ATTACHMENT 8

CLOSURE PLAN

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Closure Plan

The Hazardous Waste Management Units (HWMUs) at the Tooele Army Depot (TEAD) will be closed according to the requirements of Module II.N, UAC R315-8-7 and the following closure and post-closure plan. Prior to closure of any or all HWMUs, when necessary, this plan will be modified to add detailed procedures for sampling and decontamination or removal of all contaminated soil, groundwater, equipment and structures. The closure information in this document is general and is based on current information and future estimates of the use, current inventory and potential contamination and remediation of each of the HWMUs.

When necessary, prior to initiating closure, a baseline-sampling program will be completed to determine background concentrations of contaminants in all appropriate media, equipment, structures and decontamination waters. Any sampling and analysis plans will be approved by the Division of Solid and Hazardous Waste (DSHW) prior to implementation.

1.0 Closure Performance Standard

The HWMUs operated by TEAD will be closed in a manner that minimizes the need for further maintenance and eliminates, minimizes, or controls the possible hazards to human health and the environment. When OB/OD operations at TEAD are terminated, the unit will be closed in a manner that eliminates the need for post-closure care. Closure of the OB/OD unit will comply with the environmental performance standards of 40 CFR Part 2645, Subpart X relative to closure activities and post-closure facility conditions.

This plan does not address corrective actions concerning past activities that are identified as Solid Waste Management Units (SWMUs) with Known Releases and SWMUs with Suspected Releases since these SWMUs are addressed in the Industrial Waste Lagoon Post Closure Permit issued by the DSHW January 7, 1991, and the TEAD Federal Facilities Agreement.

The removal of all hazardous waste inventories, and the treatment and disposal of all hazardous wastes stored at TEAD, at either HWMUs operated by TEAD or off-site TSDFs, will minimize the need for further maintenance, and eliminate the possibility of a post closure escape of hazardous constituents from the HWMUs included in this permit.

The twelve HWMU's included in this closure plan are:

Building 528 - Container storage of wastes with free liquids

Ammo Igloo A-101 - Container storage of wastes with free liquids

Ammo Igloos C-815 and C816 - Container storage of wastes without free liquids

Service Magazines 1368 & 1370 - Container storage of wastes without free liquids

Above Ground Magazine 1205 - Container storage of wastes without free liquids

APE-1236 Deactivation Furnace (incinerator at Bldg.1320) – Thermal treatment of reactive (D003, explosive) wastes. Wastes are limited to Propellant Explosive and Pyrotechnic (PEP) items having military application.

Small Caliber Disassembly Line – Initiation of primers after the propellant is removed from the projectile

OB/OD Unit – Open burn and open detonation treatment of waste propellant and conventional military munitions and components in burn pans, static silos and open detonation pits.

Hydrolysis Facility – Destruction of explosives by hydrolysis in a sodium hydroxide solution

Harper 24D174 Rotary Furnace (test unit at AED Test Site) – Low temperature thermal decomposition of reactive (D003, explosive) wastes. Wastes are limited to Propellant Explosive and Pyrotechnic (PEP) items having military application.

Throughout closure of any HWMU, all operations will be performed in a manner that will protect personnel, human health, and the environment. The necessary level of protection will be achieved by ensuring that various precautions are put in place and properly implemented. Precautions will include:

- Security: All existing security (e.g., signs, gates) will be maintained and, as necessary, supplemented.

- Inspections: The facility inspection program will inspect areas where hazardous waste and residues are temporarily stored during remediation and decontamination.

- Personnel Training: All personnel associated with facility closure will receive the training necessary to perform their duties.

- Preparedness and Prevention: During closure activities, all equipment necessary to respond to potential emergencies at the facility will remain available. The facility will be maintained in such a manner as to minimize the potential for emergencies during closure.

- Contingency Plan and Emergency Procedures: The facility Contingency Plan will be maintained, and, as necessary, augmented to describe proper responses in the event of emergencies during closure.

2.0 Maximum Waste Inventory

The maximum inventory each container storage HWMU will have is determined from the maximum permitted storage capacity for each (refer to Attachment 9, Containers) and are listed below:

Building 528 – 57,800 gallons.

Igloo A-101 – 9,180 gallons.

Igloo C-815 & C-816 – 12,960 cubic feet each.

Service Magazines 1368 & 1370 – 800 cubic feet each..

Above Ground Magazines 1205 – 72,000 cubic feet.

The maximum inventory of wastes on-site at the 1236 Deactivation Furnace (Bldg. 1320) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the waste PEP item (munitions) that will be deactivated in the furnace and the second is comprised of the ash that results from furnace operations. The furnace can treat reactive (explosive) waste at a Net Explosive Weight (NEW) feed rate of 200 to 300 lbs/hr. Only the amount of waste PEP items that can be treated in one day are stored at the furnace site. Using 250 lbs/hr NEW feed rate, and 8 hours of operation/day as a basis, the maximum inventory of waste awaiting treatment stored at the furnace site is 2,000 pounds NEW.

Ash resulting from furnace operations is collected in the cyclone, baghouse, and in the containers into which this equipment empties. At the time of closure, the baghouse and cyclone will be emptied, all the bags will be removed from the baghouse. Less than ten 55 gallon drums will be required to contain the residue resulting from this clean-up activity.

The total maximum inventory of wastes that may be at the 1236 Deactivation Furnace (Bldg. 1320) when closure begins is 550 gallons (ash) plus 320 gallons (PEP items), for a total of 870 gallons.

The maximum inventory of material on-site at the AED Test Site (Bldg. 1351) at the time prior to closure is the sum of two material streams. The first material stream is comprised of the PEP item (munitions) that will be deactivated in the Harper 24D174 Rotary Furnace and the second is comprised of the particulate that results from existing air abatement system operations. The Harper 24D174 Rotary Furnace can treat reactive (explosive) material at a Net Explosive Weight (NEW) feed rate of 125 lbs/hr. Only the amount of PEP items that can be treated in one day are stored at the AED Test Site. Using 125 lbs/hr NEW feed rate, and 10 hours of operation/day as a basis, the maximum inventory of material awaiting treatment stored at the AED Test Site is 1,250 lbs NEW (5,000 lbs gross PEP weight).

Particulate resulting from furnace operations is collected in the cyclone, baghouse, and in the containers into which this equipment empties. At the time of closure, the baghouse and cyclone will be emptied of any accumulated particulate. Less than ten 55 gallon drums will be required to contain the particulate residue resulting from this clean-up activity.

The total maximum inventory of wastes and recovered materials that may be at the AED Test

Site when closure begins is 550 gallons particulate, plus 320 gallons of deactivated metal PEP items, for a total of 870 gallons.

The Decineration™ System (the Harper 24D174 Rotary Furnace) at the AED test site is an RD&D unit. As such, it is of limited duration. Following the testing, the AED test site may continue to be used as required and is not required to remove the ceramic filters or bags from the site.

The maximum inventory of waste on-site at the Small Caliber Disassembly Lines (Bldgs. 1325 and 1335) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the PEP (munitions) that will be disassembled and the second is comprised of residue collected in the pollution abatement system. Only the amount of waste PEP that can be disassembled in a day will be stored at the facility. The maximum amount that will be disassembled in one day is 50,000 rounds.

The maximum inventory of wastes on-site at the Hydrolysis Facility (Bldg. 1400) at the time prior to closure is the sum of two waste streams. The first waste stream is comprised of the waste PEP items (CADs and PADs) that will be deactivated via hydrolysis reaction, and the second is comprised of the hydrolysate solution used to process the Reactive (explosive) waste. The hydrolysis facility can treat the explosives at an average NEW feed rate of 163 lbs/hr (average rate takes bath heat up time into account, normal processing rate is 250 lbs/hr). Only the amount of waste PEP items that can be treated in one day is stored at the hydrolysis. Using 163 lbs/hr NEW feed rate, and 10 hours of operation/day as a basis, the maximum inventory of waste awaiting treatment stored at the hydrolysis site is 1,630 pounds NEW.

Hydrolysis facility residues from hydrolysis operations remain in their respective tanks until collected. At the time of closure, the hydrolysis tanks will be emptied. The total maximum inventory of wastes that may be at the Hydrolysis Facility (Bldg. 1400) when closure begins is therefore ~2,200 gallons (hydrolysate), plus 300 gallons (PEP items), 2,500 gallons total.

The inventory of waste at the OB/OD unit is discussed in Section 2.6 and 3.8.

2.1 Building 528

TEAD does not operate any HWMU capable of treating or disposing of the types of wastes stored in Building 528. Chemical analysis results show that all wastes stored in Building 528 require some type of treatment before land disposal. Wastes will be treated and disposed of at off-site TSDFs.

The types of off-site HWMUs that will be used to treat and dispose of the inventory at closure of Building 528 are Neutralization, Incineration, Chemical Oxidation, Chemical Reduction, Stabilization, and Disposal (landfill cells).

The transportation, treatment, and disposal of hazardous wastes that are stored in Building 528, is done through a contractor. For each waste stream generated on-site and stored in Building

528. TEAD provides the contractor with a waste analysis and an expected annual rate of generation.

The contractor then determines the applicable treatment standards and/or treatment technology required for each waste stream. From a list of TSDFs and the capabilities of each, the contractor then determines what TSDF has the appropriate HWMUs for each waste stream. For wastes whose treatment standards are specified as a treatment technology the contractor must send the waste to TSDFs having in operation those same specified treatment units. For wastes whose treatment standards are specified as a concentration, the contractor may choose the TSDFs operating the most economical treatment method. All transporters and TSDFs involved in the disposal of hazardous waste must have EPA ID numbers.

2.2 Igloos A-101, C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205

TEAD does operate HWMUs capable of treating the types of wastes stored in Igloos A-101, C-815, C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205 (Reactive, D003 (explosive)). Wastes stored in the HWMUs will be treated at either the 1236 Deactivation Furnace (the incinerator located at Bldg. 3120), the Hydrolysis Facility, or the Open Burn/ Open Detonation areas operated by TEAD. There will be no need to transport the wastes stored at these HWMUs off-site, since the deactivation of these waste can be done at TEAD.

2.3 1236 Deactivation Furnace (Bldg. 1320)

At closure, the 1236 Deactivation Furnace (Bldg. 1320) will be dismantled, and components that were in contact with hazardous waste and treatment residues will be decontaminated and then recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.4 Small Caliber Disassembly Lines (Bldgs. 1325 and 1335)

At closure, the Small Caliber Disassembly Lines (Bldgs. 1325 and 1335) will be disassembled, and the components that were in contact with hazardous waste and treatment residues will be recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.5 Hydrolysis Facility

At closure, the Hydrolysis Facility (Building 1400) will be disassembled, and the components that were in contact with hazardous waste and treatment residues will be recycled as scrap metal. This is an appropriate method of management of these components since they are made of metal and there is a market for scrap metal.

2.6 OB/OD Unit

Waste ordnance and munitions are neither stored nor accumulated at the OB/OD Unit. Because

these waste materials are transported to the OB/OD Unit on the day of treatment and treated on that day, there will be no inventory of such materials at this unit at closure. The maximum daily inventory of explosive material subject to OB/OD at the facility is also limited by the environmental performance standards specified in Module VI.

There are no hazardous residues resulting from OD activities. Shrapnel on the surface of the range created as a result of OD activities will be collected and recycled at the time of unit closure. Ash generated from OB activities will be collected, analyzed, and disposed of appropriately at the time of closure. Soil contaminated above risk-based or background levels (whichever are higher), will be removed for off-site treatment.

2.7 Harper 24D174 Rotary Furnace (AED Test Site)

At closure (the end of test sequence), the Harper Rotary Furnace system (AED Test Site) will be dismantled, and components that were in contact with munition items and any resulting residues will be decontaminated. The Harper Rotary Furnace will be removed from the site by U.S. Demil, LLC and returned to Harper International. The remaining equipment will be returned to use at the AED TEST Site.

3.0 Disposal or Decontamination of Equipment, Structures, Soils and Residues

Prior to any sampling of media or structures, historical records including the operating record will be reviewed to determine if any spills or releases or hazardous waste or constituents has occurred. The HWMU will be inspected for the presence of any stains or other discoloration that will indicate the potential release of a hazardous constituent or waste. This information will be used in a sampling and analysis plan to help determine the number and location of samples to be collected as well as the potential contaminates to be analyzed. If there is no evidence of a spill or release then sampling may not be required.

3.1 Building 528

Building 528 stores hazardous wastes containing free liquids. The EPA waste codes that describe the type of wastes stored there, and also define the nature of the possible contaminants and hazardous constituents expected to be present as a result of spills or leaks from containers can be found below in Table 1.

TABLE 1

D001	D006	D018	D028	D035	F001
D002	D007	D019	D029	D036	F002
D003	D008	D022	D030	D039	F003
D004	D009	D023	D032	D040	F004
D005	D011	D026	D033	D042	F005
				D043	

Possible contaminated areas are; 1) the secondary containment base, 2) soil beneath the

secondary containment base, 3) the containment trench surrounding Building 528, and 3) the load/unload area located directly in front of the entrance gate to Building 528.

To determine the need to decontaminate the secondary containment storage base of Building 528, samples will be taken and analyzed and the operating record reviewed. Thirty-seven samples of the concrete base will be taken, the location of which will be based on a hexagonal sampling pattern developed using the methodology described in EPA-560/5-86-017, "EPA Field Manual for Grid Sampling of PCB Spill Sites". The 36 samples will be combined into 4 composite samples which will be analyzed for the constituents described by the EPA waste codes found in Table 1. If these samples show contamination to be present, the secondary containment base of Building 528 will be decontaminated.

Decontamination of the secondary containment base will be done by steam cleaning. Steam cleaning will provide adequate decontamination considering the following:

1. The base is sealed with a coating that prevents the concrete from absorbing spill residue.

2. Required inspections lessen the possibility of a spilled waste contacting the base for long periods of time.

3. The only wastes that come into contact with the base are those that are spilled from containers (i.e. there are no waste piles stored in Building 528), and the condition of containers used to store hazardous waste makes this an infrequent occurrence.

4. Any volatile contamination will be driven off by the steam.

5. Other types of waste stored in Building 528 will be suspended in the steam condensate.

Condensate generated while steam cleaning the secondary containment base of Building 528 will be collected, sampled and either taken to the Tooele City Wastewater Treatment Plant or to an off-site TSDF, depending on the sampling results.

After procedures have been performed to decontaminate the secondary containment base of Building 528, 36 samples will be taken using the same location determination described above. The 36 samples will be combined into 4 composite samples that will be analyzed for the constituents described by the EPA waste codes found in Table 1.

The contamination of soil beneath the secondary storage base of Building 528 is minimized by the integrity of both the containment base and the containers used to store the hazardous waste. Permit conditions require the weekly inspection of the base of Building 528 for any cracks or structural defects, and the condition of containers stored in Building 528 to insure they are in good condition and closed.

Any discolored areas of the floor (or areas where the concrete sealant deteriorated) will be grit blasted until all discoloration is removed. The operator will be able to determine the depth of

penetration of contamination by observing the color change of the blasted concrete. Should the discoloration continue to the soil underlying the concrete base, soil samples will be taken at the soil surface and 1 foot below. Any soil samples will be analyzed for the constituents described by the EPA waste codes found in Table 1. The building shell will hold the spent blast grit, which will be containerized and managed depending on the results of the analysis of the spent blast grit. Any contaminated soil will be removed and sent to an off-site TSDF.

To determine the extent of possible contamination in soil of the exterior containment trench, samples will be taken from the centerline of the trench. When viewed from above, the trench forms a square around the secondary containment base. Both squares share the same center. Since the only source of contamination of the soil in the containment trench is the pipes found at the corner of the secondary containment base, any contamination present would be found at the highest concentration at the four corners of the square formed by the centerline of the exterior containment trench. Nineteen samples will be taken at each corner of the exterior containment trench. The samples will be taken along the centerline, at one-foot intervals.

The sample area will be the area along the centerline 10 feet prior to the corner and 10 feet past the corner. The 19 samples from each corner will be combined into 2 composite samples. Four corners will therefore yield 8 composite samples for analysis of the constituents described by the EPA waste codes found in Table 1.

The load/unload area will be sampled to determine the extent of possible soil contamination. The sample area size will be the entire area where hazardous wastes have been handled, and will be determined by the TEAD Environmental Office. The appropriate number of samples and sampling points will be determined using the methodology mentioned above for PCB spills, and is based on the size of the area to be sampled. Samples will be analyzed for the parameters described by the EPA waste codes listed in Table 1.

If necessary, action and cleanup levels regarding contaminated soils will be negotiated with the DSHW and presented in a detailed closure plan that will be submitted to the DSHW one year prior to the commencement of closure activities.

3.2 Igloo A-101

Steam cleaning will be used to decontaminate the secondary containment base of Igloo A-101. All wastes stored in A-101 are containerized (i.e. no waste piles). The only way for waste to contact the secondary containment base directly is if a container fails. This is not a common occurrence. The base is coated with a concrete sealant that is impermeable to moisture, and therefore impermeable to condensate. The condensate will be collected in the drain ditches that run the length of the igloo, down both sides. A portable sump pump will be used to containerize the condensate. The collected condensate will be analyzed for explosive contamination.

Whether the condensate is a hazardous waste or not will be based on the concentration of 2, 4, dinitrotoluene (D030), and hexachlorobenzene (D032), the constituents of concern present in explosives. If the concentration of either of these two constituents is above that specified in

Table 1 of 40 CFR 262.24, then the condensate will be managed as a toxicity characteristic hazardous waste and disposed of at an off-site TSDF. Sampling of the containment base will be conducted to determine the effectiveness of the decontamination procedures. The number, and the method of sampling will be the same as for Building 528.

The possibility of soil contamination is remote, however the most likely place for contamination to exist is where the plugged drain ditches once exited the igloo, and at the boundary where the concrete apron meets the dirt. Samples will be taken at one-foot intervals along the concrete apron/dirt boundary (the apron is in front of the igloo entrance). These samples will be composited into two samples.

Action and cleanup levels will be negotiated with the UDSHW and presented in a detailed closure plan that will be submitted by TEAD to the UDSHW one year prior to the commencement of closure activities.

3.3 Igloos C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205

Since these HWMUs store containerized wastes that do not contain free liquids and, wastes only contact the floor if a container fails (i.e. no waste piles), and neither of these areas has secondary containment capability, the floor sweepings will be collected and analyzed for explosive contamination. If not present, the concrete bases of the HWMU will be considered clean. This is because the floor sweepings give a representative sample of what has been in contact with the floor surface.

If explosive contamination is present, the concrete floor will be sandblasted. This method is chosen because there are no methods to contain liquids at any of these HWMUs. The spent grit blast will be collected and managed as a hazardous waste if upon analysis the blast grit is toxicity characteristic for the constituents 2, 4, dinitrotoluene (D030) and/or hexachlorobenzene (D032) (constituents found in explosives).

Samples of the blasted concrete base will be taken from Igloo C-815, Igloo C-816, Service Magazines 1368 and 1370 and Above Ground Magazine 1205. The sample number and method used will be that described in the section relating to Building 528. Due to the small size of Service Magazines 1368 and 1370, only 9 samples will be taken of each building. Samples taken in Igloos C-815 and C-816 and Above Ground Magazine 1205 will be composited into four samples, while samples taken from the Service Magazines will be composited into one sample .

Action and cleanup levels will be negotiated with the UDSHW and be presented in a detailed closure plan which will be submitted by TEAD to the UDSHW one year prior to the commencement of closure activities.

3.4 1236 Deactivation Furnace (Bldg. 1320)

The components of the Deactivation Furnace which continually come into contact with

hazardous wastes are the:

Rotary Kiln

Waste feed Conveyor

Waste feed Housing

Kiln Discharge Conveyor

All duct work associated with the Pollution Abatement System (PAS)

Cyclone and Bag House and the

Afterburner.

At closure, the waste feed conveyor and the waste feed housing will be dismantled and fed through the 1236 Deactivation Furnace. During this time the furnace's operating parameters will be those specified through permit conditions. The waste feed conveyor and the waste feed housing will be fed through the furnace since these pieces of process equipment function prior to the rotary kiln (which is where PEP wastes are deactivated). This will insure that any possible explosive residues that may be present on this process equipment are deactivated.

After the waste feed conveyor and the waste feed housing have been fed through the rotary kiln, the furnace will be operated at parameters specified through permit conditions for one hour. During this time waste will not be fed to the furnace. This will insure that any possible PEP residue remaining in the furnace is deactivated.

The rotary kiln, kiln discharge conveyor, PAS duct work, afterburner, cyclone, and bag house function after the rotary kiln. Therefore no explosive contamination will be present in the treatment residue (ash) contacting their surfaces. The process equipment listed above will be dismantled and cleaned of any loose, accumulated treatment residue (ash) that may be present.

The collected treatment residue (ash) will be containerized and managed in the same way as ash that was generated throughout the operational life of the furnace.

The disassembled 1236 Deactivation Furnace process equipment will then be sold as scrap metal through the Defense Reutilization and Marketing Office (DRMO).

The room housing the waste feed conveyor will be swept and the sweepings will be collected and analyzed. Sweeping will be adequate because the furnace does not treat wastes containing free liquids. If the analysis of the floor sweepings does not show the presence of explosives, the room housing the waste feed conveyor will be considered clean.

If analysis shows the floor sweepings to contain the Toxicity Characteristic waste mentioned in

the above section, or the presence of explosives, the room that housed the wastefeed conveyor will be decontaminated by sandblasting the floor to the bare concrete. Solutions or steam cleaning cannot be used since there are no provisions for capturing liquids (i.e. no secondary containment). The spent blast grit will be properly managed.

Action and cleanup levels will be negotiated with the UDSHW and be presented in a detailed closure plan that will be submitted by TEAD to the UDSHW one year prior to the commencement of closure activities.

A concrete apron is found at the unload area to the 1236 Deactivation Furnace Waste Feed Conveyor Room (Building 1320). Soil samples will be taken along the concrete apron/dirt boundary at one foot intervals. These samples will be analyzed for the presence of explosives and the constituents of concern described by the EPA waste codes D004 through D011 (i.e. Toxicity Characteristic Metals).

3.5 Small Caliber Disassembly Lines (Buildings 1325 and 1335)

All filter media will be removed and disposed of as hazardous waste. Any residues present on the process of material handling equipment will be removed with brushes. The residues and the filter media will be disposed of based on an analysis of its characteristics. The equipment will be disposed of as scrap metal.

3.6 Hydrolysis Facility

All equipment that came into contact with the hydrolysis solution will be rinsed with water to remove any contaminants. The rinse water will be collected, sampled and properly disposed of. The equipment will be disposed of as scrap metal.

3.7 Material Handling Equipment

If necessary, forklifts and trucks used to transport hazardous waste within the facility boundaries will be decontaminated on-site. TEAD does not operate any disposal HWMUs, material handling equipment (MHE) handles all wastes in containers. The only way hazardous waste can contact the surface of MHE is if a container fails. The failure of a hazardous waste container is not a regular occurrence; therefore the MHE is not expected to be contaminated.

The determination as to the necessity of decontaminating MHE used in hazardous waste operations will be made by a review of HWMU operating records, and spill report records kept by TEAD and the UDSHW. If it is demonstrated through this record review that no container failures occurred involving hazardous waste loading/unloading operations, no decontamination of MHE will be done.

The MHE will be steam cleaned in a temporary facility erected with a containment system for the residues. Residues from the cleaning of the MHE will be handled as hazardous waste until it can be properly characterized by sampling and analysis. Based upon the results of the analysis,

the residues will be appropriately disposed of.

3.8 OB/OD Unit

Methods for determining the presence of contamination, performing decontamination, and evaluating the effectiveness of decontamination procedures during closure of the OB/OD Unit are described in this section. Closure activities will be conducted in phases. Activities to be conducted during the first phase include the identification and removal of visible and/or readily identifiable waste residues from the area. This is followed by the classification, sorting, containerization, labeling, and storage of those materials.

The second phase of closure involves the sampling and analysis of soils and groundwater to determine whether contamination associated with OB/OD is present at statistically significant concentrations above risk-based or background levels (whichever are higher). A baseline characterization of the site will be conducted prior to closure of the OB/OD unit. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure.

The background area to be sampled is located on a 4-acre tract to the northeast of the OB/OD Unit, completely outside any potential impact area This area was chosen because of the similar soil type (same alluvial fan morphology) as the OB/OD Unit, and the undisturbed nature (i.e., non-graded ridge and swale) with no roads or buildings. The determination of risk-based or background levels will be discussed prior to closure and presented in a baseline SAP. Equipment that may have become contaminated will be decontaminated if sampling determines this is necessary. The analytical results from the equipment samples will be compared to appropriate performance standards.

Should sample analysis indicate the presence of contaminants in the OB/OD Unit and/or soils at concentrations above risk-based or background levels (whichever are higher) that are statistically significant, remediation will be required. Contaminated materials will be classified, sorted, containerized, and sent off-site for treatment or (if appropriate) for disposal. If surface contamination of equipment is found, an appropriate cleaning agent will be used. All of the equipment and decontamination residues will be containerized prior to off-site transport.

The third phase of closure will involve verification sampling. Sampling will be done to confirm that the closure remediation and decontamination were adequate. If contamination above risk-based or background levels (whichever are higher) is still present, additional remediation and decontamination will be done, followed by an additional round of verification sampling.

The wastes generated during closure will fall into one of four categories: (1) reactive or explosive materials that must be treated by OB/OD; (2) solid materials or soils that are not reactive, or explosive, but which may be contaminated with constituents (e.g., lead, TNT, and RDX) remaining as a result of OB/OD and which require treatment to remove this contamination; (3) contaminated liquids resulting from closure activities, primarily equipment decontamination; and (4) solid, nonhazardous wastes that require no further treatment.

Any unstable materials detected will be either detonated in-place or burned in the pans. Following removal of the burn pans and contaminated soil (if determined to be appropriate to meet risk-based levels or background conditions) and UXO, the unit will be regraded using native soils to match the contours of the remainder of the surrounding area and it will be revegetated.

As stated previously, four categories of wastes will be expected to be generated during closure. The categories are:

1. UXO - These are items that pose a risk of explosion or detonation. These materials will likely be detonated in place; however, if any such materials are brought to the staging area, they will be segregated and moved to the OD area for detonation.

2. Contaminated Materials or Soils - These are materials, debris, and contaminated soils that are generated after OD activities have reached completion and cannot be reinitiated. These materials or soils are not reactive or explosive, but may be contaminated with constituents (e.g., lead, TNT, and RDX) remaining as a result of OB/OD and which require treatment to remove this contamination.

3. Contaminated Liquids - These are liquids resulting from closure activities, primarily equipment decontamination and any collected run-on or runoff.

4. Solid, Nonhazardous Wastes - These are wastes that require no further treatment and will be disposed of in a Subtitle D Landfill.

UXO will most likely be detonated in place at the OD area. Contaminated materials/soils will be removed from the OB/OD Unit and brought to the temporary staging area located near the water tank and trailer outside the perimeter of the OB/OD Unit. Materials will be sorted, if necessary, at the staging area as they arrive. Sorting is done to divide wastes into similar categories for management and disposition. The method used for sorting will include, if necessary, the use of screens of varying mesh size, selection and removal of discrete items by hand, and other methods that protect workers while permitting the separation of wastes. At the staging area, the contaminated materials/soils will be placed in DOT-approved drums, roll-off boxes, or other suitable containers for off-site transport. Similar materials will be consolidated to the maximum extent practical to minimize the number of containers that must be handled. Only compatible wastes of similar nature will be placed in the same container.

These materials/soils will be analyzed for the Toxicity Characteristic Leaching Procedure (TCLP) characteristics of arsenic, barium, cadmium, chromium, lead, mercury, and energetics. If these materials/soils exhibit a characteristic of a hazardous waste, they will be managed in accordance with Resource Conservation and Recovery Act (RCRA) Subtitle C regulations. The hazardous materials/soils will be sent off-site to a permitted RCRA treatment, storage, disposal, or recycling facility.

All liquids will be consolidated into appropriate leak-proof shipping containers. A representative sample will be collected for chemical analysis. If the liquid is determined to exhibit a hazardous

characteristic, the liquids will be sent off-site for treatment and disposal in accordance with the RCRA Subtitle C regulations.

Any solid, nonhazardous wastes that do not require further treatment will be managed in accordance with the State of Utah solid waste regulations. These solid wastes will be sent to an off-site solid waste management facility. Materials to be managed as solid wastes may include personal protective equipment and materials/soils that do not exhibit a characteristic of a hazardous waste.

Wastes will be packed into metal or plastic shipping containers, except for unreacted and ignitable wastes that will be redetonated. The shipping containers will meet appropriate U.S. Department of Transportation (DOT) shipping and labeling requirements, as specified in 49 CFR Parts 172, 173, and 179. Items classified as hazardous waste will be labeled in accordance with 49 CFR Section 172.304.

3.8.1 Inventory Removal and Disposal of Burn Pans

The maximum amount of waste materials present at the OB area at any one time would be 12,000 pounds NEW of material. The quantity can be treated in one treatment event using 12 of the 15 burn pans. Prior to closure of the OB area, this material will be treated. Therefore, no untreated material will be in the OB area when closure activities begin.

After treatment of the final volume of wastes, the burn pans will contain treatment residuals. These materials will be managed as follows:

1. The treatment residue in each burn pan will be collected and a composite sample will be analyzed for energetics.

2. If the treatment residue fails the reactivity characteristic test, it will be reburned. Step 1 will be repeated until the treatment residue passes the reactivity characteristic test.

3. If the treatment residue passes the reactivity test, the treatment residue will be analyzed for the TCLP. The TC constituents include arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, 2,4-dinitrotoluene, and nitrobenzene.

4. If the treatment residue results exceed the regulatory TC levels, the treatment residue will be removed from the pan(s), placed into containers, and disposed of at an off-site hazardous waste landfill.

5. If the treatment residue results are below the regulatory TC levels, the treatment residue will be removed from the pans and placed into containers. The material will be disposed of in a solid waste landfill.

After all of the treatment residue has been removed from the burn pans, the burn pans will be inspected, certified as explosive-free, and sold for recycling as metallic scrap. The steel lids will

be certified as explosive-free and sold as metallic scrap. The pan supports will be disposed of as a solid waste after certification as explosive-free.

3.8.2 Inventory Removal and Decontamination of Static Silos

The below ground, concrete static silos will be removed and either decontaminated, sampled and sent to either a solid waste disposal facility or a hazardous waste TSDF, depending on sampling results. The remaining soil will be sampled, analyzed and remediated depending on the sampling results. Details of the removal, decontamination and remediation of all contaminated materials, soils and equipment will be presented at the time of closure.

3.8.3 Determination of the Presence, Nature, and Extent of Contamination

For all sampling events, CARDS personnel or other certified explosive personnel will be on site. Because of the nature of the operations at the OB/OD unit, the potential exists for surface and subsurface unexploded ordnance (UXO) and metal objects related to munitions, propellants, pyrotechnics and explosives from the treatment operations. A UXO survey will be performed to provide access for the closure field investigation and sampling activities and a UXO survey and evaluation will be performed prior to the excavation or removal of any unidentified contaminated soils. Prior to any sampling, the OB/OD Unit will be swept using a magnetometer and cleared of all metal objects to ensure that the surface and subsurface are clear of UXO. Once this is done, sampling activities will commence.

At closure, the OB/OD Unit will be inspected for the presence of visible and/or readily identifiable wastes and residues. The inspection will include a search for stained, discolored, or other visibly affected soils. The presence of liquids, debris, UXO, and other related items will be noted.

A baseline environmental characterization of the site was conducted during 1997-1998 in accordance with a SAP. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure. For practical purposes, the results of the baseline SAP investigation and routine monitoring sampling results will be used for evaluating closure sampling activities. Many of the sampling strategies are likely to be incorporated into a pre-closure sampling plan.

3.8.4 Procedures/Methods to Perform Decontamination

Any contaminated residue/soil at the OB/OD Unit exceeding background or risk-based levels will be treated on site or will be removed using backhoes or other excavation equipment. Soil will be removed in layers up to 2 feet in thickness. After a layer of contaminated soil is removed, confirmation sampling/analysis will be conducted to determine if clean-up goals have been attained. If goals are not attained, additional layers of soil will be removed until closure goals are attained. If closure goals cannot be attained, the unit will be closed in accordance with the Contingent Closure Plan as described in Section 2. At present, removal by excavation is proposed. Treatment technologies for contaminated soils cannot be determined at this time.

Potential treatment technologies may include incineration, soil washing, open burning in pans, bioremediation, etc. The decision whether treatment is appropriate will be determined in the future. This decision will depend on the contaminants present, the nature and extent of contamination, and the status of available technology at the time of closure.

If treatment, either on site or off site, is considered to be an appropriate alternative to off-site disposal, the Closure Plan will be revised and submitted to the Director of the Utah Division of Solid and Hazardous Waste. The residue or soil will then be containerized, properly manifested, and transported to an approved waste management facility.

The staging location for closure activities will be conducted from the area near the entrance by the water tank and trailer outside the perimeter of the OB/OD Unit. Contaminated materials will be removed from the OB/OD Unit and brought to the staging area. The staging area will consist of a graded, compacted earthen foundation surrounded by earthen berms or temporary concrete berms to prevent run-on and runoff from the staging area. The foundation and berms will be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand all activities to be conducted in this area (e.g., sorting, storage). Plywood or a similar material will be laid on top of the liner to prevent tearing. The staging area will be covered in a manner that prevents accumulation of precipitation while allowing work to continue. Full drums of contaminated material will be temporarily stored at the staging area away from sorting activities to prevent contamination by loose material.

Materials will be sorted, if necessary, at the staging area as they arrive. Sorting is done to divide wastes into similar categories for management and disposition. Materials will be sorted into the following categories: UXO, contaminated materials/soils, contaminated liquids, and nonhazardous solid wastes. The method used for sorting will include, if necessary, the use of screens of varying mesh size, selection and removal of discrete items by hand, and other methods that protect workers while permitting the separation of wastes.

Hand tools will be decontaminated first by brushing, scraping, and shaking, because all contaminated wastes/media are expected to be solids. Hand tools will then be decontaminated in buckets or tubs using water and an appropriate cleanser.

Large equipment will be decontaminated prior to leaving the remediation area and entering a clean area. Any contamination present is expected to be in the form of solids. These solids will be mechanically removed from the equipment. After mechanical removal of the solids, high-pressure steam will be used to complete decontamination of equipment.

All drilling equipment used for collection of soil samples will be steam or pressure cleaned prior to beginning work, between soil boring locations, and prior to leaving the OB/OD Unit. All sampling equipment will be decontaminated prior to sampling and between samples. The following decontamination steps will be followed:

- Potable water rinse
- Alconox or liquinox detergent wash
- Potable water rinse
- Distilled/deionized water rinse
- 10% nitric acid rinse diluted with distilled and deionized water
- Distilled/deionized water rinse
- Isopropanol double rinse
- Distilled/deionized water rinse
- Air dry
- Wrap in aluminum foil.

All decontamination will be conducted in an area near the entrance to the unit by the water tank and trailer inside the perimeter of the OD area. A decontamination pad will be constructed in this area to prevent impact to the surrounding soils. The decontamination pad will consist of a compacted earthen foundation surrounded by earthen berms to prevent any decontamination solutions from exiting the area. The foundation and berms will be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand decontamination activities.

Sand or similar material will be placed on top of the liner to prevent tearing. Ramps will be positioned at the entrance and exit of the decontamination pad to allow vehicles to pass over the berms. The pad will be graded to slope toward a corner, where the liner forms a sump in a depression that has been dug in the ground, to allow collection of decontamination fluids.

Discolored and stained liquids (from equipment or tools decontamination) will be collected using buckets or pumps. If only small quantities are present, an absorbent may be used to collect the liquid. If it is determined that unstable materials may be created by drying of liquids, absorbents will not be used. The liquids will be collected in 5-gallon (minimum) drums or other appropriate containers and transported to the staging area.

3.8.5 Procedures To Evaluate Effectiveness of Decontamination

During closure, excavation and sampling of the OB/OD Unit will continue until all soil above background or risk-based levels has been removed. The effectiveness of decontamination will be determined on the basis of the results of tests on soil samples. Decontamination will be considered effective when concentrations of all samples are at or below background or risk-based levels (whichever is higher) and the distribution of contamination shows no pattern of increasing contaminant concentrations.

Hand tools, drilling equipment, and heavy equipment will be sampled if there is significant potential for contamination with explosive or ordnance-related compounds. The preferred method is to collect samples from the final decontamination rinse. These samples will be either the collected liquids from the final rinse or the cloths used for final wipe-down of the cleaned equipment. In addition, preferential samples will be collected from areas where contaminants may have collected.

Closure sampling activities will be conducted in accordance with the SAP, which was submitted as a separate document and is summarized in Attachment 19. Surface soil, subsurface soil, and sediment sampling will be conducted immediately prior to closure and at completion of closure to demonstrate that closure has been successfully accomplished.

As discussed previously, a baseline environmental characterization of the OB/OD Unit was conducted during 1997-1998 in accordance with the SAP. In addition, prior to closure of the OB/OD Unit, sampling will be needed to delineate the extent of contamination and to determine the extent of any remediation needed at closure. For practical purposes the results of the baseline investigation and the routine monitoring results will be used for evaluating closure sampling activities. Many of the sampling strategies are likely to be incorporated in a pre-closure sampling plan by reference.

Any contaminated residue/soil at the OB/OD Unit exceeding background or risk-based levels, whichever is higher, will be treated on site or will be removed using backhoes or other excavation equipment. Excavated soils will be placed in containers in the staging area where they will be sampled to determine whether they need to be disposed of as a hazardous waste. Soil will be removed in layers up to 2 feet in thickness. After a layer of contaminated soil is removed, sampling/analysis will be conducted to determine if clean-up goals have been attained. If goals are not attained, additional layers of soil will be removed until closure goals are attained or the unit is closed in accordance with the Contingent Closure Plan described in Section 2. At present, removal by excavation is proposed. Treatment technologies for contaminated soils cannot be determined at this time. Potential treatment technologies may include incineration, soil washing, open burning in pans, bioremediation, etc. The decision whether treatment is appropriate will be determined in the future. This decision will depend on the contaminants present, the nature and extent of contamination, and the status of available technology at the time of closure.

3.9 Harper 24D174 Rotary Furnace (AED Test Site)

The components of the Harper 24D174 Rotary Furnace system which continually come into contact with PEP materials are the:

Munitions Feed Conveyor

Harper 24D174 Rotary Furnace

Furnace Discharge Conveyor

All duct work associated with the Pollution Abatement System (PAS)

Cyclone

Baghouse

Afterburner.

At closure (at the end of the test sequence), the Harper 24D174 Rotary Furnace will be decontaminated and removed. All other equipment will remain at the AED Test Site.

4.0 Description of Additional Activities Performed During Closure

4.1 Groundwater and Surface Water Monitoring

Closure sampling activities will be conducted in accordance with an approved SAP. Both groundwater and surface water samples will be collected immediately prior to closure and at completion of closure to demonstrate that closure has been successfully accomplished. If the unit cannot be clean closed and routine groundwater monitoring is required, it too will be conducted in accordance with an approved SAP.

Groundwater and surface water sample locations and collection methods, analytical parameters, analytical methods, and quality assurance/quality control (QA/QC) procedures will be discussed in an approved SAP.

4.2 Run-on and Runoff Control

All decontamination will be conducted in an area near the entrance inside the perimeter of the OB/OD Unit. A decontamination pad will be constructed in this area to prevent impact to the surrounding soils. The decontamination pad will consist of a compacted earthen foundation surrounded by earthen berms to prevent any decontamination solutions from exiting the area. The foundation and berms will be overlain by a 30-mil thickness (minimum) liner of sufficient durability to withstand decontamination activities.

Soils that develop in semi-arid climates generally are deep, well drained, moderately permeable, and alkaline. In addition, these soils have a moderate water-erosion potential and slight wind-erosion. Hydraulic conductivities of the soil in these five series range from $1x10^{-2}$ to $1x10^{-4}$ cm/sec.

5.0 Schedule for Closure

The time required to complete closure activities for any one of the HWMUs does not exceed 90 days. The time for closure will be shorter if the OB/OD HWMU is used to treat some of the wastes in storage that comprise the inventories of Igloos A-101, C-815 and C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205.

5.1 Building 528

The containers used to store waste in Building 528 are mostly 55-gallon drums. A review of past Hazardous Waste Manifests show that the average weight of a container is 600 pounds. The truck used by the contractor to transport containerized hazardous waste are 18-wheeler tractor trainers (60 foot trailer) with a load capability of 90 drums, or 54,000 pounds. The entire inventory of hazardous waste stored in building 528 can be transported (considering incompatible wastes also) in less than 12 loads.

The off-site treatment and disposal of hazardous waste stored in Building 528 is done through contracts controlled by the Defense Reutilization and Marketing Office (DRMO). The procedures required for TEAD to "turn-in" the maximum inventory of hazardous wastes in storage at Building 528 at closure, and for DRMO to arrange for the transportation of this hazardous waste to off-site TSDFs will not take more than 90 days to implement.

5.2 Igloo A-101

The maximum volume of the inventory of reactive (explosive) wastes stored in Igloo A-101 is 9,180 gallons. Assuming that the wastes stored in Igloo A-101 (at the time prior to closure) have a specific gravity of 1.5 (TNT has a specific gravity of 1.65), the inventory would then have a NEW weight of approximately 9,180 gallons x 8.33 lbs/gallon x 1.5 = 114,704 pounds (worst case).

The method of treating reactive (explosive) hazardous waste is deactivation (DEACT). TEAD operates two types of HWMUs capable of treating reactive (explosive) wastes. The 1236 Deactivation Furnace can treat reactive (explosive) wastes at a NEW based rate of 240 lbs/hr. At a process rate of 240 lbs/hr, the deactivation furnace will take at most 478 hours (or approximately 32 working days at 15 hours per day) to deactivate the inventory of waste PEP items stored in A-101.

The other HWMU's operated by TEAD that could be used to deactivate the maximum inventory stored in A-101 are the Open Burn/Open Detonation (OB/OD) areas. The Part A Permit approved September 25, 1990 allows for a treatment rate of 6 tons/hr (process rate based on NEW). If the OB/OD grounds are used to treat the inventory at closure of A-101, it would take 9.5 hours.

5.3 Igloos C-815 and C-816, Service Magazines 1368 and 1370, and Above Ground Magazine 1205

Only reactive (explosive) wastes are stored in Igloos C-815 and C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205. These wastes require deactivation (DEACT) as a treatment. The deactivation furnace, or the OB/OD area operated by TEAD will be used to treat these wastes. The maximum inventories of reactive (explosive) wastes stored in Igloos C-815 and C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205 prior to closure is a combined total of 172,000 cubic feet. The NEW of the maximum inventory prior to closure stored in Igloos C-815 and C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205 is approximately 1,010,642 pounds (172,000 cf x 7.48 gal/cf x 8.33

lbs/gal x 0.1 lbs NEW/lb). The deactivation furnace would take 505 hours to process this amount of Reactive (explosive) waste (approximately 263 working days). The OB/OD area would take 45 days.

Note that the assumptions made above are conservative. At this time it is impossible to know which HWMUs will be used to treat the inventories of reactive (explosive) wastes stored in Igloos A-101, C-815, C-816; Service Magazines 1368 and 1370; and Above Ground Magazine 1205. All the wastes that might be stored prior to closure can be treated at the OB/OD area, but all the wastes that might be stored prior to closure most likely could not be treated at the deactivation furnace. The deactivation furnace is the slower of the two processes, and has been used to determine the time required for closure. This logic is in line with the previous conservative assumptions that have been made.

5.4 1236 Deactivation Furnace

The maximum inventory of wastes that will be stored at the Deactivation furnace is that which could be processed in one day. The inventory of waste requiring processing through the deactivation furnace is 2000 pounds (approximately three 55 gallon barrels). Cleaning any residue from the pollution abatement system will generate approximately ten 55-gallon barrels. Processing the waste PEP items, and removing all residue associated with furnace operation will take approximately one week. There are no waste piles, hazardous waste storage tanks, or sumps associated with this HWMU.

5.5 Small Caliber Disassembly Lines (Buildings 1325 and 1335)

The maximum inventory of wastes that will be stored in the Small Caliber Disassembly Line is approximately 50,000 rounds. Removing filter media and cleaning the process equipment will generate approximately two 55-gallon drums. Processing the waste PEP items and removing all of the residues will take approximately one week.

5.6 Hydrolysis Facility

The maximum inventory of wastes that will be stored at the Hydrolysis Facility is equivalent to the maximum amount of wastes that could be processed in one day, approximately 3,900 pounds. Rinsing the process equipment will generate approximately six 55-gallon drums. Processing all of the waste PEP items and removing all of the residues will take approximately one week.

5.7 OB/OD Unit

TEAD will notify the Director of the Utah Division of Solid and Hazardous Waste at least 180 days prior to the date closure is expected to begin. Closure of the OB/OD Unit will follow the schedule outlined in Table 2.

5.8 Harper 24D174 Rotary Furnace (AED Test Site)

The maximum inventory of PEP materials that will be stored at the AED Test Site is that which

could be processed in one day. The inventory of PEP materials requiring processing through the Harper Rotary Furnace is 5000 pounds gross PEP weight (approximately seven 55 gallon barrels). Final cleaning of any residue (particulate) from the pollution abatement system will generate approximately no more than ten 55-gallon barrels. Processing the PEP items, and removing all residues associated with Harper 24D174 Rotary Furnace operation will take approximately one week. There are no waste piles, hazardous waste storage tanks, or sumps associated with this HWMU.

6.0 OB/OD Unit Contingent Closure Plan

TEAD proposes to remediate the surface and subsurface soil at the OB/OD Unit to risk-based or background levels (whichever are higher) during the closure period. As part of this process, all UXO will be removed or detonated in-place. If the soil cannot be remediated to risk-based or background levels, TEAD proposes to implement the Contingent Closure Plan discussed in this section.

Under this Contingent Closure Plan, the OB/OD Unit will be closed in a manner that will minimize or eliminate threats to human health and the environment, and the potential for escape of any possible hazardous waste, hazardous constituents, leachate, or waste decomposition products to groundwater, surface water, or the atmosphere upon cessation of operations. The unit will not undergo partial closure; all closure activities will take place following cessation of operations. The need for further maintenance after closure is addressed in the Contingent Post-Closure Plan (Section 3).

This Contingent Closure Plan will be implemented only after it has been determined that the closure as described in Section 1 is not feasible. Hence, data describing the nature and extent of any contamination will be evaluated in order to determine the

extent to which the unit requires capping, run-on and run-off controls, and other closure actions. A final cover will be placed over the unit, if it is determined to contain hazardous waste or hazardous constituents above risk-based or background levels (whichever are higher).

For this Contingent Closure Plan, TEAD proposes to install a final cover over the OB/OD Unit. It is currently proposed that this cover will consist of a multilayer clay cap with a synthetic liner. The cover will be constructed with a permeability of less than or equal to 1×10^{-6} centimeter per second. The cap will be installed following grading of the area. The synthetic liner will be constructed of 50-mil high-density polyethylene (HDPE) and will be placed over the unit after grading. The remainder of the cover will consist of 12 inches of natural clay overlain by sufficient native topsoil to support growth of natural grasses. The area will be reseeded with native grasses and contoured in an effort to promote drainage and minimize erosion. The entire cover, including the final topsoil cover material, will be of sufficient thickness and elasticity to accommodate settling and subsidence. The cover design will be provided prior to actual closure.

The unit to be closed under this Contingent Closure Plan will also have a run-on and runoff

control system to divert run-on from entering the unit area and to keep runoff leaving the unit from adversely affecting adjacent areas. This system may consist of a dike that will be a natural extension of the clay cover system, described above. The dike will be designed to prevent runon from entering the unit area during peak discharge from at least a 24-hour, 25-year storm event.

Table 2. Schedule for Closure of the OB/OD Unit*

Step	Description	Latest cumulative time (days)
1	Notify Utah Solid and Hazardous Waste Control Board of intent to close	-180
2	Treatment of final wastes by OB/OD	0
3	Begin closure	0
4	Construction of decontamination pad and staging area	10
5	Cleanup of residues at the OB/OD Unit and store residue in on-site interim status storage facilities	30
6	Soil/groundwater/surface water/sediment sampling events	30
7	Digging of test pits to explore for and remove any explosive materials (if necessary)	40
8	OD of any explosive material found during test pit excavation (if necessary), decontaminate OB pans	40
9	Removal of contaminated soil in depths of 2 feet**	130
10	Perform confirmation soil sampling to determine if clean-up goals are met**	130
11	Dispose of any contaminated soil off site	140
12	Decontamination of equipment used during closure	140
13	Disposal of decontamination solutions and any solid waste off site	160
14	Regrading and seeding of OB/OD Unit following cleanup	160
15	U.S. Army certifies that closure is completed in accordance with plan	165
16	Independent registered professional engineer certifies closure completed in accordance with plan	180

*Note that should monitoring data available at the time of closure indicate that substantial remediation will need to be conducted, an extension of the 180-day timeframe for closure will be requested.

**Note that the steps of soil removal and confirmation sampling may be repeated several times as necessary to ensure clean closure.

The runoff management system will be designed to divert at least the water volume resulting from a 24-hour, 25-year storm.

As described in Attachment 24, a groundwater monitoring well has been installed at the unit. This same groundwater monitoring well will be used to monitor the groundwater down-gradient of the unit during the post-closure period.

Access to the unit will be controlled through locked gates, and a warning sign will be placed at the gate. All other aspects of closure under this Contingent Closure Plan are identical to closure as described in previous sections.

7.0 Certification of Closure

Within 60 days of the completion of closure of each HWMU, TEAD will provide the Director of the Utah Division of Solid and Hazardous Waste, by registered mail, a certification by an independent, registered professional engineer that the unit has been closed in accordance with the Closure Plan. The certification will certify that the unit has been closed in accordance with the specifications of the approved closure plan. The certification will be signed by the Installation Commander and by an independent, registered professional engineer. Documentation supporting the engineer's certification will be furnished upon request.

8.0 Post-Closure and Closure Cost Estimate

A post-closure plan will not be needed for the seven storage HWMUs and the deactivation furnace (incinerator) since all wastes will be removed and the HWMU will be decontaminated.

The Harper 24D174 Rotary Furnace is a limited duration test of specific equipment. After completion of the test sequence, the system will be dismantled in accordance with this closure plan.

Closure and post-closure cost estimates are not provided. TEAD is an entity of the federal government and therefore exempt from this requirement.

9.0 Contingent Post-Closure Plan for OB/OD Unit

TEAD proposes to remediate the surface and subsurface soil at the OB/OD Unit to below risk-based or background levels (whichever are higher) during the closure period. As part of this process, all UXO will be removed and detonated in-place. If the soil cannot be remediated to risk-based or background levels (whichever are higher) at the OB/OD Unit, TEAD proposes to implement the Contingent Closure Plan described in Section 6 and the Contingent Post-Closure Plan described herein. The post-closure care period will span the required 30 years. The following activities will be conducted during the 30-year period.

9.1. Inspection Plan

Inspections will be conducted during the post-closure care period to mitigate the potential for migration of contaminants into soil, groundwater, surface water, and air, and to protect public health, safety, and the environment. Inspections will be conducted whenever groundwater sampling events occur, semiannually at a minimum. Inspections will also occur following all 25-year storm events. Items to be inspected are as follows:

- Security: The OB/OD Unit (as required) will have a locked gate on the access roads leading onto the ground. The gate and warning sign will be checked for damage.

- Erosion: The cover will be inspected for signs of erosion damage, such as might be due to washouts. Erosion damage will be repaired.

- Settlement: The cover will be inspected for ponding and other indications of settlement, subsidence, or displacement.

- Vegetative Cover: The condition of the vegetative cover will be inspected for adequacy and bare spots.

- Run-on and Runoff Controls: Drainage channels designed to divert and collect storm water will be checked to assure good drainage. The overall integrity of the dike system will be checked.

- Monitoring Wells: The condition of the well casing, cap, and lock will be checked as the well is sampled.

The various inspection findings and actions will be documented in the facility post-closure inspection logbook.

9.2. Post-Closure Monitoring

Groundwater monitoring at the closed OB/OD unit will be conducted once every five years. Measurements to be performed, tests to be performed, constituents to be analyzed, methods to be used, and QA/QC controls to be applied will be the same as in the monitoring program discussed in Attachment 19.

9.3. Post-Closure Maintenance

- Security: Signs will be replaced as they become illegible. The gate will be repaired or replaced as necessary to maintain the unit security.

- Erosion: Washouts will be repaired when they are detected. If the cap integrity is in question, repair activities will be initiated immediately. Restoration of the vegetative cover will be performed as needed.

- Cover Settlement: Differential settlement will be repaired by replacing cover materials and

reseeding.

- Vegetative Cover: Maintenance of the vegetative cover will include seeding, watering, and fertilizing, as needed. Tree or bush growth will be controlled by mowing. Mowing will be performed as necessary to control the growth of the vegetative cover and to maintain it at a reasonable height above the cover.

- Run-on and Runoff Controls: Drains and ditches will be cleaned and maintained to allow free drainage so that retention of storm water does not occur. High rate runoff areas (if any) will be protected by placing coarse stone, if needed, to ensure that erosion is minimal.

- Monitoring Wells: Any damage to monitoring wells will be repaired. If necessary, a damaged monitoring well will be replaced.

9.4. Post-Closure Security

Access to the unit will be controlled through a locked gate, and a warning sign will be placed at the gate. All other aspects of post-closure security under this Contingent Post-Closure Plan are identical to closure as described in Section 1.

9.5. Post-Closure Contact

The contact during post-closure care will be the TEAD Environmental Management Division.

Two copies of the post-closure plan will be stored, one by the Environmental Management Division and one by the CARDS Team Office. The Environmental Management Division is responsible for updating the plan as necessary.

9.6. Notices Required for Disposal Facilities

The following post-closure notices will be appropriately filed and submitted if clean closure cannot be demonstrated:

- A record of the type, location, and quantity of hazardous wastes disposed of will be submitted to the local zoning authority (or the authority with jurisdiction over local land use) and to the Director of the Utah Division of Solid and Hazardous Waste no later than 60 days after certification of closure.

- A notation in the deed to the facility property will be made that will, in perpetuity, notify any potential purchasers of the property that (1) the land has been used to manage hazardous waste; (2) use of the land is restricted to activities that will not disturb integrity of the final cover system or monitoring system during post-closure care period; and (3) a survey plat and record of waste disposal have been submitted to the local zoning authority (or the authority with jurisdiction over local land use) and to the Director of the Utah Division of Solid and Hazardous Waste. The survey plat will indicate the location and dimensions of the unit with

respect to permanently surveyed benchmarks. The plat will be prepared and certified by a professional land surveyor and will contain a note, prominently displayed, which states the owner's/operator's obligation to restrict disturbance of the disposal unit in accordance with applicable 40 CFR Part 264 Subpart G regulations. This notation must be placed within 60 days after certification of closure.