser layer is low and typically ranges from 1×10^{-4} to 1×10^{-5} cm/sec. Additionally, Freeze and Cherry also state that in layered sediments, the vertical hydraulic conductivity can be up to 10-times less than the horizontal value.

The horizontal groundwater gradient across SWMU 13 is measured by comparison of groundwater elevations in shallow wells across the site. From just outside of upgradient area of where the diesel LNAPL is present at monitoring well S-25-88 to the South side at monitoring well S-30-88 there is an elevation difference of 0.5 feet across a distance of 550 feet. This equates to a slight horizontal gradient of .001 feet per foot or about 5 feet per mile. The lack of a significant horizontal gradient across SWMU 13 is confirmed by the site-wide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report (Figure 2.6, Parsons, 2013), that shows a groundwater high and large flat area beneath SWMU 13.

The vertical gradient beneath SWMU 13 is measured as the difference in groundwater elevation heads between paired wells S-CAM-2 and S13-CAM-DW1. Prior to determining the vertical gradient, the water level for S-CAM-2 was corrected to account for the different densities of the groundwater and free product layer. The water level was corrected as described in Appendix I of the Parsons (2014) "*SWMU 13 CMS Data Gap Work Plan and SWMU 30 Phase II RFI Addendum Work Plan*," and Exhibits III.9 and III.10 of the USEPA (1996) guidance document "*How to Effectively Recover Free Product at Leaking Underground Storage Tank Sites*." Output details from the vertical gradient calculator (USERA 2016), show a slight downward gradient of 0.008 feet per foot was calculated. The vertical gradient was re-evaluated using the 2018 data (Plexus, 2019). A downward vertical gradient of less than 0.01 was calculated for the selected shallow/deep well pair by the USEPA vertical gradient calculator. Although a downward, vertical gradient is present, the 40-foot clay layer restricts most of the flow to the higher K units in the deeper zone.

As a general indicator of groundwater quality, total dissolved solids (TDS) was measured in samples from the paired wells. TDS in the shallow well is approximately 2,800 mg/L while approximately 17,000 mg/L was found in the deeper well. This difference suggests groundwater quality decreases with depth beneath SWMU 13. This difference further indicates a lack of vertical groundwater communication or movement between the intervals screened by these two wells.

The combination of fine-grained soils with low hydraulic conductivity and the lack of both horizontal and vertical gradients to produce a driving force combine to minimize potential groundwater movement beneath SWMU 13. A lack of vertical groundwater movement is confirmed by the change in groundwater quality between the screened intervals in the paired wells. Trace concentrations of several chemical constituents detected in Monitoring well S13-CAM-DW1 are believed present as a result of more than 30-years of chemical dispersion beneath the area where the diesel fuel was spilled, rather than a result of groundwater movement. The minimal change in groundwater elevations indicate little recharge is occurring to the groundwater underlying the installation and that there is not much connection with the ground surface or other groundwater recharge sources. For SWMU 13, hydrographs (Parsons, 2013)

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generated using data from 1999 through 2012 demonstrate the minimal variation of groundwater levels with differences due to seasonal fluctuations.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-264-110 through 120.

2.8 SECURITY REQUIREMENTS

The Permittee shall comply with the following security conditions as applicable to SWMU 13:

1. SWMU 13 is located within a Federal, military installation (TEAD-S). As such, the installation is restricted for the common population.
2. Access to SWMU 13 will be restricted and approved by the TEAD-S EO.
3. Signs will be placed and maintained at all entry points. Signs will identify the SWMU and provide contact information and state that entrance into or disturbance with the SWMU are prohibited without installation (EO) approval.
4. All signage and any fences shall be inspected throughout the post-closure care period. Inspection of security measures shall be included in the annual site inspections (Form A, Module VI).

Damaged security equipment (e.g., signs, fencing, well bollards, etc.) shall be noted in the inspection checklists (Form A, Module VI). Repairs shall be completed as soon as practical after the problem is discovered, in compliance with UAC R315-264-15(c).

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 13 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO); removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process. Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 13 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms

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shall be filed with the TEAD-S EO. At a minimum, the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Form A of Module VI) shall be forwarded to the TEAD-S EO. The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Director prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-270-30(l)(9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1 of the reporting year. The SWMU 13 Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2020, for the duration of the Post-Closure Monitoring Period.

3.6.1 *Non-Compliance Reporting:*

- The Permittee shall notify the Director orally within 24-hours of any noncompliance that may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any non-compliance which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues.

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- The Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

State of Connecticut Department of Energy and Environmental Protection (CT DEEP), 2014. *Draft Guidance for Applying Technical Impracticability of Groundwater Remediation Variance Pursuant to the Remediation Standard Regulations*.
https://www.ct.gov/deep/lib/deep/site_clean_up/remediation_regulations/ti_guidancedraft_2-20-14.pdf

Deseret Chemical Depot (DCD), 2009. *Revised Integrated Natural Resources Management Plan for Deseret Chemical Depot*.

Division of Waste Management and Radiation Control (DWMRC), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Freeze, R.A., and J.A. Cherry, 1979. *Groundwater*. New Jersey: Prentice Hall Inc. Englewood Cliffs, 604 p.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*. July.

Parsons, 2016. Solid Waste Management Unit 13 Corrective Measures Study Work Plan, Report and Statement of Basis, Tooele Army Depot South Area. July.

Parsons, 2017a. Corrective Measures Implementation Plan for Solid Waste Management Unit 13, Tooele Army Depot South Area. March.

Parsons, 2017b. Final Groundwater Management Plan, Tooele Army Depot South Area. November.

Parsons, 2018. Corrective Measures Implementation Report for Solid Waste Management Unit 13, Tooele Army Depot South Area. May.

Plexus Scientific (Plexus), 2019. Final Operation, Maintenance, and Monitoring Report (OM&M) for Solid Waste Management Unit 13, Tooele Army Depot South Area. May

Tooele Army Depot (TEAD), 2019. Request for an Alternative Remedy Strategy at Solid Waste Management Unit 13 Tooele Army Depot South Area. June

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 7**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 26
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CAMDS	Chemical Agent Munitions Disposal System
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DWMRC	Division of Waste Management and Radiation Control
EO	Environmental Office
LNAPL	Light Non-aqueous Phase Liquid
LTM	Long Term Monitoring
OM&M	Operations Monitoring and Maintenance
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Permit; 2) prevent exposure to buried landfill waste left in place at Solid Waste Management Unit (SWMU 26); and 3) prevent further degradation of groundwater. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 26. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary.

In accordance with Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 26, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1. Summary of SWMU 26 Post-Closure Information Requirements
Under UAC R315-270-14**

Regulation Citation	Requirement Description	Requirement Location
40 CFR §270.14(b)(1) UAC R315-270-14(b)(1)	General Description of the Facility	Section 2 and Permit Attachment 6
40 CFR §270.14(b)(4) UAC R315-270-14 (b)(4)	Description of Security Procedures	Section 3.0 and Module VI (VI.I)
40 CFR §270.14(b)(5) UAC R315-270-14 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
40 CFR §270.14(b)(12) UAC R315-270-14 (b)(12)	Training Requirements	Module VI (VI.K)
40 CFR §270.14(b)(6) UAC R315-270-14 (b)(6)	Preparedness and Prevention	Permit Attachment 10
40 CFR §270.14(b)(11)(i-ii, v) UAC R315-270-14 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Section 4.0 and Permit Attachment 6 (Section 14.4)

Regulation Citation	Requirement Description	Requirement Location
40 CFR §270.14(b)(11)(iii-v) UAC R315-270-14 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Section 5.0 and Permit Attachment 6 (Section 14.5)
40 CFR §270.14(b)(14) UAC R315-270-14 (b)(14)	Closure Certification and Notification	Section 2.6
40 CFR §270.14(b)(16) UAC R315-270-14 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
40 CFR §270.14(b)(18) UAC R315-270-14 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
40 CFR §270.14(b)(19)(i) UAC R315-270-14 (b)(19)(i)	Topographic Map - Map Scale and Date	Permit Attachment 6 (Section 9.0)
40 CFR §270.14(b)(19)(ii) UAC R315-270-14 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Permit Attachment 6 (Section 14.5)
40 CFR §270.14(b)(19)(iii) UAC R315-270-14 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Permit Attachment 6 (Section 10.0)
40 CFR §270.14(b)(19)(iv) UAC R315-270-14 (b)(19)(iv)	Topographic Map - Surrounding land uses	Permit Attachment 6 (Section 11.0)
40 CFR §270.14(b)(19)(v) UAC R315-270-14 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Permit Attachment 6 (Section 12.0)
40 CFR §270.14(b)(19)(vi) UAC R315-270-14 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Permit Attachment 6 (Section 9.0)
40 CFR §270.14(b)(19)(vii) UAC R315-270-14 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Permit Attachment 6 (Section 9.0)
40 CFR §270.14(b)(19)(viii) UAC R315-270-14 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Permit Attachment 6 (Section 9.0)
40 CFR §270.14(b)(19)(xi) UAC R315-270-14 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Permit Attachment 6 (Section 11.1)
40 CFR §270.14(b)(19)(xi) UAC R315-270-14 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Permit Attachment 6 (Sections 9.0 and 14.0)
40 CFR §270.14(c) UAC R315-270-14 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)

Regulation Citation	Requirement Description	Requirement Location
40 CFR §270.14(c) UAC R315-270-14 (c)(4)	Groundwater Monitoring Information - Extent of plume	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 26, as required by UAC R315-270-14(b)(1).

2.1 SWMU 26 LOCATION AND HISTORY

SWMU 26 is located within the northeastern quadrant of TEAD-S. SWMU 26 operated as a solid waste landfill between 1956 and 1994 within the designated SWMU boundary, encompassing approximately 31 acres. The landfill is not lined or ventilated. Burial of debris was not contiguous within the site. The SWMU is divided into two areas: western disposal area and eastern disposal area. The western portion of SWMU 26 has 22 burial features and the eastern portion has 23 burial features. In 1981, the eastern portion of the landfill was used for disposal of solid and possibly liquid wastes.

SWMU 26 is unoccupied and contains no structures. The perimeter is secured with a four-foot barbed wire fence.

2.2 PAST OPERATIONS

The site has not been used since the end of landfill operations. Historical documents indicate that solid waste, paper, construction debris, and munitions were disposed of in the landfill. The U.S. Army Environmental Hygiene Agency reported that munitions material disposed of in the older portions of the landfill included packing material for white phosphorus munitions, rocket pans, and projectiles.

The Western Area is comprised of approximately 11 acres of SWMU 26 and is separated from the Eastern Area by an access road. The Western Area contains buried waste and inert, surface waste from past landfill activities. The buried waste is located within four separate areas covering approximately 2 acres and the inert, surface waste is located sporadically on the surface along the southern boundary of the Western Area. Screening of the buried waste found no significant sources of methane production and the inert, surface waste was determined to be uncontaminated.

The Eastern Area is comprised of approximately 30 acres of SWMU 26, is separated from the Western Area by an access road and is located within a fenced area. The Eastern Area contains buried waste and inert, surface waste from past landfill activities. It was apparently used for disposal of solid, and possibly liquid, wastes. The buried waste covers approximately 14 acres and surface waste is located throughout the Eastern Area. Screening of the buried waste found no significant sources of methane production and the inert, surface waste was determined to be uncontaminated.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Several investigations and corrective measure studies of SWMU 26 have occurred over the past several years to include:

- Installation Assessment (USATHAMA 1979),
- US Army Environmental Hygiene Agency (USAEHA) Evaluation (1986)
- RCRA Facility Assessment (NUS Corporation, 1987),
- CERCLA Preliminary Assessment/Site Inspection (PA/SI) (EA Engineering Science and Technology, 1987),
- RCRA Facility Investigation (Ebasco, 1993),
- Passive Gas Surveys (Northwind, 2006 - 2010),
- Geophysical Investigation (NorthWind, 2007),
- Groundwater Investigation (NorthWind, 2008),
- Groundwater Investigation (Jacobs, 2010),
- RCRA Facility Investigation (ITSI, 2014)
- RCRA Facility Investigation Addendum (Plexus, 2017),
- Corrective Measures Work Plan and Implementation (Plexus, 2019-2020), and
- Corrective Measures Implementation Report (Plexus, 2020).

2.4 CLOSURE ACTIVITIES

The implemented corrective measure remedy at SWMU 26, consists of the following:

- Installation of an engineered geosynthetic liner (GCLs) system over all burial features,
- Excavation restrictions,
- Land use restrictions, and
- Long-term monitoring.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK

SWMU 26 does not qualify for a No Further Action closure based on the results of the screening risk assessment conducted as part of the RFI (Plexus, 2017). Both the western and eastern portions of the site show cancer risks greater than 1×10^{-6} for the residential scenario. The risks in the western area are driven by elevated detections of benzo(a)pyrene and dibenz(a,h)anthracene. The primary risk drivers in the eastern area are detections of PAHs and thallium.

The results of the Tier 1, Tier 2 and weight-of-evidence assessments demonstrate that there is low potential for adverse effects caused by contaminants to ecological receptors at SWMU 26 (Plexus, 2017).

Naphthalene in the western area was the only compound found to pose a threat to groundwater in the Tier 2 surface soil risk screening. Lines of evidence from the site data and observations do not indicate that the impacts associated with the exceedances represent a threat to groundwater (Plexus, 2017). Continued groundwater monitoring is recommended in accordance with the Groundwater Monitoring Plan (Parsons, 2019).

2.6 SURFACE WATER AND GROUNDWATER

Groundwater at TEAD-S is part of the regional flow system within Rush Valley. The groundwater underlying TEAD-S is recharged by intermittent streams and subsurface flow coming from the Oquirrh Mountains northeast of the facility. Groundwater flow at TEAD-S is influenced by the presence of a notable groundwater divide that crosses the facility from the northeast to the southwest. Northwest of the divide, groundwater ultimately flows north toward Rush Lake. Southeast of the divide, groundwater reportedly flows southeast toward the south part of the valley. SWMU 26 is located in the area southeast of the divide.

Based on historical groundwater elevation contour maps, groundwater at SWMU 26 typically flows toward the east-southeast at average gradients ranging from 0.0023 feet/foot to 0.0030 feet/foot. As displayed in the SWMU 26 hydrographs included in the Technical Memorandum Hydrogeologic Assessment, seasonal elevation changes and impacts on flow direction are minimal. Water level elevations at SWMU 26 wells are similar and respond in the same way with time; the seasonal variation of water levels is less than five feet (Plexus, 2017).

SWMU 26 underwent a supplemental RFI, where the presence of VOCs and SVOCs was investigated in groundwater. The COPCs include 1,1,1-TCA; 1,1-DCA; and bis(2-ethylhexyl)phthalate. A new, downgradient well was recommended as part of the supplemental RFI (Plexus, 2017) and was installed as part of the CMI (well S-150-20).

Groundwater monitoring will be conducted to evaluate groundwater conditions downgradient of the buried waste in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019). Annual groundwater samples will be collected for VOC analysis using an appropriate U.S. Environmental Protection Agency method from S-38-90, S-40-90, and the newly installed well for a minimum period of five years. The groundwater monitoring program for SWMU 26 will also require the collection of annual

groundwater elevation data from S-38-90, S-40-90, the newly installed well, and an additional seven monitoring wells.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with UAC R315-264-110 through 120.

3.0 SECURITY AND CONTINGENCY REQUIREMENTS

The Permittee shall comply with the following security conditions as applicable to SWMU 26:

1. SWMU 26 is located within a Federal, military installation (TEAD-S). As such, the installation is restricted for the common population.
2. Access to SWMU 26 will be restricted and approved by the TEAD-S EO.
3. Signs will be placed and maintained on each side of the SWMU (West and East sides) and at all entry points. Signs will identify the SWMU and provide contact information and state that entrance into or disturbance with the SWMU are prohibited without installation (EO) approval.
4. All signage and any fences shall be inspected throughout the post-closure care period. Inspection of security measures shall be included in the annual site inspections (Form B, Module VI).
5. Damaged security equipment (e.g., signs, fencing, well bollards, etc.) shall be noted in the inspection checklists (Form B, Module VI). Repairs shall be completed as soon as practical after the problem is discovered, in compliance with UAC R315-264-15(c).

3.1 CONTINGENCY PLAN

This section provides information about emergency response inspection procedures to be implemented in the event of any natural disaster in the TEAD-S area that may affect the soil covers at SWMU 26. Module VI, Form B, addressed post-closure site inspections.

The TEAD-S Contingency Plan (part B permit, Attachment 4), 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.

3.1.1 *Earthquakes*

In the event of 6.5 magnitude or higher earthquake centered within 50 mile of SWMU 26, qualified personnel will visually inspect the landfill caps for signs of damage and lateral shifting of debris as soon as it is safe and practical to do so. Any damage to the landfill caps will be repaired to ensure the integrity of the cover systems. If the landfill caps have sustained extensive damage, TEAD-S will implement corrective actions to ensure contaminants are contained and human health is protected. Post-earthquake site inspection records will be submitted to the TEAD-S EO.

3.1.2 *Major Storms or Floods*

In the event of a major storm or flood, TEAD-S will inspect the landfill caps to ensure their integrity within 72 business hours of the event. The post-closure site inspection checklist (Form B, Module VI) shall be used to document the inspection. A major storm is defined as a storm with one-inch of precipitation or more over a 24-hour period. Any damage to the landfill cap(s) will be repaired as soon as possible to ensure the integrity of the cap(s).

3.1.3 Fire

The most likely cause for a fire at SWMU 26 would be from lightning. In the event of a surface fire near SWMU 26, TEAD-S Fire Department will be notified. Following the incident, TEAD-S will perform an inspection of the landfill cap and security systems using the site-specific post-closure checklist (Form B, Module VI). If there is any fire damage, TEAD-S shall implement corrective actions to ensure that contaminants are contained, and human health is protected.

4.0 SEISMIC STANDARD

SWMU 26 is not located within 200 ft of faults, which have displacement in Holocene time. Although Utah is tectonically active, most of the earthquake activity occurs about 25 miles to the east along the Wasatch Range Foothills. The U.S. Geological Survey has conducted a study (USGS, 1988) to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps in the Tooele 1x2 Quadrangle in northwestern Utah. The conclusion of the study state that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the later Pleistocene era with no clear evidence of Holocene surface faulting.

5.0 FLOODPLAIN STANDARD

SWMU 26 is not located within a 100-year floodplain. A National Flood Insurance map, identifying the boundary of the 100-year flood has not been generated for TEAD-S. However, there are no permanent streams or other surface water bodies on TEAD-S. Surface water from precipitation flows through established drainage channels into the flat plain and evaporates.

The area within and around SWMU 26 has been graded to divert surface water away from the engineered soil covers.

6.0 POST-CLOSURE OPERATIONS, MAINTENANCE AND REPORTING

The SWMU 26 eastern and western landfills have been covered with an engineered soil cover system. The following sections discuss the Operation and Maintenance (O&M) procedures and the Reports required to ensure maintenance and monitoring of the engineered soil cover during the post-closure period.

6.1 SITE INSPECTIONS

General site inspections of the landfill area will be conducted annually by November 1st, to ensure that the integrity of the landfill cap is maintained. The following post-closure inspections will be required:

- General site inspections,
- Rock cover inspections, and
- Soil erosion control inspections.

Post-closure site inspections will be conducted using Form B of Module VI for documenting the above required inspections.

6.1.1 General Inspection

The site shall be visually inspected to ensure the following conditions are maintained at the site:

1. Proper warning signs are present;
2. No weeds (with deep taproots) are present that may penetrate the caps;
3. No excessive soil erosion is evident on the cap surface or cap edges;
4. No noticeable draining to the soil covering from burrowing animals;
5. No excessive vegetation growth in the swale drainage ditches;
6. No noticeable depressions or ponded water are present;
7. No noticeable sliding (slope failure) or desiccation cracks are present in the soil/cobble covers; and
8. No excessive erosion of the roads accessing SWMU 26 or other access issues are evident.

6.2.1 Soil Erosion Control Plan

The surface waste control system should be inspected to ensure that it is providing adequate erosion control. The SWMU 26 post-closure site inspection form for landfill sites (Form B) in Module VI includes procedures for ensuring that soil erosion is controlled.

If signs of soil erosion are excessive (for example, cracks or rills greater than two inches wide) and continual (recurring in the same area), corrective action may be needed. Significant cracks and/or rills that have the potential to impact the functionality of the cover system will be documented in the inspection forms. Corrective actions may include filling in the eroded or cracked areas, investigation the cause(s) of erosions, and regrading slopes.

6.1.3 Corrective Action

Corrective action shall be initiated as soon as practical but no longer than 30 days of discovery. If the corrective action will require more than 30 days, a schedule of the correction will be provided to the Director for approval. If corrective action requires a substantial effort, a technical plan shall be prepared to summarize the problem, illustrate potential impacts, and clarify the proposed plan for action. Routine corrective actions will be recorded on the site inspection form in the comments with the date of the correction; this will ensure proper tracking of the resolution.

Table 2: SWMU 26 Post-Closure Inspection and Monitoring Schedule

Inspection/Monitoring Issue	Frequency of Inspection ¹
Soil Cover (cover integrity, rock cover/erosion, subsidence, surface water drainage systems)	Annually ² , and After major rain events
Signs	Annually ²
Access Road	Annually ²
Groundwater well monuments	Annually ²
Groundwater well casings (structural integrity, cracks and corrosion), well caps, well locks, well ID markings, and surface pads	Annually ²

Emergency Response (earthquake, fire, and storms)	As soon as possible after an earthquake or fire and Within 72 business hours of a major storm/flood event
¹ To be documented on the General Landfill Inspection Form, Module VI, Form B.	
² Annually, by November 1 st	

6.1.4 Inspection Follow-Up

All copies of completed site inspection checklists (Form B, Module VI) will be forwarded to the TEAD-S EO. If significant damage or erosion is observed, the TEAD-S EO will be contacted immediately by telephone. Corrective action shall be initiated as soon as practical but no longer than 30 days of discovery. If the corrective action will require more than 30 days, a schedule for corrective action will be provided to the Director for approval. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, illustrate the potential impacts, and clarify the proposed plan for action. Routine corrective actions will be recorded on the site inspection form in the comments with the date of correction. This will ensure proposer tracking of the resolution.

6.2 REPORTING

This section summarizes the reporting requirements for SWMU 26 during the post-closure period (Table 3).

6.2.1 Non-Compliance

In the event non-compliance issues are observed at SWMU 26, which may endanger public water supplies, human health, or the environment, the TEAD-S EO shall be notified immediately. TEAD-S shall notify the Director within 24 hours. A written notification shall be submitted to the DWMRC within five days after oral notification. The Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment. At a minimum, the following information will be provided:

- Name, address, and telephone number of Permittee,
- Name, address, and telephone number of the individual making the report,
- Date, time, and type of incident,
- Description and quantity of materials involved,
- Extent of injuries or damage (if any),
- Assessment of actual or potential hazards to the environment and health outside the facility, and
- Estimated quantity and disposition of recovered materials.

The remote site conditions at SWMU 26 are such that impacts to human health outside the facility itself are unlikely.

Table 3: Summary Table of Required Submittals

Required Submittal	Frequency and Submittal Date
Biennial Post-Closure Report	Post Closure Reports shall be submitted to the DWMRC no later than March 1 st , of the

	following year, that the report is due. Reporting years are odd numbered years, for the duration of the Post-Closure Monitoring Period.
Anticipated Non-Compliance (Module VI.D.1)	30 days advance notice of any change, which may result in noncompliance.
24-hour Notification on information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment (Module VI.D.2)	Orally, within 24-hours of discovery of non-compliance.
Five-day written notification on information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment (Module VI.D.3).	Written, within five (5) days of discovery.
Written notification on information concerning the non-compliance, which does not endanger human health or the environment (Module VI.D.4).	Written, within fifteen (15) days of discovery.

6.3 POST-CLOSURE REPORTING

A Biennial Post-Closure Report is required during post-closure care. The Biennial Report shall be submitted to the DWMRC no later than March 1st of the following year that the report is due. The first post-closure reporting year for SWMU 26 is 2020. The report shall be submitted no later than March 1st of 2021. The following sections describe the post-closure reporting requirements.

6.3.1 Biennial Post-Closure Report

In accordance with UAC 315-270-30(1)(9), a Biennial Post-Closure Report will be prepared with all TEAD-S closed SWMUs and hazardous waste management units (HWMUs) undergoing post-closure care. Specifically, for SWMU 26, the Biennial Post-Closure Report will include the following:

- General site description and conditions,
- Inspection records (Form B, Module VI),
- Notification procedures, and
- Maintenance/Repairs performed.

7.0 POST-CLOSURE CERTIFICATION

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

8.0 REFERENCES

Division of Waste Management and Radiation Control (DWMRC), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Parsons, 2014. Final RCRA Facility Investigation Report for Solid Waste Management Unit 26, Tooele Army Depot South Area. September.

Parsons, 2016. *Final Hydrogeological Assessment and Recommendations Report*. July.

Parsons, 2019. Final Groundwater Management Plan, Tooele Army Depot South Area. November.

Plexus, 2017. Final RCRA Facility Investigation Addendum for Solid Waste Management Unit 26, Tooele Army Depot South Area. August.

Plexus, 2019. Final Corrective Measures Implementation Work Plan Solid Waste Management Unit 26 Tooele Army Depot South Area. May

U.S. Geological Survey (USGS), 1988. Map of Fault Scarps Formed on Unconsolidated Sediments, Tooele 1x2 Quadrangle, Northwestern Utah, compiled by T.P. Bamhard and R.L. Dodge

**MODULE V
CORRECTIVE ACTION PROGRAM (CAP)
FOR SOLID WASTE MANAGEMENT UNITS**

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**MODULE V
CORRECTIVE ACTION PROGRAM
FOR SOLID WASTE MANAGEMENT UNITS**

V.A. SOLID WASTE MANAGEMENT UNITS (SWMUs)

- V.A.1. The Permittee shall conduct a Corrective Action Program (CAP) for the SWMUs in Table 1A in accordance with this module.
- V.A.2. The Director may append additional SWMUs to those listed in Table 1A in accordance with Utah Admin. Code R315-270-42, based on additional information received by the Permittee, the Director or any other knowledgeable source.

V.B. STANDARD CONDITIONS

- V.B.1. Failure to submit the information required by this module or falsification of any submitted information is grounds for termination of this Permit in accordance with Utah Admin. Code R315-270-43.
- V.B.2. The Permittee shall sign and certify all plans, reports, notifications, and other submissions to the Director, in accordance with Condition I.AA.
- V.B.3. The Permittee shall submit two paper copies and one electronic copy of each plan, report, notification or other submissions, required by this module to the Director by mail or hand delivery to the address specified in Condition I.DD.
- V.B.4. All plans and schedules required by this module shall, upon written approval from the Director, be incorporated by reference into this Permit. Any noncompliance with such approved plans and schedules shall be deemed noncompliance with this Permit.
- V.B.5. The Permittee can only receive extensions of the specified compliance schedule due dates for the submittals required by this module in accordance with Condition V.I., and upon written approval from the Director.
- V.B.6. All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data and other supporting information gathered or generated during activities undertaken pursuant to this module shall be maintained at the Facility during the effective term of this Permit. The Permittee shall provide copies of reports, logs, etc., to the Director upon request.
- V.B.7. The Permittee shall provide seven days' advance notice of field activities associated with approved work plans. This notice may be provided by telephone, but shall be followed with a written notice within 72 hours.

V.C. RCRA FACILITY INVESTIGATION

- V.C.1. The Permittee shall conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to determine the nature and extent of releases of hazardous wastes or hazardous constituent(s) to the environment, originating from any location at the Facility including a Solid Waste Management Unit (SWMU) to gather data to support the Corrective Measures Study (CMS). The Permittee shall conduct the RFI in accordance with Appendix A.
- V.C.2. The Permittee shall prepare and submit the RFI Report as described in Appendix A for each SWMU.
- V.C.4. Reserved
- V.C.5. Reserved

V.C.6. The Permittee shall identify a need, if applicable, and recommend an alternate RFI schedule for the additional investigation of any SWMUs' potential or imminent threat to human health or the environment.

V.C.7. The RFI compliance schedules shall be modified in accordance with Condition V.I.

V.D. INTERIM MEASURES

V.D.1. If, during the course of any activity initiated in compliance with this module, the Director or the Permittee determines that a release or potential release of hazardous waste or hazardous constituents from a SWMU poses a threat to human health and the environment, the Permittee shall perform specific interim measures.

V.D.2. If any release or potential release of hazardous waste or hazardous waste constituents poses an immediate danger to the human health or the environment, the Permittee shall inform the Director immediately.

V.D.3. The Director shall notify the Permittee in writing of the requirement to perform any interim measures in accordance with Condition V.D.4. If interim measures are required, the Permittee shall develop and submit an Interim Measures Plan to the Director for approval.

V.D.4. Within 30 days of receiving the written notification requiring the Interim Measures Plan as specified in Condition V.D.3, the Permittee shall provide the Interim Measures Plan to the Director for approval. At a minimum, the Interim Measures Plan shall include the requirements found in Condition V.E.4 and Condition V.E.5 as well as the following:

V.D.4.i Time required developing and implementing a final remedy;

V.D.4.ii Actual and potential exposure of human and environmental receptors;

V.D.4.iii Actual and potential contamination of drinking water supplies and sensitive ecosystems;

V.D.4.iv The potential for further degradation of the medium without interim measures;

V.D.4.v Presence of containerized or uncontainerized hazardous waste that may pose a threat of release;

V.D.4.vi. Presence and concentration of hazardous waste including hazardous constituent(s) in soils that have the potential to migrate to groundwater or surface water;

V.D.4.vii Weather conditions that may affect the current levels of contamination;

V.D.4.viii Risks of fire, explosion or accident;

V.D.4.ix. Other situations that may pose threats to human health and the environment; and

V.D.4.x Reasons related to funding.

V.D.5 The Director may require a 30-day public comment period prior to implementation of the interim measures or before approval of the interim measures report.

V.D.6 The Permittee shall provide the interim measures report as specified in the approved interim measures work plan. This report shall address the requirements of Utah Admin. Code R315-101 and post closure requirements in Module VI as required.

V.E. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY

IDENTIFIED SOLID WASTE MANAGEMENT UNITS

- V.E.1. The Permittee shall notify the Director in writing within 30 days of discovery of any newly identified sites which the Permittee believes may meet the definition of a Hazardous Waste Management Unit (HWMU) or SWMU. Upon notification, a visit to the site will be scheduled. During the site visit, the Permittee shall present available information about the site as needed to justify a decision about how to manage the site. These decisions include: 1) a determination that the site is not an HWMU or SWMU; 2) a determination that the site will be addressed through the process outlined in Condition V.D for interim measures (if managed under Condition V.D, the site does not need to be added to Table 1A); 3) a determination that a newly identified SWMU needs to be added to Table 1A and that the Permittee must include the new SWMU in the RFI program as described in Appendix A.
- V.E.2. If information is presented during the decision making process described in Condition V.E.1 to indicate that hazardous wastes were or may have been placed in a newly identified SWMU after November 19, 1980, the Director may consider the unit as a HWMU and require the Permittee to close the unit under the requirements of Utah Admin. Code R315-265 and Utah Admin. Code R315-101 of the Rules.
- V.E.3. A decision as described in Condition V.E.1 and Condition V.E.2 shall be made within 30 days of the site visit. Thirty days after making a decision and choosing a site management process as described in Condition V.E.1, the Permittee shall submit a schedule for submittal of an interim measures plan or RFI Workplan.
- V.E.4. The RFI Workplan, closure plan or interim measures plan shall include the following: a description of past and present operations and dates of operation; a description of site waste streams; all existing site environmental monitoring data; a sample and analysis plan; a quality assurance and quality control plan; plans for collection of human health and ecological risk assessment data and other data and information as needed to fulfill the requirements of Utah Admin. Code R315-101. The plan shall also include a schedule for plan implementation and a date for submittal of a draft final report of results.
- V.E.5. The Permittee shall submit draft final and final RFI reports, closure reports or interim measures reports describing all results obtained from the implementation of the approved plans. The reports shall also include a risk assessment and address non-degradation of natural resources as described in Utah Admin. Code R315-101. The CMS Workplan may be submitted as part of the final RFI or as a separate document for approval by the Director.
- V.E.6. Based on the results and conclusions proposed by the Permittee in the final RFI Report, closure report or interim measures report, the Director may approve the site for no further action (NFA) as defined in Condition V.F, require further investigations or require a CMS as described in Condition V.G. For SWMUs meeting the residential or industrial land use requirements of Utah Admin. Code R315-101, the Director will require a public comment period before approval of the RFI report. For SWMUs needing corrective action, a public comment period may be required.

V.F. DETERMINATION OF NO FURTHER ACTION

- V.F.1. The Permittee may petition the Director for a determination of No Further Action (NFA) as described in Utah Admin. Code R315-101 for a HWMU or SWMU in accordance with Utah Admin. Code R315-264-100. NFA means the unit qualifies for residential land use and is no longer regulated under this Permit.
- V.F.2. At a minimum, the NFA proposal for HWMUs and SWMUs shall contain information based on the RFI or other relevant information that demonstrates there are no releases of hazardous waste or hazardous waste constituents from the HWMUs or SWMUs at the Facility that pose a threat to human health or the environment in accordance with Utah Admin. Code R315-101.

- V.F.3. A determination of NFA, in accordance with Condition V.F.1., shall not preclude the Director from requiring further investigations, studies or remediation at a later date, if new information or subsequent analysis indicates a release or potential of a release from a HWMU or SWMU at the Facility that is likely to pose a threat to human health or the environment. In such a case, the Director shall notify the Permittee in writing and provide specific requirements and schedules.

V.G. CORRECTIVE MEASURES STUDY AND IMPLEMENTATION

- V.G.1. Based on the results of the RFI and for SWMUs requiring corrective action as described in Utah Admin. Code R315-101, the Permittee shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination. This information shall be included in the CMS Workplan; this workplan shall be submitted separately or with the Phase II RFI Report. The Permittee shall prepare the CMS Workplan as described in Appendix B.
- V.G.2. Upon the Director's approval of the RFI Report and the CMS Workplan, the Permittee shall prepare and submit a CMS report for approval as specified in Table 3. This CMS report shall include a recommendation for corrective action based on the information in the CMS Workplan. A public comment period may be required prior to approval of the CMS Report.
- V.G.3. Upon the Director's approval of the CMS report, the Permittee shall submit the Corrective Measures Implementation (CMI) plan for approval. The CMI plan shall be prepared in accordance with Appendix B.
- V.G.4. The Permittee shall implement the approved CMI plan as specified in Table 3 or other approved schedules.
- V.G.5. The Permittee shall submit a CMI Report within 180 days of completion of the CMI Workplan. This report shall be certified by a Utah registered professional engineer.

V.H. REPORTING REQUIREMENTS

- V.H.1. The Permittee shall submit to the Director signed quarterly progress reports or meeting minutes describing activities (i.e., Interim Measures, RFI, CMS) conducted pursuant to this module.
- V.H.2. These reports may be in the form of minutes from regular project management meetings or if no project management meetings are held during the quarter, the reports shall contain the following:
- V.H.2.i. A description of the work completed;
- V.H.2.ii. Summaries of all problems or potential problems encountered during the reporting period and actions taken or to be taken to rectify problems; and
- V.H.2.iii. Projected work for the next reporting period.
- V.H.3. In accordance with Condition V.F.3, the Director may require the Permittee to conduct new or more extensive assessments, investigations or studies as needed, based on information provided in these minutes, progress reports.

V.I. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

- V.I.1. Modifications of the following compliance dates in this module shall be submitted to the Director for approval:
- V.I.1.i. The compliance date(s) for submittal of the RFI Final Reports in accordance with Table 2.

- V.I.1.ii. The compliance date(s) for submittal of the CMS Report in accordance with Table 3.
- V.I.1.iii. The compliance date(s) for submittal of the final Corrective Measures Implementation Program Plan in accordance with Table 3.
- V.I.1.iv. Once established in accordance with Condition V.G.5., the compliance date(s) for submittal of the corrective measures final (100% completion) design and construction plans in accordance with Table 3.
- V.I.1.v. Compliance dates for implementing the approved plans or reports; and
- V.I.1.vi. Compliance dates for quarterly submittal of progress reports.
- V.I.2. In accordance with Utah Admin. Code R315-270-41, the compliance schedules shall be modified if the Director determines that good cause exists for which the Permittee had no control and for which there is no reasonable available remedy.
 - V.I.2.i. Failure to obtain adequate funds or appropriations to conduct the Corrective Measures Implementation Program Plan in accordance with Condition V.G.3 shall be considered good cause for modification of the compliance schedule(s) as provided in Condition V.I.2 subject to the following conditions:
 - V.I.2.i.a. The Permittee shall use its best effort to secure all funds that may be required for implementation of the CMI plan.
 - V.I.2.i.b. If necessary, the Permittee shall seek by the most expeditious means possible, appropriations from the U.S. Congress. In accordance with Sections 1-4 and 1-5 of Executive Order 12088 as implemented by the Office of Management and Budget Circular A-106, as amended. Section 1-5 of Executive Order 12088 states, "The head of each executive agency shall ensure that sufficient funds for compliance with applicable pollution control standards are requested in the Agency budget."
 - V.I.2.i.c. Immediately upon failure to obtain adequate funding, the Permittee shall submit to the Director, by certified mail, express mail or hand delivery, a written request and justification for modification of the compliance schedule. The written justification shall demonstrate that good cause exists, in accordance with Condition V.I.2.i. The Permittee shall also provide an alternate schedule of compliance for conducting the Corrective Measures Implementation for the subsequent fiscal year.
 - V.I.2.i.d. Upon evaluation, if the Director determines that good cause exists in accordance with Condition V.I.2.i, the Director shall modify the compliance schedule.
 - V.I.2.i.f. For any approved modification, the compliance schedule shall be modified to provide relief from the original compliance schedule time frames only for the subsequent fiscal year. All successive compliance dates after the end of such fiscal year shall be modified to reflect the original time frames specified prior to the modification request under Condition V.I.2.i.
 - V.I.2.ii. Failure to obtain adequate funds or appropriations from Congress shall not, in any way, release the Permittee from its obligation to comply with Condition V.G.3. or any other requirement of this permit or applicable rules.
 - V.I.2.iii. If adequate funds for corrective measures are not available, the Director may pursue any actions deemed necessary to protect human health and the environment, not excluding judicial recourse or termination of this permit.
- V.I.3. The Permittee may submit a request for modifications of the interim compliance dates that do not affect the final compliance dates to the Director for approval.

FIGURE 1

LOCATION OF SOLID WASTE MANAGEMENT UNITS (SWMUS) TOOEELE ARMY DEPOT-SOUTH
AREA, TOOEELE, UTAH

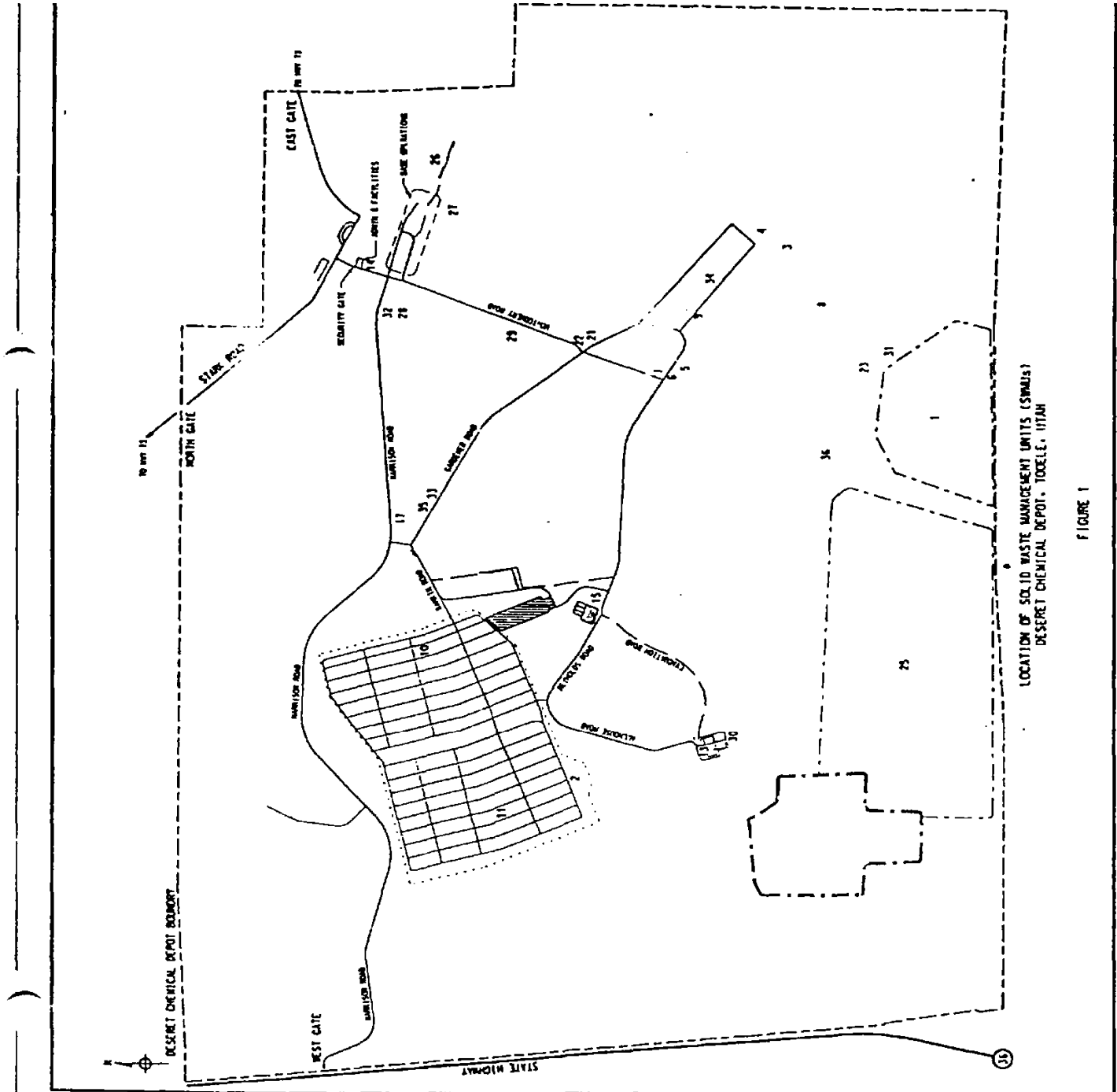


TABLE 1A SOLID WASTE MANAGEMENT UNITS (SWMU ^a)	
SWMU NUMBER	SWMU DESCRIPTION
1	Demilitarization area/Disposal pits
13	SWMU Chemical Agent Munition Disposal System Diesel fuel release
25	Demilitarization area/Disposal pits
26	Sanitary landfill (active)
40	Toxic Area 1 Burial Site (former AOC 5)
^a The SWMU numbering (Nos. 1-38) corresponds to that used in Ground-water Consultation No. 38-26-1364-86, September 5, 1986, conducted by the U.S. Army Environmental Hygiene Agency and the RCRA Facility Assessment, December 1987, prepared for the U.S. Environmental Protection Agency (USEPA).	

TABLE 1B AREAS OF CONCERN (AOCs ^a)	
AOC Number ^b	AOC Description
2	Salvage Yard
3	Ladder Dip Tank
5	Toxic Area 1
6	Toxic Area 2
7	Toxic Area 3
8	Classification Yard
9	Open Storage Pad 1
23	Building 4553 Bomb Renovation Building Evaporation Pond
24	Building 1873 (2005) and Dry Well
27	Classification Yard Access Road Burial
28	Hillside Debris Area
^a AOCs will undergo a Phase I RFI in accordance with Module V Appendix A permit condition 1.A.1. ^b AOC numbers are based on the Site of Potential Concern notation identified in the “Final Report for Identification of Sites of Potential Concern (SPC),” TEAD-S, November 2013. AOC 28 was newly identified in 2019. ^c AOC 21 is deferred until final closure of the open burn/open detonation area.	

Table 2	
RCRA FACILITY INVESTIGATION COMPLIANCE SCHEDULE FOR SOLID WASTE MANAGEMENT UNITS (SWMUS) AND AREAS OF CONCERN (AOC)	
RFI Activity	Due Date
Submit Final Phase I RFI Workplans and Reports to the Director for approval.	The Phase I RFI for the SWMUs listed in Table 1A is complete and has been approved. Minor data gaps are filled by submittal of variances and amendments to the approved workplan. The variances and amendments must be approved by the Director and documented in the Phase I RFI report.
Submit Final RFI-Phase II Workplans and Implement the Workplans to the Director for approval.	Minor data gaps are filled by submittal of variances and amendments to the approved workplan. The variances and amendments must be approved by the Director.
Submit Draft Final Phase II RFI Reports and CMS Workplans for each site or group of sites (grouping of sites is determined by the Permittee) to the Director for approval.	The Permittee shall annually provide an updated schedule. This schedule shall be submitted annually by September 30.
Submit Progress Reports to the Director.	Quarterly (every 90 calendar days).
Submit a Schedule for submittal of a Site-Wide Ecological Assessment for Director approval.	Within 90 days upon completion of Phase II RFIs.

TABLE 3	
CORRECTIVE MEASURES STUDY (CMS) AND IMPLEMENTATION COMPLIANCE SCHEDULE FOR SOLID WASTE MANAGEMENT UNITS (SWMUS) AND AREAS OF CONCERN (AOC)	
CMS SUBMISSION/CMI SUBMISSION	Due Date
Submit CMS Workplans	CMS Workplans shall be incorporated into Phase II RFI Reports or submitted separately
Submit Draft Final CMS Report	As specified in the approved schedule to be included in Final CMS Workplans
Submit Final CMS Report	As specified in the Draft Final CMS Report
Submit Draft Final CMI Plan	As specified in the approved Final CMS Report
Submit Final CMI Plan	As specified in the Draft Final CMI Plan
Implement CMI Plan	As specified in the Final CMI Plan
Submit Draft Final CMI Report	Within 180 days of completion of the CMI Plan
Submit Final CMI Report	As specified in the Draft Final CMI Report
Conduct approved Post-Closure Activities and Implement any approved post-closure plans	As specified in the Final CMI Plan and Condition V.H.

MODULE V - APPENDIX A RCRA FACILITY INVESTIGATION

1. OBJECTIVES AND PURPOSE

The objective of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (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, 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 collect sufficient data to conduct 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 shall be conducted as defined in approved RFI Workplans, Utah Admin. Code R315-101 and approved documents describing groundwater management, applicable USEPA guidance and memorandums or other correspondence from the Director describing requirements for corrective action and long-term monitoring for landfills. The final RFI report may act as a final decision document for each site (e.g., no further action (NFA), remediation, etc.) The final decision document 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 SWMUs listed in Table 1A. A Phase I RFI shall be conducted for AOCs listed in Table 1B.

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

Upon completing the Phase I investigation for newly identified SWMUs or AOCs, the Permittee shall prepare and submit for approval by the Director a Phase I RFI Report. This report shall be consistent in scope with the approved Phase I RFI Reports. 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 Condition V.D., or other action as deemed necessary by the Permittee. The Phase I Report shall be incorporated into the permit in accordance with Utah Admin. Code R315-270-41.

For AOCs where the results of the Phase I RFI indicate that additional investigation is required as part of the Phase II RFI, the AOCs shall be added to the Module V Table 1A and given a SWMU designation.

1.B. Phase II RFI Workplans

For SWMUs requiring Phase II RFI Workplans, the Phase II RFI Workplans shall be consistent in scope with the previously approved Phase II RFI Workplans.

1.B.1. Phase II RFI Workplan for Newly Identified SWMUs

Based on the results of the Phase I RFI Report for newly identified SWMUs, the Permittee shall prepare and submit a Phase II RFI Workplan. This workplan shall be consistent in scope with Phase II RFI Workplans approved for SWMUs listed in Condition 1.B.

1.C. Phase II RFI Report

The Permittee shall prepare and submit to the Director for approval a Phase II RFI Report for SWMUs listed in Module V, Table 1 with an analysis and summary of all Phase I and Phase II RFI results. The objective of the evaluation and report is to ensure that the investigations for each SWMU are sufficient to describe the nature and extent of contamination, potential threats to human health and the environment, to prepare a risk assessment, address non-degradation of natural resources and a Corrective Measures Study (CMS) Workplan.

1.C.1. Phase II RFI Workplan and Report Requirements

The Phase II RFI Workplan and Report shall, at a minimum, address and 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, to estimate and describe the mass of contamination contained in sources or in contamination release in air or in groundwater plumes -and to describe the use, value and vulnerability of groundwater as described in Appendix B.
- 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 as required by Utah Admin. Code R315-101 and the “Risk Assumptions Document”);
- 1.C.1.e. The information needed to evaluate the geological pathways of contaminant migration in air, bedrock, soil, surface water or groundwater as required by Utah Admin. Code R315-101-3 and the “Risk Assumptions Document”;
- 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;
- 1.C.1.h. The analytical or other information needed to independently reproduce conclusions and sample data as presented in text, spreadsheets, 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 in accordance with Module VI and the Post Closure Plan Attachments.
- 1.C.1.j. Other information as required by the Director.

1.C.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 Condition 1.C.2A and Condition 1.C.2.B.

1.C.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 USEPA 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.

1.C.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 and waste not to exceed the detection limit for determining agent concentrations in soil and waste (i.e., solvent extraction methods). The detection limits for determining agent concentrations in soil and waste is technology driven and shall be evaluated by the Permittee or the 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.

1.C.3. 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.

1.C.3.A COMMUNITY RELATIONS PLAN

In addition to the public comment requirements as described in Module V the Permittee has implemented this plan and informed the public by organizing a Restoration Advisory Board (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.

1.C.4. SITE-WIDE ECOLOGICAL ASSESSMENT

The Permittee shall complete a site-wide ecological assessment as required by Utah Admin. Code R315-101. The purpose of this assessment shall be to determine if residues from waste management activities at all HWMUs, and SWMUs, combined in their entirety, are a threat to ecological receptors. The assessment shall address all presently permitted or formally permitted sites under corrective action (SWMUs), HWMUs 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 V. The assessment shall address each of the plant communities located at TEAD-S, wildlife receptors for each trophic level and any threatened and endangered species, and may include species-specific toxicity testing.

MODULE V - APPENDIX B CORRECTIVE MEASURES STUDY AND CORRECTIVE MEASURES IMPLEMENTATION

1. OBJECTIVES

The objectives of the Corrective Measures Study (CMS) and Corrective Measures Implementation (CMI) are to evaluate corrective action alternatives and design and implement the chosen alternative as needed for protection of human health and the environment. The CMS and CMI shall be completed for each SWMU that does not meet the risk based no further action (NFA) or industrial closure criteria outlined in Appendix A, Module V, Utah Admin. Code R315-101 and as recommended in approved Phase II RCRA Facility Investigation (RFI) Reports and CMS Workplans. The corrective action design and implementation information shall be included in the CMI plan.

1.A. Establish Corrective Action Objectives (CAO)

The CMS Workplan shall establish SWMU specific CAOs. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA and State of Utah guidance, and the requirements of any applicable State and Federal statutes. Any corrective actions concerning groundwater releases must provide human health and environmental protections consistent with those required under Utah Admin. Code R315-101 and other requirements or groundwater management plans approved by the Director. The Permittee shall also consider the use, value and vulnerability of groundwater in establishing CAOs and preparing groundwater management plans.

2. DEVELOPMENT OF CORRECTIVE ACTION ALTERNATIVES

Based on the results of the RFI, the Permittee shall identify, screen and develop the alternatives for removal, containment, treatment or other corrective action of the contamination based on the CAOs. This information shall be included in the CMS Workplan. This information shall also be developed and reported as required by Condition 2.A., Condition 2.B. and Condition 2.C.

2.A. Description of Remedial Actions

The CMS Workplan shall include a statement of the purpose for the response. The statement of purpose shall identify the actual or potential exposure pathways that should be addressed by corrective measures. The RFI Reports and CMS Workplan shall also include information regarding previous response activities, interim measures and voluntary cleanup activities.

2.B. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI to identify technologies which are appropriate for the facility. The Permittee shall screen technologies and identify those having severe limitations, those that present safety hazards for a given set of waste and site-specific conditions or that do not meet the requirements of this Permit or the Utah Admin. Code. The screening may eliminate technologies based on these criteria. Site, waste and technology characteristics which are used to screen inapplicable technologies are described in more detail in 2.B.1. through 2.B.3.

2.B.1. Site Characteristics and History

Site data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics or safety hazards shall be eliminated from further consideration. If information that is classified by the U.S. Government will impact the CMS, and the Director has not reviewed or will not have access to this information, the existence of the classified information shall be identified in the CMS Workplan. The Permittee shall provide for the Director to review or be made aware of the essential elements of this information.

2.B.2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics shall be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods and land disposal (on/off-site). For SWMUs where chemical warfare agent or chemical warfare agent residues are present, the Permittee shall identify chemical warfare agent safety, surety or other Army requirements that may impact use of certain technologies.

2.B.3. Technology Limitations

During the screening process, the level of technology development, performance record and inherent construction, operation and maintenance problems shall be identified for each technology considered. Technologies that are unreliable, perform poorly or are not fully demonstrated shall be eliminated in the screening process. Technologies evaluated by the Interstate Technology Regulatory Council (ITRC) (see <http://www.itrcweb.org/>) may be favored for use with minimum requirements for site specific testing and prove-out.

2.C. Identification of Corrective Measure Alternatives

The Permittee shall develop the corrective measure alternatives based on the CAOs, and shall report these alternatives in CMS Workplans. The Permittee shall rely on engineering practice to determine which technologies appear most suitable for each SWMU. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative developed shall represent a workable number of option(s) that appear to address all site problems and corrective action objectives. The Permittee shall document in the workplan the reasons for excluding technologies.

3. EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes the screening as described in Section 2 and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates for each corrective measure.

3.A. Technical/Environmental/Human Health/Institutional

The Permittee shall evaluate each alternative using the criteria outlined below.

3.A.1. Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, efficacy of implementation and safety.

3.A.1.a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

3.A.1.a.i Effectiveness shall be evaluated in terms of the ability to perform intended functions, including but not limited to containment, diversion, removal, destruction or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. The evaluation shall also consider the effectiveness of combinations of technologies.

3.A.1.a.ii Useful life is defined as the length of time the level of effectiveness can be maintained. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

- 3.A.1.b. The Permittee shall provide information on the reliability of each corrective measure including its operation and maintenance requirements and its demonstrated reliability. Demonstrated reliability measures the risk and effect of failure. The Permittee shall evaluate whether the technologies have been used effectively under analogous conditions, whether the combination of technologies have been used together effectively, whether failure of any one technology has an immediate impact on receptors and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.
- 3.A.1.c. The Permittee shall describe the implementation of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response. The Permittee shall estimate the time that will be required to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.
- 3.A.1.d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider include but are not limited to fire, explosion and exposure to hazardous substances.

3.A.2. Environmental

The Permittee shall perform an environmental assessment for each alternative. The environmental assessment for each alternative shall include an evaluation of any adverse effects on environmentally sensitive areas and an analysis of measures to mitigate adverse effects.

3.A.3. Human Health

The Permittee shall assess each alternative in terms of the extent to which it mitigates short and long-term potential exposure to any residual contamination and protects human health both during and after implementing the corrective measures. The assessment shall describe the types and levels of contaminants on-site, potential exposure routes and potentially affected populations. Each alternative shall be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact shall be determined by comparing residual levels of each alternative with existing criteria, standards and guidelines acceptable to the Director.

3.A.4. Institutional

The Permittee shall assess the effects of federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances and community relations on the design, operation and timing of each alternative.

3.B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative and for each phase or segment of the alternative. The cost estimate shall include capital and operation and maintenance costs.

4. RECOMMENDATION OF A CORRECTIVE MEASURE AND PREPARATION OF THE CMS REPORT

The Permittee shall justify and recommend a corrective measure alternative in the CMS Report. The Permittee shall submit summary tables of the corrective measure alternative recommendations. Tradeoffs among health risks, environmental effects and other pertinent factors shall be highlighted. The Director shall approve the corrective measure alternative or alternatives to be implemented. The following criteria shall be used to select the final corrective measure or measures.

4.A. Technical

- 4.A.1. Performance - corrective measures which are most effective at performing their intended functions and maintaining performance over extended periods of time;
- 4.A.2. Reliability - corrective measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated;
- 4.A.3. Implementability - corrective measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time; and
- 4.A.4. Safety - corrective measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation.

4.B. Human Health

The corrective measures shall comply with existing federal and state criteria, standards and guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

4.C. Environmental

The corrective measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored. The corrective measures shall be assessed as to the degree to which they employ treatment that reduces toxicity, mobility or volume of hazardous wastes and/or hazardous constituents.

4.D. Other Pertinent Factors

The Permittee shall justify the recommended alternative by describing other pertinent factors, such as cost. In addition, all other factors being equal, in-situ technology alternatives shall be favored.

5. CORRECTIVE MEASURES IMPLEMENTATION PROGRAM AND PREPARATION OF CMI WORKPLANS

The purpose of the Corrective Measure Implementation (CMI) Program is to design, construct, operate, maintain and monitor the performance of the corrective measures selected to protect human health and the environment as described below. This information shall be included in the CMI Workplans.

5.A. Corrective Measure(s) Design

The Permittee shall prepare final construction plans and specifications to implement the corrective measure(s) at the facility as defined in the CMS. The construction plans and specifications shall include, but not be limited to:

- 5.A.1. Design plans and specifications;
 - 5.A.1.a. Design strategy and basis for implementation;
 - 5.A.1.b. Currently accepted environmental control measures, construction practices and techniques and the constructability of the design-. The Director has approved use of a performance rather than ~~technology~~ technology-based standard for landfill covers. This performance standard is one millimeter or less water infiltration per year though any current or proposed landfill cover. All landfill cover designs

shall meet this standard or provide justification if the design or current site conditions exceed this standard.

- 5.A.1.c. Assumptions, detailed drawings including, but not limited to, process flow diagrams, general arrangement and any applicable piping and instrumentation diagrams), equipment and specifications and material and energy balances; and
- 5.A.1.d. A discussion of the possible sources of error and potential operation and maintenance problems.
- 5.A.2. Short-term and long-term operations, inspection, maintenance and monitoring plans as needed;
- 5.A.2.a. Normal and alternate operation and maintenance practices including, but not limited to tasks for operation, tasks for maintenance, prescribed treatment or operation conditions and schedule identifying frequency;
- 5.A.2.b. Routine monitoring and laboratory testing including, but not limited to, description of monitoring tasks, required laboratory tests and their interpretation, required Quality Assurance/Quality Control and a schedule of monitoring frequency;
- 5.A.2.c. Equipment description (including equipment identification, installation of monitoring components, maintenance procedures and replacement schedule) and records and reporting including, but not limited to, daily operating logs, laboratory records, records for operating costs, reporting emergencies, personnel and maintenance records and required reports to be stored at the facility;
- 5.A.2.d. Alternate operating and maintenance procedures to prevent undue hazard due to system failure and analysis of vulnerability and additional resource requirements should a failure occur; and
- 5.A.2.e. Safety plan during routine operation and safety tasks in the event of systems failure.
- 5.A.3. Cost estimate.
- 5.A.4. Project schedule identifying timing for initiation and completion of all critical path tasks, dates for completion of the project and major milestones.
- 5.A.5. Construction quality assurance objectives (including but not limited to the responsibility and authority, personnel qualifications, inspection activities, sampling requirements and documentation).
- 5.A.6. Health and safety plan.
- 5.A.7. Design phases may include a preliminary design, additional studies, pre-final design and final design as specified in approved plans or reports:
 - 5.A.7.a. Preliminary Design. The preliminary design is a 30% design. The technical design requirements of the project shall be adequate to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The Permittee shall include calculations reflecting the same percentage of completion as the designs they support. If the approved alternative is a standard industry practice or considered a presumptive remedy (see <http://www.epa.gov/superfund/policy/remedy/presump/pol.htm>) and can be easily implemented, the Director may not require a preliminary design for review and approval.
 - 5.A.7.b. Additional studies to supplement the available technical CMI data may be required. Upon written notification from the Director, the Permittee shall provide sufficient sampling, testing and analysis to optimize the required treatment and/or disposal operations and systems. A final report of the testing shall include all data taken during the testing and a summary of the results of the studies.

- 5.A.7.c. Prefinal Design. The prefinal design is a 95% design. The pre-final design submittal shall include the Design Plans and Specifications, the Operations and Maintenance Plan, the Project Schedule, the Quality Assurance Plan, specifications for the Health and Safety Plan and the Construction Quality Assurance Plan as described in Condition 5.B. Depending on the site and alternative proposed, the Director may not require a pre-final design for review and approval.
- 5.A.7.d. Final design. The final design is a 100% design. The final design submittal shall include the Final Design Plans and Specifications, the Final Operation, the Maintenance and Monitoring Plan, the Final Quality Assurance Plan, the Construction Quality Assurance Plan as described in Condition 5.B, the Final Project Schedule, and Final Health and Safety Plan specifications. The final design and pre-final or preliminary design may be the same submittal.

5.B. Corrective Measure(s) Construction

Following Director approval of the final design, the Permittee shall implement a construction quality assurance program to ensure, with a reasonable degree of certainty, that a completed corrective measure meets or exceeds all design criteria, plans and specifications. The construction quality assurance plan is a facility-specific document that shall be submitted to the Director as part of the design for approval and prior to the start of construction. At a minimum, the construction quality assurance plan shall include the elements identified in Condition 5.B.1 and Condition 5.B.2. Upon the Director's approval of the construction quality assurance plan, the Permittee shall construct and implement the corrective measures in accordance with the approved design, schedule and the construction quality assurance plan. The Permittee shall also implement the elements of the approved operation -required for long-term maintenance and any conditions required to enter into post-closure.

- 5.B.1. The responsibility and authority of all organizations and the qualifications of all personnel shall be described in the construction quality assurance plan.
- 5.B.2. The observations and tests that will be used to monitor the construction and/or installation of the components of the corrective measure(s) shall be summarized in the construction quality assurance plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records and waste disposal records. The inspections shall also ensure compliance with all health and safety procedures.
- 5.B.2.a. A preconstruction inspection and meeting shall be held to discuss methods for documenting and reporting inspection data, reviewing the distribution and storage of documents and reports, reviewing work area safety, discussing appropriate modifications to the construction quality assurance plan and conducting a site visit.
- 5.B.2.b. Upon preliminary project completion, the Permittee shall conduct a pre-final inspection consisting of a walk-through inspection of the entire site. The inspection is to determine whether the project is complete and consistent with the corrective measures approved by the Director. The Permittee shall operationally test the treatment equipment. The Permittee shall demonstrate and document that the equipment has performed to meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. If necessary, a pre-final inspection report shall outline the outstanding construction items, actions required to resolve items, completion date(s) for these items, and the date of the final inspection.
- 5.B.2.c. Upon completion of all outstanding construction items, the Permittee shall notify the Director for the purposes of conducting a final inspection. A final inspection by the Director or his representatives will focus on confirming compliance with the design specifications and corrective measures objectives.

5.C. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria and plans for correcting problems shall be presented in the Corrective Measures Design.

5. D. Documentation

Reporting requirements for construction quality assurance activities shall be described in detail in the Corrective Measures Design and CMI Plan. This shall include but not be limited to such items as daily summary reports, inspection data sheets, problem identification and corrective measure reports and design acceptance reports.

6. LONG-TERM INSPECTION, MAINTENANCE AND MONITORING

The Permittee shall address long-term inspection, monitoring and maintenance in the CMI Workplan and as described in Module V. The CMI plan shall propose addition of long-term monitoring plans to a post-closure permit or other plan as needed in accordance with Module VI. The Permittee shall implement the inspection, maintenance and monitoring requirements contained in the CMI Plan upon implementing the corrective measure.

7. REPORTS

7.A. Corrective Measures Study (CMS) Workplan and CMS Reports

The Permittee shall prepare CMS Workplan and CMS reports in accordance with the schedule specified in Table 3.

7.B. Progress Reports

The progress reports shall contain the following information:

- 7.B.1. A description and estimate of the percentage of the CMS completed;
- 7.B.2. Summaries of all findings;
- 7.B.3. Summaries of all changes made in the CMS during the reporting period;
- 7.B.4. Summaries of all problems or potential problems encountered during the reporting period;
- 7.B.5. Actions being taken to rectify problems;
- 7.B.6. Projected work for the next reporting period; and
- 7.B.7. Copies of daily reports, inspection reports, laboratory and monitoring data shall be held at the facility until the CMI is completed.

7.C. Corrective Measure Implementation (CMI) Reports

At the completion of construction, the Permittee shall submit a CMI Report to the Director for approval. The report shall establish that the project was implemented and/or built according to the specifications and that the corrective measure is performing adequately. The report shall include, but not be limited to, the following elements:

- 7.C.1 Certification by an independent professional engineer registered in the state of Utah of the design and construction;
- 7.C.2 Explanation of any modifications to the plans and why these modifications were necessary;
- 7.C.3 Listing of the performance or other criteria established for judging the functioning of the corrective measure and also justifying any modification to these criteria;
- 7.C.4 Results of facility monitoring, indicating that the corrective measure meets or exceeds the performance criteria; and
- 7.C.5 This report shall include all of the daily inspection summary reports, inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications and as-built drawings.

Tooele Army Depot South Area (TEAD-S)
Draft Class 3 Modification Approval – Corrective Action Modification
Fact Sheet
UT5210090002

On January 23, 2020, the Tooele Army Depot South Area (TEAD-S) submitted a Class 3 permit modification request seeking approval to update the Corrective Action Program (Module V) and the Post-Closure Conditions (Module VI) in the permit for their facility located in Tooele County, Utah.

The changes to the Permit include the addition of three post-closure plans; the addition of a new post-closure inspection checklist for landfill sites; the addition of one new Area of Concern (AOC); the removal of two AOCs; the redesignation of two AOCs as Solid Waste Management Units (SWMUs); moving one SWMU to corrective action; moving three SWMUs to post-closure; and updating references to the Utah Administrative Code.

TEAD-S, formerly the Deseret Chemical Depot (DCD), is a US Army facility located in Rush Valley, Tooele County, Utah. At one time, TEAD-S stored the largest stockpile of chemical warfare agents and munitions in the United States. As of January, 2012, the stockpile of agents and weapons formerly stored at TEAD-S has been destroyed. TEAD-S has identified several Solid Waste Management Units (SWMUs) on the facility property and is currently in the process of taking corrective action to address the contamination and other issues associated with these units.

The Division of Waste Management and Radiation Control (DWMRC) has reviewed the request to update the Corrective Action Program and the Post-Closure Conditions in the Permit and has determined the request to be complete, containing sufficient information to issue a draft approval. A draft approval making the changes to the hazardous waste permit has been issued and is available for review during the public comment period.

The public comment period to receive comments on the draft decision to approve the changes to the Corrective Action Program and Post-Closure Conditions of the TEAD-S Permit will commence on **April 24**, 2020, and end on **June 8**, 2020. The Utah Division of Waste Management and Radiation Control will hold a virtual Public Hearing with Google Hangouts at 6:00 pm, on Wednesday, May 20, 2020. The meeting may be accessed at <https://meet.google.com/brf-gpje-cro?hs=122>. You may also join by phone at [+1 520-800-2581](tel:+15208002581) PIN: 377 086 820#

Draft changes to the Corrective Action Program and Post-Closure Conditions of the TEAD-S Hazardous Waste Permit can be reviewed at the following location:

Division of Waste Management and Radiation Control
Multi Agency State Office Building
195 North 1950 West, 2nd Floor
Salt Lake City, Utah 84116

For the public's convenience, a copy of the draft changes to the TEAD-S permit is also available on the Internet at "<https://deq.utah.gov/waste-management-and-radiation-control/waste-management-radiation-control-public-notices>".

Written comments will be accepted if received by 5:00 p.m. on **June 8**, 2020, and should be submitted to the address below. Comments can also be hand delivered to the Division address above and must be received by 5:00 p.m. on **June 8**, 2020.

Ty L. Howard, Director
Division of Waste Management and Radiation Control
Department of Environmental Quality
P.O. Box 144880
Salt Lake City, Utah 84114-4880

Comments can also be sent by electronic mail to: “dwmrpublic@utah.gov”. Comments sent in electronic format should be identified by putting the following in the subject line: Public Comment on TEAD-S Corrective Action Program. All documents included in comments should be submitted as ASCII (text) files or in pdf format.

Following the public comment period on the draft TEAD-S Class 3 modification approval, all public comments will be evaluated and, where appropriate, will be included in the final decision. A final determination will then be reached on the modification request and the modification will be approved, modified, or denied.

Under Utah Code Section 19-1-301.5 a person who wishes to challenge a Permit Order may only raise an issue or argument during an adjudicatory proceeding that was raised during the public comment period and was supported with sufficient information or documentation to enable the director to fully consider the substance and significance of the issue.

For further information contact Rick Page of the Division of Waste Management and Radiation Control at (801) 536-0230. In compliance with the Americans with Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human Resources at (801) 536-4284, Telecommunications Relay Service 711, or by email at “lwys@utah.gov”.

The draft changes to the TEAD-S permit are based upon requirements found in the Utah Administrative Code, R315-264 and 270, and are summarized below:

Table of Contents: The draft approval modifies the Table of Contents to include three new Post-Closure Plans. These are in Module VI, Attachment 5 (for SWMU 39); Module VI, Attachment 6 (for SWMU 13); and Module VI, Attachment 7 (for SWMU 26). It also adds a Post-Closure Checklist for Landfill Sites as Form B in Module V.

Module V, Corrective Action Program: The draft approval modifies Tables 1A (SWMUs) and 1B (AOCs). SWMU 13 (CAMDS Fuel Release) and SWMU 26 (Sanitary Landfill) are removed from Table 1A. They will be moved to post-closure in Module VI. AOC 5 (Toxic Area 1) is renamed SWMU 40 and moved from Table 1B to Table 1A. It will undergo additional investigations and possible post-closure care for the burial feature and the concrete foundation and drainage lines. AOC 24 (Building 1873 (2005) and Dry Well) is renamed SWMU 39 and is removed from Table 1B. It will also be moved to post-closure in Module VI. AOC 2 (Salvage Yard) and AOC 7 (Toxic Area 3) are removed from Table 1B. They have been closed and no further action is required. AOC 28 (Hillside Debris Area) is a new unit added to Table 1B.

Module VI, Post-Closure Conditions: The Post-Closure Permits for SWMU 39 (Module VI, Attachment 5) SWMU 13 (Module VI, Attachment 6) and SWMU 26 (Module VI, Attachment 7) have been added to the Table of Contents and Table 1. Table 3 is modified to specify the inspections required at these SWMUs. Form B (General Post-Closure Site Inspection Checklist for Landfill Sites) is added to the Permit.

Module VI, Attachment 1, SWMU 9 Post-Closure Plan: The references to the Utah Administrative Code were updated. Other references to the Permit were corrected. The Division name was updated.

Module VI, Attachment 2, SWMU 19 Post-Closure Plan: The references to the Utah Administrative Code were updated. Other references to the Permit were corrected. The Division name was updated.

Module VI, Attachment 3, SWMU 33 Post-Closure Plan: The references to the Utah Administrative Code were updated. Other references to the Permit were corrected. The Division name was updated.

Module VI, Attachment 4, SWMU 28 Post-Closure Plan: The references to the Utah Administrative Code were updated. Other references to the Permit were corrected. The Division name was updated.

Module VI, Attachment 5, SWMU 39 Post-Closure Plan: This is a new Post-Closure Plan. SWMU 39 is a dry well that occupies less than 0.1 acres and is located outside and along the east side of Building 1873, also known as Building 2005. The dry well was approximately four feet by four feet by four feet, with the base of the well located at a depth of six feet below ground surface. The dry well was connected to two paint booths inside of the building via a cast iron pipe. SWMU 39 post-closure care will ensure that the area is not reused or developed for residential purposes.

Module VI, Attachment 6, SWMU 13 Post-Closure Plan: This is a new Post-Closure Plan. SWMU 13 is located within the former Chemical Agent Munitions Disposal System (CAMDS) area. CAMDS has been closed, with the exception of the remnants of a historical fuel spill. The fuel spill was the result of a leak in an underground diesel fuel line that occurred sometime between 1980 and 1985 and up to 38,000 gallons of fuel may have been released. A corrective measures remedy included the installation of extraction trenches to recover the fuel. The corrective measures implementation was terminated due to the technical impracticality of the remedy. SWMU 13 will remain under industrial closure with long-term monitoring for groundwater.

Module VI, Attachment 7, SWMU 26 Post-Closure Plan: This is a new Post-Closure Plan. SWMU 26 operated as a solid waste landfill between 1956 and 1994, encompassing approximately 31 acres. The landfill is not lined or ventilated. Burial of debris was not contiguous within the site. The western portion of SWMU 26 has 22 burial features and the eastern portion has 23 burial features. A corrective measure remedy included the installation of an engineered geosynthetic liner system over all burial features. The Post-Closure Plan will prevent exposure to buried landfill waste left in place and prevent further degradation of groundwater.

JAN 23 2020



DEPARTMENT OF THE ARMY

Tooele Army Depot
Tooele, Utah 84074-5000

Reply to
Attention of:

January 23, 2020

DSHW-2020-001222

SUBJECT: Class 3 Permit Modification for Corrective Action Program Module V and Post-Closure Conditions Module VI, Tooele Army Depot South Area (TEAD-S) - EPA I.D. Number UT5210090002. ✓

Mr. Ty L. Howard
Director, Division Waste Management and Radiation Control
195 North 1950 West
Salt Lake City, UT 84114-4880

Dear Mr. Howard:

TEAD-S respectfully submits a Class 3 Permit Modification updating the Corrective Action Program Module V and Post-Closure Conditions Module VI. The modification includes proposed changes that include the following:

Module V

- Table 1A. Removed Solid Waste Management Unit (SWMU) 13; site to remain under industrial closure with long-term monitoring for groundwater. Termination of corrective measures implementation was granted as requested in the technical impracticability request (State approval letter DSHW-2019-008546)
- Table 1A. Added SWMU 40, which is the former Area of Concern (AOC) 5 (Toxic Area 1), which will undergo additional investigations and possible post closure care for the burial feature and the concrete foundation and drainage lines.
- Table 1B. Removed AOC 2, as it was closed with no further action in the Phase II RFI. Removed AOC 5 (now included as SWMU 40 in Table 1A). Removed AOC 7, as it was closed with NFA in the Phase I RFI. Removed AOC 24 (closed under industrial land use; site is now included as SWMU 39 in post closure care (Module VI) as Attachment 5. Added AOC 28, the Hillside Debris Area identified in 2019. In accordance with Module V Appendix A, 1.A.1, if the RFI indicates additional investigation is required, the AOC shall be added to Module V Table 1A and given a SWMU name. This applies to AOC 5 (now SWMU 40) and as AOC 24 is retained in post closure, a SWMU-designation was assigned in the inclusion in Module VI.

Modules VI

- Condition VI.E.2. Modified text to include references to both Form A (industrial) and Form B (landfill).
- Table 1. Added post closure permits for SWMUs 39, 13, and 26.
- Table 3. Added required inspection form references for SWMUs 39, 13, and 26.
- Condition VI.K.1.c. Added training for Form B.
- Form B. Added the General Post-Closure Inspection Checklist for Landfill Sites.
- Attachments 1 – 4: Updated Utah Administrative Code Rules.
- Attachment 5. Added new Post Closure Plan for SWMU 39.
- Attachment 6. Added new Post Closure Plan for SWMU 13.
- Attachment 7. Added new Post Closure Plan for SWMU 26.

A public comment period will begin January 28, 2020 and will end March 27, 2020 with a public informational meeting being held on March 5, 2020 at 5:30 PM.

If you have any questions regarding this request, please contact the undersigned at (435) 833-2761.

Sincerely,



Nicholas D. Montgomery
Chief, Environmental Management Division
*CERTIFICATION STATEMENT

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

**Tooele Army Depot South Area (TEAD-S) RCRA Operating Permit
Summary of Modifications, December 2019**

Table 1, Summary of Modifications for December 2019, below provides a detailed summary of all proposed changes to the permit.

Table 1 Summary of Modifications for December 2019.

Document	Title	Proposed Changes
Module V	Corrective Action Program (CAP) For Solid Waste Management Units	<ul style="list-style-type: none"> ▪ Table 1A. Removed Solid Waste Management Unit (SWMU) 13; site to remain under industrial closure with long-term monitoring for groundwater. Termination of corrective measures implementation was granted as requested in the technical impracticality request (State approval letter DSHW-2019-008546) ▪ Table 1A. Added SWMU 40, which is the former Area of Concern (AOC) 5 (Toxic Area 1), which will undergo additional investigations and possible post closure care for the burial feature and the concrete foundation and drainage lines. ▪ Table 1B. Removed AOC 2, as it was closed with no further action in the Phase II RFI. Removed AOC 5 (now included as SWMU 40 in Table 1A). Removed AOC 7, as it was closed with NFA in the Phase I RFI. Removed AOC 24 (closed under industrial land use; site is now included as SWMU 39 in post closure care (Module VI) as Attachment 5. Added AOC 28, the Hillside Debris Area identified in 2019. In accordance with Module V Appendix A, 1.A.1, if the RFI indicates additional investigation is required, the AOC shall be added to Module V Table 1A and given a SWMU name. This applies to AOC 5 (now SWMU 40) and as AOC 24 is retained in post closure, a SWMU-designation was assigned in the inclusion in Module VI.
Module VI	Post-Closure Conditions and	<ul style="list-style-type: none"> ▪ Condition VI.E.2. Modified text to include references to both Form A (industrial) and

	Standards For Solid Waste Management Units	<p>Form B (landfill).</p> <ul style="list-style-type: none">▪ Table 1. Added post closure permits for SWMUs 39, 13, and 26.▪ Table 3. Added required inspection form references for SWMUs 39, 13, and 26.▪ Condition VI.K.1.c. Added training for Form B.▪ Form B. Added the General Post-Closure Inspection Checklist for Landfill Sites.▪ Attachments 1 – 4: Updated Utah Administrative Code Rules.▪ Attachment 5. Added new Post Closure Plan for SWMU 39.▪ Attachment 6. Added new Post Closure Plan for SWMU 13.▪ Attachment 7. Added new Post Closure Plan for SWMU 26.
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PUBLIC NOTICE

Notice is hereby given that the Tooele Army Depot South Area (TEAD-S), State EPA ID Number UT5210090002, has submitted a request to the Utah Division of Waste Management and Radiation Control for a Class III modification of TEAD's RCRA Part B Permit.

Permit modification request to include: modifications to Modules V and VI include removal of closed Solid Waste Management Areas (SWMUs) and Areas of Concern (AOCs) that met risk-based closure and updates to post closure permits; addition updates to references to the Utah Administrative Code.

A 60 day public comment period for this permit modification request will begin on January 28, 2020 and end on March 27, 2020. All comments must be submitted in writing to Mr. Ty L. Howard, Director, Division of Waste Management and Radiation Control, Utah Department of Environmental Quality, Multi-Agency State Office Building, 195 North 1950 West, Salt Lake City, Utah, 84116.

TEAD-S will conduct a public information meeting concerning this permit modification request on Thursday, March 5, 2020 at 5:30 PM at the Tooele Army Depot's Eagle's Nest, building 1005 (east entrance), Second Avenue, Tooele, UT 84074.

Questions regarding this permit renewal request may be directed to TEAD by contacting Mr. Troy Johnson at (435) 833-4198; or the Utah Department of Environmental Quality, Division of Waste Management and Radiation Control, by contacting Mr. Rick Page at (801) 536-0230. The Permittee's (TEAD) compliance history during the life of the permit being modified is also available from Mr. Page.

A copy of this permit modification request is available for review by the general public at the Utah Department of Environmental Quality, Division of Solid and Hazardous Waste, Multi-Agency State Office Building, 195 North 1950 West, Salt Lake City, Utah.

FORM B - GENERAL POST-CLOSURE SITE INSPECTION CHECKLIST
Landfill Sites

Site: _____

Date: _____

1. List any site-specific inspection requirements outlined in the Site Post Closure Plan.

ATTENTION: Verbal notification (direct communication or voice mail) within 24-Hours **MUST** be provided to the TEAD-S Environmental Office on information concerning any non-compliance (for example: extreme erosion, burrowing into buried debris, or ponding on landfill cover footprint), which may endanger public drinking water supplies, human health, or the environment.

2. Purpose of Inspection:

a. Routine ☐ Annual

b. Contingency ☐ (Storm Event, Fire, Earthquake, etc.) circle one.

c. Other ☐ _____

3. Have the inspectors completed training as required by permit condition VI.K?

☐ Yes
☐ No

4. Are there open holes in the soil of the landfill cover footprint that may be caused by burrowing animals and potentially lead to a compromise of the integrity of the system that can not be mitigated during the site inspection?

☐ Yes *
☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

5. Are there noticeable depressions or ponding of surface water on the landfill cover footprint that could compromise the integrity of the landfill cover system?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

6. Are there large (more than two inches wide) cracks or rills in the soil cover that may lead to a compromise in the integrity of the cover system?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action. Corrective action may include placing a “watch status” on the area for future evaluation, filling in the eroded or cracked area, investigation the cause of erosion, and regrading slopes.*

Comments: _____

7. Inspect the survey monuments. Are they intact and legible?

☐ Yes

No *

** If no, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

8. Inspect the survey monuments. Is there evidence of erosion or subsidence in the vicinity of the monument (ponding, cracks, rills, or uneven terrain)?

☐ Yes *

☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

9. Is re-surveying of monuments necessary, based on the time since the cover was installed or the answer to Questions 7 & 8 above (i.e., is there visual evidence of significant settling)?

☐ Yes *
☐ No

**If yes, coordinate with the TEAD-S Environmental Office to arrange resurvey the monument and note if the survey monument position is significantly different in any direction from the coordinates listed in the appropriate site-specific Module VI attachment and to establish magnitude of movement.*

Comments: _____

10. Are any trees, shrubs or other vegetation present on the landfill cover that can not be mitigated (removed) during the inspection?

☐ Yes *
☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

11. Are posted signs in place and in good condition (legible)?

☐ Yes
☐ No *

** If no, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

12. Inspect areas that channel water runoff at the site, including ditches and slope edges. Are there signs of excessive erosion (rutting 1-ft wide by 1-ft deep) from storm water runoff?

☐ Yes *
☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

13. Inspect the access road leading to the site. Are there significant potholes and/or erosion preventing access to the site?

☐ Yes *
☐ No

** If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

14. Were there any problems obtaining access to the site?

☐

Yes

☐

No

Comments: _____

15. Were any orphan wastes found inside or nearby the site?

☐

Yes *

☐

No

** If yes, notify the TEAD-S Environmental Office immediately (within 24-hours) to determine appropriate measures for management of the waste.*

Comments: _____

16. Additional Notes (Sketches, time, temperature, wind direction, and other observations),
attached additional sheets as needed.

Is a location map showing location of deficiencies and/or watch items attached? ☐ Yes ☐ No

Name of Inspector: _____

Company: _____

Signature of Inspector: _____

Time and Date of Inspection: _____ Site Location: _____

MODULE V -
CORRECTIVE ACTION PROGRAM (CAP)
FOR SOLID WASTE MANAGEMENT UNITS

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V.A. SOLID WASTE MANAGEMENT UNITS (SWMUs)

V.A.2. The Director may append additional SWMUs to those listed in Table 1A in accordance with Utah Admin. Code R315-270-42, based on additional information received by the Permittee, the Director or

V.B. STANDARD CONDITIONS

V.B.1. Failure to submit the information
in response to the transmission of a file

V.B.2. The Permittee shall sign and certify all plans, reports, notifications, and other submissions to the Director, in accordance with Condition I.AA.

V.B.4. All plans and schedules required by this module shall, upon written approval from the Director, be incorporated by reference into this Permit. Any noncompliance with such approved plans and

V.B.5. The Permittee can only receive extensions of the specified compliance schedule due dates for the submittals required by this module in accordance with Condition V.I. and upon written approval from

V.B.6. All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data and other supporting information gathered or generated during activities undertaken pursuant to this module shall

V.B.7 The Permittee shall provide seven days' advance notice of field activities associated with approved work plans. This notice may be provided by telephone, but shall be followed with a written notice within 72 hours.

V.C.1. The Permittee shall conduct a Resource Conservation

V.C.2. The Permittee shall prepare and submit the RFI Report as described in Appendix A for each SWMU.

V.C.4. Reserved

V.C.5. Reserved

[illegible]

- Tusck Army Depot-South Area
Module V - Corrective Action Program
~~06/06/2019~~~~06/06/2019~~~~06/06/2019~~
- V.11.i.

The compliance date(s) for submittal of the CMS Report in accordance with Table 3.
- V.11.ii.

The compliance date(s) for submittal of the final Corrective Measures Implementation Program Plan in accordance with Table 3.
- V.11.iii.

Once established in accordance with Condition V.G.5, the compliance date(s) for submittal of the corrective measures final (100% completion) design and construction plans in accordance with Table 3.
- V.11.iv.

Compliance dates for implementing the approved plans or reports, and
- V.11.v.

Compliance dates for quarterly submittal of progress reports.
- V.12.

In accordance with Utah Admin. Code R315-270-41, the compliance schedules shall be modified if the Director determines that good cause exists for which the Permittee had no control and for which there is no reasonable available remedy.
- V.12.i.

Failure to obtain adequate funds or appropriations to conduct the Corrective Measures Implementation Program Plan in accordance with Condition V.G.1 shall be considered good cause for modification of the compliance schedule(s) as provided in Condition V.12 subject to the following conditions.
- V.12.i.a.

The Permittee shall use its best effort to secure all funds that may be required for implementation of the CMI plan.
- V.12.i.b.

If necessary, the Permittee shall seek by the most expeditious means possible, appropriations from the U.S. Congress. In accordance with Sections 1-4 and 1-5 of Executive Order 12088 as implemented by the Office of Management and Budget Circular A-106, as amended. Section 1-5 of Executive Order 12088 states, "The head of each executive agency shall ensure that sufficient funds for compliance with applicable pollution control standards are requested in the Agency budget".
- V.12.i.c.

Immediately upon failure to obtain adequate funding, the Permittee shall submit to the Director, by certified mail, express mail or hand delivery, a written request and justification for modification of the compliance schedule. The written justification shall demonstrate that good cause exists, in accordance with Condition V.12.i. The Permittee shall also provide an alternate schedule of compliance for conducting the Corrective Measures Implementation for the subsequent fiscal year.
- V.12.i.d.

Upon evaluation, if the Director determines that good cause exists in accordance with Condition V.12.i, the Director shall modify the compliance schedule.
- V.12.i.f.

For any approval modification, the compliance schedule shall be modified to provide relief from the original compliance schedule time frames only for the subsequent fiscal year. All successive compliance dates after the end of each fiscal year shall be modified to reflect the original time frames specified prior to the modification request under Condition V.12.i.
- V.12.ii.

Failure to obtain adequate funds or appropriations from Congress shall not, in any way, release the Permittee from its obligation to comply with Condition V.G.3, or any other requirement of this permit or applicable rules.
- V.12.iii.

If adequate funds for corrective measures are not available, the Director may pursue any actions deemed necessary to protect human health and the environment, not including judicial review or termination of this permit.
- V.13.

The Permittee may submit a request for modifications of the interim compliance dates that do not affect the final compliance date to the Director for approval.

TABLE 1A SOLID WASTE MANAGEMENT UNITS (SWMU) ¹	
SWMU NUMBER	SWMU DESCRIPTION
1	Demilitarization area/Disposal pits
43	SWMU - Chemical Agent Munition Disposal System Threat Area release
25	Demilitarization area/Disposal pits
26	Sanitary landfill (active)
40	Toxic Area 1 Burial Site (former AOC 4)

The SWMU numbering ([Table 1, 2012](#)) corresponds to that used in Ground-water Consultation No. 38-26-1664-86, September 5, 1986, conducted by the U.S. Army Environmental Hygiene Agency and the RCRA Facility Assessment, December 1987, prepared for the U.S. Environmental Protection Agency (USEPA).

TABLE 1B AREAS OF CONCERN (AOC) ²	
AOC Number ³	AOC Description
2	Salvage Yard
3	Ladder Dip Tank
5	Toxic Area 1
6	Toxic Area 2
7	Toxic Area 3
8	Classification Yard
9	Open Storage Pail 1
23	Building 4553 Bomb Renovation Building Evaporation Pond
24	Building 14723 (2002) and Dry Wall
27	Classification Yard Access Road (Burial)
28	Fillable Debris Area

¹ AOCs will undergo a Phase I RFI in accordance with Module V Appendix A permit condition I.A.1.
² AOC numbers are based on the Site of Potential Concern location identified in the "Final Report for Identification of Sites of Potential Concern (SPC)," TEAD-S, November 2013. AOC 79 was newly identified in 2012.
³ AOC 24 is deferred until final closure of the open area/debris area.

Table 2	
RCRA FACILITY INVESTIGATION COMPLIANCE SCHEDULE FOR SOLID WASTE MANAGEMENT UNITS (SWMUs) AND AREAS OF CONCERN (AOC)	
RFI Activity	Due Date
Submit Final Phase I RFI Workplans and Reports to the Director for approval.	The Phase I RFI for the SWMUs listed in Table 1A is complete and has been approved. Minor data gaps are filled by submittal of variances and amendments to the approved workplan. The variances and amendments must be approved by the Director and documented in the Phase I RFI report.
Submit Final RFI Phase II Workplans and Implement the Workplans to the Director for approval.	Minor data gaps are filled by submittal of variances and amendments to the approved workplan. The variances and amendments must be approved by the Director.
Submit Draft Final Phase II RFI Reports and CMS Workplans for each site or group of sites (grouping of sites is determined by the Permittee) to the Director for approval.	The Permittee shall annually provide an updated schedule. This schedule shall be submitted annually by September 30.
Submit Progress Reports to the Director.	Quarterly (every 90 calendar days).
Submit a Schedule for submittal of a Site-Wide Ecological Assessment for Director approval.	Within 90 days upon completion of Phase II RFIs.

TABLE 3 CORRECTIVE MEASURES STUDY (CMS) AND IMPLEMENTATION COMPLIANCE SCHEDULE FOR SOLID WASTE MANAGEMENT UNITS (SWMUS) AND AREAS OF CONCERN (AOC)	
CMS SUBMISSION/CMI SUBMISSION	Due Date
Submit CMS Workplans	CMS Workplans shall be incorporated into Phase II RFI Reports or submitted separately.
Submit Draft Final CMS Report	As specified in the approved schedule to be included in Final CMS Workplans
Submit Final CMS Report	As specified in the Draft Final CMS Report
Submit Draft Final CMI Plan	As specified in the approved Final CMS Report
Submit Final CMI Plan	As specified in the Draft Final CMI Plan
Implement CMI Plan	As specified in the Final CMI Plan
Submit Draft Final CMI Report	Within 180 days of completion of the CMI Plan
Submit Final CMI Report	As specified in the Draft Final CMI Report
Conduct approved Post-Closure Activities and Implement any approved post-closure plans	As specified in the Final CMI Plan and Condition V.H.

MODULE V - APPENDIX A
RCRA FACILITY INVESTIGATION

I. OBJECTIVES AND PURPOSE

The objective of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) is to determine if release 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, 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 collect sufficient data to conduct 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 shall be conducted as defined in approved RFI Workplans, Utah Admin. Code R315-101 and approved documents describing groundwater management, applicable USEPA guidance and memorandum or other correspondence from the Director describing requirements for corrective action and long-term monitoring for landfills. The final RFI report may act as a final decision document for each site (e.g., no further action (NFA), remediation, etc.) The final decision document is presented to the public for comment.

I.A. Phase I RFI

The Permittee has met all the requirements of the Phase I RFI for all SWMU's listed in Table I.A. A Phase I RFI shall be conducted for AOC's listed in Table I.B.

I.A.1. Phase I RFI Reports for Newly Identified SWMU's and AOC's

Upon completing the Phase I investigation for newly identified SWMU's or AOC's, the Permittee shall prepare and submit for approval by the Director a Phase I RFI Report. This report shall be consistent in scope with the approval Phase I RFI Reports. This report shall recommend no further action, additional investigation as part of the Phase II RFI, immediate action under an interim measure plan as outlined in Condition V.D., or other action as deemed necessary by the Permittee. The Phase I Report shall be incorporated into the permit in accordance with Utah Admin. Code R315-270-41.

For AOC's where the results of the Phase I RFI indicate that additional investigation is required as part of the Phase II RFI, the AOC's shall be added to the Module V Table I.A and given a SWMU designation.

I.B. Phase II RFI Workplans

For SWMU's requiring Phase II RFI Workplans, the Phase II RFI Workplans shall be consistent in scope with the previously approved Phase II RFI Workplans.

I.B.1. Phase II RFI Workplan for Newly Identified SWMU's

Based on the results of the Phase I RFI Report for newly identified SWMU's, the Permittee shall prepare and submit a Phase II RFI Workplan. This workplan shall be consistent in scope with Phase II RFI Workplans approved for SWMU's listed in Condition I.B.

I.C. Phase II RFI Report

The Permittee shall prepare and submit to the Director for approval a Phase II RFI Report for SWMU's listed in Module V, Table I with an analysis and summary of all Phase I and Phase II RFI results. The objective of the evaluation and report is to ensure that the investigations for each SWMU are sufficient to describe the nature and extent of contamination, potential threats to human health and the environment, to prepare a risk assessment, address non-degradation of natural resources and a Corrective Measures Study (CMS) Workplan.

1.C.1. Phase II RFI Workplan and Report Requirements

The Phase II RFI Workplan and Report shall, at a minimum, address and 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, to estimate and describe the times of contamination, continued in source, or is contamination release in air or in groundwater plumes and to describe the use, value and vulnerability of groundwater as described in Appendix B.
- 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 as required by Utah Admin. Code R315-101 and the "Risk Assumptions Document";
- 1.C.1.e. The information needed to evaluate the geological pathways of contaminant migration in air, bedrock, soil, surface water or groundwater as required by Utah Admin. Code R315-101-3 and the "Risk Assumptions Document";
- 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;
- 1.C.1.h. The analytical or other information needed to independently reproduce conclusions and sample data as presented in text, spreadsheets, 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 in accordance with Module VI and the Post Closure Plan Attachments.
- 1.C.1.j. Other information as required by the Director.

1.C.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 Condition 1.C.2.A. and Condition 1.C.2.B.

1.C.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 USEPA 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.

1.C.2.B. Chemical Agent Standards for Soil

The Permittee shall assess concentration levels for agents GA, GB, GD, GF, HG, HD, HT, L and VX in soil. The "agent free concentration level" shall be defined as the agent concentration in the soil and waste not to exceed the detection limit for determining agent concentrations in soil and waste (i.e., solvent extraction methods). The detection limits for determining agent concentrations in soil and waste is technology driven and shall be evaluated by the Permittee or the 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.

1.C.3. 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 approval water quality standards.

1.C.3.A. COMMUNITY RELATIONS PLAN

In addition to the public comment requirements as described in Module V the Permittee has implemented this plan and informed the public by organizing a Restoration Advisory Board (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.

1.C.4. SITE-WIDE ECOLOGICAL ASSESSMENT

The Permittee shall complete a site-wide ecological assessment as required by Utah Admin. Code R315-101. The purpose of this assessment shall be to determine if residues from waste management activities at all HWMUs and SWMUs, combined in their entirety, are a threat to ecological receptors. The assessment shall address all presently permitted or formerly permitted sites under corrective action (SWMUs), HWMUs 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 V. The assessment shall address each of the plant communities located at TEADS, wildlife receptors for each trophic level and any threatened and endangered species, and may include species-specific toxicity testing.

MODULE V - APPENDIX B
CORRECTIVE MEASURES STUDY AND
CORRECTIVE MEASURES IMPLEMENTATION

1. OBJECTIVES

The objectives of the Corrective Measures Study (CMS) and Corrective Measures Implementation (CMI) are to evaluate corrective action alternatives and design and implement the chosen alternative as needed for protection of human health and the environment. The CMS and CMI shall be completed for each SWMU that does not meet the risk based no further action (NFA) or industrial closure criteria outlined in Appendix A, Module V, Utah Admin. Code R315-101 and as recommended in approved Phase II RCRA Facility Investigation (RFI) Reports and CMS Workplans. The corrective action design and implementation information shall be included in the CMI plan.

1.A. Establish Corrective Action Objectives (CAO)

The CMS Workplan shall establish SWMU specific CAOs. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, IFA and State of Utah guidance, and the requirements of any applicable State and Federal statutes. Any corrective actions concerning groundwater releases must provide human health and environmental protections consistent with those required under Utah Admin. Code R315-101 and other requirements or groundwater management plans approved by the Director. The Permittee shall also consider the use, value and vulnerability of groundwater in establishing CAOs and preparing groundwater management plans.

2. DEVELOPMENT OF CORRECTIVE ACTION ALTERNATIVES

Based on the results of the RFI, the Permittee shall identify, screen and develop the alternatives for removal, containment, treatment or other corrective action of the contamination based on the CAOs. This information shall be included in the CMS Workplan. This information shall also be developed and reported as required by Condition 2.A, Condition 2.B, and Condition 2.C.

2.A. Description of Remedial Actions

The CMS Workplan shall include a statement of the purpose for the response. The statement of purpose shall identify the actual or potential exposure pathways that should be addressed by corrective measures. The RFI Reports and CMS Workplan shall also include information regarding previous response activities, interim measures and voluntary cleanup activities.

2.B. Screening of Corrective Measures Technologies

The Permittee shall review the results of the RFI to identify technologies which are appropriate for the facility. The Permittee shall screen technologies and identify those having severe limitations, those that present safety hazards for a given set of waste and site-specific conditions or that do not meet the requirements of this Permit or the Utah Admin. Code. The screening may eliminate technologies based on these criteria. Site, waste and technology characteristics which are used to screen inapplicable technologies are described in more detail in 2.B.1. through 2.B.3.

2.B.1. Site Characteristics and History

Site data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics or safety hazards shall be eliminated from further consideration. If information that is classified by the U.S. Government will impact the CMS, and the Director has not reviewed or will not have access to this information, the existence of the classified information shall be identified in the CMS Workplan. The Permittee shall provide for the Director to review or be made aware of the essential elements of this information.

2.B.2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics shall be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods and land disposal (non/office). For SWMU's where chemical warfare agent or chemical warfare agent residues are present, the Permittee shall identify chemical warfare agent safety, purity or other Army requirements that may impact use of certain technologies.

2.B.3. Technology Limitations

During the screening process, the level of technology development, performance record and inherent construction, operation and maintenance problems shall be identified for each technology considered. Technologies that are unreliable, perform poorly or are not fully demonstrated shall be eliminated in the screening process. Technologies evaluated by the Interstate Technology Regulatory Council (ITIRC) from <http://www.itirc.org> may be favored for use with minimum requirements for site specific testing and pre-treatment.

2.C. Identification of Corrective Measure Alternatives

The Permittee shall develop the corrective measure alternatives based on the CACs and shall report these alternatives in CMS Workplans. The Permittee shall rely on engineering practices to determine which technologies appear most suitable for each SWMU. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative developed shall represent a workable number of option(s) that appear to address all site problems and corrective action objectives. The Permittee shall document in the workplan the reasons for excluding technologies.

3. EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes the screening as described in Section 2 and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates for each corrective measure.

3.A. Technical/Environmental/Human Health/Institutional

The Permittee shall evaluate each alternative using the criteria outlined below.

3.A.1. Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, efficacy of implementation and safety.

3.A.1.a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure.

3.A.1.a.i. Effectiveness shall be evaluated in terms of the ability to perform intended functions, including but not limited to containment, diversion, removal, destruction or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. The evaluation shall also consider the effectiveness of combinations of technologies.

3.A.1.a.ii. Useful life is defined as the length of time the level of effectiveness can be maintained. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

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4.A. Technical

- 4.A.1. Performance - corrective measures which are most effective at performing their intended functions and maintaining performance over extended periods of time.
- 4.A.2. Reliability - corrective measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated.
- 4.A.3. Implementability - corrective measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time and
- 4.A.4. Safety - corrective measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation.

4.B. Human Health

The corrective measures shall comply with existing federal and state criteria, standards and guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

4.C. Environmental

The corrective measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored. The corrective measures shall be assessed as to the degree to which they employ treatment that reduces toxicity, mobility or volume of hazardous wastes and/or hazardous constituents.

4.D. Other Pertinent Factors

The Permittee shall justify the recommended alternative by describing other pertinent factors, such as cost. In addition, all other factors being equal, in-situ technology alternatives shall be favored.

5. CORRECTIVE MEASURES IMPLEMENTATION PROGRAM AND PREPARATION OF CMI WORKPLANS

The purpose of the Corrective Measure Implementation (CMI) Program is to design, construct, operate, maintain and monitor the performance of the corrective measures selected to protect human health and the environment as described below. This information shall be included in the CMI Workplans.

5.A. Corrective Measure(s) Design

The Permittee shall prepare final construction plans and specifications to implement the corrective measure(s) at the facility as defined in the CMS. The construction plans and specifications shall include, but not be limited to:

- 5.A.1. Design plans and specifications;
- 5.A.1.a. Design strategy and basis for implementation;
- 5.A.1.b. Currently accepted environmental control measures, construction practices and techniques and the constructability of the designs. The Director has approval use of a performance rather than technology based standard for landfill covers. This performance standard is one millimeter or less water

	<p>Tuske Army Depot-South Area Module V - Corrective Action Program OSWER-9305-2000EPA/600/R-02/022</p>
	<p>infiltration per year though any current or proposed landfill cover. All landfill cover designs shall meet this standard or provide justification if the design or current site conditions exceed this standard.</p>
5.A.1.c.	<p>Assumptions, detailed drawings including, but not limited to, process flow diagrams, general management and any applicable piping and instrumentation diagrams), equipment and specifications and material and energy balances; and</p>
5.A.1.d.	<p>A discussion of the possible sources of error and potential operation and maintenance problems.</p>
5.A.2.	<p>Short-term and long-term operations, inspection, maintenance and monitoring plans as needed;</p>
5.A.2.a.	<p>Normal and alternate operation and maintenance practices including, but not limited to tasks for operation, tasks for maintenance, prescribed treatment or operation conditions and schedule identifying frequency;</p>
5.A.2.b.	<p>Routine monitoring and laboratory testing including, but not limited to, description of monitoring tasks, required laboratory tests and their interpretation, required Quality Assurance/Quality Control and a schedule of monitoring frequency;</p>
5.A.2.c.	<p>Equipment description (including equipment identification, installation of monitoring components, maintenance procedures and replacement schedule) and records and reporting including, but not limited to, daily operating logs, laboratory records, records for operating units, reporting emergencies, personnel and maintenance records and required reports to be stored at the facility;</p>
5.A.2.d.	<p>Alternate operating and maintenance procedures to prevent undue hazard due to system failure and analysis of vulnerability and additional resource requirements should a failure occur; and</p>
5.A.2.e.	<p>Safety plan during routine operation and safety tasks in the event of system failure.</p>
5.A.3.	<p>Cost estimate.</p>
5.A.4.	<p>Project schedule identifying timing for initiation and completion of all critical path tasks, dates for completion of the project and major milestones.</p>
5.A.5.	<p>Construction quality assurance objectives (including but not limited to the responsibility and authority, personnel qualifications, inspection activities, sampling requirements and documentation).</p>
5.A.6.	<p>Health and safety plan.</p>
5.A.7.	<p>Design phases may include a preliminary design, additional studies, pre-final design and final design as specified in approval plans or reports.</p>
5.A.7.a.	<p>Preliminary Design. The preliminary design is a 30% design. The technical design requirements of the project shall be adequate to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The Permittee shall include calculations reflecting the same percentage of completion as the designs they support. If the approval alternative is a standard industry practice or considered a prescriptive remedy (see http://www.epa.gov/superfund/policy/remedy/presump/po1.htm) and can be easily implemented, the Director may not require a preliminary design for review and approval.</p>
5.A.7.b.	<p>Additional studies to supplement the available technical CMR data may be required. Upon written notification from the Director, the Permittee shall provide sufficient sampling, testing and analysis to optimize the required treatment and/or disposal operations and systems. A final report of the testing shall include all data taken during the testing and a summary of the results of the studies.</p>

5.B. Corrective Measure(s) Construction

5.B.1. The responsibility and authority of all organizations and the qualifications of all personnel shall be described in the construction quality assurance plan.

5.B.2.a. A preconstruction inspection and meeting shall be held to discuss methods for documenting and reporting inspection data, reviewing the distribution and storage of documents and reports, reviewing work area safety, discussing appropriate modifications to the construction quality assurance plan and conducting a site visit.

5.B.2b. Upon preliminary project completion, the Permittee shall conduct a pre-final inspection consisting of a walk-through inspection of the entire site. The inspection is to determine whether the project is complete and consistent with the corrective measures approved by the Director. The Permittee shall operationally test the treatment equipment. The Permittee shall demonstrate and document that the equipment has performed to meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. If necessary, a pre-final inspection report shall outline the outstanding construction items, actions required to resolve items, completion date(s) for these items, and the date of the final inspection.

5.B.2.c. Upon completion of all outstanding construction items, the Permittee shall notify the Director for the purposes of conducting a final inspection. A final inspection by the Director or his representatives will focus on confirming compliance with the design specifications and corrective measures objectives.

- 5.C. **Sampling Requirements**
- The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria and plans for correcting problems shall be presented in the Corrective Measures Design.
- 5.D. **Documentation**
- Reporting requirements for construction quality assurance activities shall be described in detail in the Corrective Measures Design and CMI Plan. This shall include but not be limited to such items as daily summary reports, inspection data sheets, problem identification and corrective measure reports and design acceptance reports.
6. **LONG-TERM INSPECTION, MAINTENANCE AND MONITORING**
- The Permittee shall address long-term inspection, monitoring and maintenance in the CMI Workplan and as described in Module V. The CMI plan shall propose addition of long-term monitoring plans to a post-closure permit or other plan as needed in accordance with Module VI. The Permittee shall implement the inspection, maintenance and monitoring requirements contained in the CMI Plan upon implementing the corrective measure.
7. **REPORTS**
- 7.A. **Corrective Measures Study (CMS) Workplan and CMS Reports**
- The Permittee shall prepare CMS Workplan and CMS reports in accordance with the schedule specified in Table 5.
- 7.B. **Progress Reports**
- The progress reports shall contain the following information:
- 7.B.1. A description and estimate of the percentage of the CMS completed;
- 7.B.2. Summaries of all findings;
- 7.B.3. Summaries of all changes made in the CMS during the reporting period;
- 7.B.4. Summaries of all problems or potential problems encountered during the reporting period;
- 7.B.5. Actions being taken to rectify problems;
- 7.B.6. Projected work for the next reporting period; and
- 7.B.7. Copies of daily reports, inspection reports, laboratory and monitoring data shall be held at the facility until the CMI is completed.
- 7.C. **Corrective Measure Implementation (CMI) Reports**
- At the completion of construction, the Permittee shall submit a CMI Report to the Director for approval. The report shall establish that the project was implemented and/or built according to the specifications and that the corrective measure is performing adequately. The report shall include, but not be limited to, the following elements:

**TOOELE ARMY DEPOT - SOUTH AREA
(TEAD-S)**

**MODULE VI
ATTACHMENT 5**

**SOLID WASTE MANAGEMENT UNIT (SWMU) 39
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COPC	Constituent of Potential Concern
EO	Environmental Office
ft bgs	feet below ground surface
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compound
SWMU	Solid Waste Management Unit
TEAD-S	Tooele Army Depot South Area
UAC	Utah Administrative Code
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The two objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and to ensure that future land use is industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 39. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) §264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 39, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 39 Post-Closure Information Requirements
under UAC R315-270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(1)	General Description of the Facility	Section 2 and Module VI Attachment 1
UAC R315-270-14(b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.H)
UAC R315-270-14(b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315-270-14(b)(12)	Training Requirements	Module VI (VI.J)
UAC R315-270-14(b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)
UAC R315-270-14(b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Attachment 1 (Section 6.2)
UAC R315-270-14(b)(14)	Closure Certification and Notification	Section 2.7
UAC R315-270-14(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to TEAD-S
UAC R315-270-14(b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
UAC R315-270-14(b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
UAC R315-270-14(b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
UAC R315-270-14(b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
UAC R315-270-14(b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
UAC R315-270-14(c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315-270-14(c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.
UAC R315-270-14(c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315-270-14(c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315-270-14(c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315-270-14(c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315-270-14(c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315-270-14(c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 39, as required by UAC R315-270-14(b)(1).

2.1 SWMU 39 Location and History

SWMU 39 is a dry well that occupies less than 0.1 acres and is located in the north western quadrant of TEAD-S outside along the east side of Building 1873, also known as Building 2005. The Buildings and SWMU are located within Area 10. Based on historical drawings dating back to 1951, the dry well was approximately four feet by four feet by four feet. The base of the well was located at a depth of six feet below ground surface (ft bgs) with two feet of earth fill on top of the well, rendering the ground surface slightly above the well level. The dry well was connected via a cast iron pipe to two paint booths inside of Building 1873. Geophysical surveys were conducted as part of the Phase I Resource Conservations and Recovery Act (RCRA) Facility Investigation (RFI) to define the feature. The site was identified at Area of Concern (AOC) 27 in the RFI process. However, as industrial closure and land use controls were recommended, the AOC was named a SWMU for inclusion in the post closure permit.

2.2 Past Operations

Historically, the paint booths were used for sand blasting and painting containers. Based on the review of historical drawings and understanding the operations of paint booths, the chemical agent contained were likely sandblasted within an enclosed room or “booth” and then remotely spray painted in either the same booth or a different one. Solid particulate matter and waste fluids would have been captured within the paint booths. It is unclear whether liquid waste (treated or untreated) from the paint booths drained to the dry well.

Building 1873 has undergone renovations since its initial construction. The paint booth first appear on a historical drawing dated 1951, and no longer appear on plans dated after 1975. Because activities conducted in the building included painting of chemical agent containers, all activities were monitored for chemical agent. There is no history of agent detections during active operations (Parsons 2019). Consistent with painting operations, the potential for contamination would be a release of the rinse down fluids from painting operations.

2.3 Previous Investigations Documentation

Table 2. Summary of Previous Investigations

Pre-RFI	Phase I RFI	Phase II RFI	CMS	Decision Document	CMI
TEAD-S, 2013	Parsons, 2017	Parsons, 2019	NA	NA	NA
CMI – Corrective Measure Implementation CMS – Corrective Measures Study NA – Not Applicable					

2.4 Closure Activities

The 2019 Phase II RFI (Parsons, 2019) established the following controls:

1. The TEAD-S Excavation Permit process will be enforced.
2. Land use restriction (post closure) – activities limited to industrial use only.

2.5 Human Health and Ecological Risk Assessment

A screening level human health and ecological risk assessment were performed using data from the soil samples collected as part of the RFI process. Several metals, volatile organic compounds (VOCs), polycyclic aromatic compounds (PAHs), and semi-volatile organic compounds (SVOCs) were selected as contaminants of potential concern (COPCs).

The results of the human health risk assessment indicated that residential risk levels are met for lead and total site risk and hazard to all other COPCs are below industrial target risk levels of 1E-06 (cancer) and 1.0 (noncancer).

There is no significant ecological risk at SWMU 39.

2.6 Surface Water and Groundwater

There are no defined surface water features within or near SWMU 39. The general direction of surface water drainage in the area surrounding this unit is southerly toward the low portion of Rush Valley.

Groundwater quality at SWMU 39 is primarily defined as Class II, drinking water quality. Depth to groundwater ranges from 8 to 28 ft bgs (Parsons, 2019). Groundwater flow is to the west, south west.

Groundwater in the vicinity is not currently used for drinking water, irrigation, or other purposes. The nearest potable groundwater wells (2) are located approximately 3.5 miles northeast (upgradient) of SWMU 39, inside the TEAD-S boundary.

Groundwater monitoring is not required for SWMU 39 (Parsons, 2019).

2.7 Closure Notifications

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 R315-264-110 through 120.

2.8 Security Requirements

No specific security features are needed throughout the post-closure care period with the exception of tracking the location of the SWMU in the TEAD Land Use Management Plan and ensure industrial land use.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 Introduction

SWMU 39 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO). Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 Routine Site Inspections

During the Post-Closure period, general inspections of the SWMU 39 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 area. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

3.3 Inspection Follow-Up

Copies of completed site inspection checklists (Module VI, Form A) shall be forwarded to the TEAD-S EO. The Point-of-Contact for the TEAD-S EO is as follows:

Environmental Program Manager
TEAD-S Environmental Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

3.4 Non-Compliance Reporting

The conditions at SWMU 39 are such that the impact to human health and the environment is 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 condition V.L.4.

3.5 Biennial Post-Closure Report

In accordance with UAC R315-270-30(1) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 39 Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 Required Submittals

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2020, for the duration of the Post-Closure Monitoring Period.

3.6.1 *Non-Compliance Reporting:*

- 24-hour notification for information concerning the noncompliance, which may endanger public drinking water supplies or human health or the environment.
- Five - (5) 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 for information concerning the noncompliance, which does not endanger human health or the environment.
- Written notification for information concerning the non-compliance, which does not endanger human health or the environment, will be submitted when the Biennial Post Closure Reports are submitted.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Analytical Quality Solutions (AQS), 2017. *Final Risk Assumptions Document, Revision 5*, Deseret Chemical Depot, March.

Division of Waste Management and Radiation Control (DWMRC), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*, Deseret Chemical Depot. July.

Parsons, 2017. *Final Phase I RCRA Facility Investigation Report of Select Areas of Concern*, Tooele Army Depot South Area, November.

Parsons, 2019. *Final Phase II RCRA Facility Investigation Report of Select Areas of Concern*, Tooele Army Depot South Area, February.

Tooele Army Depot South Area (TEAD-S), 2013. *Final Report for Identification of Sites of Potential Concern (SPC)*, Tooele Army Depot South Area, November.

MODULE VI
POST-CLOSURE CONDITIONS AND STANDARDS
FOR SOLID WASTE MANAGEMENT UNITS (SWMUs)

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LIST OF FORMS
(POST-CLOSURE SITE INSPECTION FORMS)

- FORM A - General Post-Closure Site Inspection Checklist, Industrial Closure/Industrial Use Sites
FORM B - ~~Reserved~~ General Post-Closure Site Inspection Checklist, Landfill Sites
FORM C - Reserved
FORM D - Excavation Permit Coordination

LIST OF ATTACHMENTS

<u>DESCRIPTION</u>	<u>ATTACHMENT NO.</u>
SWMU 9 Post Closure Plan.....	1
SWMU 19 Post Closure Plan.....	2
SWMU 33 Post Closure Plan.....	3
SWMU 28 Post Closure Plan.....	4
<u>SWMU 39 Post Closure Plan.....</u>	<u>5</u>
<u>SWMU 13 Post Closure Plan.....</u>	<u>6</u>
<u>SWMU 26 Post Closure Plan.....</u>	<u>7</u>

MODULE VI
POST-CLOSURE CONDITIONS AND STANDARDS
FOR SOLID WASTE MANAGEMENT UNITS (SWMUs)

VIA SOLID WASTE MANAGEMENT UNITS (SWMU) and HAZARDOUS WASTE
MANAGEMENT UNITS (HWMU)

VI.A.1 The Permittee shall comply with post-closure requirements for the SWMUs and HWMUs listed in Module VI, Table 1.

VI.A.2 The Permittee shall comply with the general requirements applicable to all sites requiring post closure care as found in Module VI. Site-specific requirements for each SWMU/HWMU are provided in each site-specific post closure plan.

VLB PERMIT CONDITIONS

VL.B.1 Failure to submit the information required by the conditions in Module VI or falsification of any submitted information is grounds for termination of this permit in accordance with Condition I.D.1.

VL.B.2 All plans, reports, notifications and other submissions to the Director of the Division of Waste Management and Radiation Control (Director) as required by the conditions in Module VI shall be signed and certified in accordance with Condition I.A.A.

VL.B.3 The Permittee shall submit two paper copies and one electronic copy of each plan, report, notification or other submissions, required Module VI to the Director by mail or hand delivery to the address specified in Condition I.D.D.

VL.B.4 All plans and schedules, as required by Module VI, upon written approval from the Director, shall be incorporated into Module VI. Any noncompliance with such approved plans and schedules shall be deemed noncompliance with this Permit.

VL.B.5 The Permittee can only receive extension(s) of the specified compliance schedule due date(s) for the submita(s) required by Module VI, upon written approval from the Director in accordance with Condition V.I.

VL.B.6 All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data and other supporting information gathered or generated during activities undertaken pursuant to Module VI shall be maintained at the Facility during the effective term of this Permit. The Permittee shall provide copies of reports, logs, etc., to the Director upon request.

VL.B.7 The Permittee shall provide seven-day advance notice of field activities associated with approved workplans. This notice may be provided by telephone; but shall be followed-up in writing within 72 hours.

VL.B.8 The Permittee shall inspect, monitor and maintain any landfill, caps, fences, signs, treatment systems or other items at the SWMUs/HWMUs listed in Table 1 and as specified in the post closure permit attachments in accordance with the conditions of this Permit.

VL.B.9 The Permittee shall give notice to the Director 60 days prior to a planned alteration to the closed HWMU or SWMU or permitted activity.

VLC MONITORING AND RECORDS

VLC.1 Monitoring and Records

VLC.1.a Samples and measurements taken for the purpose of monitoring shall be accurate and representative of the monitored activity. The method used to obtain representative samples shall be described in an approved Quality Assurance Project Plan (QAPP). The analysis of all samples, except chemical agents shall be conducted by State certified laboratories.

VLC.1.b The Permittee shall retain as part of the Operating Record all records or reports required by this Permit for the duration of the post-closure period. This period may be extended by request of the Director at any time and is automatically extended during the course of any unresolved enforcement action.

VLD RESERVED

VLE DOCUMENTS TO BE MAINTAINED AT FACILITY SITE

VLE.1 The Permittee shall maintain for the duration of the post-closure care period the following documents and amendments, revisions and modifications to these documents:

VLE.1.a Post-closure Permit and any amendments.

VLE.1.b Post-closure monitoring records, to include monitoring of environmental media and analytical results, any environmental media treatment system unit records and analytical results and records of the effectiveness of any environmental media treatment systems as required by this Permit.

VLE.1.c Certification of Closure for each SWMU/HWMU as required by Utah Admin. Code R315-265-115.

VLE.1.d Inspection forms and schedules as required by Utah Admin. Code R315-264-15(b)(2) and this Permit.

VLE.1.e Operating Records required by Utah Admin. Code R315-264-73 and this Permit.

VLE.1.f Copies of all required submittals.

VLE.1.g Copies of the Facility's Post-Closure Excavation Permit and any other related land use documents and requirements, including records showing removal of soils or construction at any HWMUs or SWMUs listed in Table 1.

VLE.2 The Permittee shall follow the Excavation Permit process as described in Form D. The Permittee shall use the Excavation Permit and ~~either~~ Form A or Form B to verify land use, compliance with institutional controls and management of environmental media at the SWMUs/HWMUs listed in Table-1.

VLF SWMUs and HWMUs SUBJECT TO POST-CLOSURE REQUIREMENTS

TABLE - 1				
Post Closure Permit SWMUs and HWMUs				
MODULE V1 ATTACHMENT NO.	SITE	TYPE OF CLOSURE	REQUIRED INSPECTION FORM	
			FORM NO.	FORM TYPE
1	SWMU 9	Industrial	A	Industrial Post Closure
2	SWMU 19	Industrial	A	Industrial Post Closure
3	SWMU 25	Industrial	A	Industrial Post Closure
4	SWMU 28	Industrial	A	Industrial Post Closure
5	SWMU 27	Industrial	A	Industrial Post Closure
6	SWMU 15	Industrial	A	Industrial Post Closure
2	SWMU 26	Landfill	B	Landfill Post Closure

* SWMU 19 is the former AOC 24 Building 1873 and Dry Well

VLF.1 SWMUs where site controls are not required for soils within 0 to 10 feet below ground surface (ft bgs) but other "special restrictions" are required are listed in Table 2. Special restrictions may include prevention of installation of drinking water wells, required groundwater monitoring, and/or notice of industrial levels of contamination in soils greater than 10 ft bgs and/or restricted use due to presence of Millions of Explosive Concern (MEC).

TABLE - 2		
Special Restrictions for Post Closure SWMUs/HWMUs		
SWMU/HWMU NUMBER	SWMU/HWMU DESCRIPTION	INSPECTIONS/RESTRICTIONS
SWMU 2	Discarded military munitions burial pit	• Groundwater monitoring shall be conducted in accordance with the recommendations outlined in the "Final Long term Monitoring of SWMU 2, Implementation of the Hydrologic Assessment and Recommendations Plan" March/April 2011.
SWMU 5	Building 600 foundation, drainage pond and ditch	• Soil at depths greater than 10 ft bgs may include hexavalent chromium at levels exceeding industrial risk levels.
SWMU 25	Open Burn Open Detonation (OB/OD) Treatment Area from Surface Stabilization	• The OB/OD treatment areas within SWMU 25 were certified closed under industrial closure. These areas are located within SWMU 25 and will be included in the SWMU 25 post closure plan.
SWMU 29	Immediate area bordering the former SWMU	• This area immediately outside the boundary of the former SWMU may

TABLE - 2		
Special Restrictions for Post Closure SWMU/HWMUs		
		contain buried debris and/or drums. The Permittee shall ensure that any intrusive activities include assembly avoidance to ensure protection of workers.

VI.G COMPLIANCE SCHEDULE

VI.G.1 The Permittee shall submit a post closure plan within 180 days after the Director approves the CMI Completion Report.

VI.H POST-CLOSURE MAINTENANCE AND MONITORING

VI.H.1 The Permittee shall inspect, maintain, monitor and track activities at the SWMUs listed in Table 1 throughout the post-closure care period in a manner that will ensure detection of a release of hazardous waste, hazardous waste constituents, leachate, contaminated runoff or hazardous waste decomposition products to the air, soil, groundwater, or surface water from the closed unit, and in a manner that will prevent unauthorized site use or unauthorized use of any excavated soil. The Permittee shall maintain any inspection, monitoring, security, treatment and other necessary equipment throughout the post-closure care period in a manner that will ensure detection of a release from the closed unit and minimize the possibility of fire, explosion, or any sudden or non-sudden release of hazardous waste constituents to air, soil, surface water or groundwater which could threaten human health or the environment.

VI.H.2 The Permittee shall ensure that installation of drinking water wells is prohibited at the SWMU/HWMUs without prior approval of the Director.

VI.H.3 The Permittee shall follow the existing Facility excavation permit coordination procedures as contained in Form D prior to initiating any intrusive activities at the SWMU/HWMU. Applications for excavation permits shall be documented using Form D, Excavation Permit.

VI.I SECURITY

VI.I.1 Specific security requirements for each SWMU/HWMU listed in Table 1 are presented in the post closure permit attachments.

VI.J GENERAL INSPECTION REQUIREMENTS

VI.J.1 The Permittee shall follow the inspection schedules as specified in the post closure permit attachments. All records of inspections and remedial actions shall be retained in the Operating Record throughout the post-closure care period.

VI.J.2 Inspections shall be documented on required forms as provided in Module VI and as indicated in the post closure permit attachments and as summarized in Table 3.

Table - 3 - General Site Inspection Checklists, TEAD-S Post-Closure Plans

TABLE - 3

Required Inspection Form(s)		
SWMU NUMBER	Type of Closure	Form Type
9	Risk-based, Industrial	Form A
19	Risk-based, Industrial	Form A
28	Risk-based, Industrial	Form A
33	Risk-based, Industrial	Form A
29	Risk-based, Industrial	Form A
43	Risk-based, Industrial	Form A
26	Landfill	Form B

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- VI.J.3 Upon discovering any deterioration or malfunction, the Permittee shall perform corrective action as required by Uwh Admin. Code R315-264-15(c). Corrective action shall be conducted as soon as practicable from the time the problem is discovered. If corrective action is extensive or will require more than 30 days to complete, the Permittee shall provide a corrective action schedule for approval by the Director.
- VI.J.4 If either the Director or the Permittee determines that any corrective action could endanger human health or the environment, the Permittee shall cease the activity until the problem has been corrected.
- VI.J.5 Records of inspections shall be kept at the Facility, as required by Uwh Admin. Code R315-264-15(g).
- VI.J.6 The Permittee shall inspect post-closure groundwater monitoring wells at the frequency specified in each site-specific post closure plan as specified below:
- VI.J.6.a Inspect for damage to the above ground casing of the well.
- VI.J.6.b Inspect for damage to cement apron and ensure that the annulus is properly sealed.
- VI.J.6.c Check for visible damage and any tampering to locks and monitoring well caps.
- VI.J.6.d Ensure that the wells are accessible and visible.
- VI.K. TRAINING REQUIREMENTS**
- VI.K.1 The Permittee shall comply with the personnel qualification, training, and training documentation requirements, where applicable, listed in this Permit. Additionally, inspectors of any post-closure care units shall be trained (documentation required), at a minimum, in the following:
- VI.K.1.a Attachment 4 (Contingency Plan).
- VI.K.1.b Site-specific Post-Closure Plans.
- VI.K.1.c General Post-Closure Site Inspection Checklists (Forms A and B)

VI.K.1.d Site-specific SWMU/HWMU Post-Closure Inspection Checklists (included in site-specific post-closure permit attachments).

VII. PREPAREDNESS AND PREVENTION

VII.L.1 Preparedness and Prevention measures, for each site listed in Table 1, shall be specified in the post-closure permit attachments, or in Attachment 4.(Contingency Plan), where applicable to each site. Any modifications of this provision shall be made in accordance with Condition I.D.3.

VIII. SAMPLING, ANALYTICAL AND QA/QC PROCEDURES

VIII.L.1 Analytical data obtained from samples collected for compliance with this Module shall be obtained using procedures specified in an approved QAPP.

IX. RECORDKEEPING AND REPORTING

IX.N.1 The Permittee shall submit reports and notifications as required by this Module and as specified in the post-closure permit attachments for each site to the Director documenting post-closure inspection and monitoring activities and results from analyses of samples. Copies of all Permit-related records will be maintained in the Operating Record.

X. POST-CLOSURE CARE

X.L.0.1 For each site listed in Table 1, the Permittee shall conduct all post-closure activities in accordance with the post-closure plans as specified in the post-closure attachments. Each post-closure plan shall include information and requirements to satisfy the requirements of Utah Admin. Code R315-101 through Utah Admin. Code R315-273 for closure of landfills, surface impoundments, storage areas, tanks and other units. Types of site inspections required for each SWMU are outlined in Table 3 and the corresponding post-closure inspection forms are provided as Form A of Module VI.

X.L.0.2 Unless specified in a schedule included in the site-specific post-closure attachment, the Permittee shall submit analytical results from all sampling activities required under Module VI within 180 days of receipt of the analytical results from the laboratory. All groundwater elevation data shall be submitted to the Director within 60 days of receipt of the analytical results from the laboratory. A report briefly describing analytical data quality shall be included with the results. If the Permittee cannot meet the 180-day requirement, the Permittee shall contact the Director and propose an alternate schedule for approval. The proposal shall include justification for not submitting the information within 180 days.

XI. GROUNDWATER

Reserved

XII. AREAS IMPACTED BY MERCUR OUTWASH

XII.Q.1 The Permittee shall ensure that areas potentially impacted by the Mercur Outwash, namely the eastern half and southeastern corner of the Facility (refer to Figure 1 of Module V) are evaluated in the excavation permit process prior to development or other intrusive work and

|
to ensure controls are in place to ensure adequate worker protection from potential exposure to metals in soil that have been impacted by the Mercer Outwash.

VLR. AREAS IMPACTED BY MEC

VLR.1. The Permittee shall ensure that areas potentially impacted by MEC from historical operations at the former HWMU 31 (refer to Figure 1) are evaluated in the excavation permit process prior to development or other intrusive work to ensure controls are in place to ensure adequate worker protection.

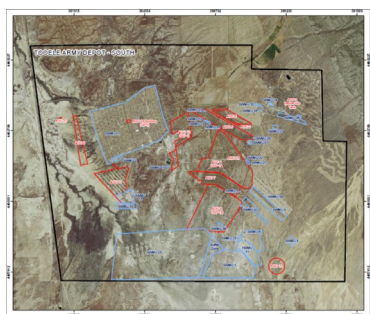


Figure 1. Area of highest probability for MEC from historical operations at the former HWMU 31.

FORM A
GENERAL POST-CLOSURE SITE INSPECTION CHECKLIST
Industrial Closure/Industrial Use Sites

Site: _____
Date: _____

1. List any site-specific inspection requirements outlined in the Site Post Closure Plan and any special tracking conditions in Module VI Table 2.

2. Inspect the site and surrounding land use. Does the area remain in industrial use?
☐ Yes
☐ No*

**If no, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

3. Were any dig permits issued for this site since the last inspection?

☐ Yes*

☐ No

**If yes, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

4. Are posted warning signs, security measures, and/or perimeter fencing and locks in good condition and in place?

☐ Yes

☐ No*

**If no, notify the TEAD-S Environmental Office to determine the appropriate course of action. If the fence is damaged, mark the area of fence needing repair.*

5. Is there any soil disturbance in the vicinity of the site? (This may also include conditions of roads up to site; significant potholes and/or erosion.)

☐ Yes*

☐ No

**If yes, verify any change to the site and describe excavation or other activities.*

Notify the TEAD-S Environmental Office to determine the appropriate course of action.

Comments: _____

6. Is there any orphan waste at the site?

☐ Yes*

☐ No

**If yes, notify the TEAD-S Environmental Office to determine the appropriate course of action.*

Comments: _____

7. Verify the security of Groundwater Monitoring Wells - (are caps intact, securely locked, etc.)

Comments: _____

Name of Inspector: _____

Company: _____

Signature of Inspector: _____

Time and Date of Inspection: _____ Site Location: _____

**FORM B – ~~RESERVED~~ FORM B – GENERAL POST-CLOSURE SITE INSPECTION
CHECKLIST
Landfill Sites**

Site: _____
Date: _____

1. List any site-specific inspection requirements outlined in the Site Post Closure Plan.

ATTENTION: Verbal notification (direct communication or voice mail) within 24-Hours **MUST** be provided to the TEAD-S Environmental Office on information concerning any non-compliance (for example: extreme erosion, burrowing into buried debris, or ponding on landfill cover footprint), which may endanger public drinking water supplies, human health, or the environment.

2. Purpose of Inspection:

a. Routine ☐ Annual

b. Contingency ☐ (Storm Event, Fire, Earthquake, etc.) circle one.

c. Other ☐ _____

3. Have the inspectors completed training as required by permit condition VI.K?

☐ Yes
☐ No

4. Are there open holes in the soil of the landfill cover footprint that may be caused by burrowing animals and potentially lead to a compromise of the integrity of the system that can not be unmarked during the site inspection?

☐ Yes *
☐ No

* If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.

Comments: _____

5. Are there noticeable depressions or ponding of surface water on the landfill cover footprint that could compromise the integrity of the landfill cover system?

☐ Yes *

☐ No

* If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.

Comments:

6. Are there large (more than two inches wide) cracks or rills in the soil cover that may lead to a compromise in the integrity of the cover system?

☐ Yes *

☐ No

* If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action. Corrective action may include placing a "watch area" on the area for future evaluation, filling in the eroded or cracked area, investigating the cause of erosion, and regrading slopes.

Comments:

7. Inspect the survey monuments. Are they intact and legible?

☐ Yes

☐ No *

* If no, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.

Comments:

8. Inspect the survey monuments. Is there evidence of erosion or subsidence in the vicinity of the monument (ponding, cracks, rills, or uneven terrain)?

☐ Yes *

☐ No

* If yes, coordinate with the TEAD-S Environmental Office to determine the appropriate course of action.

Comments:

☐ Yes *

☐ No

Comments:

☐ Yes *

☐ No

Comments

☐ Yes

☐ No *

Comments:

☐ Yes *

☐ No

Comments:

13. Inspect the access road leading to the site. Are there significant potholes and/or erosion preventing access to the site?

☐ Yes *

☐ No

** If yes, coordinate with the TEADS Environmental Office to determine the appropriate course of action.*

Comments: _____

14. Were there any problems obtaining access to the site?

☐ Yes

☐ No

Comments: _____

15. Were any orphan wastes found inside or nearby the site?

☐ Yes *

☐ No

** If yes, notify the TEADS Environmental Office immediately (within 24 hours) to determine appropriate measures for management of the waste.*

Comments: _____

16. Additional Notes (Sketches, time, temperature, wind direction, and other observations), attached additional sheets as needed.

Is a location map showing location of deficiencies and/or watch items attached? ☐ Yes ☐ No

Name of Inspector: _____
Company: _____
Signature of Inspector: _____
Date and Time of Inspection: _____ Site Location: _____

FORM C - RESERVED

**FORM D
EXCAVATION PERMIT COORDINATION**

This Excavation Permit form shall be used by the Facility contractor or Facility personnel prior to beginning any excavations.

I. Procedures:

- a. The Excavation Requester shall begin the process for an excavation permit as early in the development of the project as possible to assure the acceptability of the proposed work and site and to avoid complications from approval delay.
- b. The request will indicate any critical time constraints and be accompanied by three items:
 - 1) A detailed map of the area showing where the undertaking will occur.
 - 2) A larger scale small map or sketch showing dimensions and depth of the proposed excavation along with distances and orientations from local landmarks.
 - 3) Name, telephone number and email (if applicable of a point of contact designated by the Excavation Requester).
- c. These documents shall be forwarded to appropriate reviewers with suspense for comments.
- d. The reviewers will be provided two weeks to review the request documents. At the end of that time, a signed approval form or detailed explanation of the problems and issues will be due back to the requester.
- e. After notification of approval of the excavation permit, the excavation requestor will notify the blue stake teams of the projected start dates. A 48-hour advance notice is needed so that the blue staking can be in place prior to start of the excavation. The excavation requestor has the responsibility to mark the extent of the excavation and to protect the markings through blue stake procedures and excavation.
- f. An approved Excavation Permit will be valid for the period of the project as identified.
- g. An excavation permit for a new project within the limits of a previous metal sweep can be granted without an additional metal sweep if a site visit produces no indications of additional hazards having been introduced to the site.

Exemptions: The following are the only approved excavations that can be performed without an approved Excavation Permit.

- a. Removal of material from existing gravel or borrow pits, within the marked limits of a previously cleared Excavation Permit.
- b. Excavations within the marked limits of a previously cleared excavation permit are exempt from the requirement to obtain an additional metal sweep.

- c. Repairs to a broken underground utility line where the location is clearly indicated and no additional utilities have been placed over the line and no hazards have been introduced to the area since the construction of the line.

FORM D – TEADS EXCAVATION PERMIT

APPENDIX A

EXCAVATION PERMIT

(Proposed Agency is Engineering Services Division)
(TEAD-R 403-16)

PERMIT EFFECTIVE DATE FROM TO

EXCAVATION REQUEST BY PHONE

LOCATION OF EXCAVATION

PURPOSE OF EXCAVATION
EXCAVATOR IS RESPONSIBLE TO MAINTAIN UTILITY MARKINGS AND IS LIABLE FOR ANY DAMAGE CAUSED THROUGH THE FAILURE TO MAINTAIN MARKINGS.

BASED UPON DRAWINGS AVAILABLE, AND PERSONAL KNOWLEDGE OF THE AREA FOR WHICH I AM RESPONSIBLE, THE SITE IS FREE OF UNDERGROUND FACILITIES OR UTILITIES EXCEPT AS NOTED. IF YES IS CHECKED THE CONTRACTOR IS REQUIRED TO NOTIFY THE UNDERSIGNED 24 HOURS IN ADVANCE OF EXCAVATION.

NOTIFICATION REQUIRED	YES	NO
FACILITY SUPPORT DIVISION BLDG 502 (405) 833-2602	<input type="checkbox"/>	<input type="checkbox"/>
ELECTRICAL BLDG 502 (405) 833-2603	<input type="checkbox"/>	<input type="checkbox"/>
WATER BLDG 502 (405) 833-2603	<input type="checkbox"/>	<input type="checkbox"/>
TELEPHONE CONTRACTOR BLDG 19 (405) 833-3000/2000	<input type="checkbox"/>	<input type="checkbox"/>
ENVIRONMENTAL OFFICE BLDG 16 (405) 833-2101	<input type="checkbox"/>	<input type="checkbox"/>
SAFETY OFFICE BLDG 316 (405) 833-3888	<input type="checkbox"/>	<input type="checkbox"/>
FIRE DEPARTMENT BLDG 6 (405) 833-2015	<input type="checkbox"/>	<input type="checkbox"/>

BLUE STAKES Notification Required ☐ YES ☒ NO Confirmation Number

If "yes" is checked, please insert address and in the excavation area. In addition to notifying the required Government organizations listed above, the excavator is required to notify BLUE STAKES (201) 863-1075, and coordinate marking services by BLUE STAKES, and the Government in the excavation area. This permit is not valid if "yes" is checked and the confirmation number is missing.

ENGINEERING SERVICES DIVISION CHIEF OR CONTRACTING OFFICERS REPRESENTATIVE (COR) BLDG 801 OR FOR IN-HOUSE PROJECTS FACILITY SUPPORT DIVISION REPRESENTATIVE

SIGNATURE DATE

NOTE: THIS PERMIT IS TO BE COMPLETED AND ATTACHED TO THE WORK ORDER PRIOR TO THE WORK ORDER BEING ISSUED. AFTER HOUR EMERGENCY CALL (405) 833-3011 OR (405) 833-2015. EXCAVATOR MUST HAVE A VALID PERMIT IN POSSESSION BEFORE DURING EXCAVATION.

COMMENTS

**TOOELE ARMY DEPOT - SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 1

**SOLID WASTE MANAGEMENT UNIT (SWMU) 9
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DSHW	Division of Solid and Hazardous Waste
EO	Environmental Office
IMPA	Isopropyl Methylphosphonic Acid
MPA	Methylphosphonic Acid
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD	Tooele Army Depot
UAC	Utah Administrative Code

1.0 INTRODUCTION

The ~~two~~three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure that future land use is industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 9. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) § 264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 9, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 9 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI Attachment 1
UAC R315- 270-14 <u>3-2.5</u> (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.H)
UAC R315- 270-14 <u>3-2.5</u> (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 270-14 <u>3-2.5</u> (b)(12)	Training Requirements	Module VI (VI.J)
UAC R315- 270-14 <u>3-2.5</u> (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)
UAC R315- 270-14 <u>3-2.5</u> (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-14 3.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Attachment 1 (Section 6.2)
UAC R315- 270-14 3.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-14 3.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-14 3.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-14 3.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to TEAD-S
UAC R315- 270-14 3.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Attachment 1 (Section 10.0)
UAC R315- 270- 143.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
UAC R315- 270-14 3.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
UAC R315- 270-14 3.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
UAC R315- 270-14 3.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
UAC R315- 270-14 3.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
UAC R315- 270-14 3.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-14 3.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.
UAC R315- 270-14 3.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-14 3.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-14 3-2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 9, as required by UAC R315-~~270-14 3-2.5~~(b)(1).

2.1 SWMU 9 LOCATION AND HISTORY

SWMU 9 encompasses approximately 145 acres (USATHAMA, 1979). SWMU 9 includes the former open-storage portion of the Area 2 chemical munitions safeguarding area and the Old Area 2 southwest of Area 2. The SWMU also includes an area southeast of Old Area 2 that reportedly contained burn pits. SWMU 9 is no longer used for agent storage (Foster Wheeler, 1999a).

2.2 PAST OPERATIONS

This site was used for chemical munitions storage (GB, VX, and mustard containers). One-ton containers were stored on rail lines. Munitions were also stored in tin sheds in the area. The site was used for munitions storage from the 1960s to the early 1980s. Known minor mustard releases have occurred at this site, and other releases are probable. Burn pits have also been discovered in the area.

2.2.1 Area 2

Area 2 stored munitions containing mustard, nerve agents, chemical agent identification sets, and war gas identification sets. Area 2 consisted of 23 chemical munitions storage buildings and an open area where 1-ton containers of mustard, GB, and VX were stored on rails (Foster Wheeler, 1999a; Weston, 1991). The rails were placed in 1967 to hold canisters from Area 10. VX spray tanks were reportedly stored on ties between the buildings in Area 2, while the GB and mustard containers were stored on 10 pairs of rails south of the buildings in an area that was approximately 0.75 mile long. Open storage continued in Area 2 until 1974, when the containers were transferred back to Area 10 (Foster Wheeler, 1999a).

2.2.2 Old Area 2

Old Area 2, southwest of Area 2, stored M70 bombs, mustard, chemical agent identification sets, and a limited number of 1-ton containers of mustard and lewisite prior to 1967. Two to three sheds at the south end of Old Area 2 contained 1-ton containers of mustard and CG. Several of the mustard containers leaked onto the ground by the sheds. The locations of the leaks were decontaminated by treating the area with bleach and plowing the surface soil. Old Area 2 reportedly also contained burn pits in the southern portion of the site. Open storage continued in Old Area 2 until the mid-1980s (Foster Wheeler, 1999a).

A Corrective Measure Study (CMS) was conducted in 1996 to address the human health risks found in the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) (Foster Wheeler, 1999b). The CMS proposed that institutional controls would prevent residential use of land and shallow groundwater (Foster Wheeler, 1999b). The decision document accepts the CMS preferred alternative of institutional controls (Foster Wheeler, 1999c). The decision document has been submitted to the state and approved.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Pre-RFI	Phase I RFI	Phase II RFI	CMS	Decision Document	Corrective Measure Implementation (CMI)
<ul style="list-style-type: none"> USATHAMA 1979: Report 141; NUS 1987: Interim RFI; USATHAMA 1988, Performance Assessment/Site Investigation 	EBASCO 1993	Foster Wheeler 1999	Foster Wheeler 1999	Foster Wheeler 1999	North Wind 2004

2.4 CLOSURE ACTIVITIES

The 1999 foster Wheeler CMS established the following controls:

1. Site control – fencing and posting of warning signs to restrict entry and activity at the site is complete.
2. The TEAD-S Excavation Permit process will be enforced.
3. Land use restriction (deed restriction) – restrictions to prevent shallow groundwater use and future development has not been implemented.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Soil samples collected during the RFI revealed the presence of arsenic and low concentrations of two agent breakdown products (ABPs): methylphosphonic acid (MPA) and isopropyl methylphosphonic acid (IMPA).

Groundwater samples collected during 1993 indicated the presence of methylene chloride and metals contamination. The presence of methylene chloride is likely due to contamination in the laboratory.

The results of the human health risk assessment indicate residential risk levels were not met but that there were negligible potential health risks to industrial workers associated with exposure to SWMU 9 soils. There is no significant ecological risk at SWMU 9.

2.6 SURFACE WATER AND GROUNDWATER

There are no defined surface water features within or near SWMU 9. The general direction of surface water drainage in the area surrounding this unit is southerly toward the low portion of Rush Valley.

Groundwater quality at SWMU 9 is primarily defined as Class IA, with the western portion defined as Class II. Groundwater contours show a slight “divide” through the center of the site; groundwater within the southwest half of the SWMU flow to the south-southwest at a gradient of 0.0133 feet/foot, while groundwater within the northeastern half of the SWMU flows to the south-southeast at a gradient of 0.0100 feet/foot.

Groundwater in the vicinity is not currently used for drinking water, irrigation, or other purposes. The nearest potable groundwater wells (2) are located approximately three (3) miles northwest (upgradient) of SWMU 9, inside the TEAD-S boundary.

Groundwater monitoring is not required for SWMU 9 (Parsons, 2012).

2.7 CLOSURE NOTIFICATIONS

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-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Security features are to be maintained and inspected throughout the post-closure care period.

The following security conditions are applicable to SWMU 9:

Signs are present warning against unauthorized entry; this SWMU is fenced, contact with contamination is not expected during normal TEAD-S operations.

The security features (i.e., posted warning signs) will be inspected and the frequency of inspection is stated in Module VI, Condition 2.2. TEAD-S shall report to the Division of Solid and Hazardous Waste (DSHW) any decrease of TEAD-S Base Security, which could affect the security conditions as applicable to SWMU 9.

Damaged or missing security features shall be noted in the inspection checklist. Repairs shall be completed as soon as practicable after the problem is discovered, in compliance with R315-~~8-2.6264-15~~ (c).

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 9 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO). Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 9 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Module VI, Form A) shall be forwarded to the TEAD-S EO. The Point-of-Contact for the TEAD-S EO is as follows:

Environmental Program Manager
TEAD-S Environmental Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

The conditions at SWMU 9 are such that the impact to human health and the environment is 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 condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-~~3-3.1~~270-30(l) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 9, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2012, for the duration of the Post-Closure Monitoring Period.

3.6.1 *Non-Compliance Reporting:*

- 24-hour notification for information concerning the noncompliance, which may endanger public drinking water supplies or human health or the environment.
- Five - (5) 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 for information concerning the noncompliance, which does not endanger human health or the environment.
- Written notification for information concerning the non-compliance, which does not endanger human health or the environment, will be submitted when the Biennial Post Closure Reports are submitted.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Deseret Chemical Depot 2012- Evaluation of Potential for Migration of Contaminants to Groundwater at Solid Waste Management Unit (SWMU) 9. July.

Division of Solid and Hazardous Waste (DSHW), ~~2001~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

EBASCO, 1993. *Tooele Army Depot – South Area Suspected Releases Unit RCRA Facility Investigation – Phase I Revised Final Report*. July

Foster Wheeler 1999. *Deseret Chemical Depot Suspected Releases Units RCRA Facility Investigation, Phase II Group 2 SWMUs (SWMUs 3, 5, 8, 9, 30, and 31)*.

Foster Wheeler, 1999. *Deseret Chemical Depot Suspected Releases Units RCRA Corrective Measures, Phase II Group 2 SWMUs (SWMUs 3, 5, 8, 9, 30, and 31)*.

North Wind 2004 - Corrective Measure Implementation

NUS Corporation (NUS), 1987. *Interim RCRA Facility Assessment*, Tooele Army Depot South Area.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*, Deseret Chemical Depot. July.

United States Army Toxics and Hazardous Materials Agency (USATHAMA), 1979. *Installation Assessment of Tooele Army Depot. Report No. 141*, Aberdeen Proving Ground.

USATHAMA, 1988. *Performance Assessment/Site Investigation*, Tooele Army Depot South Area.

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 2

**SOLID WASTE MANAGEMENT UNIT (SWMU) 19
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CMS	Corrective Measures Study
EO	Environmental Office
HWMU	Hazardous Waste Management Unit
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD	Tooele Army Depot
UAC	Utah Administrative Code

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 19. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) § 264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-~~3-2.19-270-28~~, the PCP is required to include specific information for a closed facility. As applicable to SWMU 19, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 19 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI Attachment 1
UAC R315- <u>270-14</u> 3-2.5 (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.H)
UAC R315- <u>270-14</u> 3-2.5 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- <u>270-14</u> 3-2.5 (b)(12)	Training Requirements	Module VI (VI.J)
UAC R315- <u>270-14</u> 3-2.5 (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)
UAC R315- <u>270-14</u> 3-2.5 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-14 3.2.5 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Attachment 1 (Section 6.2)
UAC R315- 270-14 3.2.5 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 270-14 3.2.5 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 270-14 3.2.5 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 270-14 3.2.5 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to TEAD-S
UAC R315- 270-14 3.2.5 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
UAC R315- 270-14 3.2.5 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
UAC R315- 270-14 3.2.5 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
UAC R315- 270-14 3.2.5 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
UAC R315- 270-14 3.2.5 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
UAC R315- 270-14 3.2.5 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
UAC R315- 270-14 3.2.5 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 270-14 3.2.5 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Not required.
UAC R315- 270-14 3.2.5 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 270-14 3.2.5 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 270-14 3-2.5 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 270-14 3-2.5 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 19, as required by UAC R315-~~270-14 3-2.5~~(b)(1).

2.1 SWMU 19 LOCATION AND HISTORY

SWMU 19 is also known as the Building 533 Foundation (Empty Drum Storage Area) and consists of the concrete foundation of the former Building 533. Site features include an adjacent liquid and dry sumps in the concrete floor/foundation, abandoned railroad tracks, and a septic tank. Building 533 was demolished by the Army in 1992.

SWMU 19 was investigated under a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) in 1992 (Ebasco). Volatile organic compounds (VOCs) were identified in sufficient concentrations to warrant a Phase II RFI. The Phase II RFI was conducted in 1994, 1995, and 1998 by SAIC that included soil gas surveys, sampling of the septic tanks and groundwater sampling. The results of the Phase II RFI were consistent with the results of the Phase I RFI showing soil gas with fuel-related VOCs and chlorinated solvents. A Corrective Measure Study (CMS) was conducted by URS-Dames and Moore in 2002; the CMS only evaluated site management measures. An additional soil gas survey was conducted in 2011 (Parsons) with results showing exceedences for trichloroethylene and chloroform. Follow up work was conducted in 2013 (Parsons) that consisted of soil borings and installation and sampling of a new groundwater well. The results of the 2013 Parsons work demonstrated the site met industrial closure.

2.2 PAST OPERATIONS

The Building 533 was originally used for railroad car maintenance and later for storage of empty drums and other materials. The SWMU 19 area is currently used for storage of recyclable materials.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Phase I RFI	Phase II RFI	Phase II-A RFI	CMS	Soil Gas	RFI Addendum
Ebasco (1995)	SAIC (2001)	SAIC (2001)	URS (2002)	Parsons (2011)	Parsons (2014)

2.4 CLOSURE ACTIVITIES

The 2014 Phase II RFI Addendum (Parsons, 2014) established the following controls:

1. The TEAD-S Excavation Permit process will be enforced.
2. Industrial closure with no groundwater monitoring.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The results of the risk assessment from the Phase II RFI Addendum show that the site did not meet risk-based levels for residential receptors but that risk levels are met for industrial workers. The primary pathway driving risk is inhalation of vapors migrating from soil to indoor air. No pathways were identified as complete for ecological receptors due to the industrial setting of the area.

2.6 SURFACE WATER AND GROUNDWATER

There is no surface water at this site. Groundwater sampling showed no chemicals were detected in the new source area well (Parsons, 2014). A thick clay unit (greater than 120 feet) also exists between the sump sources area and the first water-bearing zone, preventing migration of VOCs detected in subsurface soils down to groundwater. No groundwater monitoring was proposed for this site.

2.7 CLOSURE NOTIFICATIONS

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-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the human health risk assessment, only management measures are required at SWMU 19.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 19 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO); removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process. Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 19 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Form A of Module V) shall be forwarded to the TEAD-S EO. The Point-of-Contact for the TEAD-S EO is as follows:

Environmental Programs Manager
TEAD-S Environmental Program Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

The conditions at SWMU 19 are such that the impact to human health and the environment is 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 condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-~~3-3.1~~270-30(l) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 19, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due.

3.6.1 *Non-Compliance Reporting:*

- 24-hour notification for information concerning the noncompliance, which may endanger public drinking water supplies or human health or the environment.
- Five - (5) 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 for information concerning the noncompliance, which does not endanger human health or the environment.
- Written notification for information concerning the non-compliance, which does not endanger human health or the environment, will be submitted when the Biennial Post Closure Reports are submitted.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Division of Solid and Hazardous Waste (DSHW), ~~2004~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Ebasco, 1993. *RCRA Facility Investigation – Phase I Suspected Release Units, Revised Final*. Deseret Chemical Depot, Stockton, Utah. July.

Parsons, 2001. *Final Completion report for Soil Gas Survey at SWMU 19*. August.

Parsons, 2014. *Final RCRA Facility Investigation Addendum Report for Solid Waste Management Unit 19*. January.

SAIC, 2011. *Final Phase II RCRA RFI Report, Group 3 Suspected Releases SWMUs, Volume 1*. August.

URS, 2002. *Final Corrective Measures Study SWMU 19 – Building 533 Foundations (Empty Drum Storage Area) group 3 Suspected Release SWMUs.* July.

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 3

**SOLID WASTE MANAGEMENT UNIT (SWMU) 33
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CMS	Corrective Measures Study
EO	Environmental Office
HWMU	Hazardous Waste Management Unit
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
XRF	X-ray fluorescence

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 33. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) § 264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-~~3-2.19~~270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 33, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 33 Post-Closure Information Requirements
Under UAC R315-~~3-2.5~~270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2.5 <u>270-14</u> (b)(1)	General Description of the Facility	Section 2 and Module VI Attachment 1
UAC R315- 3-2.5 <u>270-14</u> (b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.H)
UAC R315- 3-2.5 <u>270-14</u> (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315- 3-2.5 <u>270-14</u> (b)(12)	Training Requirements	Module VI (VI.J)
UAC R315- 3-2.5 <u>270-14</u> (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)
UAC R315- 3-2.5 <u>270-14</u> (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3.2.5270-14 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Attachment 1 (Section 6.2)
UAC R315- 3.2.5270-14 (b)(14)	Closure Certification and Notification	Section 2.7
UAC R315- 3.2.5270-14 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315- 3.2.5270-14 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315- 3.2.5270-14 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
UAC R315- 3.2.5270-14 (b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to DCD
UAC R315- 3.2.5270-14 (b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Attachment 1 (Section 10.0)
UAC R315- 3.2.5270-14 (b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
UAC R315- 3.2.5270-14 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
UAC R315- 3.2.5270-14 (b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Module VI Attachment 1 (Section 10.0)
UAC R315- 3.2.5270-14 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
UAC R315- 3.2.5270-14 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
UAC R315- 3.2.5270-14 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
UAC R315- 3.2.5270-14 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
UAC R315- 3.2.5270-14 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Not required.
UAC R315- 3.2.5270-14 (c)(2)	Groundwater Monitoring Information -- Identification of uppermost aquifer	Not required.
UAC R315- 3.2.5270-14 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Not required.
UAC R315- 3.2.5270-14 (c)(4)	Groundwater Monitoring Information - Extent of plume	Not required.

Regulation Citation	Requirement Description	Requirement Location
UAC R315- 3-2-5270-14 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Not required.
UAC R315- 3-2-5270-14 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Not required.
UAC R315- 3-2-5270-14 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Not required.
UAC R315- 3-2-5270-14 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Not required.
UAC R315- 3-2-5270-14 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 33, as required by UAC R315-~~3-2-5270-14~~(b)(1).

2.1 SWMU 33 LOCATION AND HISTORY

SWMU 33 is associated with Building 536 and is located in the north-central part of TEAD-S. Building 536 was the old CAMDS salt storage building. This building has been investigated as a Hazardous Waste Management Unit (HWMU) and closure documentation will be provided separately. The land outside of Building 536 is associated with the SWMU.

SWMU 33 was investigated under a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) with results provided in the Interim Final RFI report (SAIC, 2001). Under the RFI, the outside areas consisted of SWMU 33B and SWMU 33C. Area B is considered all of the soil surrounding Building 536 and extending north/northeast to Blume Street. Area C was identified as a drainage swale to the southeast of Building 536. The RFI risk assessment concluded that SWMUs 33B and 33C met industrial risk and could be closed with controls.

2.2 PAST OPERATIONS

The Building 536 exterior site is characterized by unpaved soil covered with sparse vegetation, including grasses, weeds, and rabbit brush. It is relatively flat, but slopes very gradually from the northeast to the southwest. According to the Phase II RFI Report (SAIC, 2001), no materials are stored at the Building 536 Exterior Site.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Phase II RFI	Phase IIA RFI	Phase IIB RFI	CMS	Decision Document	Corrective Measure Implementation (CMI)
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SAIC 1994 to 1995 (SAIC, 2001)	SAIC 1998 to 1999 (SAIC, 2001)	SAIC 2000 (SAIC, 2001)	URS, 2002	URS, 2002	DCD, 2013
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2.4 CLOSURE ACTIVITIES

The 2002 URS CMS established the following controls:

1. The DCD Excavation Permit process will be enforced.
2. Land use restriction (deed restriction) – restrictions to prevent shallow groundwater use and future development has not been implemented.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

A re-evaluation of SWMU 33B and C was conducted in 2013 in conjunction with the State of Utah. Metals were evaluated using a handheld X-ray fluorescence (XRF) detector. The results of the XRF survey confirmed that both areas meet criteria for industrial closure as originally presented in the Phase II RFI.

However, the soil pile outside the building is an isolated hot spot. In order to ensure overall protection of future workers at this area, TEAD-S recommends that when contracting and funding become available, this soil pile be removed and disposed of at an appropriate facility. As it is unclear when this action may occur, TEAD-S is restricting closure of SWMU 33 to industrial use with special control for the soil pile.

2.6 SURFACE WATER AND GROUNDWATER

Groundwater monitoring data was not collected at SWMU 33. The RFI included a chemical transport model to determine if the contaminants identified in the SWMU 33 soil could potentially reach the groundwater table. The model did not find any contaminants that could affect groundwater and did not include a quantitative risk assessment for groundwater at SWMU 33 as a consequence.

2.7 CLOSURE NOTIFICATIONS

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-~~7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the Human Health Risk Assessment, only management measures are required at SWMU 33.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 33 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO); removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process. Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 33 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Form A of Module V) shall be forwarded to the TEAD-S EO. The Point-of-Contact for the TEAD-S EO is as follows:

Environmental Programs Manager
TEAD-S Environmental Program Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

The conditions at SWMU 33 are such that the impact to human health and the environment is 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 condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-~~3-3-1270-30~~(1) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 33, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due.

3.6.1 *Non-Compliance Reporting:*

- 24-hour notification for information concerning the noncompliance, which may endanger public drinking water supplies or human health or the environment.
- Five - (5) 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 for information concerning the noncompliance, which does not endanger human health or the environment.
- Written notification for information concerning the non-compliance, which does not endanger human health or the environment, will be submitted when the Biennial Post Closure Reports are submitted.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Division of Solid and Hazardous Waste (DSHW), ~~2004~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Division of Solid and Hazardous Waste (DSHW), 2001. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Ebasco, 1993. *RCRA Facility Investigation – Phase I Suspected Release Units, Revised Final*. Deseret Chemical Depot, Stockton, Utah. July.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*. July.

SAIC, 2001. *Final Phase II RCRA RFI Report, Group 3 Suspected Releases SWMUs, Volume 1*. August.

URS, 2002. *Final Corrective Measures Study SWMU 19 – Building 533 Foundations (Empty Drum Storage Area) group 3 Suspected Release SWMUs*. July.

Deseret Chemical Depot, 2013. *Final Evaluation of Solid Waste Management Unit 33 to Support Closure, Tooele Army Depot South Area*. July 2013

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 6

**SOLID WASTE MANAGEMENT UNIT (SWMU) 13
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CAMDS	Chemical Agent Munitions Disposal System
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
EO	Environmental Office
LNAPL	Light Non-aqueous Phase Liquid
LTM	Long Term Monitoring
OM&M	Operations Monitoring and Maintenance
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

The four objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at Solid Waste Management Unit (SWMU) 13; 3) to ensure industrial use only; and 4) to ensure any buildings are constructed to prevent exposure via the vapor intrusion pathway. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 13. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) § 264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 13, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

**Table 1: Summary of SWMU 13 Post-Closure Information Requirements
Under UAC R315-270-14**

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(1)	General Description of the Facility	Section 2 and Module VI Attachment 1
UAC R315-270-14(b)(4)	Description of Security Procedures	Section 2.8 and Module VI (VI.H)
UAC R315-270-14(b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
UAC R315-270-14(b)(12)	Training Requirements	Module VI (VI.J)
UAC R315-270-14(b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)
UAC R315-270-14(b)(11)(iii-v)	Facility Location Information - 100- year floodplain	Module VI Attachment 1 (Section 6.2)
UAC R315-270-14(b)(14)	Closure Certification and Notification	Section 2.7
UAC R315-270-14(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
UAC R315-270-14(b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(ii)	Topographic Map - 100-year floodplain area	Not applicable to DCD
UAC R315-270-14(b)(19)(iii)	Topographic Map - Surface waters including intermittent streams	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
UAC R315-270-14(b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
UAC R315-270-14(b)(19)(vi)	Topographic Map - Orientation of map, North arrow	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
UAC R315-270-14(b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
UAC R315-270-14(b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
UAC R315-270-14(b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
UAC R315-270-14(c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Final OM&M Report (Plexus, 2019)

Regulation Citation	Requirement Description	Requirement Location
UAC R315-270-14(c)(4)	Groundwater Monitoring Information - Extent of plume	Final OM&M Report (Plexus, 2019)
UAC R315-270-14(c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(iii)	Groundwater Monitoring Information - Background values	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan
UAC R315-270-14(c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 13, as required by UAC R315-270-14(b)(1).

2.1 SWMU 13 LOCATION AND HISTORY

SWMU 13 is located within the southwestern quadrant of TEAD-S. It includes the former Chemical Agent Munitions Disposal System (CAMDS) within a ten-acre fenced area. The CAMDS facility operated from 1979 to 2005 to develop and demonstrate methods for chemical munitions handling, demilitarizing chemical munitions, waste incineration, and treating wastes from the demilitarization process. When operational, CAMDS consisted of incinerators, munitions handling areas, waste handling areas, chemical storage areas, hazardous waste storage areas, laboratories, control rooms, maintenance facilities, and support buildings (Rust 1997, URS 2002, Parsons 2013a).

Upon completion of the CAMDS mission in 2005, operations ceased, the facility was decommissioned and all facilities were demolished. The closure of CAMDS has been approved by the Utah DWMRC with respect to past chemical releases (URS 2012), with the exception of the remnants of a historical fuel spill and minor releases of chlorinated solvents. The historic fuel spill was the result of a leak in an

underground diesel fuel line that occurred sometime between 1980 and 1985 in the vicinity of three aboveground storage tanks (ASTs) near the western perimeter of CAMDS. The leak went undetected for an unknown period of time and up to 38,000 gallons of fuel may have been released (Rust 1997). As part of the closure verification, URS (2012) collected soil and sump-water samples that were analyzed for metals, explosives, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), chemical agents, and agent breakdown products (ABPs) based on the history of individual facilities and their potential for contamination.

2.2 PAST OPERATIONS

SWMU 13 is characterized by former building cement pads and unpaved soil covered with sparse vegetation, including grasses, weeds, and rabbit brush. It is relatively flat but slopes very gradually from the northeast to the southwest. The site is a result of a long-term fuel oil leak from below ground storage tanks, which have been removed.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Several investigations and corrective measure studies of SWMU 13 have occurred over the past several years to include:

- Installation Assessment (USATHAMA 1979),
- Exploratory Survey (ErTech, 1992),
- Installation Environmental Assessment (Ebasco, 1993),
- Preliminary Assessment/Site Investigation (EA, 1988),
- Resource Conservation and Recovery Act (RCRA) Phase I RCRA Facility Investigation (RFI) (Donohue and Associates, 1990),
- Remedial Investigation Report (Weston, 1991),
- RCRA Phase II RFI (Rust, 1997),
- Decision Document (URS, 2001),
- Corrective Measure Study (URS/Dames and Moore, 2002),
- Product Thickness Monitoring (SC Environmental, 2009),
- CAMDS Closure Verification Sampling Report (URS, 2012),
- Base-wide groundwater monitoring (Klienfelder 1999 and 2006 and Jacobs, 2011),
- RCRA Data Gap Investigation (Parsons 2014),
- Corrective Measure Study (CMS) and Decision Document (Parsons, 2016),
- Corrective Measure Implementation (CMI) Plan (Plexus, 2017), and
- Operation, Maintenance and Monitoring (OM&M) Plan (Plexus, 2018).

The implemented corrective measure remedy at SWMU 13, consists of the following:

- Installation of extraction trenches to recover light non-aqueous phase liquid (LNAPL),
- Monitoring of petroleum constituents in groundwater and soil gas,
- Groundwater use restrictions,
- Excavation restrictions,
- Land use restrictions, and
- Long-term monitoring.

The system consists of three LNAPL recovery trenches, 14 sumps, eight skimmer pumps, and eight 55-gallon drum recovery systems and was installed in 2017/2018 in accordance with the CMS

Implementation Work Plan (Plexus, 2017). A product recovery system prove-out and a baseline OM&M evaluation were also completed in 2018.

2.4 CLOSURE ACTIVITIES

Due to technical inefficiency of the implemented system, TEAD-S requested a Technical Impracticability (TI) variance, proposing a shutdown of the existing system and an alternative remediation strategy consisting of long-term monitoring (LTM) and land use controls. LTM will consist of horizontal and vertical plume monitoring and updating the potentiometric surface maps. The TI variance was approved by the State (TEAD, 2019)

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

The protection of human health and the environment will be ensured by site-specific measures outlined below, rather than by achieving the Utah criteria for groundwater or soil vapor. In addition, to ensure protection of human health and the environment, the following land use controls are required:

- Industrial use only.
- Limitation on buildings. The RFI concluded that the vapor intrusion pathway was complete and that it was assumed a priori that adverse risks were present from the vapor intrusion pathway. Any construction of buildings near the footprint of SWMU 13 and near the groundwater plume associated with SWMU 13 will require adequately ventilation for VOCs and periodic testing.
- Dig permit process. Intrusive activities should be limited to near ground surface, to prevent contact with any LNAPL present in shallow groundwater.

2.6 SURFACE WATER AND GROUNDWATER

Groundwater at TEAD-S is part of the regional flow system within Rush Valley. The groundwater underlying TEAD-S is recharged by intermittent streams and subsurface flow coming from the Oquirrh Mountains northeast of the facility. Groundwater flow at TEAD-S is influenced by the presence of a notable groundwater divide that crosses the facility from the northeast to the southwest.

North of this divide, groundwater flow is generally to the west toward discharge points near the center of Rush Valley. South of the divide, groundwater is directed southeastward toward Cedar Valley. Shallow groundwater at TEAD-S generally occurs under unconfined conditions, although semi-confined and confined conditions exist in localized areas. Depth to groundwater beneath TEAD-S ranges from greater than 200 feet bgs at sites closer to the recharge areas in the northeast, to less than 10 feet bgs near discharge areas located along the TEAD-S western boundary (Parsons, 2017).

SWMU 13 lies on the south side of the regional groundwater divide and groundwater flows to the south-southeast. The horizontal groundwater gradient across SWMU 13 is measured by comparison of groundwater elevations in shallow wells across the site. Historically, from just outside the upgradient area where the diesel product is present at monitoring well S-26-88 to the downgradient south side at monitoring well S-30-88 there is an elevation difference of 1.3 feet across a distance of 650 feet. This equates to a slight horizontal gradient of 0.001 feet per foot or about five feet per mile. The slight horizontal gradient is further confirmed by the site-wide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report, which shows a groundwater high and large, flat area beneath SWMU 13 (Parsons, 2017).

Shallow groundwater conditions were further investigated beneath SWMU 13 with the drilling, installation and sampling of monitoring well S-13-CAM-DW1. The well is sited at the former location of the diesel fuel storage tanks that leaked and released the diesel fuel and is paired with S-CAM-2, where residual diesel fuel remains as an LNAPL on top of the water table. The location was selected to be representative of the area where impacts from the diesel fuel are the greatest.

An evaluation of the boring log and the CPT data for S13-CAM-DW1 finds fine-grained soils that are a mixture of clays, silts and fine sands to a depth of 54.8-feet bgs, where a silty gravel was encountered. This coarser layer was found to be about two-feet in thickness and was the interval selected to be screened. According to Freeze and Cherry (1979) horizontal hydraulic conductivity in the type of soil between the shallow groundwater and the coarser layer is low and typically ranges from 1×10^{-4} to 1×10^{-5} cm/sec. Additionally Freeze and Cherry also state that in layered sediments, the vertical hydraulic conductivity can be up to 10-times less than the horizontal value.

The horizontal groundwater gradient across SWMU 13 is measured by comparison of groundwater elevations in shallow wells across the site. From just outside of upgradient area of where the diesel LNAPL is present at monitoring well S-25-88 to the South side at monitoring well S-30-88 there is an elevation difference of 0.5 feet across a distance of 550 feet. This equates to a slight horizontal gradient of .001 feet per foot or about 5 feet per mile. The lack of a significant horizontal gradient across SWMU 13 is confirmed by the sitewide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report (Figure 2.6, Parsons, 2013), that shows a groundwater high and large flat area beneath SWMU 13.

The vertical gradient beneath SWMU 13 is measured as the difference in groundwater elevation heads between paired wells S-CAM-2 and S13-CAM-DW1. Prior to determining the vertical gradient, the water level for S-CAM-2 was corrected to account for the different densities of the groundwater and free product layer. The water level was corrected as described in Appendix I of the Parsons (2014) "*SWMU 13 CMS Data Gap Work Plan and SWMU 30 Phase II RFI Addendum Work Plan*," and Exhibits III.9 and III.10 of the USEPA (1996) guidance document "*How to Effectively Recover Free Product at Leaking Underground Storage Tank Sites*." Output details from the vertical gradient calculator (USERA 2016), show a slight downward gradient of 0.008 feet per foot was calculated. The vertical gradient was re-evaluated using the 2018 data (Plexus, 2019). A downward vertical gradient of less than 0.01 was calculated for the selected shallow/deep well pair by the USEPA vertical gradient calculator. Although a downward, vertical gradient is present, the 40-foot clay layer restricts most of the flow to the higher K units in the deeper zone.

As a general indicator of groundwater quality, total dissolved solids (TDS) was measured in samples from the paired wells. TDS in the shallow well is approximately 2,800 mg/L while approximately 17,000 mg/L was found in the deeper well. This difference suggests groundwater quality decreases with depth beneath SWMU 13. This difference further indicates a lack of vertical groundwater communication or movement between the intervals screened by these two wells.

The combination of fine-grained soils with low hydraulic conductivity and the lack of both horizontal or vertical gradients to produce a driving force combine to minimize potential groundwater movement beneath SWMU 13. A lack of vertical groundwater movement is confirmed by the change in groundwater quality between the screened intervals in the paired wells. Trace concentrations of several chemical constituents detected in Monitoring well S13- CAM-DW1 are believed present as a result of more than 30-years of chemical dispersion beneath the area where the diesel fuel was spilled rather than a result of

groundwater movement. The minimal change in groundwater elevations indicate little recharge is occurring to the groundwater underlying the installation and that there is not much connection with the ground surface or other groundwater recharge sources. For SWMU 13, hydrographs (Parsons, 2013) generated using data from 1999 through 2012 demonstrate the minimal variation of groundwater levels with differences due to seasonal fluctuations.

2.7 CLOSURE NOTIFICATIONS

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 R315-264-110 through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the Human Health Risk Assessment, management measures to include the dig permit process along with limitations to industrial use and limitations on buildings are required at SWMU 13.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 13 post closure care is in accordance with the TEAD-S RCRA part B Permit. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the TEAD-S Environmental Office (EO); removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process. Soil disturbance at this site must be coordinated through the TEAD-S EO.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 13 site shall be conducted annually by November 1st to ensure the site remains under industrial use and to ensure that the TEAD-S Excavation Permit process has been followed. 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 areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO. At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary; and
2. There is no evidence of soil disturbance.

At a minimum, the site inspector should have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Form A of Module V) shall be forwarded to the TEAD-S EO. The Point-of-Contact for the TEAD-S EO is as follows:

Environmental Programs Manager
TEAD-S Environmental Program Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by TEAD-S. 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 will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

The existing conditions at SWMU 13 are such that the impact to human health and the environment is 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 condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-270-30(l) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 13, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Report Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due.

3.6.1 *Non-Compliance Reporting:*

- 24-hour notification for information concerning the noncompliance, which may endanger public drinking water supplies or human health or the environment.
- Five - (5) 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 for information concerning the noncompliance, which does not endanger human health or the environment.

- Written notification for information concerning the non-compliance, which does not endanger human health or the environment, will be submitted when the Biennial Post Closure Reports are submitted.

3.6.2 *Anticipated Non-Compliance:*

- 30 days' advance notice of any change which may result in noncompliance

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

State of Connecticut Department of Energy and Environmental Protection (CT DEEP), 2014. *Draft Guidance for Applying Technical Impracticability of Groundwater Remediation Variance Pursuant to the Remediation Standard Regulations*.

https://www.ct.gov/deep/lib/deep/site_clean_up/remediation_regulations/ti_guidancedraft_2-20-14.pdf

Deseret Chemical Depot (DCD), 2009. *Revised Integrated Natural Resources Management Plan for Deseret Chemical Depot*.

Division of Solid and Hazardous Waste (DSHW), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Freeze, R.A., and J.A. Cherry, 1979. *Groundwater*. New jersey: Prentice Hall Inc. Englewood Cliffs, 604 p.

Parsons, 2013. *Final Hydrogeological Assessment and Recommendations Report*. July.

Parsons, 2016. Solid Waste Management Unit 13 Corrective Measures Study Work Plan, Report and Statement of Basis, Tooele Army Depot South Area. July.

Parsons, 2017a. Corrective Measures Implementation Plan for Solid Waste Management Unit 13, Tooele Army Depot South Area. March.

Parsons, 2017b. Final Groundwater Management Plan, Tooele Army Depot South Area. November.

Parsons, 2018. Corrective Measures Implementation Report for Solid Waste Management Unit 13, Tooele Army Depot South Area. May.

Plexus Scientific (Plexus), 2019. Final Operation, Maintenance, and Monitoring Report (OM&M) for Solid Waste Management Unit 13, Tooele Army Depot South Area. May

Tooele Army Depot (TEAD), 2019. Request for an Alternative Remedy Strategy at Solid Waste Management Unit 13 Tooele Army Depot South Area. June

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 7

**SOLID WASTE MANAGEMENT UNIT (SWMU) 26
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
CAMDS	Chemical Agent Munitions Disposal System
CFR	Code of Federal Regulations
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
EO	Environmental Office
LNAPL	Light Non-aqueous Phase Liquid
LTM	Long Term Monitoring
OM&M	Operations Monitoring and Maintenance
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semi-volatile Organic Compounds
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solids
TEAD	Tooele Army Depot
UAC	Utah Administrative Code
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Post-Closure Permit Conditions (Module VI) approved by the State of Utah with respect to post-closure inspection requirements; 2) prevent exposure to buried landfill waste left in place at Solid Waste Management Unit (SWMU 26); and 3) prevent further degradation of groundwater. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 26. Post-closure requirements will continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary [40 Code of Federal Regulations (CFR) § 264.117(a)(2)].

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-270-28, the PCP is required to include specific information for a closed facility. As applicable to SWMU 26, 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.

The following table lists the regulatory citation, description of the regulatory requirement and where to find this information in the permit and within this PCP.

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Under UAC R315-270-14**

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40 CFR §270.14(b)(5) UAC R315-270-14 (b)(5)	General Inspection Schedule	Section 3.2 and Module VI Form A
40 CFR §270.14(b)(12) UAC R315-270-14 (b)(12)	Training Requirements	Module VI (VI.J)
40 CFR §270.14(b)(6) UAC R315-270-14 (b)(6)	Preparedness and Prevention	Section 2.8 and Module VI (VI.K)
40 CFR §270.14(b)(11)(i-ii, v) UAC R315-270-14 (b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Module VI Attachment 1 (Section 6.1)

Regulation Citation	Requirement Description	Requirement Location
40 CFR §270.14(b)(11)(iii-v) UAC R315-270-14 (b)(11)(iii-v)	Facility Location Information - 100-year floodplain	Module VI Attachment 1 (Section 6.2)
40 CFR §270.14(b)(14) UAC R315-270-14 (b)(14)	Closure Certification and Notification	Section 2.7
40 CFR §270.14(b)(16) UAC R315-270-14 (b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement
40 CFR §270.14(b)(18) UAC R315-270-14 (b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement
40 CFR §270.14(b)(19)(i) UAC R315-270-14 (b)(19)(i)	Topographic Map - Map Scale and Date	Module VI Attachment 1 (Section 10.0)
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40 CFR §270.14(b)(19)(iv) UAC R315-270-14 (b)(19)(iv)	Topographic Map - Surrounding land uses	Module VI Attachment 1 (Section 2.0)
40 CFR §270.14(b)(19)(v) UAC R315-270-14 (b)(19)(v)	Topographic Map - A wind rose (i.e., prevailing windspeed and direction)	Module VI Attachment 1 (Section 4.0)
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40 CFR §270.14(b)(19)(vii) UAC R315-270-14 (b)(19)(vii)	Topographic Map - Legal boundaries of the hazardous waste management facility.	Module VI Attachment 1 (Section 10.0)
40 CFR §270.14(b)(19)(viii) UAC R315-270-14 (b)(19)(viii)	Topographic Map - Access control, fence, gates	Module VI Attachment 1 (Section 7.0)
40 CFR §270.14(b)(19)(xi) UAC R315-270-14 (b)(19)(ix)	Topographic Map - Injection and withdrawal wells	Module VI Attachment 1 (Section 5.0)
40 CFR §270.14(b)(19)(xi) UAC R315-270-14 (b)(19)(xi)	Topographic Map - Barriers for drainage or flood control	Module VI Attachment 1 (Section 6.2)
40 CFR §270.14(c) UAC R315-270-14 (c)(1)	Groundwater Monitoring Information - Summary of groundwater data	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(2)	Groundwater Monitoring Information - Identification of uppermost aquifer	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(3)	Groundwater Monitoring Information - Delineation of the waste management area	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)

Regulation Citation	Requirement Description	Requirement Location
40 CFR §270.14(c) UAC R315-270-14 (c)(4)	Groundwater Monitoring Information - Extent of plume	Final RCRA RFI SWMU 26 (Parsons, 2014) and Final RFI Addendum (Plexus, 2017)
40 CFR §270.14(c) UAC R315-270-14 (c)(5)	Groundwater Monitoring Information - Detailed plans/engineering report for proposed groundwater program	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(i)	Groundwater Monitoring Information - Proposed list of parameters	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(ii)	Groundwater Monitoring Information - Proposed groundwater monitoring system	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(iii)	Groundwater Monitoring Information - Background values	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)
40 CFR §270.14(c) UAC R315-270-14 (c)(6)(iv)	Groundwater Monitoring Information - A description of the proposed sampling	Post closure groundwater monitoring will be in accordance with the TEAD-S Groundwater Management Plan (Parsons, 2019)

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 26, as required by UAC R315-270-14 (b)(1).

2.1 SWMU 26 LOCATION AND HISTORY

SWMU 26 is located within the northeastern quadrant of TEAD-S. SWMU 26 operated as a solid waste landfill between 1956 and 1994 within the designated SWMU boundary, encompassing approximately 31 acres. The landfill is not lined or ventilated. Burial of debris was not contiguous within the site. The SWMU is divided into two areas: western disposal area and eastern disposal area. The western portion of SWMU 26 has 22 burial features and the eastern portion has 23 burial features. In 1981, the eastern portion of the landfill was used for disposal of solid and possibly liquid wastes.

SWMU 26 is unoccupied and contains no structures. The perimeter is secured with a four-foot barbed wire fence.

2.2 PAST OPERATIONS

SWMU 26 is characterized by former building cement pads and unpaved soil covered with sparse vegetation, including grasses, weeds, and rabbit brush. It is relatively flat but slopes very gradually from the northeast to the southwest. The site is a result of a long-term fuel oil leak from below ground storage tanks, which have been removed.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

Several investigations and corrective measure studies of SWMU 26 have occurred over the past several years to include:

- Installation Assessment (USATHAMA 1979),
- US Army Environmental Hygiene Agency (USAEHA) Evaluation (1986)
- RCRA Facility Assessment (NUS Corporation, 1987),
- CERCLA Preliminary Assessment/Site Inspection (PA/SI) (EA Engineering Science and Technology, 1987),
- RCRA Facility Investigation (Ebasco, 1993),
- Passive Gas Surveys (Northwind, 2006 - 2010),
- Geophysical Investigation (NorthWind, 2007),
- Groundwater Investigation (NorthWind, 2008),
- Groundwater Investigation (Jacobs, 2010),
- RCRA Facility Investigation (ITSI, 2014)
- RCRA Facility Investigation Addendum (Plexus, 2017),
- Corrective Measures Work Plan and Implementation (Plexus, 2019-2020), and
- Corrective Measures Implementation Report (Plexus, 2020).

2.4 CLOSURE ACTIVITIES

The implemented corrective measure remedy at SWMU 26, consists of the following:

- Installation of an engineered geosynthetic liner (GCLs) system over all burial features,
- Excavation restrictions,
- Land use restrictions, and
- Long-term monitoring.

2.5 SURFACE WATER AND GROUNDWATER

Groundwater at TEAD-S is part of the regional flow system within Rush Valley. The groundwater underlying TEAD-S is recharged by intermittent streams and subsurface flow coming from the Oquirrh Mountains northeast of the facility. Groundwater flow at TEAD-S is influenced by the presence of a notable groundwater divide that crosses the facility from the northeast to the southwest.

North of this divide, groundwater flow is generally to the west toward discharge points near the center of Rush Valley. South of the divide, groundwater is directed southeastward toward Cedar Valley. Shallow

groundwater at TEAD-S generally occurs under unconfined conditions, although semi-confined and confined conditions exist in localized areas. Depth to groundwater beneath TEAD-S ranges from greater than 200 feet bgs at sites closer to the recharge areas in the northeast, to less than 10 feet bgs near discharge areas located along the TEAD-S western boundary (Parsons, 2017).

SWMU 26 lies on the south side of the regional groundwater divide and groundwater flows to the south-southeast. The horizontal groundwater gradient across SWMU 26 is measured by comparison of groundwater elevations in shallow wells across the site. Historically, from just outside the upgradient area where the diesel product is present at monitoring well S-26-88 to the downgradient south side at monitoring well S-30-88 there is an elevation difference of 1.3 feet across a distance of 650 feet. This equates to a slight horizontal gradient of 0.001 feet per foot or about five feet per mile. The slight horizontal gradient is further confirmed by the site-wide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report, which shows a groundwater high and large, flat area beneath SWMU 26 (Parsons, 2017).

Shallow groundwater conditions were further investigated beneath SWMU 26 with the drilling, installation and sampling of monitoring well S-26-CAM-DW1. The well is sited at the former location of the diesel fuel storage tanks that leaked and released the diesel fuel and is paired with S-CAM-2, where residual diesel fuel remains as an LNAPL on top of the water table. The location was selected to be representative of the area where impacts from the diesel fuel are the greatest.

An evaluation of the boring log and the CPT data for S26-CAM-DW1 finds fine-grained soils that are a mixture of clays, silts and fine sands to a depth of 54.8-feet bgs, where a silty gravel was encountered. This coarser layer was found to be about two-feet in thickness and was the interval selected to be screened. According to Freeze and Cherry (1979) horizontal hydraulic conductivity in the type of soil between the shallow groundwater and the coarser layer is low and typically ranges from 1×10^{-4} to 1×10^{-5} cm/sec. Additionally Freeze and Cherry also state that in layered sediments, the vertical hydraulic conductivity can be up to 10-times less than the horizontal value.

The horizontal groundwater gradient across SWMU 26 is measured by comparison of groundwater elevations in shallow wells across the site. From just outside of upgradient area of where the diesel LNAPL is present at monitoring well S-25-88 to the South side at monitoring well S-30-88 there is an elevation difference of 0.5 feet across a distance of 550 feet. This equates to a slight horizontal gradient of .001 feet per foot or about 5 feet per mile. The lack of a significant horizontal gradient across SWMU 26 is confirmed by the sitewide potentiometric surface map presented in the Final Hydrological Assessment and Recommendations Report (Figure 2.6, Parsons, 2026), that shows a groundwater high and large flat area beneath SWMU 26.

The vertical gradient beneath SWMU 26 is measured as the difference in groundwater elevation heads between paired wells S-CAM-2 and S26-CAM-DW1. Prior to determining the vertical gradient, the water level for S-CAM-2 was corrected to account for the different densities of the groundwater and free product layer. The water level was corrected as described in Appendix I of the Parsons (2014) "*SWMU 26 CMS Data Gap Work Plan and SWMU 30 Phase II RFI Addendum Work Plan*," and Exhibits III.9 and III.10 of the USEPA (1996) guidance document "*How to Effectively Recover Free Product at Leaking Underground Storage Tank Sites*." Output details from the vertical gradient calculator (USERA 2016), show a slight downward gradient of 0.008 feet per foot was calculated. The vertical gradient was re-evaluated using the 2018 data (Plexus, 2019). A downward vertical gradient of less than 0.01 was calculated for the selected shallow/deep well pair by the USEPA vertical gradient calculator. Although a

downward, vertical gradient is present, the 40-foot clay layer restricts most of the flow to the higher K units in the deeper zone.

As a general indicator of groundwater quality, total dissolved solids (TDS) was measured in samples from the paired wells. TDS in the shallow well is approximately 2,800 mg/L while approximately 17,000 mg/L was found in the deeper well. This difference suggests groundwater quality decreases with depth beneath SWMU 26. This difference further indicates a lack of vertical groundwater communication or movement between the intervals screened by these two wells.

The combination of fine-grained soils with low hydraulic conductivity and the lack of both horizontal or vertical gradients to produce a driving force combine to minimize potential groundwater movement beneath SWMU 26. A lack of vertical groundwater movement is confirmed by the change in groundwater quality between the screened intervals in the paired wells. Trace concentrations of several chemical constituents detected in Monitoring well S26- CAM-DW1 are believed present as a result of more than 30-years of chemical dispersion beneath the area where the diesel fuel was spilled rather than a result of groundwater movement. The minimal change in groundwater elevations indicate little recharge is occurring to the groundwater underlying the installation and that there is not much connection with the ground surface or other groundwater recharge sources. For SWMU 26, hydrographs (Parsons, 2026) generated using data from 1999 through 2012 demonstrate the minimal variation of groundwater levels with differences due to seasonal fluctuations.

2.6 CLOSURE NOTIFICATIONS

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 R315-264-110 through 120.

3.0 SECURITY AND CONTINGENCY REQUIREMENTS

The Permittee shall comply with the following security conditions as applicable to SWMU 26:

1. SWMU 26 is located within a Federal, military installation (TEAD-S). As such, the installation is restricted for the common population.
2. Access to SWMU 26 will be restricted and approved by the TEAD-S EO.
3. Signs will be placed and maintained on each side of the SWMU (West and East sides) and at all entry points. Signs will identify the SWMU and provide contact information and state that entrance into or disturbance with the SWMU are prohibited without installation (EO) approval.
4. All signage and any fences shall be inspected throughout the post-closure care period. Inspection of security measures shall be included in the annual site inspections (Form B, Module VI).
5. Damaged security equipment (e.g., signs, fencing, well bollards, etc.) shall be noted in the inspection checklists (Form B, Module VI). Repairs shall be completed as soon as practical after the problem is discovered, in compliance with UAC R315-264-15(c).

3.1 CONTINGENCY PLAN

This section provides information about emergency response inspection procedures to be implemented in the event of any natural disaster in the TEAD-S area that may affect the soil covers at SWMU 26. Module VI, Form B, addressed post-closure site inspections.

The TEAD-S Contingency Plan (part B permit, Attachment 4), 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.

3.1.1 Earthquakes

In the event of 6.5 magnitude or higher earthquake centered within 50 mile of SWMU 26, qualified personnel will visually inspect the landfill caps for signs of damage and lateral shifting of debris as soon as it is safe and practical to do so. Any damage to the landfill caps will be repaired to ensure the integrity of the cover systems. If the landfill caps have sustained extensive damage, TEAD-S will implement corrective actions to ensure contaminants are contained and human health is protected. Post-earthquake site inspection records will be submitted to the TEAD-S EO.

3.1.2 Major Storms or Floods

In the event of a major storm or flood, TEAD-S will inspect the landfill caps to ensure their integrity within 72 business hours of the event. The post-closure site inspection checklist (Form B, Module VI) shall be used to document the inspection. A major storm is defined as a storm with one-inch of precipitation or more over a 24-hour period. Any damage to the landfill cap(s) will be repaired as soon as possible to ensure the integrity of the cap(s).

3.1.3 Fire

The most likely cause for a fire at SWMU 26 would be from lightning. In the event of a surface fire near SWMU 26, TEAD-S Fire Department will be notified. Following the incident, TEAD-S will perform an inspection of the landfill cap and security systems using the site-specific post-closure checklist (Form B, Module VI). If there is any fire damage, TEAD-S shall implement corrective actions to ensure that contaminants are contained, and human health is protected.

4.0 SEISMIC STANDARD

SWMU 26 is not located within 200 ft of faults, which have displacement in Holocene time. Although Utah is tectonically active, most of the earthquake activity occurs about 25 miles to the east along the Wasatch Range Foothills. The U.S. Geological Survey has conducted a study {[U.S. Geological Survey (USGS), 1988], Map of Fault Scarps Formed on Unconsolidated Sediments, Tooele 1x2 Quadrangle, Northwestern Utah, compiled by T.P. Bamhard and R.L. Dodge} to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps in the Tooele 1x2 Quadrangle in northwestern Utah. The conclusion of the study state that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the later Pleistocene era with no clear evidence of Holocene surface faulting.

5.0 FLOODPLAIN STANDARD

SWMU 26 is not located within a 100-year floodplain. A National Flood Insurance map, identifying the boundary of the 100-year flood has not been generated for TEAD-S. However, there are no permanent

streams or other surface water bodies on TEAD-S. Surface water from precipitation flows through established drainage channels into the flat plain and evaporates.

The area within and around SWMU 26 has been graded to divert surface water away from the engineered soil covers.

6.0 POST-CLOSURE OPERATIONS, MAINTENANCE AND REPORTING

The SWMU 26 eastern and western landfills have been covered with an engineered soil cover system. The following sections discuss the Operation and Maintenance (O&M) procedures and the Reports required to ensure maintenance and monitoring of the engineered soil cover during the post-closure period.

6.1 SITE INSPECTIONS

General site inspections of the landfill area will be conducted annually by November 1st, to ensure that the integrity of the landfill cap is maintained. The following post-closure inspections will be required:

- General site inspections,
- Rock cover inspections, and
- Soil erosion control inspections.

Post-closure site inspections will be conducted using Form B of Module VI for documenting the above required inspections.

6.1.1 General Inspection

The site shall be visually inspected to ensure the following conditions are maintained at the site:

1. Proper warning signs are present;
2. No weeds (with deep taproots) are present that may penetrate the caps;
3. No excessive soil erosion is evident on the cap surface or cap edges;
4. No noticeable draining to the soil covering from burrowing animals;
5. No excessive vegetation growth in the swale drainage ditches;
6. No noticeable depressions or ponded water are present;
7. No noticeable sliding (slope failure) or desiccation cracks are present in the soil/cobble covers; and
8. No excessive erosion of the roads accessing SWMU 26 or other access issues are evident.

6.2.1 Soil Erosion Control Plan

The surface waste control system should be inspected to ensure that it is providing adequate erosion control. The SWMU 26 post-closure site inspection form for landfill sites (Form B) in Module VI includes procedures for ensuring that soil erosion is controlled.

If signs of soil erosion are excessive (for example, cracks or rills greater than two inches wide) and continual (recurring in the same area), corrective action may be needed. Significant cracks and/or rills that have the potential to impact the functionality of the cover system will be documented in the inspection forms. Corrective actions may include filling in the eroded or cracked areas, investigation the cause(s) of erosions, and regrading slopes.

6.1.3 Corrective Action

Corrective action shall be initiated as soon as practical but no longer than 30 days of discovery. If the corrective action will require more than 30 days, a schedule of the correction will be provided to the Director for approval. If corrective action requires a substantial effort, a technical plan shall be prepared to summarize the problem, illustrate potential impacts, and clarify the proposed plan for action. Routine corrective actions will be recorded on the site inspection form in the comments with the date of the correction; this will ensure proper tracking of the resolution.

Table 2. SWMU 26 Post-Closure Inspection and Monitoring Schedule

Inspection/Monitoring Issue	Frequency of Inspection ¹
Soil Cover (cover integrity, rock cover/erosion, subsidence, surface water drainage systems)	<ul style="list-style-type: none"> Annually², and After major rain events
Signs	Annually ²
Access Road	Annually ²
Groundwater well monuments	Annually ²
Groundwater well casings (structural integrity, cracks and corrosion), well caps, well locks, well ID markings, and surface pads	Annually ²
Emergency Response (earthquake, fire, and storms)	<ul style="list-style-type: none"> As soon as possible after an earthquake or fire and Within 72 business hours of a major storm/flood event
¹ To be documented on the General Landfill Inspection Form, Module VI, Form B.	
² Annually, by November 1 st	

6.1.4 Inspection Follow-Up

All copies of completed site inspection checklists (Form B, Module VI) will be forwarded to the TEAD-S EO. If significant damage or erosion is observed, the TEAD-S EO will be contacted immediately by telephone. The point of contact for the TEAD-S EO is as follows:

Environmental Programs Manager
TEAD-S Environmental Program Office
11500 Stark Road, Building 5119
Stockton, UT 84071
Telephone: (435) 833-4198

Corrective action shall be initiated as soon as practical but no longer than 30 days of discovery. If the corrective action will require more than 30 days, a schedule for corrective action will be provided to the Director for approval. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, illustrate the potential impacts, and clarify the proposed plan for action. Routine corrective actions will be recorded on the site inspection form in the comments with the date of correction. This will ensure proposer tracking of the resolution.

6.2 REPORTING

This section summarizes the reporting requirements for SWMU 26 during the post-closure period (table 6-3).

6.2.1 Non-Compliance

In the event a non-compliance issues are observed at SWMU 26, which may endanger public water supplies, human health, or the environment, The TEAD-S EO shall be notified immediately. TEAD-S shall notify the Director within 24 hours. A written notification shall be submitted to the UDEQ DWMRC within five days after oral notification. If the non-compliance does not affect human health or the environment, the written notification will be submitted at the time monitoring reports are submitted [UAC R315-270-30(1)(2)(ii)(4)]. At a minimum, the following information will be provided:

- Name, address, and telephone number of Permittee,
- Name, address, and telephone number of the individual making the report,
- Date, time, and type of incident,
- Description and quantity of materials involved,
- Extent of injuries or damage (if any),
- Assessment of actual or potential hazards to the environment and health outside the facility, and
- Estimated quantity and disposition of recovered materials.

The remote site conditions at SWMU 26 are such that impacts to human health outside the facility itself are unlikely.

Table 3. Summary Table of Required Submittals

Required Submittal	Frequency and Submittal Date
Biennial Post-Closure Report	Post Closure Reports shall be submitted to the DWMRC no later than March 1st, of the following year, that the report is due. Reporting years are odd numbered years, for the duration of the Post-Closure Monitoring Period.
Anticipated Non-Compliance (Module VI.D.1)	30 days advance notice of any change, which may result in noncompliance.
24-hour Notification on information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment (Module VI.D.2)	Orally, within 24-hours o discovery of non-compliance.
Seven-day written notification on information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment (Module VI.D.3).	Written, within seven (7) days of discovery.
Written notification on information concerning the non-compliance, which does not endanger human health or the environment (Module VI.D.4).	Written, submitted with the Biennial Post-Closure Report.

6.3 POST-CLOSURE REPORTING

A Biennial Post-Closure Report is required during post-closure care. The Biennial Report shall be submitted to the DWMRC no later than March 1st of the following year that the report is due. The first post-closure reporting year for SWMU 26 is 2020. The report shall be submitted no later than March 1st of 2021. The following sections describe the post-closure reporting requirements.

6.3.1 *Biennial Post-Closure Report*

In accordance with UAC 315-270-30(1)(9), a Biennial Post-Closure Report will be prepared with all TEAD-S closed SWMUs and hazardous waste management units (HWMUs) undergoing post-closure care. Specifically, for SWMU 26, the Biennial Post-Closure Report will include the following:

- General site description and conditions,
- Inspection records (Form B, Module VI),
- Notification procedures, and
- Maintenance/Repairs performed.

7.0 POST-CLOSURE CERTIFICATION

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

8.0 REFERENCES

Division of Solid and Hazardous Waste (DSHW), 2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Parsons, 2014. Final RCRA Facility Investigation Report for Solid Waste Management Unit 26, Tooele Army Depot South Area. September.

Parsons, 2016. *Final Hydrogeological Assessment and Recommendations Report*. July.

Parsons, 2019. Final Groundwater Management Plan, Tooele Army Depot South Area. November.

Plexus, 2017. Final RCRA Facility Investigation Addendum for Solid Waste Management Unit 26, Tooele Army Depot South Area. August.

Plexus, 2019. Final Corrective Measures Implementation Work Plan Solid Waste Management Unit 26 Tooele Army Depot South Area. May

**TOOELE ARMY DEPOT – SOUTH AREA
(TEAD-S)**

MODULE VI

ATTACHMENT 4

**SOLID WASTE MANAGEMENT UNIT (SWMU) 28
POST CLOSURE PLAN**

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
CFR	Code of Federal Regulations
CMS	Corrective Measures Study
DCD	Deseret Chemical Depot
EO	Environmental Office
ft	feet
PA/SI	Preliminary Assessment / Site Investigation
PCP	Post Closure Plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TEAD-S	Tooele Army Depot South Area

1.0 INTRODUCTION

The three objectives of this Post-Closure Plan (PCP) are: 1) ensure that Tooele Army Depot- South Area (TEAD-S) complies with the Permit; 2) outline the requirements needed to prevent exposure or contact with contamination left in place at this Solid Waste Management Unit (SWMU); and 3) to ensure industrial use only. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at SWMU 28. Post-closure requirements shall continue for a minimum of 30 years. The post-closure care period may be extended or shortened, as deemed necessary by the Director.

In accordance with Utah Admin. Code R315-~~3-2.19~~270-28, the PCP shall include specific information for a closed facility. As applicable to SWMU 28, the information requirements shall 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.

2.0 FACILITY DESCRIPTION

The following provides a general description of SWMU 28, as required by Utah Admin. Code R315-~~3-2.5~~270-14(b)(1).

2.1 SWMU 28 LOCATION AND HISTORY

SWMU 28 is an inactive (abandoned) landfill encompassing approximately 0.3 acres, and is located approximately 1,000 feet (ft) southwest of the Administrative Area in the northeast region of the Facility (Figure 2.3; Inset 1). The landfill was used between 1963 and 1972 for the disposal of solid waste, paper, and building debris. Reportedly, no noxious or hazardous materials were disposed of at this site, and the landfill was filled to grade and revegetated in 1972, although details of the cover/cap are unknown (Ebasco, 1993).

Based on test pitting conducted by the Permittee in October 2012, the thickness of overburden at the landfill ranges from approximately one to two ft, and buried debris is present to a maximum depth of approximately 11 to 14 ft below ground surface (bgs). No landfill liner was observed during the test pit operations; as such, the landfill at SWMU 28 was likely an unlined disposal area.

A range fire in 2012 burned and removed all vegetation at the SWMU 28 site and exposed the landfill cover materials. The cover, comprised of gravel and cobble rich materials, is similar to the fill/cover

material commonly seen at the Facility sites and is therefore believed to have originated from the installation's primary borrow pit.

2.2 PAST OPERATIONS

Previous investigations at SWMU 28 include a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA), Preliminary Assessment/Site Investigation (PA/SI), Phase I RCRA Facility Investigation (RFI) field investigation, 2012 test pit investigation, and a RCRA RFI Addendum in 2012. The Phase I RFI only included the installation and sampling of three groundwater monitoring wells. No soil or soil gas samples were collected during the Phase I RFI or during the test pitting operation conducted in 2012. The scope of the RFI addendum included completion of the nature and extent of potential contamination within and around the landfill and included additional sampling of surface and subsurface soils and soil gas (active). The conclusions of the RFI addendum were that the site met industrial use and risks, groundwater monitoring was not required.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

RFA	PA/SI	Phase I RFI	Phase IIA RFI	Phase IIB RFI (Addendum)
NUS Corp 1987	EA Engineering Science & Tech inc 1988	Ebasco 1992	DCD ^a 2012 Test Trench Investigation	Parsons, 2013a
^a Deseret Chemical Depot (now the TEAD-S)				

2.4 CLOSURE ACTIVITIES

Based on the RFI Addendum (Parsons, 2013a) the following controls are to be established:

1. Form D TEAD-S Excavation Permit process shall be enforced.
2. Land use restriction – restrictions to prevent shallow groundwater use and future development.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

A risk assessment was conducted using residential (hypothetical) and industrial (actual) land use exposure scenarios to determine potential risks and hazards to receptors from exposure to contaminants at SWMU 28. The carcinogenic risks estimated for residents exceeded the point of departure of 1E-06. This risk estimate is almost entirely due to assumed exposures to benzo(a)pyrene in soils and assumed inhalation exposures to chloroform in indoor air from soil gas. However, the risk estimates for industrial and construction workers are within the USEPA (1990) risk management range of 1E-06 to 1E-04. The noncarcinogenic hazard index estimated for residents, industrial workers, and construction workers are less than or equal to 1.0, the benchmark level of concern for noncarcinogenic effects. An ecological risk assessment was also conducted and no chemicals of concern were identified that may pose potential hazards to populations of ecological receptors at the site. Soil-to-groundwater analysis also indicates that future impacts to groundwater from chemicals in soil are not expected. Therefore, based on the results from the soil-to-groundwater evaluation, detections in soils are not present at concentrations that will significantly impact groundwater in the future and degradation of natural resources is not likely.

2.6 SURFACE WATER AND GROUNDWATER

No surface water is present at SWMU 28. Previous investigations at SWMU 28 were limited to the installation and sampling of three groundwater monitoring wells. Periodic sampling of these wells over the last 20 years has shown no impacts to site groundwater. The RFI addendum (Parsons, 2013a) recommended the discontinuation of groundwater monitoring for this site.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority in accordance with Utah Admin. Code R315-~~8-7264-110~~ through 120.

2.8 SECURITY REQUIREMENTS

Based on the results from the human health risk assessment, only land use management measures are required at SWMU 28.

3.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

3.1 INTRODUCTION

SWMU 28 post closure care shall be in accordance with Module VI. To ensure that the area is not reused or developed for residential purposes, periodic site inspections and a biennial post-closure report are required. Removal and reuse of soil from this site shall not be allowed unless approved by both the TEAD-S Environmental Office (EO) in accordance with Condition VI.H.3. and the Director; removal and reuse of the soil associated with the soil pile removal is prohibited unless part of the remediation process.

3.2 ROUTINE SITE INSPECTIONS

During the Post-Closure period, general inspections of the SWMU 28 site shall be conducted as required by Module VI annually by November 1st to ensure the site remains under industrial use. Any modifications to the frequency of inspections shall be in accordance with Condition I.D.3.

Site inspections shall consist of a complete walkthrough and visual inspection of the areas. A general site inspection checklist for industrial sites is included in Module VI as Form A. Completed inspection forms shall be filed with the TEAD-S EO as part of the Facility Operating Record.

At a minimum, the site inspector shall have a radio or phone and a First Aid kit available during inspections.

3.3 INSPECTION FOLLOW-UP

The EO shall notify the appropriate personnel to implement corrective action as needed. Corrective action shall be initiated as soon as practical after identifying a problem, or as directed by the Permittee. If corrective action is required 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 by Module V and Module VI. This plan requires Director approval prior to implementing corrective action.

3.4 NON-COMPLIANCE REPORTING

Notifications of any type of non-compliance with any condition of this Permit shall be submitted as required by Condition V.L.4.

3.5 BIENNIAL POST-CLOSURE REPORT

The Permittee shall submit in accordance with Utah Admin. Code R315-~~3-3-1270-30~~(1) (9), a Biennial Post-Closure Report shall be prepared for all SWMUs undergoing post-closure care by March 1, of the reporting year. The SWMU 28, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions, and
- Inspection records.

3.6 REQUIRED SUBMITTALS

Biennial Post-Closure Reports shall be submitted to the Director no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2012, for the duration of the Post-Closure Monitoring Period.

3.6.1 Non-Compliance Reporting:

- The Permittee shall notify the Director orally within 24-hours of any noncompliance, which may endanger public drinking water supplies or human health or the environment.
- The Permittee shall notify the Director in writing within five days of any 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 Permittee shall notify the Director in writing within 15-days of any noncompliance which does not endanger public drinking water supplies or human health or the environment.

4.0 POST-CLOSURE CERTIFICATION

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

5.0 REFERENCES

Division of Solid and Hazardous Waste (DSHW), ~~2001~~2019. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Analytical Quality Solutions (AQS), 2013. *Final Risk Assumptions Document Solid Waste Management Units and Other Corrective Action Sites*. Deseret Chemical Depot, Tooele, Utah. Revision 1. January.

Department of Defense, 2010. *Department of Defense, Quality Systems Manual for Environmental Laboratories*, prepared by Department of Defense Environmental Data

Quality Workgroup, Final, Version 4.2, October 25.

Division of Solid and Hazardous Waste (DSHW), 2011. Utah Administrative Code (UAC). R315-101.

Ebasco, 1993. *RCRA Facility Investigation – Phase I, Suspected Release Units, Revised Final*. Deseret Chemical Depot (DCD), Stockton UT. July.

Gardner, P.M., and Kirby, S.M., 2011. *Hydrogeologic and Geochemical Characterization of Groundwater Resources in Rush Valley, Tooele County, Utah*: U.S. Geological Survey Scientific Investigations Report 2011–5068, 68 p.

Kleinfelder, 1999. *Final Groundwater Monitoring Report, Fall 1998, Deseret Chemical Depot, Tooele, Utah*. May.

Parsons, 2013a. *Final Work Plan - RCRA Facility Investigation Addendum for Solid Waste Management Units 19 and 28 at Deseret Chemical Depot, Utah*. February.

Parsons, 2013b. *SWMU 28 Final Work Plan Addendum- Plan for Additional Subsurface Soil Sampling*. Tooele Army Depot-South Area, Utah. September.

Parsons, 2013c. *Final Hydrogeological Assessment and Recommendations Report, Deseret Chemical Depot, Utah*. July.

U.S. Army Corps of Engineers (USACE), 2005. *Environmental Quality-Guidance for Evaluating Performance-Based Chemical Data*. EM-200-1-10. June.

United States Environmental Protection Agency (USEPA), 1989. *Risk Assessment Guidance for Superfund (RAGS). Human Health Evaluation Manual Part A*. Interim Final. Office of

Emergency and Remedial Response Washington, D.C. OSWER 9285.701A. EPA/540/1-89/002.

USEPA, 1990. *National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Final Rule)*. 40 CFR Part 300: 55 Federal Register 8666.

USEPA, 1992a. *Guidance for Data Usability in Risk Assessment (Part A) Final*. Publication Number 9285.7-09A. April.