

**ATTACHMENT 11  
CLOSURE PLANS**

**(PERMIT APPLICATION SECTION 15)**

**15.0 § 270.14(b)(13-18) – Closure Plans**

These closure plans identify the steps necessary to clean close the hazardous waste operating units as required by §264.112(b)(1). Copies of the closure plans will be kept on file at the facility. WSTF's Environmental Program Manager is responsible for the maintenance of the facility's copies. The Plans will be updated as necessary to ensure adequate closure. It is anticipated that the final closure of the units will be deemed clean closures. Since the beginning of unit operations, the ETU and FTU have been inspected every working day and inspection records indicate that there have been no spills or releases of hazardous waste at these units. After the closure of each unit, all operations at that unit will cease (§ 264.112(b)(2)).

**15.1 § 270.14(b)(13) - ETU Closure**

**15.1.1 § 264.112(b)(3) - Maximum Waste Inventory**

It is estimated that the evaporation tanks will have accepted approximately 10 million gallons of waste at the time of closure (§ 264.112(b)(3)). A majority of the waste is made up of mildly contaminated water, which is treated by evaporation and biological means. The waste streams treated at the ETU are numerous and variable; see the Part A, Section 2.0 for a complete list of waste codes and quantities.

**15.1.2 § 264.113 - Schedule for Closure**

Closure of the ETU will be performed at the end of the unit's useful life, which has been determined to be in the year 2023. Closure activities may be initiated prior to the scheduled date if NASA or NMED determines closure is necessary. Notification of closure will be submitted to the NMED Secretary at least 45 days prior to beginning final closure. A modified closure plan will be submitted with the closure notification. Table 15.1 sets forth the steps that will occur during closure (§ 264.112(b)(6)).

**Table 15.1** Closure Schedule

DAYS	0	45	90	135	180	225	285
Closure Notification to NMED § 264.112 (d)(1)	*						
Final Receipt of Hazardous Waste § 264.112(d)(2)		*					
Closure Activities Begin § 264.113(a)		*					
All Hazardous Wastes Removed § 264.113(a)			*-----90 days-----*				
Disposal and Decontamination and Sampling Activities § 264.114					*-----180 days-----*		
Certification of Closure § 264.115							*--60 days--*

**15.1.3 § 264.114 - Disposal of Waste Inventory and Decontamination of Equipment**

All waste and waste residues contained in the tanks at the time of closure will be removed from the tanks, containerized, and transported to an off-site, permitted disposal facility as required by § 264.197(a). Liquid waste will be pumped from the tanks into contracted tanker trailers and dispatched directly to a permitted waste disposal facility. Solid waste will be placed in DOT approved containers and kept in a 90-day waste accumulation area prior to shipment to a disposal facility.

Tank liners that have come into contact with hazardous waste will be decontaminated by means of three high pressure water rinses. All other equipment associated with the tank system, such as piping, will be decontaminated by triple rinsing with water. All water used for decontamination will be collected in the tanks and either shipped off-site to a permitted disposal

facility or allowed to evaporate. After decontamination procedures are complete, the tank liners will be cut into manageable pieces, placed in DOT approved containers, and transported to a permitted hazardous waste disposal facility for incineration (§ 264.112(b)(4)).

Soil samples will be collected from areas surrounding the tanks to ensure that no contamination was incurred during operation of the unit. Two samples, one surface and one sub-surface, will be collected from points on the east, west, north and south sides of each tank. Surface and sub-surface samples will also be obtained from three sampling points between the front entrance gate and the unit's loading/off-loading pad which is the unit's highest traffic area.

Soil samples will be collected for analysis by EPA Method 8260B or equivalent for volatile organics, Method 8270 or equivalent for semivolatile organics, HPLC for hydrazines, and Method 6010B/7471 or equivalent for RCRA metals.

## **15.2 § 270.14(b)(13) - FTU Closure**

### **15.2.1 § 264.112(b)(3) - Maximum Waste Inventory**

The maximum annual inventory of hazardous wastes which could be in the FTU due to extreme circumstances would be 830,000 gallons (§ 264.112(b)(3)). This inventory would include the maximum operating capacity of both storage tanks and a transport vehicle. During normal operations, the maximum amount of waste at the facility will be about 3,000 gallons. The contents of the storage tanks will be disposed off-site as required. Removal of wastes from the FTU, prior to closing, will be conducted in accordance with normal FTU manifest and shipping procedures. No spills or unintended releases have occurred at this unit.

The following is a list of wastes managed at the unit:

- Hydrazine;
- Methyl hydrazine;
- 1,1-unsymmetrical dimethylhydrazine;
- 1,2-symmetrical dimethylhydrazine; and
- aqueous mixtures of these.

### **15.2.2 § 264.113 - Schedule for Closure**

The FTU is scheduled for closure in the year 2025. Closure activities may be initiated prior to the scheduled date if NASA or NMED determines closure is necessary. WSTF will notify the NMED Secretary 45 days prior to the expected date that closure activities are to begin at the unit. A modified closure plan will be submitted with the closure notification. Removal and disposal of waste inventory is estimated to take 6 weeks. Table 15.1 sets forth the steps that will occur in the closing of the FTU (§ 264.112(b)(6)).

### **15.2.3 § 264.114 - Disposal of Waste Inventory and Decontamination of Equipment**

All accumulated fuel waste will be transported to a RCRA permitted facility for off-site disposal or safely transferred to the ETU. WSTF qualified hazardous waste handlers will decontaminate the facility with a steam cleaner producing 185°F water with biodegradable detergent at between 700 and 1,000 pounds per square inch, gauge (psig). After the third application, all rinsates will be collected using pumps, drums, and tanks available on-site. All equipment used in the closure will then be triple rinsed and/or steam cleaned at the decontamination station used for the closure and the rinsates added to the rinsate from the facility decontamination. Then all rinsate will be evaluated, characterized, and disposed of in compliance with RCRA (§ 264.112(b)(4)).

Any potential contaminated tanks, process lines, or materials which can not be decontaminated at the closure site will be transported to the precision cleaning facility in the 200 Area and decontaminated, or will be characterized and disposed of in compliance with RCRA.

Soil sampling and analysis will be conducted to demonstrate contamination is not present in the soil as a result of unit operations. Three discrete scoop samples will be obtained from the south side of the unit-loading ramp, two samples on the south side of the containment, and two samples on the east side of the containment. A total of 14 samples will be taken at surface and sub-surface (approximately 1 foot deep) locations around the loading ramp and secondary containment. The samples will be analyzed using hydrazine(s) by HPLC. It is not anticipated that hydrazine(s) will be detected in the soil. However, if they are detected above the laboratory reporting limits, NMED Residential Soil Screening Levels (SSLs) will be used to determine if the detection is considered protective of human health and the environment. At this time there are no SSLs listed for hydrazine(s). EPA Region 6 has a residential human health medium-specific screening level for hydrazine, hydrazine sulfate of 0.16 mg/Kg. EPA Region 9 lists a residential Preliminary Remediation Goal (PRG) for hydrazine, hydrazine sulfate, methyl hydrazine, and dimethylhydrazine of 0.16 mg/Kg. NASA will use 0.16 mg/Kg as the action level for all hydrazine results. Any detects below this level will be considered protective of human health and the environment.

**15.3 § 264.115 - Certification of Closure**

NASA will submit all analytical data and closure discussion for NMED review and concurrence. Data sets will contain results, reporting limits, method detection limits, and appropriate SSLs, if established. Within 60 days of closure completion, a certification by an independent, registered, professional engineer stating the unit has been closed in accordance with this plan will be submitted to NMED.

**15.4 § 270.14(b)(14) - Notice Documentation**

This section does not apply to the ETU or FTU since unit closure has not taken place.

**15.5 § 270.14(b)(15) - Closure Cost Estimate**

WSTF is a Federal facility and is exempt from financial requirements as stated in 264.140(c).

**15.6 § 270.14(b)(16) - Post-Closure Cost Estimate**

WSTF is a Federal facility and is exempt from financial requirements as stated in § 264.140(c).

**15.7 § 270.14(b)(17) - Insurance**

WSTF is a Federal facility and is exempt from financial requirements as stated in § 264.140(c).

**15.8 § 270.14(b)(18) - Proof of Coverage**

WSTF is a Federal facility and is exempt from financial requirements as stated in § 264.140(c).