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UNIT DESCRIPTION

The T-Plant Complex Operating Unit Group (T-Plant) is located in Hanford’s 200 West Area. The primary missions of T-Plant are treatment and storage of non-containerized and containerized dangerous or mixed waste.

The following wastes may be managed at the T-Plant Operating Unit Group:

- Dangerous or mixed waste that is generated from processes at the Hanford site.
- Waste that is specifically identified in Section II, paragraph 8 of the Settlement Agreement re: Washington v. Bodman, Civil No. 2:30-cv-05018-AAM, January 6, 2006.

No other wastes may be managed at T-Plant unless authorized via a permit modification decision under Permit Condition I.C.3. Requests for Permit modifications must be accompanied by an evaluation adequate for Ecology to comply with SEPA.

At T-Plant the Permittees also:

- Vents containers.
- Decontaminates equipment and debris.
- Identifies, verifies, samples, treats, and repackages dangerous and mixed waste.
- Repairs and prepares equipment to be returned to service.

T-Plant personnel open, sort, treat, repackage, sample, perform physical screening and chemical screening to characterize retrieved waste, and verify the characterization of containers of dangerous and mixed waste.

Treatment of mixed waste includes:

- Deactivation (neutralization, cementing, absorption, encapsulating, and controlled reaction with water).
- Stabilization (cementing, absorption, and encapsulating).
- Volume reduction of waste.

Repackaging of waste includes the removal of prohibited items, puncturing of aerosol canisters, removal or collection of liquids, segregation or sorting, and waste consolidation.

T-Plant Dangerous Waste Management Units

T-Plant consists of the following dangerous waste management units where dangerous and mixed waste is treated or stored.

- 221-T Canyon Building
  - 221-T Canyon Deck
  - 221-T Cells
  - 221-T Tank System
  - 221-T Railroad Tunnel
  - 221-T Head End
- 2706-T Buildings
  - 2706-T Building
  - 2706-TA Building
  - 2706-TB Building
- 214-T Building
The T-Plant consists of the following outdoor dangerous waste management units:

- 2706-T Storage Yard
  - Dangerous and Mixed Waste Storage Modules (for storage only)
    - HS-030 Storage Module
    - HS-031 Storage Module
    - HS-032 Storage Module
- 2706-T Asphalt Pad
- 211-T Cage
- 221-T R-5 Waste Storage Area
- 221-TA Storage Area
- 243-T Covered Storage Pad
- 221-T Sand Filter Storage Area
- 211-T Pad
- 221-T BY Storage Area

These buildings, storage pads, storage areas, and storage modules provide space for storing dangerous and mixed waste containers. The Permit allows storage of bulk waste in the 221-T Canyon Cells.

The Permit allows treatment of dangerous and mixed waste only in the following locations within the T-Plant buildings:

- 221-T Canyon Deck
- 221-T Cells
- 221-T Railroad Tunnel
- 2706-T Building
- 2706-TA Building.

The Permittees can manage and store various sizes of waste containers in approved dangerous waste management units. They must maintain appropriate separation between containers of incompatible waste. (Incompatibility is defined in WAC 173-303-395.)

The Permittees must manage the containers following T-Plant processes and controls. This includes inspections outlined in Addendum I. Below is a brief description of the authorized dangerous waste management units within the T-Plant complex.

**221-T Canyon Building Deck**

The Canyon Building Deck consists of 38 covered and uncovered process cells (2L through 20L) and the railway tunnel access. Waste management activities include storing, opening, sorting, treating, repackaging, sampling, and physical screening and chemical screening to characterize waste retrieved from the burial grounds and to verify the characterization of containers of dangerous and mixed waste. The Permit allows treatment of dangerous and mixed waste within the 221-T Canyon Building Deck.

**221-T Cells**

The 221-T Canyon Building contains 37 process cells, grouped into 12-meter (40-foot) sections arranged in a single row running the length of the canyon. The 221-T Cells meet the requirements for a containment building storage location, because the ventilation system prevents inside air from going outside. The Permit allows treatment of dangerous and mixed waste in the 221-T Cells.

**221-T Tank System**

The 221-T Tank System consists of six tanks in various cells in the 221-T canyon. It includes the 211-T Sump. The last addition of waste to the 221-T tank system was on June 3, 1999. The Permittees then
isolated the tank system and removed it from service permanently. The Permit does not allow treatment of
dangerous and mixed waste in these tanks.

221-T Railroad Tunnel

The tunnel staging area is within the railroad tunnel that enters the 221-T Building at cell 2L. The Permit
allows treatment of dangerous and mixed waste in the 221-T Railroad Tunnel.

221-T Head End

The head end area consists of one large cell, a control room, laboratories, a change room, a maintenance
shop, and a large high bay work area. Here, the Permittees store, open, sort, repackaging, sample, and
physically and chemically screen waste to characterize retrieved waste and to verify the characterization of
containers of dangerous and mixed waste. The Permit does not allow treatment of dangerous and mixed
waste within the 221-T Head End.

2706-T Building

The 2706-T Building contains the 2706-T effluent collection system. This system collects, filters,
transfers, stores, and contains liquid mixed waste from treatment and decontamination activities in the
2706-T and 2706-TA Buildings and from direct additions of liquid mixed waste from other treatment and
storage activities. The system includes:
- 2706-T railroad pit sump.
- 2706-TA sump.
- 2706-TA heating, ventilation, and air conditioning sump.
- 2706-TB sump.
- Waste transfer piping and equipment.
- Liquid waste load out area above the railroad pit.

The Permit allows storage of non-containerized waste potentially containing free liquids. It also allows for
decontamination or treatment activities using free liquids on 2706-T and 2706-TA Building operational
area floors.

The 2706-T Building is a high ground-level building with an epoxy coated concrete floor. The 2706-T
Building is the load out point for all liquid waste generated in the 2706-T and 2706-TA Buildings. Here,
the Permittees vent, segregate, repackaging, verify, and store dangerous and mixed waste containers (boxes
and drums). The Permit allows treatment of dangerous and mixed waste in the 2706-T Building.

2706-TA Building

The 2706-TA Building is made of prefabricated steel and has a concrete floor coated with an epoxy floor
sealant. Here, the Permittees vent, segregate, repackaging, verify, and store dangerous and mixed waste
containers (boxes and drums). The Permit allows treatment of dangerous and mixed waste in the 2706-TA
Building. The 2706-TA Building may be used for equipment decontamination.

2706-TB Building

The 2706-TB Building is made of prefabricated steel and has a concrete floor. It contains two storage and
treatment tanks with secondary containment. The two storage tanks, T-XX-2706-220 (T-220) and
T-XX-2706-221 (T-221), are stainless steel tanks that are a portion of the effluent collection system.
2706-TP also contains a chemical addition room, located at the north end of the building.

T-220 developed leaks and was removed from service. There are no current plans to repair the tank.

T-221 is a useable tank, but has never been used for receipt of any type of material. Both tanks have been
confirmed to be empty, and their inlets and outlets were blanked to prevent any addition of material to the
tanks. The pipe blanking was witnessed by Ecology and documented via pictures.

The Permit does not allow waste management in Tanks T-220 and T-221.
214-T Building
The 214-T Building is made of corrugated steel overlaying I-beams. It has containment basins and a concrete floor coated with an epoxy floor sealant. The containment basins are coated with material that is resistant to caustic, oxidizing, combustible, and flammable chemicals. The Permit does not allow dangerous and mixed waste treatment activities in this area.

2706-T Storage Yard
The 2706-T Storage Yard is a fenced, uncovered asphalt paved area for storage of containerized mixed and low-level waste. The 2706-T Storage Yard is located on the north side of the 2706-TA and 2706-TB Buildings. It is irregular in shape and contains two engineered metal structures (HS-030 and HS-032). The Permit does not allow dangerous and mixed waste treatment activities in this area.

HS-030 Storage Module
HS-030 is an engineered metal storage module, enclosed completely by walls, roof, and floor to protect containers from precipitation and run-on. The Permit does not allow dangerous and mixed waste treatment activities in this area.

HS-031 Storage Module
HS-031 is an engineered metal storage module, enclosed completely by walls, roof, and floor to protect containers from precipitation and run-on. The Permit does not allow dangerous and mixed waste treatment activities in this area.

HS-032 Storage Module
HS-032 is an engineered metal storage module, enclosed completely by walls, roof, and floor to protect containers from precipitation and run-on. The Permit does not allow dangerous and mixed waste treatment activities in this area.

2706-T Asphalt Pad
The 2706-T Asphalt Pad is an uncovered asphalt area for storage of waste in containers. This pad can store waste containers of various size and volume. It is located northwest of the 2706-T Storage Yard. The Permit does not allow dangerous and mixed waste treatment activities in this area.

211-T Cage
The 211-T cage is a fenced outside storage area with a locking gate for storing containerized waste. The Permit does not allow dangerous and mixed waste treatment activities in this area.

221-T R-5 Waste Storage Area
The 221-T R-5 Waste Storage Area is an uncovered asphalt storage area. The Permit does not allow dangerous and mixed waste treatment activities in this area.

221-TA Storage Area
The 221-TA storage area is an outside paved storage area at the southeast corner of the 221-T Building. The Permit does not allow dangerous and mixed waste treatment activities in this area.

243-T Storage Area
243-T is an outdoor irregularly shaped area. This storage area includes a partially covered asphalt pad, and an adjacent graveled area. The pre-engineered cover has a structural steel frame, a sheet metal roof, and open sides. The Permit does not allow dangerous and mixed waste treatment activities in this area.

221-T Sand Filter Storage Area
The 221-T Sand Filter storage area is an uncovered gravel storage area. The Permit does not allow dangerous and mixed waste treatment activities in this area.
211-T Pad

The 211-T Pad is a concrete pad with curbs. It is available for use as secondary containment for tanker trucks. Drums and boxes containing free or containerized liquids can be stored on this pad. The Permit does not allow dangerous and mixed waste treatment activities in this area.

221-T BY Storage Area

The 221-T BY is an uncovered, irregular shaped area encompassing asphalt and gravel pads. It is located northwest of the 221-T Canyon Building and Tunnel. The Permit does not allow dangerous and mixed waste treatment activities in this area.

TYPE AND QUANTITY OF WASTE

The T Plant stores and treats a very wide variety of dangerous and mixed wastes. For specific information on types of waste found at T Plant, refer to T Plant Addendum A, Part A form. Storage volume and secondary containment volume for each of the dangerous waste management units are listed in Table 1.

Table 1. Secondary Containment Volume and Storage Capacity for Each Dangerous Waste Management Unit

<table>
<thead>
<tr>
<th>Structure</th>
<th>Secondary Containment Volume (liters)</th>
<th>Maximum Total Storage Capacity Volume (liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>221-T Canyon Deck</td>
<td>Provided by individual spill pallets</td>
<td>S06 included in 221-T Cells</td>
</tr>
<tr>
<td>221-T Cells</td>
<td>2,000 per secondary containment liner</td>
<td>10,700,000 (S06)</td>
</tr>
<tr>
<td>221-T Tank System</td>
<td>187,000 50% volume of cell 5R</td>
<td>213,247(S02)</td>
</tr>
<tr>
<td>221-T Railroad Tunnel</td>
<td>Provided by individual spill pallets</td>
<td>224,640 (S01)</td>
</tr>
<tr>
<td>221-T Head End</td>
<td>Provided by individual spill pallets</td>
<td>8,320 (S01)</td>
</tr>
<tr>
<td>2706-T Building</td>
<td>400</td>
<td>13,191,000 (X99)</td>
</tr>
<tr>
<td>2706-TA Building</td>
<td>2,000</td>
<td>13,191,000 (X99)</td>
</tr>
<tr>
<td>2706-T Storage Yard</td>
<td>Provided by individual spill pallets</td>
<td>392,709 (S01)</td>
</tr>
<tr>
<td>2706-TB Building (2706-T Tank)</td>
<td>60,300</td>
<td></td>
</tr>
<tr>
<td>214-T Building</td>
<td>1,381</td>
<td>67,392 (S01)</td>
</tr>
<tr>
<td>211-T Cage</td>
<td>870</td>
<td>19,968 (S01)</td>
</tr>
<tr>
<td>2706-T Asphalt Pad</td>
<td>Provided by individual spill pallets</td>
<td>1,246,068 (S01)</td>
</tr>
<tr>
<td>221-TA Storage Area</td>
<td>Provided by individual spill pallets</td>
<td>56,160 (S01)</td>
</tr>
<tr>
<td>221-T R-5 Waste Storage Area</td>
<td>Provided by individual spill pallets</td>
<td>898,560 (S01)</td>
</tr>
</tbody>
</table>
### Basis for Permit Conditions

This permit is intended to protect human health and the environment while ensuring proper management of waste at T-Plant. The permit addenda are incorporated into this permit and are enforceable by reference. The conditions and addenda are derived from the permit application. Ecology has reviewed the permit application for T-Plant to ensure the unit meets dangerous waste facility standards.

The permit includes requirements for complying with environmental standards and maintaining and modifying the permit. The permit conditions address specifics such as personnel training, adequate staffing, process controls, and inspection requirements.

### General Waste Management Requirements

The Permit allows T-Plant to receive waste from onsite generators. The Permit authorizes T-Plant to accept, treat, and store only wastes that satisfy the T-Plant waste acceptance criteria and permit conditions, and only in the permitted areas.

The Permittees collect and transfer liquid mixed waste from decontamination processes to drums or directly to a tanker truck. (Mixed waste consists of waste containers, uncontainerized process equipment, jumpers, and other items awaiting decontamination, treatment, or repackaging before final disposition.) The liquid waste then goes to a treatment, storage, and disposal facility that can accept it.

The Permittees must maintain the integrity of the unit and its secondary containment systems that prevent

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### Table: Secondary Containment

<table>
<thead>
<tr>
<th>Structure</th>
<th>Secondary Containment Volume (liters)</th>
<th>Maximum Total Storage Capacity Volume (liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>221-T Sand Filter Storage Area</td>
<td>Provided by individual spill pallets</td>
<td>56,160 (S01)</td>
</tr>
<tr>
<td>211-T Pad</td>
<td>10,065</td>
<td>56,160 (S01)</td>
</tr>
<tr>
<td>243-T Covered Storage Pad</td>
<td>Provided by individual spill pallets</td>
<td>591,168 (S01)</td>
</tr>
<tr>
<td>221-T BY Storage Area</td>
<td>Provided by individual spill pallets</td>
<td>591,168 (S01)</td>
</tr>
<tr>
<td>HS-030</td>
<td>3,142</td>
<td>7,488 (S01)</td>
</tr>
<tr>
<td>HS-031</td>
<td>3,142</td>
<td>7,488 (S01)</td>
</tr>
<tr>
<td>HS-032</td>
<td>3,142</td>
<td>7,488 (S01)</td>
</tr>
<tr>
<td>T-Plant Maximum Total Capacity</td>
<td>4,230,937 (S01)</td>
<td>Volume for containers</td>
</tr>
<tr>
<td>T-Plant Total Capacity Volume</td>
<td>213,247 (S02)</td>
<td>for tanks</td>
</tr>
<tr>
<td>T-Plant Total Capacity Volume</td>
<td></td>
<td>for containment building</td>
</tr>
<tr>
<td>T-Plant Total Capacity Volume</td>
<td>10,700,000 (S06)</td>
<td>for miscellaneous unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(X99)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26,377,000 (X99)</td>
</tr>
</tbody>
</table>
waste from escaping.

Addendum B supersedes Addendum A, the Part A form, for information on waste types, quantities, and process information.

WASTE ANALYSIS REQUIREMENTS

Condition III.09.C.1 requires the Permittees to comply with the requirements in Addendum B (Waste Analysis Plan). The basis of this condition is WAC 173-303-300(5). The Permittees must also comply with recordkeeping requirements in WAC 173-393-380.

Condition III.09.C.2 requires the Permittees to provide, within 14 days of the effective date of this permit, a modification request identifying and defining the waste acceptance criteria for each of the authorized dangerous waste management units Addendum C. This condition, based on WAC 173-303-300 (1), assures that the Permittees have sufficient information about a waste to reliably substitute for direct testing of the waste.

RECORDKEEPING AND REPORTING

The basis of Condition III.5.B, is WAC 173-303-380 and WAC 173-303-810(16) for those requirements not elsewhere in the permit.

SECURITY

The T-Plant is within Hanford’s secured area. Access to the unit is subject to the general security provisions of Condition II.L. Security provisions, access controls, and signage specific to this unit will comply with the requirements of WAC 173-303-301.

PREPAREDNESS AND PREVENTION

The basis of preparedness and prevention requirements in the Permit conditions and Permit Addendum F is WAC 173-303-340. These requirements address internal and external communications with unit personnel and emergency responders in case of fire or other emergency. They also include emergency equipment and procedures.

CONTINGENCY PLAN

Requirements in Condition II.A will apply. The facility contingency plan is attached to the Permit (Addendum J).

INSPECTIONS

Condition II.X requires Hanford's dangerous waste management units to establish a written inspection schedule and conduct inspections following the schedule. The Permittees must correct problems found during these inspections. Condition II.X also includes inspection recordkeeping requirements. The basis for these inspection requirements is WAC 173-303-320.

Due to high radiation in the 221-T Canyon, the Permittees meet the visual tank inspection requirements of WAC 173-303-640 using a camera system that monitors all activities on the deck.

TRAINING

Condition III.09.I requires the Permittees to put the training requirements described in Addendum G into a written training plan required by Condition II.C. The plan will be specific to the positions and job descriptions associated with T-Plant. The training program, the written training plan, and records must meet the requirements of WAC 173-303-330.

OTHER GENERAL PERMIT REQUIREMENTS

The Permittees will comply with WAC 173-303-395(1) for management of ignitable, reactive, or incompatible waste, and WAC 173-303-395(2) for compliance with other environmental protection laws and regulations. The requirements for inspections related to management of ignitable and reactive wastes are in Addendum I.
Land Disposal Restriction Requirements

Tri-Party Agreement Milestone M-26 requires a land disposal restrictions report. Condition III.09.J.4 requires the Permittees to include in that report a schedule of compliance and associated work requirements for treatment and/or acquisition of treatment.

CLOSURE

Clean closure involves removing all dangerous waste from T-Plant and decontaminating or removing any equipment or surfaces that are contaminated. The Permittees have submitted a closure plan based on clean closure (Addendum H). The plan complies with the requirements of WAC 173-303-610(2)(6) and WAC 173-303-630(10).

The dangerous waste regulations require the Permittees to finish clean closure of a facility in 180 days or fewer. The Permit conditions allow the Permittees two years for clean closure of T-Plant. We are allowing the extra time because of the complexity of clean closing a radiological facility with hot cells. If clean closure in two years is not possible, the Permittees can request a delay. The Permittees must demonstrate cause for the delay. If Ecology agrees with the Permittees, we will work with them to set a new date.

CONTAINER STORAGE UNIT STANDARDS

Addendum C, Section C.1 documents the areas within T-Plant used for management of dangerous/mixed waste. Sections C.1.1, C.1.2, and C.1.4 contain their waste management requirements. Permit Addendum B, Section B.1.1.1.2.2, and Table B.1, includes requirements for waste compatibility. Condition III.09.O includes requirements for managing the containers. The use and management of containers are covered in WAC 173-303-630.

Ecology is establishing the requirements of WAC 173-303-630(7) for secondary containment, and indirectly, the capacity of the unit and the various storage devices in it. Physical capacity limits of buildings, storage pads, etc., are also specified. The storage capacity of T Plant is not a fixed quantity (although a ceiling amount is specified in Permit Addendum A). Capacity depends on the type and quantity of wastes in T Plant. Certain ignitable and reactive wastes are subject to management in a manner equivalent to the requirements of the Uniform Building Code and the International Fire Code pursuant to WAC 173-303-630(8).

The requirements of Permit Addenda C and Addenda F, and Conditions III.09.O.1 and III.09.O.2 for management of dangerous and mixed waste comply with WAC 173-303. These requirements protect human health and the environment.

Condition III.09.O.3.a requires the Permittees to inspect the container storage areas according to the inspection plan in Permit Addendum I.

Addendum C, Section C.2.5.2 requires the Permittees to satisfy requirements for Level 1 controls through use of Department of Transportation-compliant containers or by keeping sealed lids on containers at all times, except when adding or removing wastes from containers.

TANK MANAGEMENT STANDARDS

Condition III.09.P addresses tank management standards at T-Plant. The standards are based on the requirements of WAC 173-303-640.

These requirements include:

- Tank integrity assessment.
- Protection of tank system integrity.
- Prevention of spills and overflows.
- Marking and labeling.
• Tank leaks and spills including description of controls and practices to prevent spills and overflows.
• Management of incompatible waste.
• Periodic inspection and documentation.
Sections of Addendum C (Process Information) satisfy the requirements of WAC 173-303-815(2) for facility-specific permit conditions.

REQUESTED VARIANCES OR ALTERNATIVES

There are no requested variances or alternatives for T-Plant.

STATE ENVIRONMENTAL POLICY ACT (SEPA)

The SEPA determination for T-Plant is in the Hanford-Wide Permit Fact Sheet.
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