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DEPARTMENT OF ECOLOGY
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Re: Transmittal of the Complete Draft Hanford Facility Dangerous Waste Permit, Rev 9, Including Single- Shell Tank Closing Unit Group 4 Portion

Dear Madam and Gentlemen:

Enclosed is the complete draft Hanford Facility Dangerous Waste Permit, Revision 9 (Permit). The Permit is being updated to include the draft Single-Shell Tank Closing Unit Group 4 portion. As noted in Reference 1, the Single-Shell Tank Closing Unit Group was not included in the original release.

All other portions of the Permit were released for review on May 1, 2012. No changes have been made to the already released portions. The comment period for all portions of the draft Permit, including the Single-Shell Tank Closure Unit Group, runs through September 30, 2012.

The Department of Ecology (Ecology) is providing copies of this complete draft Permit on DVD to the Hanford Public Information Repositories located in Richland, Spokane, and Seattle, Washington and Portland, Oregon. A complete copy is available on our website at http://www.ecy.wa.gov/programs/nwp/permitting/hdwp/.

Ecology is also providing the Single-Shell Tank Unit Group information for incorporation into the paper copies of the draft Permit available at:

Department of Ecology
3100 Port of Benton Blvd
Richland, Washington

Administrative Record Reading Room
2440 Stevens Center Place
Richland, Washington.

You may comment on any portion of the Permit. Comments may be submitted by email, U.S. mail, or fax. In addition, you may comment orally at a public hearing. The public comment period ends September 30, 2012.

Written comments should be submitted to:

Nuclear Waste Program
Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354

Email: Hanford@ecy.wa.gov

Fax: 509-372-7971

Ecology will hold a public hearing on the Permit on Tuesday, August 7, 2012 at 5:30 p.m. at:

Richland Public Library
955 Northgate Drive
Richland, Washington.

Portions of the Permit specific to the Waste Treatment Plant contain confidential business information. This information is not being provided for public review (Reference 2).

In addition to the draft Permit, copies of the original permit applications are available at the Ecology office in Richland, Washington. You may contact Valarie Peery at 509-372-7920 regarding copies. Please contact Andrea Prignano at 509-372-7911 with any other questions regarding the Hanford Facility Dangerous Waste Permit.

Sincerely,

Jane A. Hedges
Program Manager
Nuclear Waste Program

Reference 1: Letter 12-NWP-055, dated April 27, 2012, from Jane A. Hedges, Department of Ecology, to Distribution, "Re: Transmittal of the Draft Hanford Facility Dangerous Waste Permit, Rev 9"

Reference 2: Letter dated April 1, 2009, from Jay J. Manning, Department of Ecology, to Shirley J. Olinger, United States Department of Energy, and Mr. William S. Elkins, Bechtel National, Inc., "Re: Certification of Confidential Business Information for the Waste Treatment Plant"

Enclosure

cc: w/enc:

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USDOE Reading Room
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USDOE Administrative Record
USDOE Environmental Portal
USDOE-ORP Correspondence Control
USODE-RL Correspondence Control
Hanford Facility Operating Record General File

Single-Shell Tank System

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FACT SHEET

PART V CLOSURE UNIT GROUP 4, SINGLE SHELL TANK SYSTEM

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FACT SHEET

PART V CLOSURE UNIT GROUP 4, SINGLE SHELL TANK SYSTEM

UNIT DESCRIPTION

The Single Shell Tank (SST) System includes 12 tank farms. These tank farms contain a total of 149 underground storage tanks, related equipment, active and miscellaneous underground storage tanks, miscellaneous facilities. It also includes and soils and groundwater that are contaminated from leaks and unplanned releases.

The SST System contains:

- 133 100-series SSTs (530,000 to 1 million gallon capacity).
- 16 200-series SSTs (55,000 gallon capacity).
- Waste transfer vaults and related tanks.
- Tank pits, valve pits, and flush pits.
- Pumps and valves.
- Diversion boxes.
- Numerous pipelines.
- Above-ground buildings and structures.
- Other mechanical equipment.
- Contaminated soils.
- Contaminated groundwater.

The12 tank farms are geographically grouped into seven waste management areas (WMAs) for regulatory purposes. WMA A-AX, C, and B-BX-BY are located in the 200 East Area of the Hanford Site. WMA T, TX-TY, U, and S-SX are located in 200 West Area of the Hanford Site. Most of the SST System is located within the WMAs. However, some components of the system, such as ancillary equipment, transfer lines, and support facilities are located outside WMA boundaries. The associated equipment outside the WMA boundaries is located within 200-IS-1 Operable Unit (OU).

In addition to SST components, the 200-IS-1 OU includes past-practice sites subject to the Hazardous Waste Management Act (HWMA) corrective action and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial action requirements, and other tank storage and disposal facilities that are not part of the SST System. The HWMA is Washington State's implementation of the Resource Conservation and Recovery Act (RCRA), as delegated by the United States Environmental Protection Agency (EPA).

TYPE AND QUANTITY OF WASTE

The 149 SSTs in the 200 East and 200 West Areas of the Hanford Site were built between 1943 and 1964 to store waste underground. Beginning in 1944, waste was routed via buried pipelines to the SSTs from spent fuel processing and other operations. The SSTs also received liquid radioactive wastes from Hanford facilities outside of the 200 Areas.

All waste in the SSTs is mixed waste (radioactive and dangerous) (see WAC 173-303-040). The type and quantity of waste is listed in Addendum A of the SST Permit, and the United States Department of Energy (USDOE) publication HNF-EP-0182, *Waste Tank Summary Report,* Rev. 284.

The maximum quantity of waste in the SSTs at one time was about 77.5 million gallons in 1966. As of November 2011, the SSTs hold 27.51 million gallons of mixed waste (HNF-EP-0182, *Waste Tank Summary Report,* Rev. 284).

Waste has leaked from the SST system or has been discharged in an unplanned manner. The estimated volume of leaked waste from the SSTs is approximately 3.8 million Liters (1 million gallons).

BASIS FOR PERMIT CONDITIONS

Ecology cannot authorize the SST System to operate (treat, store, or dispose of dangerous waste) because the tank system does not satisfy the requirements of WAC 173-303. Specifically, the SST System has been declared to be an unfit for use tank system under WAC 173-303-400(3) (incorporating by reference 40 C.F.R. §265.191). Unfit for use tank systems must be upgraded, repaired, or closed. USDOE has chosen to close the SST System. This closure will follow the standards of WAC 173-303-610 (addressing dangerous waste facility closure generally) and WAC 173-303-640(8) (addressing closure for dangerous waste tank systems).

WAC 173-303-610(4)(b) requires non-compliant facilities to be closed within 180 days. However, the Permittees cannot practicably close the facility to meet the closure requirements within 180 days due to:

- The complexity of the Hanford SST System.
- The amount of waste in the system.
- The nature of the waste (mixed waste – both radioactive and dangerous).
- The fact that capacity to treat the waste is not yet on-line.
- The magnitude of soil and groundwater contamination caused by the discharge, spills, and leaks from the SST System.

Ecology is incorporating into the SST Permit existing legal compliance schedules that dictate schedules and certain requirements for completing the SST System closure. This will ensure that the closure process protects human health and the environment; meets the dangerous waste regulations; and minimizes long-term post closure care and environmental impact. These compliance schedules have either been negotiated and agreed upon in the Hanford Federal Facility Agreement and Consent Order (HFFACO) (also known as the Tri-Party Agreement [TPA]) (e.g., through its major Milestone M-045 series, Appendix H and Appendix I), or have been negotiated and agreed upon, and adopted as a judicial order, in the consent decree entered in the *Washington v. Chu* Case, Case No. 08-5085 FVS, United States Federal District Court for the Eastern District of Washington, entered on October 25, 2010, (*Washington v. Chu* Consent Decree).

The SST System cannot be closed within 180 days as required by WAC 173-303-610(4)(b). The closure process will take an extended period so the waste stored in the SST System has to be safely managed, even though the SST System is an unfit for use tank system and is not operating. To provide for this safe management, pre-closure conditions are imposed in this Permit that requires the Permittees to:

- Undertake safety controls and hazards prevention.
- Perform tank leak and intrusion detection.
- Respond to leaks and spills.
- Comply with the contingency plan in Addendum K.
- Develop an inspection schedule, description of security procedures, and a training matrix identifying worker categories and training categories of personnel involved with hazardous waste management, tank waste retrieval, closure, and corrective action.
- Implement and comply with the requirements of the approved plans.

As stated in the HNF-EP-0182, *Waste Tank Summary Report,* Rev. 284, as of November 2011, the SSTs still hold 27.51 million gallons of mixed waste. Tank waste must be retrieved and transferred into safer storage for eventual treatment and disposal. *The Washington v. Chu* Consent Decree sets forth the requirements and schedules for tank waste retrieval from 19 tanks. The rest of the SSTs are subject to retrieval requirements and schedules of the TPA . Those requirements and schedules are contained in, and established under, TPA Milestones M-045 and M-062, Appendix H, and Appendix I, which are incorporated into the Permit by reference.

Among the 149 SSTs, 67 tanks are leakers or assumed leakers. Waste has been leaked from the system or discharged in an unplanned manner. The estimated volume of leaked waste from the SSTs is approximately one million gallons. The Permittees are required to conduct corrective action under WAC 173-303-646 to address contamination caused by these releases. The Permit incorporates corrective action requirements and schedules of the TPA where they exist for WMA C and for certain interim actions. The Permit further requires development of a schedule and implementation plan for completing corrective action at all other WMAs.

PROCESS INFORMATION SUBMISSION AND UPDATING

Conditions V.4.B contain the requirements for process information for the SST System, WMAs, and 200-IS-1 OU. To facilitate the SST System closure action, the Permit requires the Permittees to organize and submit SST System process information in a manner corresponding with the three-tier approach for closure plans described in TPA Appendix I, Section 2.0.

The process information for the SST System (Tier 1) will include a system-wide description of the SST System processes, waste generation, transfer and storage procedures, diagram(s), drawing(s), service and operating history, and list of tanks and ancillary equipment. The information will be submitted to update Addendum B of this Permit.

WMA process information (Tier 2) shall include WMA-specific process information, waste information, a list of components within the WMA, and any non-tank structures located within a WMA that may need decommissioning before closure, or any components located outside a WMA but are proposed to be closed with that WMA.

The Permittees will provide detailed information for each component of the WMA (Tier 3) for the review and approval of closure plans, clean-closure impracticability demonstrations, and remedial or corrective action for components located outside WMAs. The information will be submitted to update Addendum C of this Permit.

The Permittees have been submitting annual updates to the Part A form (see Addendum A) to document the SST System and WMAs. The annual update to the Part A form will no longer take place. When there is new or revised information, the Permittees will provide updates that will be incorporated into Addendum B (SST System Process Information) or Addendum C (WMAs Process Information). If the Permittees have not identified new or revised information, they will notify Ecology.

Within 180 days of the effective date of the Permit, the Permittees will submit the SST System process information that has been identified as of the effective date of the Permit. After that, they will submit new or updated information annually by March 1 or notify Ecology that there is no new or revised process information.

The Permittees are required to submit the process information for WMA C within 180 days of the effective date of this Permit with the permit modification required by TPA Milestone M-045-82.

The Permittees are required to provide Ecology, by December 30, 2015, a schedule of permit modifications for obtaining the process information for all other WMAs by December 30, 2025. Once the process information for a WMA is submitted, the Permittees will continue to submit new or revised process information annually by March 1, until that WMA is certified closed.

The Permittees will submit the process information for 200-IS-1 OU by the date specified in TPA Milestone M-015-90.

SST SYSTEM GROUNDWATER MONITORING

Conditions V.4.C contain the requirements for SST System groundwater monitoring. The SST System is a tank system (and not what is defined as a land-based "regulated unit"). It is not subject to groundwater monitoring requirements under the Dangerous Waste Regulations.[1] However, because the SST system is located underground, is unfit for use, and has already incurred releases to soils and groundwater, Ecology has, under the authority of WAC 173-303-815(2)(b)(ii), chosen to require groundwater monitoring of the system as if it were a regulated unit.

Prior to issuance of this SST System Permit chapter, groundwater monitoring of the SST System has been managed by applying interim status facility standards incorporated under WAC 173-303-400(3). Under these standards, groundwater at all seven SST WMAs has been placed for assessment monitoring starting from various years (1993, 1996, 2000, 2005, and 2011) following the requirements in 40 Code of Federal Regulations (CFR) 265, Subpart F. Subpart F specifies the requirements for groundwater monitoring system, sampling and analysis, and evaluation and responses.

An interim monitoring plan was approved for each WMA except WMA B-BX-BY and WMA A-AX, for which groundwater monitoring plans are pending approval.

The groundwater monitoring under the current assessment monitoring plans have concluded that three WMAs (C, U, A-AX) have impacted groundwater, and that groundwater under two WMAs (S-SX, and B-BX-BY) have been impacted by multiple source locations. No conclusions have been drawn for WMA T and TX-TY. Their groundwater monitoring plans were updated in 2009. However, remedial action is being implemented for groundwater OU, 200-ZP-1, which is right under WMA T and TX-TY, The Record of Decision (ROD) for 200-ZP-1 acknowledges widespread contamination within the unit, without identifying specific sources.

Under the Permit, the current assessment monitoring plans will be implemented until new groundwater monitoring plans are developed and approved. The Permittees are required to develop and implement new plans to conduct groundwater compliance monitoring in accordance to WAC 173-303-645(8) and (10), with specified groundwater protection standards established in the plans. These plans will be developed on a WMA basis. The plans will be incorporated into this Permit as Addendum D.

With confirmed releases and groundwater contamination, the Permittees must conduct groundwater monitoring as part of the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) in accordance with WAC 173-303-646, and monitor for corrective action in accordance with WAC 173-303-645(11) [the requirements of which are applied under the authority of WAC 173-303-815(2)(b)(ii)].

TPA Action Plan Section 5.5 specifies that "CERCLA past-practice authority may provide the most efficient means for addressing mixed waste groundwater contamination plumes originating from a combination of treatment, storage, and disposal (TSD) and past-practice units." Consistent with this, the Permit incorporates the requirements and schedules of operable unit (OU) groundwater performance monitoring to satisfy corrective action performance monitoring.

Ecology reserves the authority to impose additional conditions through permit modification if groundwater monitoring specified in Remedial Design/Remedial Action (RD/RA) Work Plans is found to be inadequate to meet corrective action performance monitoring requirements.

To assist Ecology in overseeing the groundwater monitoring effort, Permittees are required to submit an annual Hanford Site Groundwater Monitoring and Performance Report to Ecology for review and

[1] WAC 173-303-640, requirements applicable to tank systems, and WAC 173-303-645, groundwater monitoring requirements for regulated units.

approval no later than July 31 of each calendar year. The annual groundwater monitoring report will summarize the groundwater monitoring results for the previous calendar year.

For any well installation and decommissioning, Permittees must follow the well construction standards and decommissioning requirements of WAC 173-160. Prior to the installation of any additional wells to satisfy the Permit's groundwater monitoring requirements, the Permittees must submit, for Ecology's approval, a well installation plan. The plan must specify the basis for well replacement (if applicable), including, but not limited to:

- Any computer modeling results performed to determine new groundwater monitoring wells;
- Location of the proposed wells;
- Well design;
- Screen length and placement;
- Construction and installation procedures;
- Management of wastes generated during well construction.

Dry or "unsuitable for use" wells must be replaced within two years.

CORRECTIVE ACTIONS

Conditions V.4.D contain the corrective action requirements. Releases of mixed waste to soil have occurred in each of the seven WMAs, and the groundwater contamination plumes have been found associated with both SST System TSD and past-practice units. These releases require corrective action.

The TPA Action Plan has established milestones for WMA corrective action, including Milestones M-045-61 and M-045-62. The Permit incorporates these requirements and schedules, which include requirements to submit to Ecology a Phase 2 RFI/CMS Report and a Corrective Measures Implementation (CMI) Work Plan for WMA C.

Further, under the Permit, the Permittees are required to submit a schedule and implementation plan no later than December 31, 2014, for completing corrective action for all other WMAs. The schedule and implementation plan must:

- Include the development of RFIs/CMSs, the submission of permit modification requests for the selection of corrective actions, and the submission of CMI Work Plans, with schedules.
- Support the development of WMA closure schedules under TPA Milestones M-045-84 and M-045-85, and allow Permittees to meet the date established in TPA Milestone M-045-00 for completing the closure of all SST farms.
- Contain the elements of a RFI/CMS work plan as defined in TPA Action Plan Section 11.6 and Appendix I.
- Be sufficiently aggressive to allow for the implementation of any early action deemed necessary to reduce risk in accordance to the information provided in the Phase I RFI/CMS, annual Hanford Site Groundwater Monitoring and Performance Report, and final tank closure and water management Environmental Impact Statement.

The schedule and implementation plan will be considered during TPA WMA closure milestone negotiations in accordance with TPA Milestones M-045-84 and M-045-85, including the respective TPA change packages M-45-12-02 and M-045-12-03.

Additionally, Permittees shall complete implementation of interim measures including control of surface water infiltration (TPA Milestone M-045-59), interim barrier installation (TPA Milestone M-045-92), and interim measures in accordance with the requirements of TPA Milestone M-045-56, as incorporated in the Permit.

PRE-CLOSURE WASTE MANAGEMENT REQUIREMENTS

Conditions V.4.E contain the pre-closure requirements. Although the SST System cannot be permitted as an operating waste management unit and must be closed as an unfit for use tank system, waste will continue to be managed in the system for years before closure can be completed. As a result, under the authority of WAC 173-303-815(2)(b)(ii), Ecology is requiring the Permittees to comply with certain operating requirements in WAC 173-303 during the extended closure period in order to protect human health and the environment. This period before closure is completed is referred to as the "pre-closure" period. The pre-closure requirements are summarized below.

1. Safety Controls and Hazards Prevention

a. Preparedness and Prevention

Within 60 days of the effective date of this Permit, the Permittees are required to submit to Ecology a description of the practices to prevent hazards (preparedness and prevention), which will be incorporated into this Permit as Addendum O. The description shall include:

- Using and maintaining internal, communications, and emergency equipment following the requirement of WAC 173-303-340(2).
- Operating and maintaining runoff controls and other systems to minimize run-on and infiltration of liquids to SST tanks, catch tanks, vaults, pits, and any ancillary equipment or structures in accordance with the requirements of WAC 173-303-640(5).
- Conducting any pumping activities, such as removal of waste from SST ancillary equipment or component, except for tank waste retrieval operations, in compliance with WAC 173-303-640(5)(b).

b. Air Emissions

Ecology has already issued Hanford Site Air Operating Permit (#00-05-006) and "Criteria and Toxic Air Emissions NOC Application for Operations of Waste Retrieval Systems in SST Farms as Supplemented with C Farm Exhauster Operations" (Order # DE05NWP-002). Permittees must conduct any SST pre-closure and closure activities in compliance with these permits or orders.

c. Waste Management and Accumulation

Because the SST System is closing as an unfit for use tank system, the Permittees are not authorized to introduce any additional dangerous waste into the SST System, except upon prior written approval from Ecology. Permittees may use Double Shell Tank System supernatant for the purpose of SST waste retrieval under an effective Tank Waste Retrieval Work Plan (TWRWP).

The Permittees must maintain a current listing of any containerized waste accumulation areas (e.g., 90-day and satellite accumulation areas) within the SST System footprint (i.e., WMAs).

The Permittees are not authorized to store waste in containers within the SST System footprint for more than 90 days without an approved permit modification unless Ecology has approved a 30-day extension.

Generator requirements are included in this Permit because the Permittees may become a generator of dangerous waste and must handle the waste in accordance with all applicable requirements of WAC 173-303-170 through WAC 173-303-230. *See* WAC 173-303-610(5).

d. Mapping and Marking

Permittees must develop a mapping and marking plan in accordance with WAC 173-303-640(5) and WAC 173-303-395(6), and implement such plan to warn employees, emergency response personnel, and the public of major risks associated with waste being stored or otherwise held in SSTs, underground pipelines, diversion boxes, pits, and other structures within the SST system.

e. Integrity Assessment of SSTs

The 149 SSTs were constructed between 1943 and 1964 with a design life of approximately 20 years. As a result, all of the SSTs are well past their service life. As of November 2011, the 149 SSTs still hold 27.51 million gallons of mixed waste (HNF-EP-0182, *Waste Tank Summary Report*, Rev. 284). Among the 149 SSTs, 67 tanks have leaked or are assumed to have leaked.

Because under the current closure schedule some tanks may continue to hold waste for another 30 years, the integrity of the SSTs is of a great concern. Therefore, to ensure SST integrity, tank integrity assessments must be conducted throughout the entire pre-closure period. The requirements and schedules of the TPA Milestone M-045-91 series are incorporated by reference into the Permit with respect to performing SST System Integrity Assessment.

The Permit presumes that the phrase "the end date of the mission" under TPA Milestone M-045-91I means the date upon which the SST System is certified as closed. In the event this phrase is interpreted differently, Ecology reserves the authority to modify the SST Permit to require additional integrity assessment requirements to satisfy 40 CFR § 265.191 and 40 CFR § 265.196 (incorporated by reference in WAC 173-303-400[3]), as well as WAC 173-303-640(2).

f. New SST Components

Even though the SST System is not authorized to operate, pre-closure activities may require the Permittees to install new SST components or modify or repair existing SST components. In such event, the Permittees are required to follow the requirements of WAC 173-303-640(3) to conduct new component integrity assessment.

g. Temporary Waste Transfer Line Management

The Permittees must follow requirements of the temporary waste transfer lines specified in Permit Condition V.4.F.5 for temporary waste transfer lines used in the SST System.

h. Leak Detection Monitoring Technology and Dry Well Data Logging

The Permittees will evaluate the leak detection monitoring technology every five years and provide the evaluation to Ecology in a report. Within two years of the effective date of this Permit, the Permittees are required to provide Ecology with a schedule for the leak detection monitoring technology reports.

The Permittees are required to perform dry well data logging and include logging data in the Hanford Operating Record, SST System file. The Permittees must provide a summary list of dry well logging data including the tank farm or wells logged and dates of logging to Ecology annually.

2. Tank Leak/Intrusion Detection and Responses to Leak/Spills

For the reasons described above with respect to integrity assessments, leak detection is also required to be performed until the SST System is closed.

Requirements for leak and intrusion monitoring, including reporting, are incorporated into this Permit. Permittees will submit a report within 90 days after the effective date of this Permit that identifies the methods and equipment used for monitoring liquid level changes in the SSTs for Ecology review and approval. Ex-tank drywell logging for all SSTs will be performed and reported by March 30, 2016, and every 10 years thereafter.

Leak and intrusion detection is required for tanks that have not been retrieved or for tanks where retrieval has been completed. Appropriate response actions must be taken in a timely manner in the event of spill, leak, or intrusion. Monitoring requirements and schedules provided in the RPP-9937, *Single Shell Tank Leak Detection and Monitoring Functions and Requirements*, are incorporated by reference into this Permit. Such incorporation expires two years after the effective date of this Permit, unless RPP-9937 has been updated under the TPA, in which case the update is incorporated under the terms of Permit Condition I.A.4.

If RPP-9937 is not updated within two years, the monitoring requirements of Permit Conditions V.4.E.2.b through V.4.E.2.f will take effect. If RPP-9937 is updated, then the requirements of Permit Conditions V.4.E.2.b through V.4.E.2.f will not take effect.

3. Contingency Plan

The Permittees will follow the requirements of the Contingency Plan in Addendum K of this Permit and keep reports and details of any incidents that require implementation of the Contingency Plan.

4. Training

Within 60 days of the effective date of this Permit, the Permittees are required to submit a training matrix identifying worker categories and training categories. The matrix will reflect the training requirements to be included in the SST System training plan specific to the waste management, tank waste retrieval, closure, and corrective action activities conducted at the SST System. The Permittees shall implement such training plans for corresponding facilities. The training matrix will be incorporated into this Permit.

5. Security

Within 90 days of the effective date of this Permit, the Permittees are required to submit a description of the security procedures specific to the SST System that implement the security requirements of Site-Wide Permit Condition II.L and Attachment 3, WAC 173-303-310, and WAC 173-303-395(1), (2), and (6). The description of the security procedures specific to the SST System will be incorporated into this Permit as Addendum E.

6. Inspections

The Permittees are required to inspect the SST System in accordance with the requirements of WAC 173-303-320 and WAC 173-303-640(6). Within 90 days of the effective date of this Permit, the Permittees are required to submit an inspection schedule and to implement the inspection schedule upon approval. The SST System Inspection Schedule will be incorporated into this Permit as Addendum I.

TANK WASTE RETRIEVAL

Tank waste retrieval requirements are in Conditions V.4.F. There are still 27.51 million gallons of mixed waste stored in the SSTs as of November 2011 (HNF-EP-0182, *Waste Tank Summary Report*, Rev. 284). The Permittees are required to conduct tank waste retrieval from SSTs before the SST System can be closed. The retrievals will be undertaken to meet the retrieval requirements of the *Washington v. Chu* Consent Decree, Case 12 No. 08-5085 FVS, entered on October 25, 2010, and the TPA.

1. Tank Waste Retrieval Schedules, Criteria, and TWRWPs

The *Washington v. Chu* Consent Decree provides the requirements and schedules for tank waste retrieval of 19 tanks (10 tanks in WMA C and 9 additional tanks). The permit incorporates the requirements and schedules of *Washington v. Chu* Consent Decree, for completing the retrieval of the nineteen tanks. Specific requirements include Section IV-B, Appendix B and Appendix C of the *Washington v. Chu* Consent Decree, the application of TWRWP requirements established under the Decree, residual tank waste characterization, and retrieval data report.

The TPA Action Plan provides the requirements and schedules for the retrieval of all remaining SSTs not addressed under *Washington v. Chu* Consent Decree. The permit incorporates the requirements and schedules of the TPA, including applicable portions of the M-045 Milestone series, the M-062 Milestone series, Appendix H, and Appendix I, for completing the retrieval of all remaining tanks. This includes incorporating the requirements of TWRWPs approved by Ecology under the TPA.

2. Residual Tank Waste Characterization

The chemical constituents of the single-shell tank waste are approximated by the Best Basis Inventory (BBI), maintained and updated quarterly by the Permittees in the Tank Waste Information System (TWINS). The TWINS is a database for characterization of the overall waste in the SSTs, including two levels of waste inventories: tank-by-tank waste inventories and global waste inventories. The best-basis global inventories are independent estimates of the total amount of chemical and radionuclide components in all tanks. The chemical analyte list selected represents 99 percent by weight of the tank contents, and the radionuclides represent over 99 percent of the activity.

Information used to establish global inventories originated from key historical records (e.g., essential material purchase records), from various chemical flowsheets used in reprocessing of irradiated Hanford Site reactor fuels, and from calculations of radionuclide isotope generation and decay. These inventory estimations are adjusted, as necessary, when tank-specific chemical analyses are completed.

Before the SST system can be closed, the waste in the SSTs must be retrieved and transferred to other storage facilities for safer storage and eventual treatment. However, a certain amount of residual waste may remain in the tanks after the retrieval is complete due to the limitations of current retrieval technologies.

Considering the nature and limitations of the retrieval technologies used (sluicing, high-pressure spray, and the mobile retrieval system [MRS]) and the physical and chemical heterogeneity of the tank wastes, it is likely that the residual wastes remaining in the tanks after retrieval may be significantly different from the BBI, and potentially significantly different among tanks. Therefore, waste analysis is critical for the safe closure of the SST System. To evaluate risk and guide the closure decision, the Permit incorporates the requirements of TPA Appendix I, Section 2.1.6 for the Permittees to conduct residual tank waste characterization after retrieval.

3. Tank Leak Detection During Retrieval

Because of the introduction of liquids during tank waste retrieval (e.g., double-shell tank supernatant and potentially water or other liquids), leak detection during retrieval is critically important to protect the environment. The requirements for leak detection included in TWRWPs are necessary to ensure the Permittees will provide adequate leak detection during waste retrieval, respond to leaks/spills, and take necessary actions to mitigate leaks/spills if they occur.

To assist in the development of TWRWPs, the permit establishes baseline requirements on these topics. Among other matters, monitoring frequencies are greater during retrieval than during periods in which tanks are not undergoing retrieval operations.

4. Data Quality Objectives (DQO) and Sampling and Analysis Plans (SAP)

The Permittees will develop both DQOs and SAPs in coordination with Ecology. The DQOs will be written to incorporate the rationale for selecting the parameters for which each sample will be analyzed so the analysis will provide sufficient information to comply with WAC 173-303-300(1), (2), (3), and (4). The Permittees will develop the SAP based on the DQO requirements.

Once approved by Ecology, the SAP for post-retrieval and closure sampling will be incorporated into this permit as Addendum N. Finally, the Permittees will develop a tank or component specific SAP (TSAP) and provide that TSAP to Ecology. The TSAP will be implemented unless Ecology notifies the Permittees within three calendar days that it takes exception to the TSAP.

5. Temporary Waste Transfer Line Management

Because most waste transfers during tank waste retrievals are done using temporary waste transfer lines, the management of the temporary waste transfer lines (e.g., hose-in-hose transfer lines [HIHTL]) must be managed to meet the requirements set forth in the *Temporary Waste Transfer Line Management Program Plan* (RPP-12711, Rev. 3K), which are incorporated in the permit.

In the event a leak occurs, the Permittees are required to respond to leaks or spills following the requirements of RPP-12711. To provide for leak and spill response for temporary waste transfer lines, the Permittees are required to submit a revision to RPP-12711 to incorporate a leak response plan within 180 days of the effective date of the Permit.

The Permittees will update the HIHTL tracking system information within 20 days of the end of each quarter and provide it to Ecology within 30 days after the end of the quarter. The submittal of a quarterly update is a corrective measure that resulted from a notice of violation for management of HIHTLs and a subsequent inspection that determined the HIHTLs were not being managed as required in RPP-12711 (Re: *Notice of Violation for Unfit-for-Use Hazardous Tank System Components*, dated May 14, 2007).

The requirements for HIHTLs in RPP-12711 include how long the HIHTLs may be used before they must be removed. It also contains an extension waiver process the Permittees must use if they require use of an HIHTL beyond three years if deployed in the field, or beyond seven years if stored. HIHTLs cannot be used after 10 years. (*Re: Conditional Approval of the Updated Temporary Waste Transfer Line Management Program Plan, RPP-12711, Revision 3K, Approval of the Hose in Hose Transfer Line (HIHTL) Compliance Removal Schedule, and Resolution of Ecology's HIHTL Outstanding Notice of Violation (NOV)*, dated May 5, 2008.) The Permittees must provide formal notification to Ecology of the determination to extend the service life of an HIHTL.

SST CLOSURES

The SST System closure requirements are in Conditions V.4.G.

1. Closure General Requirements

The SST System has been grouped into seven WMAs. Closure of SST System shall be performed on WMA-by-WMA basis. The SST System will not be regarded as closed until all tanks, ancillary equipment, contaminated soil, and contaminated groundwater included in the system are closed. The closure of individual SST component or groups of components within WMAs can only be certified as complete prior to the closure of the associated WMA if the component(s) are clean closed and meet clean closure performance standards.

Before any WMA closure activities can be performed, the Permittees must conduct and complete pre-closure requirements, including tank waste retrieval, residual tank waste characterization, risk assessment (RA), and additional mitigation measures required by Ecology if the results of the RA indicate that risk associated with a final WMA closure is unacceptable.

2. Closure Performance Standards

As required by WAC 173-303-610(2)(b) and WAC 173-303-640(8)(a), all dangerous waste, waste constituents, dangerous waste residues, equipment, bases, liners, any materials containing or contaminated with dangerous waste or waste residue, and contaminated soils and groundwater throughout the closing unit must be removed or decontaminated. General closure performance standards are specified in the permit and apply to any closure scenario. Under any scenario, closure must:

- Minimize the need for further maintenance.
- Control, minimize, or eliminate to the extent necessary the post-closure escape of dangerous waste to the environment.
- Return the land to the appearance and use of surrounding land to the decree possible given the nature of previous dangerous waste activity.

Clean closure performance standards are specified in the permit and are consistent with WAC 173-303-610(2)(b). For soils and groundwater affected by releases from the SST System, clean closure requires meeting the numeric cleanup levels for unrestricted land use under the Model Toxics Control Act (MTCA), WAC 173-340 (generally as calculated under MTCA Method B). For structures and equipment, clean closure standards are incorporated from Ecology document #94-111, Guidance for Clean Closure of Dangerous Waste Units and Facilities.

Under WAC 173-303-640(8)(b) (Tank System Closure),

> "If the owner or operator demonstrates that *not all contaminated soils can be practicably removed or decontaminated* as required in (a) of this subsection, then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills [*see* WAC 173-303-665(6)]." (*Emphasis added.*)

In the event that landfill closure of any portion of the SST System is proposed, the Permittees must provide an "Impracticability Demonstration" in the relevant WMA closure plan(s) to demonstrate that clean closure is not practicable for that portion of the system. "Practicable" is not defined under the Dangerous Waste Regulations. The Permit therefore directs the Permittees to make this demonstration applying the MTCA definition of "practicable" (WAC 173-340-200) and following the demonstration procedures and criteria of WAC 173-340-360(3)(e) and (f). The demonstration is to be undertaken at a WMA level.

This approach to demonstrating the "impracticability" of clean closure follows the Single-Shell Tank Waste Management Area C Closure White Paper (Attachment 2 to the *Waste Management Area C Closure Demonstration Project Plan*, RPP-PLAN-46484, Rev 1A), which identified MTCA's analytical approach to practicability as a reference.

The tool under MTCA for determining whether it is justified to leave contaminated soils in place (i.e., that it is not *practicable* to remove or decontaminate all contaminated soils to meet MTCA unrestricted land use standards) is MTCA's "permanent to the maximum extent practicable" requirement, which outlines a disproportionate cost evaluation. *See* WAC 173-340-360(3). Further, the same analytical tool (the disproportionate cost evaluation) is also employed in making corrective action decisions to leave contamination in place (which would also be applicable in a decision to leave contaminated soils in place). *See* WAC 173-303-64620(4).

Under the SST System closure permit, this "practicability" concept is extended to include not just landfill closure of contaminated soils, but also underground tanks system components that contain tank waste residues. EPA documents refer to landfill closure of the "tank system" when clean closure of contaminated soils is not practicable. [An example EPA document is 51 Fed. Reg. 25457; *Questions and Answers Regarding the July 14, 1986 Hazardous Waste Tank System Regulatory Amendments*, EPA/530-SW-87-012 (October 1987).

The permit further provides that before any SST System tanks or ancillary equipment may be landfill closed, the Permittees must meet all land disposal restriction requirements or obtain Ecology's approval for a site-specific treatability variance of such requirements under the criteria of 40 C.F.R. 268.44(h), incorporated by reference in WAC 173-303-140(2).

Finally, landfill closure performance standards are also specified in the Permit. The Permit incorporates the landfill closure and post-closure care requirements of WAC 173-303-665(6), with certain exceptions and more specific requirements. These more specific requirements relate to the unique circumstances of the SST System and the Hanford Site.

Should the SST System close as a landfill, this Permit provides for three exceptions to the landfill closure performance requirements:

- The liner and leachate collection requirements of WAC 173-303-665(6)(b)(ii) are not applicable because the system cannot meet the requirements.
- The period provided for post-closure care and use of property is extended to 500 years based on cover designs, results of modeling efforts, and the natural systems around us. Ecology finds that the extended period is necessary to protect human health and the environment. (For example, leachate or groundwater monitoring results indicate a potential for migration of dangerous waste at levels that may be harmful to human health and the environment [*see* WAC 173-303-610(7)(b)(ii)]). The requirements for cover systems also require the cover to be designed for an estimated 500-year design life.
- Under WAC 173-303-610(7)(c) security requirements of WAC 173-303-310 will be continued throughout the post closure care period.

The landfill closure performance standards provide for groundwater and/or vadose zone monitoring systems during the post-closure care period. The intent is to use currently available moisture monitoring (such as neutron moisture logging) or other technology that could be used in the future.

3. Closure Schedules

Existing legal closure schedules have been incorporated from the TPA M-045 Milestone series. Permittees shall follow TPA Milestone M-045-00 to:

- Close all Single-Shell Tank Farms.
- Close WMA C following TPA Milestone M-045-083.
- Close a second WMA following TPA Milestone M-045-84.
- Close the remaining WMAs following the schedule of TPA Milestone M-045-85.

4. Closure Plans

To complete the SST System closure following the closure performance standards and meet the closure schedules in TPA milestones, the Permittees must develop closure plans following TPA Action Plan Appendix I, Sections 2.2, 2.3, 2.4, 2.5, and 3.0. Those sections outline the closure plan development for WMAs. The Permit also identifies specific closure plan requirements for clean closure, impracticability demonstration, and landfill closures. The Permittees will submit the closure plans to Ecology for review and approval, based on the requirements specified in the permit. Approved closure plans will be incorporated into the Permit in Addendum H.

Closure plans are to be developed following the requirements of TPA Action Plan Appendix I, Sections 2.2, 2.3, 2.4, 2.5, and 3.0. Closure plans are to be developed on both a WMA ("Tier 2") basis and component-specific ("Tier 3") basis.

Each Tier 2 closure plan will be accompanied by a group of Tier 3 closure plans for the components located within that WMA, if the components have not already been certified as clean closed.

Closure plans shall include a description of clean closure methods for removing, transporting, treating, storing, or disposing of all dangerous waste. If landfill closure is proposed, the plans must include an impracticability demonstration and description of contingent landfill closure procedures, including the technologies and capabilities needed, cover system construction procedures, and a landfill design and operating and maintenance plan.

All SST components located within 200-IS-1 OU must be closed to meet the closure performance standards. The Permittees will treat 200-IS-1 OU as a WMA. The Permittees shall submit a Tier 2 Plan accompanied by a group of Tier 3 plans for all SST components located within 200-IS-1 OU.

Alternatively, the Permittees may prepare a 200-IS-1 OU RFI/CMS and Remedial Investigation / Feasibility Study (RI/FS) document that presents the SST component closure requirements in the TPA Action Plan, Section 5.5. If this approach is taken, Permittees will structure the RFI/CMS/RI/FS document such that the closure requirements for SST components located in 200-IS-1 OU are clearly identified for separate review and approval through the permit modification process.

5. Risk Assessment

Before starting closure activities, the Permittees are required to conduct a RA to evaluate the protectiveness of closure conditions for each WMA. This requirement is to ensure that Ecology has a sufficient basis to judge whether clean closure is "practicable" or "not practicable" for the purposes of WAC 173-303-640(8). The requirements of TPA Appendix I, Section 2.5, in which the Tri-Parties have already described a risk assessment approach, are incorporated by reference into the permit to satisfy this requirement. The inclusion of an assessment of radiological contaminants of concern in an integrated PA as described in TPA Appendix I, Section 2.5 is necessary for effective closure decision-making under the scope of this Permit.

An RA must include all the tanks, ancillary equipment, and contaminated soils and other components, as well as all waste residue inventories and waste characterization information after tank retrieval, for each WMA. The waste residue inventories and waste characterization shall be consistent with the most updated information.

An RA must consider all relevant exposure pathways. It must include preliminary remediation goals for the WMA contaminants addressing protection of human health direct contact, protection of soils, groundwater and surface water, and protection of air. It must also include ecological screening and site-specific analyses in accordance with WAC 173-340-7490 through -7494, incorporated by reference. Any modeling work performed must be consistent with WAC 173-340 requirements, incorporated by reference, and supporting data shall be provided to Ecology, with the RA, as necessary.

Before a final RA report is submitted for a WMA closure, an interim RA report will be submitted to Ecology for review. The interim RA must be submitted to Ecology at least three years prior to the closure plan submittal. The interim RA will be updated as necessary until the final RA is approved by Ecology along with the closure plan.

Final RA reports must be submitted as part of the closure plan for each WMA. In the event the RA results indicate that the risk is not acceptable for a WMA, Ecology reserves the authority to modify the Permit to require the Permittees to conduct additional risk mitigation measures until the risk is mitigated and reduced to an acceptable level. Those additional measures include, but are not limited to:

- Additional waste retrieval to remove waste residue left in the tanks or ancillary equipment.
- Removal and decontamination of SST components or groups of components (equipment, soils, dangerous wastes, etc.)

- Changing the closure plan to incorporate new closure designs.
- Changing the institutional control plan.

POST-CLOSURE CARE

Conditions V.4.H contain post-closure care requirements of any WMA in which the clean closure performance standards cannot be met upon closure and waste has been left in place. If any portion of the SST System is closed as a landfill, the Permittees will provide post closure care for that portion. The requirements for surface barrier inspection, barrier maintenance and performance monitoring, administrative controls, and groundwater monitoring will be implemented.

SST CLOSURE COMPLIANCE SCHEDULE

The compliance schedule for this Permit is in Addendum P.

REQUESTED VARIANCES OR ALTERNATIVES

The Dangerous Waste Regulations for closure (WAC 173-303-610) specify that the Permittees must complete closures in 180 days or less for a tank system that does not meet the requirements of WAC 173-303-640. However, the permit will allow the Permittees to close the SST System following the closure schedules of TPA Milestone M-045 series. The extra time is needed due to the complexity of the system, the amount of waste, the nature of the waste (mixed waste – both radiological and dangerous), the lack of current ability to treat the waste, and magnitude of the soil and groundwater contamination, and at the Hanford facility.

STATE ENVIRONMENTAL POLICY ACT (SEPA) DETERMINATION

The SEPA determination for this unit is in the Hanford-Wide Permit Fact Sheet.

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PART V, CLOSURE UNIT GROUP 4 CONDITIONS
SINGLE SHELL TANK SYSTEM

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PART V, CLOSURE UNIT GROUP 4 CONDITIONS

SINGLE SHELL TANK SYSTEM

UNIT DESCRIPTION

Between 1943 and 1964, 149 single shell tanks (SSTs) were constructed in the 200 East and 200 West Areas of the Hanford Site to store waste underground. All waste contained in the SSTs is considered to be mixed waste (MW) (radioactive and dangerous). Beginning in 1944, wastes were routed from spent fuel processing and other operations in the Hanford Site 200 East and 200 West Areas via buried lines to the SSTs for storage. Wastes were also routed from tanks to processing facilities and between tanks via miscellaneous underground storage tanks and facilities. The SSTs also received liquid radioactive wastes from Hanford facilities outside of the 200 Areas. The maximum quantity of waste in the SST System was approximately 77,500,000 gallons in 1966. As of November 30, 2011, the SSTs contained 27,510,000 gallons of mixed waste (*HNF-EP-0182, Waste Tank Summary Report, Rev. 284*). Some waste has leaked from the SST System or has been discharged in an unplanned manner. The estimated volume of leaked waste from the SSTs is approximately 3.8 million liter (1 million gallons).

The SST System includes twelve tank farms that contain 149 underground mixed-waste storage tanks, ancillary equipment, miscellaneous underground storage tanks, miscellaneous facilities, and soil and groundwater that are contaminated from leaks and unplanned releases. The SST System contains:

- 133 100-series SSTs (2 to 3.8 million liter [530,000 to 1 million gal] capacity)
- 16 200-series SSTs (200,000 liter [55,000 gal] capacity)
- Waste transfer vaults and associated miscellaneous underground storage tanks
- Tank pits, valve pits, and flush pits
- Pumps and valves
- Diversion boxes and diverter stations
- Numerous pipelines
- Above ground buildings and structures
- Other mechanical equipment
- Contaminated soils
- Contaminated groundwater

The 200 East Area SST Tank Farms are 241-A, 241-AX, 241-B, 241-BX, 241-BY, and 241-C. The 200 West Area SST Tank Farms are 241-S, 241-SX, 241-T, 241-TX, 241-TY, and 241-U. These twelve tank farms are geographically grouped into seven waste management areas (WMAs) for regulatory purposes. Most of the SST System is located within the WMAs; however, some components of the system, such as, ancillary equipment, transfer lines, and support facilities, are located outside WMA boundaries. Ancillary equipment, including transfer lines that are a part of the SST System, but outside of the WMA boundaries are in the 200-IS-1 Operable Unit (OU) and will be closed as a part of the 200-IS-1 OU. The SST System WMAs contain underground tank systems and components that are undergoing closure as MW storage and treatment units. The system is closing because all 149 SSTs have been identified as "unfit for use" pursuant to 40 CFR. § 265.191(incorporated by reference in WAC 173-303-400(3)), as evidenced by *Single Shell Tank System Integrity Assessment Report*, RPP-10435, Revision 0, and Letter dated June 27, 2002, from James E. Rasmussen, Department of Energy, Office of River Protection, to Michael Wilson, Department of Ecology, and the system cannot achieve compliance with the Tank Systems requirements of the Washington State Dangerous Waste Regulations, WAC 173-303-640, incorporated by reference, due in part to a lack of secondary containment. The system cannot receive additional dangerous waste for storage. Because of the complexity of the SST System, closure is expected to take decades to complete. Therefore, this closure Permit includes "pre-closure requirements" for the SST System as necessary to protect human health and the environment during the extended closure period. The SST System and its

associated ancillary equipment, containment systems, contaminated soil, and groundwater are subject to the requirements of this Permit Chapter and WAC 173-303.

Seven SST WMAs have been identified as follows:

Waste Management Area	Tank Farms	Total Number of SSTs
WMA A-AX:	241-A and AX tank farms	10
WMA B-BX-BY:	241-B, BX, and BY tank farms	40
WMA C:	241-C tank farm	16
WMA S-SX:	241-S and SX tank farms	27
WMA T:	241-T tank farm	16
WMA TX-TY:	241-TX and TY tank farms	24
WMA U:	241-U tank farm	16

All WMAs contain additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems. The WMAs also contain fill, soil, and vadose zone contaminated from unplanned release (UPR) waste sites that will require remediation (corrective action) prior to final WMA closure.

WMA A/AX

The 241-A tank farm is located in the 200 East Area and contains six 100 series tanks, each with an operating capacity of 3.8 million liter (1 million gallons). The 241-A tank farm was built between 1954 and 1955 and the tanks ceased receiving waste between 1963 and 1980. The tanks are numbered 241-A-101 through 241-A-106.

The 241-AX tank farm is located adjacent to the 241-A tank farm in the 200 East Area and contains four 100 series tanks, each with an operating capacity of 3.8 million liter (1 million gallons). The 241-AX tanks were the last SSTs to be built. They operated from the 1960s to 1980. The tanks in the 241-AX tank farm are numbered 241-AX-101 through 241-AX-104.

WMA B/BY/BX

The 241-B tank farm is located in the 200 East Area and was constructed between 1943 and 1944. These tanks began receiving waste between 1945 and 1946 and ceased receiving waste between 1971 and 1978. The 241-B tank farm contains twelve 100-series tanks with operating capacities of 1.9 million liters (0.5 million gallons) each, and four 200-series tanks each with operating capacities of 208,000 liters (55,000 gallons). The tanks in the 241-B tank farm are numbered 241-B-101 through 241-B-112, and 241-B-201 through 241-B-204.

The 241-BX tank farm contains twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons) each. The tank farm was built between 1946 and 1947, began receiving waste between 1948 and 1950, and ceased receiving waste between 1971 and 1980. The 241-BX tank farm is located adjacent to the 241-BY tank farm, and the tanks are numbered 241-BX-101 through 241-BX-112.

The 241-BY tank farm is located north and adjacent to the 241-BX tank farm and contains twelve 100-series tanks each with operating capacities of 2.8 million liters (0.75 million gallons). The tanks began receiving waste between 1950 and 1953, and ceased receiving waste between 1971 and 1979. The tanks in the 241-BY tank farm are numbered 241-BY-101 through 241-BY-112.

WMA C

The 241-C tank farm is located in the 200 East Area and contains sixteen buried SSTs. The 241-C tank farm contains twelve 100-series tanks, each with operating capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks, each with a tank operating capacity of 208,000 liters (55,000 gallons). The 241-C tank farm was constructed between 1943 and 1944, and stopped receiving waste between 1976 and 1980.

WMA S/SX

The 241-S tank farm is located in the 200 West Area and is comprised of twelve tanks, each with operating capacities of 2.8 million liters (0.75 million gallons). The tanks first received waste in 1950 and 1951, and ceased receiving waste between 1968 and 1980. The tanks in the 241-S tank farm are numbered 241-S-101 through 241-S-112.

The 241-SX tank farm has fifteen 3.8 million liters (1 million gallons) tanks that were constructed in 1953 and 1954, and ceased receiving waste between 1958 and 1980. The tanks are numbered 241-SX-101 through 241-SX-115.

WMA T

The 241-T tank farm is located in the 200 West Area and contains twelve 100-series tanks, each with operating capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks, each with a tank operating capacity of 208,000 liters (55,000 gallons). The tanks were built in 1943 and 1944, and ceased receiving waste between 1973 and 1979. The tanks in the 241-T tank farm are numbered 241-T-101 through 241-T-112, and 241-T-201 through 241-T-204.

WMA TX/TY

The 241-TX tank farm is located in the 200 West Area and contains eighteen 100-series tanks, each with operating capacities of 2.8 million liters (0.75 million gallons). The tanks started receiving waste in 1949 and ceased receiving waste between 1969 and 1980. The tanks in the 241-TX tank farm are numbered 241-TX-101 through 241-TX-118.

The 241-TY tank farm is located adjacent to the 241-TX tank farm, and contains six 100-series tanks each with capacities of 2.8 million liters (0.75 million gallons). The tanks were built in 1951 and 1952, and ceased receiving waste between 1959 and 1980. The tanks in the 241-TY tank farm are numbered 241-TY-101 through 241-TY-106.

WMA U

The 241-U tank farm is located in the 200 West Area and contains twelve 100-series tanks, each with operating capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks, each with a tank operating capacity of 208,000 liters (55,000 gallons). The 241-U tanks were constructed in 1943 and 1944, and ceased receiving waste between 1951 and 1980. The tanks in the 241-U tank farm are numbered 241-U-101 through 241-U-112, and 241-U-201 through 241-U-204.

200-IS-1 OPERABLE UNIT

The 200-IS-1 OU contains all the ancillary equipment that is part of the SST System and outside of the WMAs listed above in addition to ancillary equipment from other dangerous waste units and Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) regulated ancillary equipment.

LIST OF ADDENDA

Addendum A	Part A Form, March 1, 2011, rev. 13
Addendum B	SST Process Information
Addendum C	WMAs Process Information
Addendum D	Reserved, Groundwater Monitoring Plans
Addendum E	Reserved, Security
Addendum F	Tank Waste Retrieval Work Plans
Addendum G	Data Quality Objectives for Groundwater Monitoring
Addendum H	Reserved, Tier 2 Closure Plans
Addendum I	Reserved, SST System Inspection Schedule

Addendum J	Reserved
Addendum K	Contingency Plan
Addendum L	Reserved, Personnel Training
Addendum N	SST Sampling and Analysis Plans for Post-Retrieval and Closure Sampling
Addendum O	Reserved, Preparedness and Prevention
Addendum P	Compliance Schedule

DEFINITIONS

The following definitions are specific to the Single Shell Tank System. Other applicable definitions may be contained in the Dangerous Waste Regulations (WAC 173-303, incorporated by reference) and the definitions section of the Site-Wide Permit.

Ancillary equipment means any device that is used to distribute, meter, or control the flow of dangerous waste from its point of generation to a storage or treatment tank(s), between dangerous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment for disposal offsite, in accordance with WAC-173-303-040, including, but not limited to, devices such as piping, fittings, flanges, valves, pumps, and miscellaneous catch or storage tanks. Examples of ancillary equipment include components both internal and external to the tank, such as pipelines (including hose-in-hose transfer lines [HIHTL]), conduit, diversion boxes, , tank risers, pumps, measuring equipment (such as liquid level detection systems), shield plugs, valve pits, flush pits, single shell tank pits, waste transfer vaults, transfer lines, and miscellaneous structures.

Aquifer means a geologic formation, group of formations, or a part of a formation capable of yielding a significant amount of groundwater to wells or springs.

Best Basis Inventory means a database developed by the U.S. Department of Energy (DOE) Hanford Site to comply with the Data Access and Delivery Requirements in Section 9.6 of the HFFACO. The Best Basis Inventory is accessed through the Tank Waste Information Network System (TWINS).

Catch tank means underground tanks used to collect small amounts of waste drained from waste transfer components, typically from pits and vaults. Catch tanks are associated with diversion boxes and diverter stations designed to receive leakage from boxes, adjacent pipe encasements, and connected floor drains. Waste is transferred from the catch tanks to double-shell tanks.

Compliance schedule means an enforceable schedule of required actions included in this Permit (for example, actions, operations, or milestone events).

Component means, as defined in WAC 173-303-040, incorporated by reference, either the tank or ancillary equipment of a tank system. As used in this Permit, the term "component" is expanded to include the subunits of a SST waste management area for which closure actions have been identified in the SST System closure plan. For example, an individual tank, a piece or grouping of ancillary equipment, a contiguous area of contaminated soil, and a groundwater plume are each defined as components.

Component closure activities mean actions taken to close components in compliance with this permit. By themselves, component closure activities do not constitute final closure of the SST System.

Contaminant means any chemical material that contaminates (pollutes) air, soil, or water. This term also refers to any hazardous substance that does not occur naturally or that occurs at levels greater than those naturally occurring in the surrounding environment (background).

Corrective action means the process taken to address past, present and potential future tank system waste releases to the environment as necessary to protect human health and the environment, including all releases from solid waste management units and areas of concern at the facility, releases that have migrated beyond the facility boundary, and any other releases that would constitute a "facility" for purposes of implementing corrective action as defined in WAC 173-303-040 (incorporating

RCW 70.105D.020(4)), incorporated by reference. This process will comply with section 7.0 of the HFFACO, Condition II.Y of the Site-Wide Permit, WAC 173-303-646W, incorporated by reference, and, for releases from a regulated unit after closure, WAC 173-303-645(1)(c) , incorporated by reference.

Cover block means removable shields over cell openings, diversion boxes, valve pits, and pump pits.

Dangerous Waste means those solid wastes designated under WAC 173-303 as dangerous or extremely hazardous waste. As used in the Permit, the words "dangerous waste" will refer to the full universe of wastes regulated by Chapter 70.105 RCW and WAC 173-303 (including dangerous waste, hazardous waste, extremely hazardous waste, the hazardous waste component of mixed waste, and acutely hazardous waste).

Data Quality Objective (DQO) means a process implemented in accordance with the U.S. Environmental Protection Agency (EPA), EPA/600/R-96/05 Guidance for the Data Quality Objectives Process (EPA QA/G-4). The DQO serves as a tool for determining type, quantity, and quality of data needed to support Agency decisions.

Diversion box means below-grade, reinforced concrete structures that provide a flexible method of directing liquid waste from a given point to any other given point. The top of the diversion box is a cover block that usually extends above-grade. Cover blocks vary in thickness from box to box. Some diversion boxes are lined with steel. Transfer lines are connected in the diversion box by installing a jumper between the connecting nozzles. Jumpers either can be fixed or flexible. Jumper installation or removal can be a complex operation requiring a crane to remove and handle the cover block and to install the jumper.

Diverter station means an in ground concrete vault similar to diversion boxes, except that gravity flow is necessary.

Double contained receiver tanks (DCRT) means an interim underground receiver tank, generally at 25,000 gallons in capacity, constructed with an inner carbon steel containment vessel within a reinforced concrete vault. DCRTs were intended primarily to receive interstitial liquid and serve as auxiliary or catch tanks for other facilities. Leak detection instrumentation was usually placed in the annulus space between the tank and concrete vault. A DCRT may be associated with a filter pit, pump pit, instrument pit, flush pit, and a vault in which the DCRT is installed.

Down gradient a hydrologic term used to designate downstream (e.g., direction of groundwater flow).

Dry Well means a drainage receptacle constructed by digging a hole and refilling with coarse gravel; also a watertight well casing used for inserting monitoring equipment.

Dry Well Logging means moisture detection and spectral or gross gamma-ray logging of dry wells to determine moisture levels, and radionuclide levels of gamma-emitting radionuclides in soils and their variability with depth, to detect whether tank leaks have occurred and to track mixed waste releases.

ENRAF™ gauge means an automated surface contact gauge that monitors the solid or liquid level of the material in tanks.

Exposure means the contact of an organism with a chemical or physical agent (contaminant).

Farm or Tank Farm means an area containing a number of storage tanks, piping, ancillary equipment, support facilities, soil and groundwater.

Final Closure of the SST System means the closure of all WMAs, and all SST components located outside of the WMAs, in accordance with the requirements of this Permit, as certified pursuant to Permit Condition V.4.G.1.c.

Flush Pits means the components for pipeline back flushing and decontamination operations. Cross-connection control devices protect the flush pit system from contamination from mixed waste back flowing into the raw water feed to the flushing system.

Groundwater monitoring well means boreholes drilled to groundwater at various depths, some of which are completed as Resource Protection Wells per WAC 173-160, incorporated by reference, where instruments are lowered or water samples are taken to determine what is present in the well.

Hose-in-Hose Transfer Line (HIHTL), a type of **"Temporary Waste Transfer Line,"** means a liquid waste pipeline transfer system consisting of a primary hose encased in a secondary hose. The primary hose is fitted with hose end connections suitable for attaching to valve manifolds with remote connectors. For transfer lines too long to be made out of one continuous length of hose, two or more HIHTL assemblies are joined at mid-point connections to establish the required route.

Human intrusion means person who might occupy the disposal site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which the person might be unknowingly exposed to hazards from the waste.

Inactive Miscellaneous Underground Storage Tank (IMUST) means underground tanks, generally between 18,000 and 50,000 gallons in capacity, that were used for settling precipitates, neutralizing acidic wastes before discharge, and capturing drainage from valves boxes, diversion boxes, and other spills from the SSTs, and are no longer in use.

Inadvertent intruder means person who might occupy the disposal site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which the person might be unknowingly exposed to hazards from the waste.

Initiation of waste retrieval means initiation of the installation of equipment for retrieval of waste from a tank or set of tanks.

Interim stabilization means actions taken to stabilize single-shell tanks to meet the criteria goal that a tank contains less than 50,000 gallons of drainable interstitial liquid and less than 5,000 gallons of supernatant liquid. The interim stabilization requirements are identified in United States District Court Eastern District of Washington, No. CT-99-5076-EFS Consent Decree. This action was terminated and all work has been completed. Current liquid volumes are estimated in HNF-EP-0182, Waste Tank Summary Report, as revised monthly.

Interlock means circuitry and instrumentation that prevents activation or operation until required conditions have been met.

Institutional control means methods to protect against person(s) who might occupy the disposal site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which the person might be unknowingly exposed to hazards from the waste on closed areas or waste sites, or other exposure to contaminants left in place after SST closure. Institutional controls include site access, restrictions, monitoring, and maintenance. Institutional controls must be maintained during a post-closure period.

Intrusion means the inadvertent introduction of water or liquid waste into a tank or ancillary equipment that commingles with wastes and affects the total volume of materials in the tanks or ancillary equipment.

Isolation means administrative and/or engineering controls to prevent liquid intrusion into a SST.

Jumper means a prefabricated piping device, usually remotely installed, that is used to make a temporary connection between two waste transfer nozzles, or between a nozzle and a piece of equipment (e.g., pump, sluicer).

Miscellaneous structures mean special structures that support SST functions and do not fit into other listing categories.

Mixed waste, as defined in WAC 173-303-040, incorporated by reference, means a dangerous, extremely hazardous, or acutely hazardous waste that contains both a nonradioactive hazardous waste component and, as defined by the 10 CFR 20.1003, source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

Non-retrieval Mode means any period in which a Single Shell Tank is not in retrieval mode, including before retrieval when the SST still has waste stored in the tank, and after retrieval is complete, but the SST has not yet been certified as closed.

Nozzle means the termination point for a transfer line in a diversion box designed to be a jumper connection point.

Particulate means the particles in a gas stream that usually can be removed by filtration.

pH means a measure of the relative acidity or alkalinity of a solution. A neutral solution has a pH of 7, acids have a pH of less than 7, and bases have a pH of greater than 7.

Pit means a covered, below grade facility, usually concrete, used for waste routing (with jumpers), servicing, monitoring, and for equipment installation and connection. Major pits directly connected to SSTs are heel pits, pump pits, salt well pits and sluice pits. Farm support pits include diversion boxes and valve pits. Other pit facilities include condensate pump pits, condensate valve pits, condenser pits, flow meter pits, flush pits, heat exchanger pits, hold-up tank pits, instrument pits, jet pump pits, leak detection pits, receiver pits, salt tank pump pits, and service pits.

Plume means the distribution of contaminants a distance away from a point source in a medium such as groundwater or air.

Point of compliance, unless otherwise specified, means a vertical surface located at the hydraulically down gradient limit of the WMA that extends down into the uppermost aquifer underlying the WMA.

Post-closure plan means a document that describes how the owner and operator will meet applicable requirements placed on portions of the SST System closed as a landfill or landfills after closure to ensure environmental safety for a number of years after closure.

Pre-closure period: means the entire time period from the effective date of the Permit until a SST closing unit (e.g.WMA, or a group of components) is certified as closed. The pre-closure period includes the period preceding tank waste retrieval, the period during tank waste retrieval, the period following tank waste retrieval before closure activities are initiated, and the period in which closure activities are undertaken, up to the point that closure certification is obtained.

Quarterly means certain activities (e.g., groundwater monitoring) being performed four times a year during January 1 through March 31, April 1 through June 30, July 1 through September 30 or October 1 through December 31.

Retrieval means the removal of liquid and solid wastes from SSTs and ancillary equipment.

Retrieval Mode means the period in which waste in a Single Shell Tank is subject to being retrieved. The period begins under either of the following two conditions: 1) a primary leak detection or monitoring device has been rendered out of service due to preparations for retrieval operations; or 2) waste has been physically removed from the tank by retrieval operations. The period ends when retrieval of a Single Shell Tank is certified as complete under *Washington v. Chu* Consent Decree, or is otherwise deemed complete under the terms of HFFACO Action Plan, Appendix I, whichever is applicable.

Riser means the vertical access pipe through the dome and into the single shell tank. Risers generally vary in diameter from ½" to 42", and may terminate above grade on the floor of a pit.

Sampling and analysis plan (SAP) means a plan established for conducting sampling and analysis of waste to support regulatory requirements.

Single shell tank (SST) means one of 149 underground reinforced concrete tanks located within 200 East and 200 West Areas of the Hanford Facility, with a single carbon-steel liner, which are covered with 2 to 3 meters of earth. Capacity ranges from 209,175 liters to 3.79 million liters (55,000 gallons to 1 million gallons) and are also identified as 100 or 200 series tanks. The tanks are used to store mixed waste.

SST System means the 100 and 200 series Single Shell Tanks, and all components related to that system, following the definition of a "tank system" in WAC 173-303-040, incorporated by reference. This includes all process-waste pipeline systems including the extensive network of pipelines, tanks, diversion boxes, catch tanks, waste vaults, valve pits, waste transfer lines, and related devices regardless of location or "activity" status as defined in the Waste Information Data System (WIDS). The SST System consists of multiple types of dangerous waste management units. The SST System is an unfit-for-use tank system. Soils and groundwater that have been contaminated by the SST System are considered part of the SST System for purposes of closure and corrective action.

Single-shell tank pit means the access ports located atop the tanks and provide a pathway into the tanks for pumps and monitoring equipment.

Stratigraphy means the origin, composition, distribution, and succession of different layers or strata of rock or earth.

Supernatant means the fluid lying above a settled residue at the bottom of a storage tank.

Tank system means a dangerous waste storage or treatment tank and its associated ancillary equipment and containment system, as defined by WAC 173-303-040, incorporated by reference.

Tank Waste Retrieval Work Plan (TWRWP) means a document that, among other matters, describes how waste from an individual tank or tanks is to be retrieved, the technology to be used for retrieval, and the type of monitoring used during retrieval. The TWRWP also includes a pre-retrieval risk assessment. A more complete description of TWRWPs for purposes of the HFFACO is provided in HFFACO Action Plan, Appendix I, section 2.1.3. A more complete description of TWRWPs for purposes of the *Washington v. Chu* Consent Decree is provided in the Consent Decree Appendix C, Part 2.

Temporary waste transfer line means a line that is meant for temporary use that can be removed and possibly used in another location and is in compliance with the requirements for ancillary equipment in WAC 173-303-640.

Thermocouple means a device consisting of two different conductors (usually metal alloys) that produce a voltage proportional to a temperature difference, between either ends of the two conductors.

Transfer lines means piping (either temporary or permanent and above ground or below ground) used to transfer waste from one location to another.

Unconfined aquifer means the subsurface water-bearing region that does not have impermeable confining boundary layers to restrict water movement. In an unconfined aquifer the water table forms the upper boundary.

Vadose zone means the subsurface zone of aeration. It is a subsurface zone containing water under pressure less than that of the atmosphere, including water held by capillarity, and containing air or gases generally under atmospheric pressure. This zone is limited above by the land surface and below by the surface of the 'zone of saturation', i.e., the water table.

Valve pits means concrete structures located below ground that contain valve and jumper assemblies to route liquid waste through the connected pipelines within a tank farm. Heavy, thick, grade-level blocks cover each of the valve pits. When several tanks are undergoing simultaneous pumping to a single receiver tank, the flow is routed to a valve pit. In the valve pit, the transfer lines of the sending tank are manifolded to the receiver tank line by means of a series of valves and jumper connections. Two-and three-way valves are built into each rigid jumper assembly to divert the flow in the required direction. Waste also can be routed through the valve pit with stainless steel flex jumpers. Each valve pit is equipped with a leak detection that is interlocked to shut down pumps. Each valve pit also has a flush line connected to a flush pit or a drain line connected to an underground storage tank.

Vault means a below grade concrete structure consisting of one or more cells usually containing tanks. Vaults were used as waste unloading points and for mixing and chemical adjustments prior to transfer to a storage tank.

Ventilation system means equipment through which a structure (e.g., building, tank.) may be vented to atmosphere pressure.

***Washington v. Chu* Consent Decree** means the consent decree entered in *Washington v. Chu*, Case No. 08-5085 FVS, on October 25, 2010, providing certain requirements relating to SST retrieval and waste treatment plant construction and initial operation.

Waste Information Data System (WIDS) means a database which identifies all waste management units on the Hanford Site. It describes the current status of each unit, along with descriptive information (see HFFACO, Section 3.5).

Waste Management Area (WMA) means a tank farm or several tank farms that are grouped into a contiguous area based on geographical proximity for dangerous waste management purposes. For the SST System, the twelve tank farms are grouped into seven WMAs:

WMA A-AX:	241-A and AX tank farms
WMA B-BX-BY:	241-B, BX, and BY tank farms
WMA C:	241-C tank farm
WMA S-SX:	241-S and SX tank farms
WMA T:	241-T tank farm
WMA TX-TY:	241-TX and TY tank farms
WMA U:	241-U tank farm.

Waste pile means any noncontainerized accumulation of solid, nonflowing dangerous waste that is used for treatment or storage.

Waste transfer vaults means shielded enclosures used to collect, clarify, and allow physical and chemical modification of contents before such contents are transferred elsewhere.

WMA Closure Actions means actions that support and lead to final closure of a WMA (and ultimately to final closure of the SST System).

200-IS-1 Operable Unit (OU) means a past practice unit designated under the HFFACO that includes: (1) past-practice sites subject to HWMA corrective action and CERCLA remedial action requirements; (2) SST System components that are located outside WMAs; and (3) TSD units that do not belong to SST System (e.g., the CX Tank System, the Hexone Storage and Treatment Facility, and the 241-Z Treatment and Storage Tanks). The 200-IS-1 OU includes more than 100 pipeline waste sites, pipeline component waste sites (e.g., diversion boxes, catch tanks, valve pits, vaults, and control structures), and associated waste sites that are the result of unplanned releases (leaks and spills) to the soil originating from the pipelines or pipeline components.

ACRONYMS

BBI	Best Basis Inventory
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
CMI	Corrective Measures Implementation
DCRT	Double Contained Receiver Tank
DQO	Data Quality Objective
DOE	Department of Energy
DOE/RL	Department of Energy Richland Operational Office
DST	Double-Shell Tank
Ecology	Washington State Department of Ecology
HEPA	High Efficiency Particulate Air
HFFACO	Hanford Federal Facility Agreement and Consent Order
EHW	Extremely Hazardous Waste
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
HIHTL	Hose-In-Hose Transfer Line
HRR	High Resolution Resistivity
HWMA	Hazardous Waste Management Act
IQRPE	Independent Qualified Registered Professional Engineer
LDM	Leak Detection Monitoring
LDR	Land Disposal Restrictions
LOW	Liquid Observation Well
IMUST	Inactive Miscellaneous Underground Storage Tank
MRS	Mobile Retrieval System
MTCA	Model Toxics Control Act
MW	Mixed Waste
ORP	Office of River Protection
OU	Operable Unit
PA	Performance Assessment
QA	Quality Assurance
QC	Quality Control
RA	Risk Assessment
RD/RA	Remedial Design and Remedial Action
RAS	Radionuclide Assessment System
RCRA	Resource Conservation and Recovery Act of 1976
RCW	Revised Code of Washington

RMS	Radionuclide Monitoring System
RFI/CMS	RCRA Facility Investigation/Corrective Measures Study
SAP	Sample Analysis Plan
SGLS	Spectral Gamma Logging System
SST	Single Shell Tank
TFC	Tank Farm Contractor
TSD	Treatment, Storage, and Disposal
TWINS	Tank Waste Information Network System
TWRWP	Tank Waste Retrieval Work Plan
UPR	Unplanned Release
WAC	Washington Administrative Code
WIDS	Waste Information Data System
WMA	Waste Management Area

V.4.A COMPLIANCE WITH PERMIT CONDITIONS

V.4.A.1 The Permittees will comply with all requirements in this Permit Chapter and its Addenda, as set forth in the following conditions, for managing dangerous waste in the Single-Shell Tank (SST) System. Permittees will comply with the requirements in Part I Standard Conditions and, to the extent applicable, Part II General Facility Conditions.

V.4.B FACILITY DESCRIPTION AND PROCESS INFORMATION

V.4.B.1 General Requirements

V.4.B.1.a The Permittees will submit to Ecology three levels of SST facility process information corresponding to the three-tiers of closure plans described in HFFACO Appendix I, Section 2.0. The approved process information incorporated into this Permit will be used to evaluate closure plans and closure activities for SST components, WMAs (including contaminated soils within WMAs), and the entire SST.

V.4.B.1.a.i The SST System (Tier 1) process information, once approved by Ecology, will be incorporated into this Permit as Addendum B, which will be a complete description of the SST System.

V.4.B.1.a.ii WMA-level (Tier 2) process information, once approved by Ecology, will be incorporated into this Permit as Addendum C.

V.4.B.1.a.iii Component specific (Tier 3) process information will be provided together with WMA process information and will also be included in Addendum C.

V.4.B.1.b Any modifications to the SST System, WMA, or component specific process information (e.g., to reflect changes to the SST System, or correct errors) must be submitted pursuant to the permit modification process under Permit Condition I.C.3.

V.4.B.1.c When submitting updated SST System and WMA process information, any change shall be summarized in a separate attachment to indicate components newly added, eliminated, changed, or corrected to the SST System or WMAs.

V.4.B.1.d Permittees will describe all dangerous waste by its common name and dangerous waste number(s) from WAC 173-303-080 through 173-303-104, incorporated by reference. When a dangerous waste contains multiple dangerous waste constituents, the waste description will include all applicable dangerous waste numbers. For waste numbers that

are not listed in WAC 173-303, incorporated by reference, the waste description must include the following information:

a) Name of the process that generated the waste

b) Physical form (i.e., liquid, solid, sludge, or gas)

c) Weight, or volume and density, using one of the units of measure in WAC 173-303-380(2)(c)

d) Date and management method for each waste including handling code specified in WAC 173-303-380(2)(d).

V.4.B.1.e All wastes contained in the SSTs are currently designated as mixed waste (MW) in accordance to WAC 173-303-040, with the waste codes specified in SST Part A, Rev. 13. Before any modification to this mixed waste designation or these waste codes, the Permittees must submit a justification request to Ecology.

V.4.B.1.f All process information submitted must be certified in accordance with WAC 173-303-810(13), incorporated by reference.

V.4.B.2 SST System Process Information

V.4.B.2.a The Permittees will submit the process information described in V.4.B.2.d that has been identified as of the effective date of this Permit for the SST System to Ecology within 180 days after the effective date of this Permit. Permittees will submit such information through a permit modification request in accordance with Permit Condition I.C.3. Upon Ecology approval, the submitted information for SST System will update Addendum B to this Permit.

V.4.B.2.b The Permittees will thereafter submit any new or revised SST System process information to Ecology annually, by March 1 for review and approval if, over the past calendar year, any new components or new or revised process information concerning the SST System has been identified, or if any other changes need to be made. Permittees will submit such information through a permit modification request in accordance with Permit Condition I.C.3. For the purposes of this condition, a "new component" or new process information is defined as a component or process information that has not previously been included in Addendum A, Part A Form, Rev. 13, or previous SST System process information submitted to Ecology and incorporated into this Permit.

V.4.B.2.c If no new or revised information is identified within the required updating time frame, the Permittees will submit a letter in accordance with Permit Condition Part I.I, stating that no new information has been identified.

V.4.B.2.d The SST System process information consists of the following as it is identified:

a) All components of the SST System as defined in this Permit, including components inside and outside the WMAs;

b) Incorporated diagram(s) and drawings of piping, inactive waste transfer lines, vaults, pits, diversion boxes, and miscellaneous structures and other components located inside and outside the WMAs, including newly identified components;

c) Dimensions, capacity, depth, and location (with coordinates and map) information for all tanks;

d) Description of construction dates, service and operating history, waste transfer history;

e) Waste generation, transfer, process flow and waste storage procedures;

f) Current waste types, amount (volume or other measure as appropriate) and characterization;

g) Tank design or current vapors and emissions of acutely or chronically toxic extremely hazardous waste (EHW) controls and air emission controls equipment.

V.4.B.2.e The Permittees shall maintain the SST System process information in the Hanford Facility Operating Record, SST System file.

V.4.B.3 WMA Process Information

V.4.B.3.a The Permittees will submit the process information described in V.4.B.3.f and V.4.B.3.h for each WMA to Ecology according to the schedules in V.4.B.3.b. to V.4.B.3.d. Permittees will submit such information through a permit modification request in accordance with Permit Condition I.C.3. Upon Ecology approval, the submitted information for each WMA will update Addendum C to this Permit. Addendum C will form the basis for the closure plan of each WMA.

V.4.B.3.b Within one hundred eighty (180) days of the effective date of this Permit, the Permittees will submit process information for WMA C with the permit modification required to meet HFFACO milestone M-045-82.

V.4.B.3.c By December 30, 2015, the Permittees will provide Ecology with a schedule of permit modifications to be submitted to Ecology for review and approval for all WMA process information other than WMA C. The schedule will define how all WMA process information will be submitted to Ecology no later than December 30, 2025, with no more than one WMA submittal to Ecology per year. Permittees will submit the WMA process information permit modifications to Ecology in accordance with Permit Condition V.4.B.3.a following the approved schedule. After submitting the permit modification for the WMA process information and until that WMA is certified as closed, the Permittees will submit to Ecology new or revised WMA process information annually, by March 1, if new WMA components have been identified, or the WMA process information has been changed over the past calendar year, including, but not limited to:

a) Waste retrieval;

b) Closure activities;

c) Reassignment of SST components located within 200-IS-1 OU or other OUs to associated WMAs based on connectivity, proximity, process, waste type, or characterization, or any other reasons, subject to Permit Condition V.4.G.5.f.

V.4.B.3.d If no new or revised process information is identified within the required updating time frame, the Permittees shall submit a letter in accordance with Permit Condition I.I. stating that no new information has been identified.

V.4.B.3.e Additional new or revised WMA process information may be submitted any time necessary to support WMA closure plan submissions.

V.4.B.3.f The process information for each WMA, including 200-IS-1 OU in accordance with Permit Condition V.4.G.5.c, will include, at a minimum, and as known at the time of submission, the following:

a) A list of all single shell tanks within the WMA;

b) A list of all ancillary equipment located within the WMAs, including but not limited to, temporary waste transfer lines, cross site transfer lines, catch tanks, double contained receiver tanks (DCRT), and inactive miscellaneous underground storage tanks (IMUST) and other piping;

c) Reserved

d) A description of major processes specific to the WMA including historical operations, configuration changes, and current status;

e) A description of releases to soil and groundwater through overflows, spills, releases, and leaks:

f) A detailed diagram of piping, and process flow for each tank and related waste transfer lines, vaults, pits, diversion boxes, waste plies, and miscellaneous structures and other components located inside the WMAs; WMA specific tank system instrumentation;

g) Inventory or source contaminant concentrations of activities associated with each item listed in f) above and m) below, including references to sampling data or process knowledge;

h) A summary of tank integrity assessment and tank integrity status for each tank;

i) Description of the marking and labeling of the tanks;

j) Topographical maps with sufficient scales to show components included. Insert or call-out maps may be used if necessary;

k) The area and boundary of the WMAs, to include map and description as necessary;

l) Maps to show the spatial distribution of tanks and ancillary equipment at surface, 10 feet, and 15 feet deep; in some cases, maps to show equipment distribution up to 50 feet depth may be necessary if the structures resides deeper than 15 feet, and Permittees will identify such cases and include deep layer maps as necessary;

m) Identification of all non-tank system structures (e.g. septic systems, utilities, groundwater wells, dry wells, buildings) that are located within the WMA boundary and must be decommissioned before WMA closure.

n) Reserved

V.4.B.3.g The process information for each component listed for a WMA will include the following items, if applicable (components may be grouped, with justification):

a) Construction (date, design, materials, completion)

b) Process description;

c) The current waste quantity (volume, weight, or density) information, using one of the units of measure specified in WAC 173-303-380(2)(c), incorporated by reference, and status of wastes;

d) Waste type, and physical form (i.e., liquid, solid, sludge, or gas);

e) The approximate location of each dangerous waste type left in components;

f) Waste constituents, chemical processes or reactions, occurred or occurring, if such information is available or otherwise required in other provisions within this Permit;

g) Dimensions, capacity, depth and location;

h) The service history;

i) The transfer history, if applicable;

j) Release history (spills, leaks, overflows, or other incidents) including information available through historic records regarding: the date, location, duration, type of waste, and quantity of the release and mitigation measures and remedial actions taken, if any. More detailed information will be provided by the deliverables associated with HFFACO milestones M-045-61 and new deliverables established by M-045-84 and M-045-85;

k) Integrity status;

l) Retrieval status;

m) Temporary waste transfer lines status, if any;

n) Leak test history and results for tanks and ancillary equipment;

o) The operational status of field testing, leak detection monitoring (LDM) and mitigation, intrusion monitoring/control;

p) A description of materials and equipment used to provide external corrosion protection, as required under WAC 173-303-640(3)(a)(iii)(B), incorporated by reference;

q) Photographs, if available.

V.4.B.4 200-IS-1 OU Component Process Information

V.4.B.4.a By the date specified in HFFACO milestone M-015-90, incorporated by reference under the terms of Permit Condition I.A.4, Permittees will submit process information for SST components within 200-IS-1 OU as specified in Permit Condition V.4.B.3.f and V.4.B.3.g, where 200-IS-1 OU will be treated as a WMA in applying these conditions, through a permit modification process in accordance with Permit Condition I. C.3. Permittees may alternately satisfy this requirement by providing the same information in an RFI/CMS/RI/FS document submitted pursuant to HFFACO milestone M-015-90, which shall be incorporated by reference herein under the terms of Permit Condition I.A.4.

V.4.C SST SYSTEM GROUNDWATER MONITORING

V.4.C.1 Compliance Monitoring Requirements

V.4.C.1.a Initial Groundwater Monitoring Requirements

V.4.C.1.a.i Until WMA-specific groundwater monitoring plans pursuant to Permit Condition V.4.C.1.d are effective, the Permittees will follow the Dangerous Waste groundwater monitoring program described in the following documents for each WMA as interim groundwater monitoring requirements.

a) "Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area U" (DOE/RL-2009-74, Revision 0)

b) " Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area C" (DOE/RL-2009-77, Revision 0)

c) "Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area S-SX" (DOE/RL-2009-73, Revision 0)

d) "Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area T" (DOE/RL-2009-66, Revision 0)

e) "Interim Status Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area TX-TY" (DOE/RL-2009-67, Revision 0)

f) "Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area A-AX" (DOE/RL-2009-70, Draft A) (upon approval)

g) "Groundwater Quality Assessment Plan for the Single-Shell Tank Waste Management Area B-BX-BY" (DOE/RL-2009-72, Draft A) (upon approval)

V.4.C.1.a.ii **Reserved**

V.4.C.1.b Compliance Monitoring

V.4.C.1.b.i Permittees will implement compliance groundwater monitoring for each WMA under a groundwater monitoring plan in effect pursuant to Permit Condition V.4.C.1.d following the requirements of WAC 173-303-645(8) and (10), incorporated by reference, until each WMA is certified as closed.

V.4.C.1.b.ii Compliance groundwater monitoring will include the following minimum requirements:

a) Samples must be analyzed, at a minimum, for anions, cyanide, inductively coupled plasma metals, and gross beta. A low-level gamma scan shall also be performed.

b) For the sole purpose of monitoring plume movement, tritium, chromium, cobalt-60, Tc-99 and iodine-129 must be sampled and analyzed as characteristic tracers, along with the monitoring parameters selected under this subsection of the Permit.

V.4.C.1.b.iii Permittees may request a release from the requirements of this section under the following conditions, through the permit modification request under Permit Condition I. C.3:

a) A WMA is certified as clean closed and is not subject to post-closure care;

b) A WMA is landfill closed and a post-closure care plan, including a post-closure groundwater monitoring plan, has been approved and is in effect; or

c) A remedial action for contaminated soil or groundwater OU under a WMA commences and is in operation, and Permittees demonstrate that continuation of the compliance groundwater monitoring is impracticable and unnecessary.

V.4.C.1.c Groundwater Protection Standard

V.4.C.1.c.i Permittees will follow the requirements of this section to establish groundwater protection standards in accordance with WAC 173-303-645(3), incorporated by reference. The standards established in this section will provide the groundwater protection standards to be utilized in groundwater monitoring plans developed under Permit Condition V.4.C.1.d. The standards must include the compliance monitoring requirements identified in Permit Condition V.4.C.1.b.ii

V.4.C.1.c.ii No later than sixty (60) days prior to any groundwater monitoring plan submittal under Permit Condition V.4.C.1.d.ii, Permittees will submit a DQO for groundwater monitoring to Ecology for approval through a permit modification request in accordance with Permit Condition I.C.3. Once approved, the DQO for groundwater monitoring will be incorporated in this permit as Addendum G. The groundwater monitoring plan shall be developed following the DQO process and implement the SAP requirements of the DQO. The DQO will:

a) Be developed in conjunction with the development of each WMA groundwater monitoring plan and include WMA specific requirements;

b) Establish the contaminants of concern for groundwater monitoring, together with concentration limits, as described in WAC 173-303-645(4) and (5), incorporated by reference. Dangerous waste constituents listed in both Chemical Test Methods for Designating Dangerous Waste, Appendix 5, Groundwater Monitoring List [as provided in WAC 173-303-110(7)], and Tables 4-1, 4-2, and 4-4 of *Single-Shell Tank Component Closure Data Quality Objectives* (*RPP-23403, Rev.4*) shall serve as a guideline and basis for determining the contaminants of concern;

c) Establish the number of groundwater monitoring wells required, locations of the wells, sampling methods, monitoring requirements, reporting requirements, and alternative monitoring and sampling requirements within the vadose zone in the absence of groundwater.

V.4.C.1.c.iii The DQO must include a SAP for each WMA, which will specify sampling and analytical methods and procedures for dangerous waste constituents. The SAP will, at a minimum:

a) Describe the analytical laboratory processes to be used to analyze the various samples, constituents, and the uncertainties (range) of the measurements.

b) Describe the QA/QC processes to be employed for analytical data/processes. Describe the statistical procedures to be used to make comparisons/determinations.

c) Identify Analytes of Concern following Permit Conditions V.4.C.1.c.i and V.4.C.1.c.ii.

d) Specify groundwater monitoring well sampling methods and specify the methods and procedures to be used in sample collection, preservation, transportation, and documentation.

e) Specify water level measurements criteria and describe how water level measurements will be made and documented.

f) Address the technical basis for the sampling pump intake position should any groundwater monitoring well have a screen length exceeding 15 feet and the water column exceeds 15 feet.

V.4.C.1.d Groundwater Monitoring Plans

V.4.C.1.d.i The Permittees are required to develop a groundwater monitoring plan for each WMA and submit each plan to Ecology for approval as a permit modification request under Permit Condition I.C.3, in accordance with the schedule specified in Permit Condition V.4.C.2.d.ii. The approved groundwater monitoring plans will be incorporated into this Permit as Addendum D. Each groundwater monitoring plan becomes effective, and must be implemented beginning, 45 days after incorporation into this Permit.

V.4.C.1.d.ii The groundwater monitoring plan for WMA C will be submitted to Ecology for approval within 120 days of the effective date of this Permit. Groundwater monitoring plans for another three WMAs, as selected by the Permittees, will be submitted within one hundred and eighty (180) days of the submittal of WMA C monitoring plan. Groundwater monitoring plans for the remaining three WMAs will be submitted within three hundred and sixty five (365) days of the submittal of WMA C monitoring plan.

V.4.C.1.d.iii Each groundwater monitoring plan submitted must be certified pursuant to WAC 173-303-810(12) and -810(13), incorporated by reference.

V.4.C.1.d.iv The Permittees must include sufficient supporting background information in each WMA groundwater monitoring plan to justify conditions proposed in the plan, including, but not limited to:

a) Hydrogeologic data that may substantiate the direction of groundwater flow beneath each WMA, the methods used to make this determination, and the degree of uncertainty of this determination;

b) A detailed characterization and presentation of the soil column, including stratigraphy, soil physical properties and parameters;

c) Characteristics of perched water, if any;

d) The characteristics of the uppermost aquifer beneath the WMA, and the hydraulic connection between the uppermost aquifer and any other aquifer system(s);

e) A description of hydrogeologic conditions and contaminant concentrations, including uncertainty for the unconfined aquifer at all the groundwater monitoring wells.

V.4.C.1.d.v The groundwater monitoring plans will describe the conditions under which Permittees will monitor groundwater in each WMA to determine compliance with the groundwater protection standard established in Permit Condition V.4.C.1.c, and include the following:

a) Address the groundwater flow system including the depth to groundwater, vertical gradients, direction of groundwater flow, and flow rate in the uppermost aquifer.

b) Include a sufficient number of groundwater monitoring wells, and add new wells as necessary, to catch the contaminant movements in the groundwater and identify the compliance status.

c) Identify point(s) of compliance that satisfy WAC 173-303-645(6), incorporated by reference, for each WMA. Groundwater monitoring wells shall be identified to represent the point(s) of compliance. In the event no existing wells can be identified to represent point(s) of compliance, new well(s) shall be proposed under HFFACO M-24 milestones.

d) Specify the monitoring frequency for parameters based on their strengths, concentrations, the need to evaluate compliance status, the need to evaluate effectiveness of corrective action, the need to detect potential tank leaks, and the risk to human health and the environment.

e) Specify responses and reporting procedures in the event that any dangerous waste constituent concentration at the point of compliance exceeds applicable groundwater standards. The Permittees shall specify in the groundwater monitoring plans a written reporting procedure, including a reporting timeframe.

V.4.C.1.d.vi The Permittees must submit revised groundwater monitoring plans, in accordance with Permit Condition I.C.3 and certified pursuant to WAC 173-303-810(12) and -810(13), within ninety (90) days of any condition that warrants a plan modification. Conditions that may warrant a plan modification include, but are not limited to:

a) Groundwater monitoring wells used in the groundwater monitoring system are projected to "go dry" (i.e., no longer be suitable for sampling) within two (2) years of the effective date of a groundwater monitoring plan, or within two years of the submittal date of a groundwater report submitted pursuant to Permit Condition V.4.C.2;

b) The current groundwater monitoring system is found to be inadequate and additional groundwater monitoring wells (existing wells or new wells) are determined to be needed;

c) The approved groundwater plan is found to no longer satisfy any part of the requirements of WAC 173-303-645(8), (9), (10), or (11);

d) A SAP change is proposed, including sampling positions, frequencies, monitoring methods;

e) A substantial change of existing conditions has been caused by tank leak, tank failure, tank closures, or groundwater remedial actions;

f) A substantial change in hydrogeologic conditions.

V.4.C.2 Corrective Action Monitoring

V.4.C.2.a The following permit conditions are premised on HFFACO Action Plan Section 5.5, which provides: "Ecology, EPA, and DOE agree that past-practice authority may provide the most efficient means for addressing mixed waste groundwater contamination plumes originating from a combination of TSD and past-practice units." Ecology reserves the authority to impose additional conditions through permit modification if groundwater monitoring specified in RD/RA Work Plans incorporated through the following conditions is found to be inadequate to meet corrective action performance monitoring requirements.

V.4.C.2.b For the purpose of corrective action, the groundwater point of compliance is throughout a contaminated plume as provided under WAC 173-303-64620(4)(g) and WAC 173-340-720(8)(b), incorporated by reference, unless the criteria for approval of a groundwater conditional point of compliance under WAC 173-340-720(8)(c) (and if triggered,

WAC 173-340-720(8)(d)) are met. Groundwater monitoring systems shall include all wells necessary to define the scope, concentrations, and migration of groundwater plumes originating from the SST System.

V.4.C.2.c Corrective action performance monitoring requirements for WMA T and WMA TX-TY:

a) Permittees will comply with the requirements and schedules of HFFACO Action Plan Section 7.3.10 and HFFACO Milestone M-016-00 for performance monitoring for the 200-ZP-1 OU (including *Performance Monitoring Plan for the 200-ZP-1 Groundwater Operable Unit Remedial Action, DOE/RL-2009-115, Revision 0*), incorporated by reference under the terms of Permit Condition I.A.4.

b) Permittees will evaluate the effectiveness of the 200-ZP-1 OU remedial action for groundwater contamination originating from the WMA T and WMA TX-TY after 200-ZP-1 OU remedial action commences, in the annual Hanford Site Groundwater Monitoring and Performance Report submitted pursuant to Permit Condition V.4.C.2.

V.4.C.2.d Corrective action performance monitoring requirements for WMA S-SX and WMA-U:

a) Permittees will comply with the requirements and schedules of HFFACO Action Plan Section 7.3.10 and HFFACO Milestone M-16-00 for performance monitoring for the 200-UP-1 OU, incorporated by reference under the terms of Permit Condition I.A.4.

b) Permittees will evaluate the effectiveness of the 200-UP-1 OU remedial action for groundwater contamination originating from the WMA S-SX and WMA-U after 200-UP-1 remedial action commences. Permittees will summarize the evaluation in the annual Hanford Site Groundwater Monitoring and Performance Report submitted pursuant to Permit Condition V.4.C.2.

V.4.C.2.e Corrective action performance monitoring requirements for WMA B-BX-BY and WMA-C:

a) Permittees will comply with requirements and schedules of HFFACO Action Plan Section 7.3.10 and HFFACO Milestones M-015-21A and M-016-00 for performance monitoring for the 200-BP-5 OU remedial action, incorporated by reference under the terms of Permit Condition I.A.4.

b) Permittees will evaluate the effectiveness of the 200-BP-5 OU remedial action for groundwater contamination originating from the WMA B-BX-BY and WMA-C after 200-BP-5 OU remedial action commences. Permittees will summarize the evaluation in the annual Hanford Site Groundwater Monitoring and Performance Report submitted pursuant to Permit Condition V.4.C.2.

V.4.C.2.f Corrective action performance monitoring Requirements for WMA A-AX:

a) Permittees will comply with requirements and schedules of HFFACO Action Plan Section 7.3.10 and HFFACO Milestones M-015-21A and M-016-00 for performance monitoring for the 200-PO-1 OU remedial action, incorporated by reference under the terms of Permit Condition I.A.4.

b) Permittees will evaluate the effectiveness of the 200-PO-1 OU remedial action for groundwater contamination originating from the WMA A-AX, and WMA C after 200-PO-1 OU remedial action commences. Permittees will summarize the evaluation in the annual Hanford Site Groundwater Monitoring and Performance Report submitted pursuant to Permit Condition V.4.C.2.

V.4.C.3 Groundwater Monitoring and Performance Report

V.4.C.3.a Permittees will submit an annual Hanford Site Groundwater Monitoring and Performance Report to Ecology for review and approval no later than July 31 of each calendar year. The annual groundwater monitoring report will summarize the groundwater monitoring results compiled under Permit Condition V.4.C.1.b.i for the previous calendar year. The report will include, but not be limited to, the following information:

a) An evaluation of groundwater contamination and compliance status;

b) An evaluation of the effectiveness of groundwater remedial actions, if any.

c) An evaluation of tank leaks based on groundwater monitoring;

d) The calculated (or measured) rate of migration of dangerous waste or dangerous waste constituents in the groundwater during the reporting period;

e) An evaluation of the monitoring system, including the need for well replacement, new well addition, well malfunction and remedy, and need for modification of monitoring plan;

f) Groundwater monitoring data to support the evaluation and analysis.

V.4.C.3.b The groundwater monitoring reports and monitoring records will be kept in the Hanford Facility Operating Record, SST System file.

V.4.C.4 Well Installation and Decommissioning

V.4.C.4.a Prior to the installation of any additional wells to satisfy the groundwater monitoring requirements of this Permit, the Permittees must submit, for Ecology's approval, a well installation plan that specifies the basis for well replacement (if applicable), including, but not limited to, any computer modeling results performed to determine new groundwater monitoring wells; location of the proposed wells; well design; screen length and placement; construction and installation procedures; and management of wastes generated during well construction.

V.4.C.4.b New groundwater monitoring and resource protection wells will be constructed in accordance with the resource well construction standards of WAC 173-160, incorporated by reference.

V.4.C.4.c For all newly constructed groundwater monitoring wells, the Permittees must justify the placement and length of the screened interval based on groundwater sampling data obtained during well construction.

V.4.C.4.d Wells that are no longer sampled due to water table decline (i.e., "dry wells"), and/or for which there is no future use, must be decommissioned. For purposes of this Permit, "potential future use" criteria consists of the well's use as documented in a work or monitoring plan or the well's documented use within a period of two (2) years after the "dry well" designation.

V.4.C.4.e Permittees must follow the decommissioning requirements of WAC 173-160, incorporated by reference, in decommissioning any groundwater monitoring well.

V.4.C.4.f In the event an "unsuitable-for-use," a "dry," or a "candidate for decommissioning" well must be replaced to satisfy the monitoring requirements of this Permit, the Permittees must replace the well within two (2) years from the date of the determination.

V.4.C.5 Contingent Post-Closure Groundwater Monitoring

V.4.C.5.a In the event that any portion of the SST System is closed as a landfill under Permit Condition V.4.G 2.c., groundwater monitoring and reporting must be performed as part of the post-closure care measures during the entire post-closure care period. The post-closure groundwater monitoring must meet all the post-closure care groundwater

monitoring requirements specified in the Contingent Landfill Closure and Post-Closure Plan developed under Permit Condition V.4.G.4.b.ii (c), as approved by Ecology under Permit Condition V.4.G.4.a.iv.

V.4.D CORRECTIVE ACTION

V.4.D.1 The Permittees will conduct corrective action for releases of dangerous waste and dangerous waste constituents from the SST System as required by Permit Condition II.Y.1, except as provided in Permit Condition II.Y.2 for work under the HFFACO.

V.4.D.2 Permittees will comply with the requirements and schedules of HFFACO milestone M-045-61, which are incorporated by reference under the terms of Permit Condition I.A.4., with respect to submitting to Ecology a Phase 2 RFI/CMS Report for WMA C.

V.4.D.3 Concurrent with submission of the report required under Permit Condition V.4.D.2, Permittees will submit a permit modification request to Ecology for selection of a corrective action related to WMA C.

V.4.D.4 Permittees will comply with the requirements and schedules of HFFACO milestone M-045-62, which are incorporated by reference under the terms of Permit Condition I.A.4., to submit to Ecology a Corrective Measures Implementation (CMI) Work Plan for WMA C.

V.4.D.5 No later than December 31, 2014, Permittees will submit a preliminary schedule and enabling assumptions for completing corrective action at all remaining WMAs. The schedule and documentation will address:

a) The development of RFIs/CMSs, the submission of permit modification requests for the selection of corrective actions, and the submission of Corrective Measures Implementation (CMI) Work Plans, with schedules.

b) The development of WMA closure schedules under HFFACO milestones M-045-84 and M-045-85, and allow Permittees to meet the date established in HFFACO milestone M-045-00 for completing the closure of all SST farms.

c) The schedule for the elements of a RFI/CMS work plan as defined in HFFACO Action Plan Section 11.6 and Appendix I.

d) Identify any early actions that are necessary t to reduce risk in accordance to the information provided in the Phase I RFI/CMS, annual Hanford Site Groundwater Monitoring and Performance Report, and final tank closure and water management EIS.

V.4.D.6 Permittees will complete implementation of interim measures in accordance with the requirements of HFFACO milestone M-045-56, which are incorporated by reference under the terms of Permit Condition I.A.4.

V.4.D.7 Permittees will control surface water infiltration in the WMAs in accordance with the requirements of HFFACO milestone M-045-59, which are incorporated by reference under the terms of Permit Condition I.A.4.

V.4.D.8 Permittees will comply with the requirements of HFFACO milestone M-045-92, which are incorporated by reference under the terms of Permit Condition I.A.4, with respect to interim barrier installation.

V.4.E PRE-CLOSURE REQUIREMENTS

This section describes the requirements the Permittees must follow to provide for hazard prevention, leak detection/intrusion monitoring, tank integrity assessment, and inspection during the extended pre-closure period for the SST System. Unless otherwise specified,

the requirements of this Permit section apply to the SST System from the effective date of this Permit until the SST System is certified as closed.

V.4.E.1 Safety Controls and Hazards Prevention

V.4.E.1.a Preparedness and Prevention

V.4.E.1.a.i Within 60 days of the effective date of the Permit, the Permittees will submit to Ecology for review and incorporation into this Permit chapter, a description of the practices to prevent hazards (Preparedness and Prevention) in the SST system pursuant to WAC 173-303-340 and WAC 173-303-640(5), incorporated by reference, or provide to Ecology a justification of any request for a waiver(s) of the preparedness and prevention requirements of WAC 173-303-340. The description will be submitted through a permit modification request under Permit Condition I.C.3. Once approved, the description of Preparedness and Prevention will be incorporated into this Permit as Addendum O.

V.4.E.1.a.ii The Permittees will implement and maintain practices specific to the SST System, as described in Addendum O, pursuant to WAC 173-303-340. This will include:

a) Using and maintaining the internal and external communications and emergency equipment specified in Addendum O, in accordance with the requirements of WAC 173-303-340(2), incorporated by reference.

b) Operating and maintaining runoff controls and other systems to minimize run-on and infiltration of liquids to SST tanks, catch tanks, vaults, pits, and any ancillary equipment or structures described in Addendum O, in accordance with the requirements of WAC 173-303-640(5), incorporated by reference. Actions undertaken in compliance with Permit Condition V.4.D.7 will go toward satisfying this Condition.

c) Conducting any pumping activities (removal of waste from SST ancillary equipment or component), except for tank waste retrieval operations conducted under Permit Condition V.4.F, in compliance with WAC 173-303-640(5)(b). Permittees will notify Ecology sixty (60) days prior to such pumping activities, with the notification to include estimated duration of the operation, system design and basis for the activity to include why the Permittees need to take this action and how the Permittees estimated the duration of the pumping activity, description of the waste, and anticipated plan for disposition of the waste. Upon completion of the pumping activities, Permittees will provide Ecology with the actual duration of the operation and final disposition of the waste. Should the Permittees determine pumping activities must be conducted in less than sixty (60) days, Permittees will notify Ecology with the schedule and a basis for conducting the pumping activities, along with the information required in the 60-day notification. Permittees will notify Ecology within 14 days if they exceed the estimated duration or volume of the pumping activity.

V.4.E.1.a.iii The Permittees will implement the emergency procedures specified in Addendum K, in the event of a fire, explosion, or release that could threaten human health or the environment, in accordance with the requirements of WAC 173-303-340 and WAC-173-303-360, incorporated by reference.

V.4.E.1.b Air Emissions

Pursuant to WAC 173-303-810(8)(c) and WAC 173-303-395(2), the Permittees must conduct activities under this Permit so as to maintain compliance with, and not cause the violation of any term of, Hanford Site Air Operating Permit (#00-05-006) and "Criteria and Toxic Air Emissions NOC Application for Operations of Waste Retrieval Systems in

SST Farms as Supplemented with C Farm Exhauster Operations" (Order # DE05NWP-002).

V.4.E.1.c Waste Management and Accumulation

V.4.E.1.c.i Because the SST System is closing as an unfit for use tank system, the Permittees are not authorized to introduce any additional dangerous waste into the SST System, except upon prior written approval from Ecology. The Permittees may utilize DST system supernatant for the purpose of SST waste retrieval as specified in a TWRWP that has become effective under the *Washington v. Chu* Consent Decree, or approved under the HFFACO, and following the waste compatibility assessment requirement of Permit Condition V.4.F.1.a.v.

V.4.E.1.c.ii The Permittees must maintain a current listing of any containerized waste accumulation areas (e.g., 90-day and satellite accumulation areas) within the SST System footprint (i.e., WMAs). Documentation of waste designation, container accumulation area management and locations, and any contaminated equipment storage areas must be maintained in the Hanford Facility Operating Record, SST System file.

V.4.E.1.c.iii The Permittees are not authorized to store waste in containers within the SST System footprint (i.e., WMAs) for more than ninety (90) days without an approved permit modification to this chapter in accordance with Permit Condition I.C.3. The Permittees may request Ecology approval of a thirty (30)-day extension to store dangerous waste for more than ninety (90) days without a permit modification if dangerous waste must remain onsite due to unforeseen, temporary and uncontrollable circumstances.

V.4.E.1.d Mapping and Marking

V.4.E.1.d.i Within three hundred and sixty five (365) days after the effective date of this Permit, the Permittees will develop a Mapping and Marking Plan for the SST System, including piping and ancillary equipment. The Plan will be updated annually. The Permittees will submit and update the plan pursuant to the permit modification process in Permit Condition I.C.3.

V.4.E.1.d.ii The Mapping and Marking Plan for the SST System, at a minimum, will:

a) Include a schedule for implementation and must describe the methods to comply with the requirements of Permit Conditions II.U, II.V, if applicable.

b) Describe methods to comply with, and all alternatives from the requirements of, WAC 173-303-640(5)(d), incorporated by reference, for marking and labeling SST System components located outside the WMA boundaries.

c) Specify that access points to the SST WMA and components located outside of the WMAs be labeled to meet the requirements of WAC 173-303-395(6) and WAC 173-303-640(5)(d), incorporated by reference. The access points must be marked to be legible from a distance of 25 feet and must identify the waste stored in the tanks and components. The label must adequately warn employees, emergency response personnel, and the public of the major risks associated with the waste being stored.

V.4.E.1.d.iii Upon incorporation into the Permit under Permit Condition V.4.E.1.d.i, the Permittees will implement the Mapping and Marking Plan in accordance with the schedule contained therein.

V.4.E.1.d.iv Permittees will place the Mapping and Marking Plan into the Hanford Facility Operating Record, SST System file.

V.4.E.1.e Integrity Assessment of SSTs

V.4.E.1.e.i Permittees will comply with the requirements and schedules of the HFFACO, Milestone M-045-91 series, incorporated by reference according to Permit Condition I.A.4 with respect to performing SST System Integrity Assessment.

V.4.E.1.e.ii This Permit presumes that the phrase "the end date of the mission" under HFFACO, Milestone M-045-91I means the date upon which the SST System is certified as closed. In the event this phrase is interpreted differently, Ecology reserves the authority to modify this Permit to require additional integrity assessment requirements to satisfy 40 CFR § 265.191 and 40 CFR § 265.196 [incorporated by reference in WAC 173-303-400W(3)] and WAC 173-303-640(2).

V.4.E.1.e.iii Results of the integrity assessments will be maintained in the Hanford Facility Operating Record, SST System file until the WMA is certified as closed.

V.4.E.1.f New Component Design and Installation Requirements:

V.4.E.1.f.i The Permittees will comply with the requirements of this Permit section for the design, installation and certification by an IQRPE of any new SST tank component, or the modification or repair of any existing SST tank component, (collectively referred to as "new SST components"), not exempted from permitting requirements pursuant to WAC 173-303-200, with the exception of the design, installation, and certification by an IQRPE of any new components in conjunction with tank waste retrieval activities, which are subject to Permit Condition V.4.F.

V.4.E.1.f.ii Prior to the installation of any new SST components, the Permittees will provide the following information concerning the components to Ecology for review and approval pursuant to Permit Condition I.C.3:

a) Design standards;
b) Dangerous waste characteristics of the waste(s) to be handled and compatibility; evaluation with the new component;
c) General arrangement diagrams;
d) System description purpose and length of service;
e) Piping and instrumentation drawings for the system;
f) Process flow diagrams;
g) Information to demonstrate compliance with WAC 173-303-640(3)(a), including an assessment reviewed and certified by an IQRPE;
h) Description of the deposition or designation of the component or system at completion of the operation.

V.4.E.1.f.iii Permittees must develop a schedule for conducting integrity assessment over the life of any new SST component to ensure that the new component retains its structural integrity and will not collapse, rupture or fail. The schedule must be based on the nature of the new SST component, the results of past SST System integrity assessments, the age of the SST tanks, the materials of construction, characteristics of the waste, and any other relevant factors, in accordance with WAC 173-303-640(3)(b), incorporated by reference.

V.4.E.1.f.iv The Permittees must ensure that proper handling procedures are adhered to in order to prevent damage to new SST components during installation. Prior to covering, enclosing, or placing a new SST component in use, an independent, qualified installation inspector or an IQRPE, trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of any of the potential leaking items listed in WAC 173-303-640(3)(c)(i) to (vi), incorporated by reference.

V.4.E.1.f.v For new SST components that are placed underground and that are back-filled, the Permittees must employ a backfill material that is a non-corrosive, porous, homogeneous substance. The backfill must be installed so that it is placed completely around the component and compacted to ensure that the component is fully and uniformly supported in accordance with WAC 173-303-640(3)(d), incorporated by reference.

V.4.E.1.f.vi All new SST components must be tested for tightness prior to being covered, enclosed, or placed for use. If a new SST component is found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the tank system being covered, enclosed, or placed into use in accordance with WAC 173-303-640(3)(e), incorporated by reference.

V.4.E.1.f.vii The Permittees must ensure that new ancillary equipment is supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction in accordance with WAC 173-303-640(3)(f), incorporated by reference.

V.4.E.1.f.viii The Permittees must provide the type and degree of corrosion protection recommended in the determination of the corrosion expert to meet the requirements of WAC 173-303-640(3)(a)(iii), incorporated by reference for new tanks and ancillary equipment. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation in accordance with WAC 173-303-640(3)(g), incorporated by reference.

V.4.E.1.f.ix Permittees will meet the requirements of WAC 173-303-640(3)(h), incorporated by reference, to obtain, and keep on file in the Hanford Facility Operating Record, SST System file, written statements by those persons required to certify the design of the tank system and supervise the installation of the new SST components in accordance with the requirements of WAC 173-303-640(3)(b) through (g), to attest that the new component(s) were properly designed and installed and that any repairs, pursuant to WAC 173-303-640(3)(c) and (e) were properly performed. The written certification must include the certification statement required in WAC 173-303-810(13)(a).

V.4.E.1.f.x New SST components used for the storage or transfer of mixed wastes shall incorporate leak detection design features and secondary containment in accordance with WAC 173-303-640(4), incorporated by reference. If liquids or wastes are discovered within the secondary containment, but cannot be removed from the secondary containment within twenty-four (24) hours of discovery, Ecology shall be notified the next business day. The notification to Ecology shall include the following at a minimum:

a) The reasons for delayed removal of liquids or wastes from secondary containment.

b) The measures employed to prevent releases from secondary containment to the environment.

c) The actions and schedules to be taken to remove the liquids or wastes from secondary containment.

V.4.E.1.g **Temporary Waste Transfer Line Management**

Permittees will comply with the requirements of Temporary Waste Transfer Line Management specified in Permit Condition V.4.F.5 for any temporary transfer lines use in the SST System.

V.4.E.1.h **Leak Detection Monitoring Technology and Dry Well Logging**

V.4.E.1.h.i The Permittees will evaluate the leak detection monitoring technology every five (5) years and provide the evaluation to Ecology in a report, according to the following criteria:

a) Within two (2) years after the effective date of this Permit, Permittees will provide Ecology with a schedule for review and approval with the leak detection monitoring technology evaluation reports.

b) Permittees will determine whether the current technology is the best available detection technology applicable to the waste type and retrieval method.

c) Evaluate any new technology for the following:

- the scale of the leak that could be detected
- the impact of any environmental conditions around and under an SST, as practicable, that might affect the technology

d) Specify monitoring procedures, schedules, and goals for the technology.

V.4.E.1.h.ii Dry Well Logging Data Requirements

Permittees will include dry well logging data in the Hanford Facility Operating Record, SST System file. A summary listing of logging data, including the tank farm or wells logged and dates of logging, must be sent to Ecology annually. Data must be provided to Ecology on request that includes the following:

a) The number of dry wells logged;

b) The total depth, location, and configuration of each dry well;

c) The dry well logging frequency and schedule and how it coordinates with the associated tank waste retrieval;

d) The logging rate (i.e., the speed of withdrawal of the tool from the dry well) and/or logging methodology;

e) Logging tools used (e.g., spectral gamma, gross gamma) and their measuring capabilities;

f) A description indicating whether the entire length of each borehole will be logged or just selected intervals. If the Permittees plan to log selected intervals, a summary of the depth ranges and rationale for selection of these intervals must be included;

g) A description of any data reduction or analysis was used;

h) The turnaround time for any analyses;

i) The estimated time to detect a leak from its onset during retrieval operations;

j) The estimated time to determine a leak rate and leak volume following the confirmed detection of a leak;

V.4.E.2 Tank Leak/Intrusion Detection and Responses to Leak/Spills

V.4.E.2.a Leak Detection Compliance Schedule

V.4.E.2.a.i The monitoring requirements and schedule provided in *Single Shell Tank Leak Detection and Monitoring Functions and Requirements, RPP-9937* are incorporated by reference into this Permit upon the effective date of this Permit as, leak detection monitoring requirements for the SST System. Such incorporation will expire two years after the effective date of this Permit, unless *Single Shell Tank Leak Detection and Monitoring Functions and Requirements, RPP-9937* has been updated under the HFFACO, in which case such update is incorporated under the terms of Permit Condition I.A.4.

V.4.E.2.a.ii In the event that an updated version of the *Single Shell Tank Leak Detection and Monitoring Functions and Requirements, RPP-9937* is not incorporated into this Permit within two years of the effective date of this Permit, the monitoring requirements and schedules specified in V.4.E.2.b through V.4.E.2.f will take effect.

V.4.E.2.a.iii Should an updated version of the *Single Shell Tank Leak Detection and Monitoring Functions and Requirements*, RPP-9937, be incorporated into this permit within two years after the effective date of this Permit, the monitoring requirements and schedules specified in Permit Conditions V.4.E.2.b through V.4.E.2.f specified in Permit Condition V.4.E.2.a.ii will not take effect.

V.4.E.2.b General Requirements

V.4.E.2.b.i The leak detection monitoring (LDM) requirements in this Permit section apply to the entire SST System (including SSTs, catch tanks, and miscellaneous tanks), and apply until the identified SST components are certified as closed, except when tanks are in retrieval mode as defined in this Permit. Leak detection and monitoring for tanks in retrieval mode are specified in Permit Condition V.4.F.3.

V.4.E.2.b.ii The conditions in this section may be subject to change by Ecology through the permit modification process based on circumstances including, but not limited to, on-going retrieval and closure activities, or detection of leaks or intrusion.

V.4.E.2.b.iii In order to change the monitoring methods, devices, frequency, or any other requirement of this Permit with respect to LDM, the Permittees must submit a permit modification under the terms of Permit Condition I.C.3. Any new monitoring method or modification of the approved methods, other than those identified in Permit Condition V.4.E.2.c.iii, must meet the leak detection requirements and ensure that the data quality and integrity are maintained, as justified in the modification request.

V.4.E.2.c Leak/Intrusion Monitoring for SSTs

V.4.E.2.c.i Intrusion monitoring will be performed for SSTs in which tank waste retrieval has been certified as complete, or tanks in which waste retrieval has not been conducted and in which in-tank leak detection is not feasible (e.g., in tanks that contain no drainable liquid), pursuant to the following requirements.

a) Intrusion monitoring shall be performed semi-annually, with the two monitoring dates at least five months apart.

b) In-tank intrusion of liquids monitoring shall be conducted using ENRAF™ gauges or equivalent or intrusion.

V.4.E.2.c.ii Liquid monitoring for the purposes of determining changes in liquid volume will be performed for all SSTs prior to tank waste retrieval, except for tanks in which in-tank liquid detection is not feasible (e.g., in tanks that contain no drainable interstitial liquid), pursuant to the following schedule and requirements.

a) SSTs that have any amount of drainable liquid as identified in DOE document *HNF-EP-0182, Waste Tank Summary Report, Rev. 284*, incorporated by reference, will be monitored at least quarterly for the determination of a change in liquid volume;

b) SSTs that are assumed leakers with no liquid, but with sludge form of waste, as identified in DOE document *HNF-EP-0182, Waste Tank Summary Report, Rev. 284*, incorporated by reference, will be monitored for liquid volume increases at least semi-annually;

c) Permittees will submit a report within ninety (90) days after the effective date of this permit, which identifies the methods and equipment used for monitoring liquid level changes in the SSTs for Ecology review and approval pursuant to Permit Condition I.C.3.

V.4.E.2.c.iii Approved in-tank leak detection monitoring methods include: liquid observation wells (LOW), ENRAF™ gauges or equivalent, zip cords, dip tubes, or manual tape, whichever are installed and available. The Permittees will repair and reinstall devices if existing instrumentation has malfunctioned or is out of service.

V.4.E.2.c.iv Ex-tank dry well logging for all SSTs will be performed and reported by March 30, 2016. Then additional logging will be completed at least every 10 years thereafter for all tanks using all available and usable dry wells.

V.4.E.2.d Leak Detection Monitoring (LDM) for Catch Tanks and Miscellaneous Tanks

V.4.E.2.d.i LDM is required for catch tanks and miscellaneous tanks. Those catch tanks and miscellaneous tanks identified in *RPP-PLAN-48438, Single Shell Tank System Catch Tank Assumed Leak Response Plan, Rev. 1,* incorporated by reference, as requiring leak detection monitoring must be monitored quarterly. Miscellaneous underground storage tanks not requiring intrusion monitoring must be monitored at least annually.

V.4.E.2.d.ii For those catch tanks, and miscellaneous tanks identified in *RPP-PLAN-48438, Single Shell Tank System Catch Tank Assumed Leak Response Plan, Rev. 1,* incorporated by reference, as not requiring leak detection monitoring, the Permittees will perform intrusion checks at least annually.

V.4.E.2.e Leak Assessment and Data Reporting

V.4.E.2.e.i The Permittees will conduct preliminary monitoring data review within 30 days after the quarterly, semi-annual, or annual monitoring data are collected.

V.4.E.2.e.ii If a data review indicates that an anomaly exists that may be caused by a potential tank leak or intrusion, the leak assessment process specified in *TFC-ENG-CHEM-D-42, Tank Leak Assessment Process, Rev. B-4*, incorporated by reference, will be followed to immediately conduct a leak assessment, in accordance with following steps:

a) Review available in-tank and ex-tank leak/intrusion monitoring data, including tank surface level; flow rate; barometric pressure; tank process history; historical dry well logs; photographs; or any other relevant data, and additional information needs.

b) Develop specific intrusion, leak, and non-leak hypotheses.

c) Assess leak probability.

d) Prepare a leak and intrusion assessment report that: 1) includes the information reviewed; 2) discusses hypotheses considered; 3) summarizes assessment results; 4) calculates mathematical probabilities; and 5) provides a final determination, which may include long-term actions.

V.4.E.2.e.iii Ecology must be notified of the initiation of the Leak Assessment Process within seven (7) days of the initiation of the process.

V.4.E.2.e.iv Permittees must complete the Leak Assessment Process within ninety (90) days. If the Permittees cannot complete the Leak Assessment Process within 90 days, the Permittees will notify Ecology of the reasons for the delay and when the leak assessment process is projected to be complete.

V.4.E.2.e.v Ecology must be notified of the conclusion of the Leak Assessment Process within seven (7) days of such conclusion.

V.4.E.2.e.vi Should the leak assessment conclude that a leak or potential leak has occurred, the Permittees must follow the requirements of Permit Condition V.4.E.2.f.

V.4.E.2.e.vii No later than March 31 each year, Permittees will submit an Annual Leak Detection and Intrusion Monitoring Report for the SST System to Ecology for approval that summarizes the LDM system and data, identifies existing problems, and documents any leak events for the previous calendar year. The report shall provide, but not be limited to, the following information (with information provided on a tank specific basis as necessary).

a) Specification of all leak detection systems installed in the SST System.

b) Specification of which portions of the existing leak detection system are functional and in operation, identifying the need for any replacement, repair, or maintenance needs.

c) Specification of any changes in monitoring frequency or methodology that occurred over the reporting period;

d) A list of tanks and components for which monitoring was not conducted, and a specification of the reasons for not conducting monitoring;

e) Specification of the leak and intrusion detection method(s)/instrumentation employed for each tank or component, identifying any uncertainties, if necessary;

f) Description of instrument calibration and maintenance of leak detection and monitoring equipment;

g) The current surface and/or interstitial liquid level for each tank or component;

h) An estimate of pumpable liquid based on the interim stabilization report and intrusion monitoring for each tank;

i) An estimate of drainable liquid for each tank or component;

j) An estimate of the change in liquid volume in the last year;

k) For tanks in which leaks, potential leaks, or intrusions are confirmed or suspected, the specific actions (investigation, mitigation, repair, installation, decommission, etc.) taken with action levels and reporting methods, based on approved documents as supporting information.

l) Specification of whether any leaks or intrusions were investigated in the last year for each tank or component.

m) A summary analysis of the monitoring data with regards to data quality, problems, and need for improvement.

n) A trend analysis, on a tank by tank basis as necessary, of the interstitial and surface liquid levels.

o) Specification of the surface level trend direction (positive, negative, stayed the same) and explanation what the trend indicates in regard to a release or intrusion.

p) A declaration that leak and/or intrusion is occurring or that the tank or component is stable.

V.4.E.2.f Response to Leaks, Intrusions, and Spills

V.4.E.2.f.i In the event the leak assessment process indicates a leak for catch tanks and miscellaneous tanks, the Permittees must take necessary steps to mitigate the risk following the requirements of RPP-PLAN-48438, *Single-Shell Tank System Catch Tank Assumed Leak Response Plan,* incorporated by reference.

V.4.E.2.f.ii In the event a leak, intrusion, or spill is validated for SSTs, the Permittees must, within twenty-four (24) hours after detection of the leak or release from a tank system, remove as much of the waste from the tank system as is necessary to prevent further release to the environment in accordance with WAC 173-303-640(7)(b)(i), incorporated by reference.

V.4.E.2.f.iii In the event of a release, the Permittees must immediately conduct an inspection of the release and, based upon that inspection:

a) Direct immediate actions necessary to stabilize the facility/operation to a safe condition, prevent and stop the flow or addition of liquids into the tank;

b) Inspect the system to determine the cause of the leak, intrusion or spill, and document the as found conditions for subsequent investigation;

c) Ensure that trained personnel respond to spills by quickly evaluating the situation, and implementing the Building Emergency Plan and the Contingency Plan as necessary;

d) Determine if the spill or release exceeds reportable quantity for the material specified in 40 CFR 302, "Designation, Reportable Quantities, and Notification."

e) Notify the appropriate regulatory agencies in accordance with *TFC-ESHQ-ENV-FS-C-01, Environmental Notification*, incorporated by reference. This includes notification to Ecology pursuant to the requirements of WAC 173-303-145, as well as the Washington State Department of Health, if the Contingency Plan as specified in V.4.E.3 has been implemented in response to the leak;

f) Prevent further migration of the leak or spill to soils or surface water;

g) Remove, and properly dispose of, any visible contamination of the soil or surface water;

h) Within twenty-four (24) hours after detection of the leak or release to a secondary containment system, remove the released materials in accordance with WAC 173-303-640(7)(b)(ii), incorporated by reference. If the Permittees demonstrates that released materials cannot be removed within 24 hours, the material must be removed as soon as possible to prevent harm to human health and the environment.

V.4.E.3 Contingency Plan

V.4.E.3.a The Permittees will comply with Addendum K in addition to the requirements of Permit Condition II.A, when applicable. [WAC 173-303-350]

V.4.E.3.b The Permittees shall keep summary reports and details of all incidents that require implementation of the Contingency Plan in the Hanford Facility Operation Record, SST System file according to the requirements of Permit Condition II.A.1.

V.4.E.4 Training Plan

V.4.E.4.a Within sixty (60) days of the effective date of this Permit, the Permittees will submit a training matrix identifying worker categories and training categories to comply with the requirements for training in Permit Condition II.C, Attachment 5. The matrix will reflect the hazardous waste training requirements consistent with WAC 173-303-330 for personnel involved with waste management, tank waste retrieval, closure, and corrective action activities conducted at the SST System.

V.4.E.4.b The training matrix will be submitted pursuant to the permit modification process specified in Permit Condition I.C.3. Once approved by Ecology, the matrix will be incorporated into this Permit as Addendum L.

V.4.E.4.c Permittees will develop written training plans and include training requirements as specified in the training matrix and implement the plans for corresponding facilities.

V.4.E.4.d The Permittees will comply with the requirements for training in Addendum L and Permit Condition II.C, Attachment 5.

V.4.E.5 Security

V.4.E.5.a Within ninety (90) days of the effective date of this Permit, the Permittees will submit a description of security procedures specific to the SST System implementing the

requirements of Permit Condition II.L and Attachment 3, WAC 173-303-310, and WAC 173-303-395(1), (2), and (6), incorporated by reference.

V.4.E.5.b The SST System security description will be submitted pursuant to the permit modification process specified in Permit Condition I.C.3. Once approved by Ecology, the SST System security description will be incorporated into this Permit as Addendum E.

V.4.E.5.c The Permittees shall comply with all security provisions of Addendum E and WAC 173-303-310 and WAC 173-303-640(5)(d), incorporated by reference.

V.4.E.6 Inspections

V.4.E.6.a The Permittees are required to inspect the SST System in accordance with the requirements of WAC 173-303-320 and WAC 173-303-640(6), incorporated by reference except as described in Permit Condition V.4.E.6.d.

V.4.E.6.b All operational and monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that prevents, detects, or responds to hazards to the public health or the environment is also subject to inspection requirements. Such equipment may include, but is not limited to:

a) All aboveground SST System leak detection instrumentation;

b) All aboveground external-tank monitoring equipment, and tank ventilation equipment including vapor monitoring devices;

V.4.E.6.c The Permittees will submit a written SST Inspection Schedule within 90 days of the effective date of this Permit through the permit modification process of Permit Condition I.C.3. Once approved by Ecology, the SST System Inspection Schedule will be incorporated into this Permit as Addendum I.

V.4.E.6.d The SST System Inspection Schedule shall provide for inspections that meet the requirements of WAC 173-303-320(1) and (2), WAC 173-303-395(1)(d), and WAC 173-303-640(6), incorporated by reference, and the following:

V.4.E.6.d.i During retrieval or transfer activities, areas at risk of potential spills must be inspected daily when in use;

V.4.E.6.d.ii Portions of the tank system in non-retrieval mode must be inspected weekly;

V.4.E.6.d.iii All inactive, above ground structures located outside the SST Tank Farms must be inspected annually.

V.4.E.6.d.iv SST System Inspection Schedule will include descriptions of the following:

a) The types of problems that are to be looked for during inspections;

b) The equipment to be inspected,

c) Method(s) of inspection;

d) The frequency of inspection for specific items;

e) Calibration and maintenance of monitoring equipment, including liquid level monitors, thermocouple trees, ventilation systems, and high efficiency particulate air (HEPA) filters and vapor monitors, with inspection to ensure the equipment is being operated according to its design.

f) The nature of inspections required for the tank system during non-retrieval periods to document compliance with all requirements under WAC 173-303-640(6), WAC 173-303-320, incorporated by reference, and this Permit.

g) The nature of inspections required for each tank retrieval activity to document compliance with all requirements under WAC 173-303-640(6), WAC 173-303-320, incorporated by reference, and this Permit.

h) The nature of inspections required for closure activities required by the component activity closure plans to document compliance with all requirements under WAC 173-303-320, incorporated by reference, and this Permit.

V.4.E.6.d.v The SST System Inspection Schedule must indicate the frequency of inspection for specific items. The frequency should be based on the rate of possible deterioration of equipment and the probability of an environmental or human health incident; basis for frequency to be provided to Ecology for review and approval if different than a regulatory specified interval. Inspections must be conducted often enough to identify problems in time to correct them before they harm human health or the environment. At a minimum, the inspection schedule must also include the applicable items and frequencies required for the specific waste management methods described in WAC 173-303-320(2)(c), incorporated by reference. Factors that may be considered in developing this schedule include, but are not limited to, the following:

a) Age and condition of the component;

b) Location;

c) Use/storage history;

d) Leak and incident history;

e) Engineering design;

f) Limitations of inspection and monitoring devices;

g) Manufacturer's recommended calibration/functionality test procedures and maintenance procedures;

h) Malfunctions and deterioration;

i) Integrity assessment records;

j) Retrieval status;

k) Worker safety.

V.4.E.6.e Permittees will comply with Permit Condition II.X.4 and remedy problems revealed by an inspection on a schedule which prevents hazards to the public health and the environment. Where a hazard is imminent or has already occurred, Permittees will conduct remedial action immediately. Permittees will record the date and nature of any repairs or remedial actions taken, or the scheduled date of such repairs or remedial actions, in the inspection log required by Permit Condition II.X.2.

V.4.E.6.f The Permittees must review and modify, as appropriate, pursuant to the permit modification process of Permit Conditions I.C.3, the inspection schedule and requirements within thirty (30) days after any of the following events occur:

V.4.E.6.f.i Implementation of the contingency plan pursuant to Permit Condition II.A.1;

V.4.E.6.f.ii Changes to the SST System.

V.4.E.6.g The Permittees will place inspection records (e.g., inspection logs or summaries) in the SST System file of the Hanford Facility Operating Record, SST System file, as required by Permit Condition II.X.3.

V.4.F TANK WASTE RETRIEVAL REQUIREMENTS

This section describes the requirements the Permittees must follow in conducting tank waste retrieval, including retrieval operation, leak detection and response to spills, and reporting.

V.4.F.1 General Requirements

V.4.F.1.a Tank Waste Retrievals

V.4.F.1.a.i For those SST retrievals within the scope of the *Washington v. Chu* Consent Decree, Permittees must complete the retrieval of tank waste from SSTs in compliance with the requirements and schedules of:

a) Section IV-B, Appendix B, and Appendix C of the *Washington v. Chu* Consent Decree, which are incorporated by reference under the terms of Permit Condition I.A.5;

b) Those portions of TWRWPs established under the *Washington v. Chu* Consent Decree that, once established, constitute a HFFACO Action Plan primary document for enforcement purposes, which are incorporated by reference under the terms of Permit Condition I.A.4;

c) Sections 2.1.4, 2.1.5, and 2.1.6 of HFFACO Appendix I, as they are defined to be applicable under Appendix C, Part 3, of the *Washington v. Chu* Consent Decree, which are incorporated by reference under the terms of Permit Condition I.A.4, and

d) HFFACO Milestone M-045-86 with respect to submitting retrieval data reports for SSTs retrieved under the *Washington v. Chu* Consent Decree, which are incorporated by reference under the terms of Permit Condition I.A.4.

V.4.F.1.a.ii For those SST retrievals within the scope of the HFFACO, Permittees must complete the retrieval of tank waste from SSTs in compliance with the schedules and requirements contained in, and established under, HFFACO Milestones M-045 and M-062, Appendix H, and Appendix I, which are incorporated by reference under the terms of Permit Condition I.A.4.

V.4.F.1.a.iii The Permittees shall transfer all retrieved waste into only the DST waste system, unless other approval is obtained from Ecology in the TWRWPs and/or another Ecology approval process.

V.4.F.1.a.iv Only upon prior written approval from Ecology, the SST System is authorized to accept DST system supernatant for purpose of SST waste retrieval. The Permittees are not authorized to introduce any other dangerous waste into the SST System.

V.4.F.1.a.v Before initiating waste retrieval and before initiating transfer of SST waste to the DST system, a formal waste compatibility assessment must be performed in accordance with the waste acceptance criteria of the DST System (Operating Unit Group 12, Addendum B).

V.4.F.1.a.vi Mixed waste can be transferred from the SST System only in accordance with the receiving unit's waste acceptance criteria, as specified in the DST System Permit, Addendum B, Waste Analysis Plan (Operating Unit Group 12).

V.4.F.1.a.vii The Permittees must conduct waste retrieval activities and maintain the retrieved tanks before closure in a manner that minimize the environmental impact and protect human health pursuant to WAC 173-303-283(3)(i). To ensure these requirements are met, the Permittees will employ the leak mitigation strategy specified in the Ecology-approved TWRWP to reduce leak loss potential.

V.4.F.1.a.viii Reserved

V.4.F.2 TWRWP Requirements

V.4.F.2.a TWRWPs submitted to Ecology under the requirements of the *Washington v. Chu* Consent Decree, or the HFFACO, must ensure compliance with the requirements of Permit Conditions V.4.F.3 and V.4.F.5.

V.4.F.2.b The Permittees will maintain TWRWPs that have become effective under the *Washington v. Chu* Consent Decree, or been approved under the HFFACO, in the Hanford Facility Operating Record, SST System file.

V.4.F.3 Tank Leak Detection Monitoring

V.4.F.3.a Leak Detection Monitoring and Mitigation Plan

V.4.F.3.a.i Prior to the initiation of any waste retrieval operations, Permittees must have a Leak Detection Monitoring and Mitigation Plan included in a TWRWP that has become effective under the *Washington v. Chu* Consent Decree, or been approved under the HFFACO.

V.4.F.3.a.ii The Leak Detection Monitoring and Mitigation Plan will satisfy the following requirements:

a) Identify the best available leak detection technology applicable to the tank waste type and retrieval method in order to detect as small a scale leak as practicable. For the ex-tank technologies, evaluate and implement improvements on the currently used HRR as practicable. Evaluate and compare alternate ex-tank leak detection technologies when initiating the first tank retrieval for each WMA.

b) Show that current leak detection HRR, or other technology, configuration is sufficient to investigate completely around and under a SST, as practicable.

c) Describe how system capabilities including tracking of the lateral and vertical movement of a leak within tank farm boundary and how close to the specific tank being retrieved the system can measure.

d) Identify monitoring schedules, procedures, specify frequency of data gathering and evaluations, and specify the anticipated effectiveness of the technologies performance.

V.4.F.3.a.iii The Leak Detection Monitoring and Mitigation Plan must describe utilization of both ex-tank and in-tank leak detection methods, as well as any other methods that may be approved by Ecology on a case by case basis.

a) For the primary ex-tank leak detection methods, the current best available technologies are: High Resolution Resistivity (HRR) and dry well logging; and

b) For the primary in-tank leak detection methods, the current best available technologies are: ENRAF™ gauges, manual tape, and LOW.

V.4.F.3.a.iv Groundwater monitoring will be used as a supplementary ex-tank leak detection method during retrieval operations. Groundwater sampling must be performed within a 3-month period prior to and after retrieval, following the requirement of Permit Condition V.4.C.1.b.ii (b).

V.4.F.3.b Ex-Tank Leak Detection/Monitoring with HRR

V.4.F.3.b.i HRR monitoring must be used as primary ex-tank leak detection method during tank waste retrieval operations.

V.4.F.3.b.ii The HRR LDM system must be used with following specifications:

a) A pre-retrieval HRR baseline measurement/survey must be performed.

b) HRR leak detection requirements and approved procedures must be implemented by trained and designated personnel prior to the start of tank waste retrieval operations.

c) Functions and requirements necessary to support design and operation of proposed LDM system(s) must be consistent with TWRWP.

d) Any changes to HRR LDM field monitoring activities that the Permittees propose must be documented and the documentation maintained in the Hanford Facility Operating Record, SST System file.

e) The equipment must be operated continuously except when down for repairs, calibrations, electrical outages, or similar reasons.

f) Should a problem occur that renders the HRR leak detection system inoperable for more than seven (7) consecutive days, dry well monitoring must be used as a backup means of leak detection.

g) Ecology may review the HRR data during any Ecology working hours. Such data must be made available upon Ecology request.

h) If an unexplained HRR anomaly exists, Ecology must be informed as soon as practicable and the Leak Assessment and Leak Mitigation process in this subsection must be followed.

i) If after three months of the discovery of the unexplained HRR anomaly, the anomaly has not been resolved, Permittees will consult with Ecology regarding possible changes to groundwater monitoring and analyte monitoring frequency.

V.4.F.3.c Ex-Tank Leak Detection with Dry Well Monitoring

V.4.F.3.c.i Requirements for dry well loggings prior to initiation of retrieval:

a) In order to provide baseline soil moisture information, gamma scans and moisture scans must be obtained for each dry well listed in a TWRWP prior to initiation of retrieval operations in a tank.

b) Should a prior-to-retrieval gamma scan show an unexpected presence of radioactivity in the soil adjacent to any of the dry wells listed in a TWRWP, and the unexpected reading is confirmed, the tank leak assessment process in procedure *TFC-ENG-CHEM-D-42 Tank Leak Assessment Process, Rev. B-4* (CH2M Hill, 2008) must be implemented.

c) Retrieval activities cannot commence until the unexpected reading had been evaluated and is shown to not alter the leak status for the tank whose waste was to be retrieved.

V.4.F.3.c.ii Requirements for dry well logging during retrieval:

a) After retrieval operations have been initiated, dry well logging will only be performed as a backup leak detection method if the HRR system becomes inoperable.

b) When dry well logging is employed as a backup leak detection method, it shall be performed to monitor specific region(s) of interest for increases in soil moisture (or gamma) content. These may include the interval from above the existing waste surface to below the base of the tank, and the depth interval to log.

c) Should dry well moisture logging be initiated for leak detection due to inoperable HRR monitoring during waste retrieval, the prior-to-retrieval moisture logging will be used as a baseline for comparison.

d) Ecology must be informed within seventy-two (72) hours of discovery of any missed required dry well monitoring (missed intervals or entire dry well).

e) In the event that moisture logging demonstrates significant increases in soil moisture levels, a gamma scan must be performed within seven (7) days as a follow-up to determine if the moisture increase is due to a tank waste leak. If unable to perform gamma scan within seven (7) days, Ecology will be informed.

f) If there is an unexplained increase in soil moisture content observed during moisture logging and access is not practicable for any gamma monitoring system, Ecology

must be informed within seventy-two (72) hours of confirmation of the increase in soil moisture content, and the Permittees must propose an alternate means of investigation for Ecology approval.

V.4.F.3.c.iii Requirements for post-retrieval dry well loggings:

a) Gamma scans must be obtained for each dry well listed in a TWRWP no sooner than three months, but no later than six months, following the completion of waste retrieval from any tank subject to the TWRWP.

V.4.F.3.c.iv The dry well logging will be performed to meet the following requirements:

a) All dry well loggings will be obtained for the entire dry well column from near the ground surface to near the bottom of each dry well.

b) Gamma logging may be performed with the radionuclide assessment system (RAS truck), the radionuclide monitoring system (RMS), or the spectral gamma logging system (SGLS).

c) Moisture logging will be performed with hand-held moisture probes or any of the vehicle mounted systems.

d) Logging equipment will be calibrated annually or anytime when there is any indication of an erroneous result that indicates recalibration is warranted.

V.4.F.3.c.v The logging systems will be deployed by qualified personnel in accordance with the applicable procedures for that equipment. Established methods must be followed when conducting dry well logging. Dry well logging data must be reviewed, processed, and interpreted by qualified personnel.

V.4.F.3.d In-Tank Leak Detection/Monitoring

V.4.F.3.d.i Under following conditions, liquid level measurement may be used for leak detection and monitoring during waste retrieval:

a) The tank level gauge must be an ENRAF™ gauge or equivalent of the type normally used in tank farms;

b) There must be a liquid surface under the ENRAF™ gauge or equivalent plummet or tape;

c) There are no active retrieval operations being performed;

d) The tank is not being actively exhausted;

e) The measured waste level is not increasing.

V.4.F.3.e Leak Assessment and Leak Mitigation

V.4.F.3.e.i The Permittees must conduct initial data review for the LDM in a timely manner. For LDM during SST tank waste retrieval, the initial data review must not be more than 24 hours after the data are collected.

V.4.F.3.e.ii If a data review indicates that an unexplained anomaly exists that may be caused by a potential tank leak, or intrusion, Permittees will follow Permit Condition V.4.E.2.e.ii to immediately conduct a leak assessment or updated document approved in the *Single Shell Tank Leak Detection and Monitoring Functions and Requirements, RPP-9937.*

V.4.F.3.e.iii Permittees must notify Ecology of the initiation of the Leak Assessment Process within seventy-two (72) hours of the initiation of Leak Assessment Process.

V.4.F.3.e.iv Permittees must complete the Leak Assessment process within forty-five (45) days. If the Permittees cannot complete the leak assessment process within 45 days, the

Permittees will notify Ecology of the reasons for the delay and when the leak assessment process is projected to be complete.

V.4.F.3.e.v Permittees must notify Ecology of the conclusion of the Leak Assessment within seventy-two (72) hours of completion.

V.4.F.3.e.vi In the event a leak occurs or the leak assessment process is initiated during retrieval, the Permittees must follow the Response to Leaks, Intrusions, and Spills requirements of Permit Condition V.4.E.2.f.

V.4.F.3.e.vii The leak detection monitoring results during waste retrieval will be summarized and included in the Annual Leak Detection and Intrusion Monitoring Report for the SST System following Permit Condition V.4.E.2.e.vii.

V.4.F.4 Data Quality Objectives (DQO) and Sampling and Analysis Plan (SAP)

V.4.F.4.a DQO and Sampling and Analysis Plan (SAP) documents developed under HFFACO Appendix I, Section 2.1.6 in coordination with Ecology for residual tank waste characterization, are subject to following conditions:

a) The DQO will be developed in accordance with EPA guidance EPA/600/R-96/05 Guidance for the Data Quality Objectives Process (EPA QA/G-4), incorporated by reference.

i. Permittees will provide the rationale for selecting the parameters for which each sample will be analyzed [i.e., how analysis for these parameters will provide sufficient information on the waste to comply with WAC 171-303-300(1), (2), (3) and (4)].

ii. The Permittees will coordinate the development of the DQO with Ecology and resolve any issues and comments. The resolution of issues and comments are documented via approval of the SAP required by Permit Conditions V.4.F.4.a (b) and V.4.F.4.a (c).

iii. The DQO requirements in the *Single-Shell Tank Component Closure Data Quality Objectives (RPP-23403 Rev.4)*, incorporated by reference, may be amended to include components. Should the DQO be amended, the Permittees will submit a revised SAP following the requirements of Permit Condition V.4.F.4.a(d) to Ecology for review and approval.

iv. A new DQO may be developed for components. Upon development of a new DQO, the Permittees will submit a new sampling and analysis plan for post-retrieval and closure sampling following the requirements of Permit Condition V.4.F.4.b and in accordance with Permit Condition I.C.3 to Ecology for review and approval.

b) The Permittees will follow the requirements of the *Sampling and Analysis Plan for Single-Shell Tank Closure* (RPP-PLAN-23827, Revision 2), incorporated by reference.

c) The Permittees will follow the requirements of any SAP submitted as a result of Permit Condition V.4.F.4.a.iv.

d) The requirements incorporated into Permit Conditions V.4.F.4.a (b), and V.4.F.4.a.(c), may be modified as necessary under the terms of Permit Condition I.C.3. An approved sampling and analysis plan for post-retrieval and closure sampling, once approved by Ecology, will be incorporated into this permit as Addendum N.

V.4.F.4.b As part of the DQO process, the Permittees will implement and maintain the SAPs following Permit Conditions V.4.F.4.a (b) and V.4.F.4.a (c), for post-retrieval and closure

sampling and residual tank waste characterization pursuant to the requirements of HFFACO, Section 6.5 and Appendix I, Section 2.1.6 incorporated by reference. At a minimum, the SAP must include:

a) Waste description
b) The parameters for which each sample will be analyzed;
c) The methods of obtaining or testing for these parameters;
d) The methods for obtaining representative samples of wastes for analysis;
e) A description of the sampling techniques to be utilized for sample collection;
f) Quality Assurance and Quality Control (QA/QC) for sample collection and laboratory analysis;
g) Data reporting requirements.

V.4.F.4.c Following development of a SAP, in accordance with Permit Conditions V.4.F.4.a (b) and V.4.F.4.a (c), the Permittees will develop a tank or component specific sampling and analysis plan (hereafter referred to as a TSAP). The TSAP will support the SAP and the Permittees will follow the TSAP for post-retrieval and closure sampling and residual tank waste characterization. The TSAP will be submitted to Ecology for review and will be implemented unless Ecology notifies the Permittees that it takes exception to the TSAP within three (3) calendar days. Exceptions to TSAPs and the resolutions will be documented in the Hanford Facility Operating Record, SST System file.

V.4.F.4.d Upon Ecology approval, Permittees may use the same SAP, or a previously approved SAP, for multiple tanks or components that share similar waste characteristics. Permittees must provide information adequate to justify this approach.

V.4.F.5 Temporary Waste Transfer Line Management

V.4.F.5.a The Permittees will have leak detection sufficient to meet the requirements of WAC 173-303-640(4)(c), incorporated by reference, for each SST temporary waste transfer line.

V.4.F.5.b Prior to using any temporary waste transfer lines, Permittees must comply with the requirements of Permit Condition V.4.E.1.f., except for V.4.E.1.f.ii and V.4.E.1.f.iii.

V.4.F.5.c Prior to use of a temporary waste transfer line, the Permittees will have IQRPE certification, that having considered the entire configuration of the system impacted by the use of the temporary waste transfer line, attests the temporary waste transfer line is fit for use per the requirements of WAC 173-303-640(4)(b) and (c).

V.4.F.5.d Secondary containment for SST temporary waste transfer lines must be provided for the transfers of waste from the SST System to the DST System, and for the transfers of supernatant from the DST System back to the SST System.

V.4.F.5.e In the event a leak occurs, the Permittees must respond to the leak and any spill by following the requirements of RPP-12711, *Temporary Waste Transfer Line Management Program Plan,* Rev. 3K, incorporated by reference,

V.4.F.5.f The Permittees will comply with the following additional requirements specific to hose-in-hose transfer lines (HIHTL) used for temporary waste transfer:

a) The Permittees will follow the requirements of RPP-12711, *Temporary Waste Transfer Line Management Program Plan,* Rev. 3K, incorporated by reference, which are incorporated by reference, to manage HIHTLs;
b) The requirements incorporated into Permit Condition V.4.F.5.f (a) may be modified as necessary under the terms of Permit Condition I.C.3. Any changes made to RPP-12711, except changes to Tables A1 and A2 must be approved by Ecology;

c) Permittees will update the HIHTL tracking system information pursuant to RPP-12711, Rev. 3K, for the SST System temporary waste transfer lines within twenty (20) days of the end of each quarter. A copy of the quarterly updates will be submitted to Ecology within thirty (30) days after the end of the quarter;

d) The Permittees will submit formal notification of the determination to extend the service life of an HIHTL to Ecology;

e) The Permittees cannot use a HIHTL that is greater than 10 years of age;

V.4.F.5.g Within 180 days of the effective date of this Permit, the Permittees must submit a revision to RPP-12711, *Temporary Waste Transfer Line Management Program Plan,* Rev. 3K to include a leak response plan for leaks from any temporary waste transfer line that occurs from the primary to secondary containment, and from the secondary containment to the environment.

V.4.F.5.h Permittees will place the following documents in the Hanford Facility Operating Record, SST System file:

a) a description of the installation, maintenance, operation, and leak detection methods of each SST System temporary waste transfer line;

b) Documentation of the leak detection method used for each SST System temporary waste transfer line;

c) The latest version of RPP-12711, *Temporary Waste Transfer Line Management Program Plan*, within 7 days after issuance;

d) a list of all temporary waste transfer lines deployed within the SST System;

e) the HIHTL tracking system information;

f) Any completed HIHTL extension waiver package.

V.4.G SST SYSTEM CLOSURE

V.4.G.1 General Requirements

V.4.G.1.a The Permittees will close the entire SST System, including tanks, ancillary equipment, contaminated soil, and contaminated groundwater, in accordance with the closure performance standards specified in Permit Condition V.4.G.2.

V.4.G.1.b Final closure of the SST System will not be complete until all WMAs, and all SST components outside WMAs, are certified as closed.

V.4.G.1.c Permittees must provide a certification of closure in accordance with WAC 173-303-610(6), incorporated by reference, at the WMA level, and for all SST components outside WMAs.

V.4.G.1.d Closure activities for individual SST component or groups of components within WMAs can only be certified as complete prior to the closure of the associated WMA if the component(s) are clean closed and meet the clean closure standards specified in Permit Condition V.4.G.2.b.

V.4.G.1.e Unless otherwise approved by Ecology, before any WMA closure activities can be performed, the Permittees must conduct the following pre-closure activities within the WMA:

V.4.G.1.e.i Complete tank waste retrieval as required under Permit Condition V.4.F.

V.4.G.1.e.ii Complete tank waste characterization as required under Permit Condition V.4.F.1.a.i (c) or V.4.F.1.a.ii, whichever condition applies.

V.4.G.1.e.iii Complete a RA in compliance with the requirement specified in Permit Condition V.4.G.6.

V.4.G.1.e.iv Complete any additional mitigation measures required by Ecology under this Permit if the results of the RA indicate that the risk associated with a final WMA closure is unacceptable. Such mitigation measures may include additional tank waste retrieval, stabilization, isolation, or cleanup activities for any part of a WMA, individual tanks, or SST components.

V.4.G.1.f The Permittees must properly dispose of or decontaminate all equipment, structures, and soils generated during the partial and final closure periods, and handle all dangerous waste generated during closure, as required by WAC 173-303-610(5), incorporated by reference.

V.4.G.2 CLOSURE PERFORMANCE STANDARDS

V.4.G.2.a General Closure Performance Standards

V.4.G.2.a.i The Permittees must close SST System in a manner that achieves the following closure objectives, in accordance with WAC 173-303-610(2)(a):

a) Minimizes the need for further maintenance.

b) Controls, minimizes or eliminates to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere.

c) Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity.

V.4.G.2.a.ii Reserved

V.4.G.2.b Clean Closure Performance Standards

V.4.G.2.b.i Except as provided in Permit Condition V.4.G.2.c (Landfill closure), the Permittees must meet the requirements of WAC 173-303-610(2)(b) and WAC 173-303-640(8)(a) in closing the SST System: All dangerous waste, waste constituents, dangerous waste residues, equipment, bases, liners, any materials containing or contaminated with dangerous waste or waste residue, and contaminated soils and groundwater throughout the closing unit must be removed or decontaminated. The removal or decontamination must assure that the levels of dangerous waste or dangerous waste constituents or residues do not exceed:

a) For soil and groundwater in any areas affected by releases from the SST System, the numeric cleanup levels pursuant to unrestricted use exposure assumptions in the Model Toxics Control Act (MTCA) regulations, WAC 173-340, incorporated by reference. These are the numeric cleanup levels calculated according to MTCA Method B, although Method A may be used as appropriate.

b) For all structures, equipment, bases, liners, etc., clean closure standards as applicable in Ecology document #94-111, Guidance for Clean Closure of Dangerous Waste Units and Facilities, incorporated by reference.

V.4.G.2.b.ii Reserved

V.4.G.2.c Landfill Closure Performance Standards

V.4.G.2.c.i Before the Permittees may close any portion of the SST System under landfill closure standards, the Permittees must demonstrate that clean closure of such portions is impracticable.

a) The "Impracticability Demonstration" must be made under the definition of "practicability" under WAC 173-340-200, incorporated by reference, and following

the demonstration procedures and criteria of WAC 173-340-360(3)(e) and (f), incorporated by reference.

b) The "Impracticability Demonstration" must be undertaken for any WMA that is proposed to be closed in whole or part as a landfill. The demonstration for one WMA cannot be used to determine landfill closure for any other WMA or for the entire SST System.

c) The "Impracticability Demonstration" must be undertaken at the WMA level. The demonstration shall include a component level evaluation of all tanks, ancillary equipment, and contaminated soils within the WMA that the Permittees believe cannot practicably meet clean closure standards. Permittees may group similar components together for the purpose of this demonstration.

d) The "Impracticability Demonstration" must be submitted as an integrated part of the proposed closure plans for the closure unit (component, group of components, or WMAs).

V.4.G.2.c.ii If the Permittees demonstrate that all or part of the SST System, including contaminated soils, cannot be practicably removed or decontaminated as required by Permit Condition V.4.G.2.b., the Permittees must, upon Ecology approval, close those portions of the SST System as a landfill and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills under WAC 173-303-665(6) (including internal references to WAC 173-303-610(7),(8),(9), and (10)), incorporated by reference, with the following exceptions and requirements:

a) Exceptions:

- The liner and leachate collection requirements of WAC 173-303-665(6)(b)(ii) and (iii) are not applicable; and
- The post-closure care period under WAC 173-303-610(7)(a) is designated as 500 years.
- Under WAC 173-303-610(7)(c), the security requirements of WAC 173-303-310 will be continued throughout the post-closure care period.

b) Requirements for Cover System(s): The Permittees must design, construct, and maintain a cover that:

- Ensures long-term isolation of wastes with minimal maintenance requirements;
- Has low permeability to minimize the infiltration of precipitation into contaminated soil or debris, thereby minimizing the driving force for downward migration of contaminants;
- Minimizes the migration of windblown dust originating from contaminated surface soils and limits water erosion, and includes re-vegetating the barrier surface areas to enhance evapotranspiration and blend into the surrounding landscape;
- Minimizes the potential for direct exposure of inadvertent intruders to contamination, including minimizing the potential for intrusion and destructive effects by plants and burrowing animals;
- Prevents human intrusion and ecological receptors, and attenuates the risk from covered contaminants;
- Include design features to ensure that the cover's structural integrity is maintained;
- Is based on site-specific evaluations, subject to approval by Ecology, ensuring that designs are appropriate for specific WMA characteristics;

- Does not inhibit future groundwater remediation;
- Has an estimated 500-year design life.

c) Requirements for Groundwater/Vadose Zone Monitoring System(s): The Permittees must provide for and maintain vadose zone monitoring as part of groundwater/vadose zone monitoring system(s) during the post-closure care period, and perform mitigation actions as necessary if a leak is detected.

d) Requirements for Construction Phase Monitoring and Inspection: The Permittees must provide for monitoring and inspections as necessary during construction, or installation period, in accordance with the requirements of WAC 173-303-665(4).

e) Requirements for Institutional and Administrative Controls: The Permittees must implement and maintain institutional controls during the post-closure care period to ensure the protection of human health and the environment. The Permittees will place each WMA in a period of administrative control during which monitoring and maintenance activities will take place. The institutional controls may include:

- Non-engineered restrictions on activities, access, or exposure to land, groundwater, surface water, waste, and waste disposal areas or media;
- RA and reporting of controls;
- Permanent markers, signs, and monuments on the landfill areas, and
- Distributed records that pass on information regarding the nature and location of hazards to future generations

f) Inspection Requirements: The Permittees must provide for post-closure inspections for the engineered surface barriers after the final closure for vegetation conditions, signs of intrusion; run on/run-off control; and specify maintenance if problems are discovered during inspections.

V.4.G.2.c.iii No landfill closure actions can be undertaken for any component or groups of components within a WMA before a closure plan allowing for such actions is approved for the WMA.

V.4.G.2.c.iv Before any SST System tanks or ancillary equipment may be landfill closed, the Permittees must meet all land disposal restriction (LDR) requirements specified in WAC 173-303-140, incorporated by reference, or obtain Ecology's approval for a site-specific LDR treatability variance under the criteria of 40 CFR.268.44(h), incorporated by reference in WAC 173-303-140(2)(a) and incorporated by reference into this Permit, otherwise allowing for the *in situ* disposal of such components.

V.4.G.3 SST System Closure Schedule

V.4.G.3.a The Permittees will comply with the requirements and schedules of HFFACO milestone M-045-00, which are incorporated by reference under the terms of Permit Condition I.A.4., for completing the closure of all Single Shell Tank Farms.

V.4.G.3.b The Permittees will comply with the requirements and schedules of HFFACO Milestone M-045-082, which are incorporated by reference under the terms of Permit Condition I.A.4., for submitting permit modification requests to support final closure of WMA C.

V.4.G.3.c Permittees will comply with the requirements and schedules of HFFACO milestone M-045-83, which are incorporated by reference under the terms of Permit Condition I.A.4, for completing the closure of WMA C.

V.4.G.3.d Permittees will comply with the requirements and schedules of, and requirements and schedules developed under, HFFACO milestone M-045-84, which are incorporated by reference under the terms of Permit Condition I.A.4, for closing a second WMA.

V.4.G.3.e Permittees will comply with the requirements and schedules of, and requirements and schedules developed under, HFFACO milestone M-045-85, which are incorporated by reference under the terms of Permit Condition I.A.4, for closing all remaining WMAs.

V.4.G.3.f Permittees will comply with the requirements and schedules of, and requirements and schedules developed under, HFFACO milestone M-045-92B, which are incorporated by reference under the terms of Permit Condition I.A.4, for submitting all applicable information to be included in the Corrective Measures Study & Feasibility Study Report and Proposed Corrective Action Decision Plan for SST ancillary equipment in the 200-IS-1 Operable Unit.

V.4.G.4 Closure Plan Submission

V.4.G.4.a General Requirements

V.4.G.4.a.i The Permittees will develop and submit closure plans (also called Closure Action Plans under the HFFACO) in a timely manner to support the closure schedules specified in Permit Condition V.4.G.3.

V.4.G.4.a.ii The closure plans will be developed following the requirements of HFFACO Action Plan Appendix I, Sections 2.2, 2.3, 2.4, 2.5, and 3.0, which are incorporated by reference under the terms of Permit Condition I.A. 4.

V.4.G.4.a.iii Closure plans will be submitted on both WMA ("Tier 2") and component-specific ("Tier 3") levels.

V.4.G.4.a.iv Closure plans will be submitted as permit modification requests under Permit Condition I.C.3.

V.4.G.4.a.v If the Permittees propose closure under alternative requirements pursuant to WAC 173-303-610(1)(e) (e.g., relying on corrective action to satisfy closure of contaminated soils), the closure plan must include either the alternative requirements or a reference to the enforceable document that contains the alternative requirements.

V.4.G.4.b WMA (Tier 2) Closure Plans

V.4.G.4.b.i General Requirements: Unless otherwise approved by Ecology, and consistent with HFFACO, Appendix I, the following general requirements apply:

a) Tier 2 Closure Plans will be developed for each WMA.

b) The Tier 2 Closure Plans will address how compliance will be achieved with the closure requirements of WAC 173-303-610, WAC 173-303-640(8), and, as applicable, WAC 173-303-660(9) and WAC 173-303-665(6), incorporated by reference, and the requirements of this Permit.

c) Each Tier 2 Closure Plan will be accompanied or preceded by a group of Tier 3 Closure Plans for all components within that WMA if the components have not already been certified as clean closed. The Tier 2 plan must address closure issues for the entire WMA.

d) The Tier 2 Closure Plan for each WMA must address closure actions for all the components (tanks, ancillary equipment, contaminated soils and groundwater included within the WMA) based on the process information for that WMA within Addendum C to this Permit.

e) The Tier 2 Closure Plan for each WMA must be accompanied by a final RA report following the requirements of Permit Condition V.4.G.6, with updated assessment results reflecting the most updated component closure activities, residual waste volume, constituent concentrations, and all other characterization information necessary for the closing units.

V.4.G.4.b.ii Specific content: The Tier 2 Closure Plans must include the following:

a) Clean Closure Description:
- A description of how each WMA will be closed in accordance with the closure performance standards specified in Permit Condition V.4.G.2.a, and V.4.G.2.b;
- A detailed description of the methods to be used during closure, including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all dangerous wastes;
- Identification of the type(s), location, and schedule of availability of any off-site dangerous waste management units to be used;
- A detailed description of the steps needed, or technologies and capabilities needed, to remove or decontaminate all dangerous waste residues and contaminated containment system components, equipment, structures, and soils during closure, including, but not limited to, procedures for cleaning or removing equipment and contaminated soils;
- Methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard;
- A detailed description of other activities necessary during the closure period to ensure that the closure satisfies closure performance standards, including, but not limited to, groundwater monitoring, and run-on and runoff control;

b) Clean Closure Impracticability Demonstration:
- If the Permittees propose that closure in accordance with the closure performance standards specified in Permit Condition V.4.G.2.b is not practicable for all or part of a WMA and that closure in accordance with the closure standards specified in Permit Condition V.4.G.2.c.i should be approved, the Permittees must include an "Impracticability Demonstration" in the closure plan as specified in Permit Condition V.4.G.2.c.ii,

c) Contingent Landfill Closure and Post-Closure Description: For any portion of the SST System proposed to be closed as a landfill, the closure plan must include:
- A description of how the WMA will be closed and post-closure care conducted, in accordance with the closure performance standards specified in Permit Condition V.4.G.2.a and the landfill closure performance standards specified in Permit Condition V.4.G.2.c.
- A detailed description of the steps needed, technologies and capabilities needed, and landfill cover construction procedures necessary to accomplish closure as a landfill of all dangerous waste residues and contaminated tanks, containment system components, ancillary equipment, structures, and soils subject to such closure within the WMA.
- A landfill design and an operating and maintenance plan (addressing construction, installation, inspection, monitoring and leak detection, surveying, recording and reporting) for each WMA to meet the WAC 173-303-665 requirements.
- A Response Action Plan for each WMA pursuant to WAC 173-303-665(8) and (9) during landfill operating period and during post-closure care period.
- A petition for a site-specific LDR treatability variance under the criteria of 40 CFR 268.44(h), incorporated by reference in WAC 173-303-140(2)(a) and incorporated by reference into this Permit, with respect to any tanks and/or ancillary equipment proposed to be disposed of *in situ*. Such petitions will be submitted pursuant to the requirements of 40 CFR 268.44(h)-(m), incorporated

by reference in WAC 173-303-140(2)(a) and incorporated by reference into this Permit.

d) The Permittees may submit items (a) and (b) prior to submittal of (c).

V.4.G.4.c Tier 3 Closure Plan and Component Closure:

a) Tier 3 closure plans are required for all SST component(s) or groups of components within WMAs, and components outside WMAs if they are to be closed in conjunction with the WMAs.

b) If a grouping of components is proposed for component closure, the Permittees will provide sufficient information to support such grouping such as waste transfer history, process information, similarity of waste characteristics, geographic proximity, risk levels, and connectivity.

c) To carry out HFFACO Action Plan Appendix I, Section 2.2.2 (incorporated in Permit Condition V.4.G.4.a.ii), Tier 3 closure plans will include an Ancillary Equipment Waste Inventory and Retrieval Plan that includes DQOs, work schedules, work procedures, leak detection, and post-retrieval waste characterization if waste retrieval is necessary before closure, or otherwise demonstrating it is not necessary to conduct waste retrieval.

d) Tier 3 closure plans must provide detailed closure procedures for the component, or groups of components, which, upon approval, shall provide operable guidance for field closure activities.

e) The closure of components or groups of components must meet the clean closure standards specified in Permit Condition V.4.G.2.b.i of this Permit, unless the Permittees provide sufficient information to demonstrate that it is impracticable to clean close these components following Permit Condition V.4.G.2.c.i.

f) The closure of a component or groups of components must not interfere with or preclude final or adjacent component closure actions. The Tier 3 closure plan shall address the effects of closing these components or group of components on other components or WMA closures.

V.4.G.5 Closure Requirement for SST Components within 200-IS-1 OU

V.4.G.5.a All SST components located within 200-IS-1 OU must be closed to meet the closure performance standards specified in Permit Condition V.4.G.2.a.

V.4.G.5.b All SST components located within 200-IS-1 OU will be closed to meet the clean closure performance standards specified in Permit Condition V.4.G.2.b., unless Permittees demonstrate that such components cannot be practicably removed or decontaminated under the "Impracticability Demonstration" outlined in Permit Condition V.4.G.2.c.i, in which case the components must be closed in compliance with the landfill closure performance standards of Permit Condition V.4.G.2.c.

V.4.G.5.c Permittees will develop and submit Tier 2 and Tier 3 closure plan(s) for SST components located within 200-IS-1 OU following the requirements of Permit Condition V.4.G.4. For the purposes of this condition, the collection of SST components located within 200-IS-1 OU will be treated as a WMA in applying the Tier 2 requirements of Permit Condition V.4.G.4.

V.4.G.5.d Permittees may prepare a 200-IS-1 OU RFI/CMS/RI/FS document that presents SST component closure requirements pursuant to HFFACO Section 5.5, incorporated by reference. If this approach is taken, Permittees will structure the RFI/CMS/RI/FS document such that the closure requirements for SST components located in 200-IS-1 OU are clearly identified for separate review and approval through the permit modification process.

V.4.G.5.e Any reassignment of SST components located in 200-IS-1 OU to a WMA must occur before the submission of the corresponding closure plan for that WMA, and the reassigned components must be included in that closure plan. Reassignment of components after the closure plan is submitted will require amendment of the closure plan in accordance with Permit Condition I.C.3.

V.4.G.5.f Reserved

V.4.G.6 RISK ASSESSMENT

V.4.G.6.a Prior to undertaking closure activities, the Permittees are required to conduct a risk assessment (RA) to evaluate the protectiveness of closure conditions for each WMA. The requirements of HFFACO Appendix I, Section 2.5, are incorporated by reference under the terms of Permit Condition I.A.4 to satisfy this requirement. The inclusion of an assessment of radiological contaminants of concern in an integrated PA as described in HFFACO Appendix I, Section 2.5 is necessary for effective closure decision-making under the scope of this Permit.

V.4.G.6.b An RA of the scope described in Permit Condition V.4.G.6.a must include all the tanks, ancillary equipment, and contaminated soils and other components, as well as all waste residue inventories and waste characterization information after tank retrieval, for each WMA. The waste residue inventories and waste characterization shall be consistent with the process information in Addenda B and C of this Permit.

V.4.G.6.c An RA of the scope described in Permit Condition V.4.G.6.a must consider all relevant exposure pathways. It must include cleanup levels for the WMA contaminants addressing protection of human health direct contact, protection of soils, groundwater and surface water, and protection of air. It must also include ecological screening and site-specific analyses in accordance with WAC 173-340-7490 through -7494, incorporated by reference. Any modeling work performed must be consistent with WAC 173-340 requirements, incorporated by reference, and supporting data shall be provided to Ecology, as attachment(s) to the RA as necessary.

V.4.G.6.d Before a final RA report of the scope described in Permit Condition V.4.G.6.a is submitted for a WMA closure, an interim RA report will be submitted to Ecology for review. The interim RA must be submitted to Ecology at least three years prior to the closure plan submittal. The interim RA will be updated as necessary until the final RA is approved by Ecology along with the closure plan.

V.4.G.6.e Final RA reports of the scope described in Permit Condition V.4.G.6.a must be submitted as part of the closure plan for each WMA, in accordance with Permit Condition V.4.G.4.e.vi.

V.4.G.6.f In the event the RA results indicate that the risk is not acceptable for a WMA, Ecology reserves the authority to modify the Permit to require the Permittees to conduct additional risk mitigation measures, including, but not limited to, additional waste retrieval to remove waste residue left in the tanks or ancillary equipment, removal and decontamination of SST components or groups of components (equipment, soils, dangerous wastes, etc.), changing the closure plan to incorporate new closure designs, and/or changing the institutional control plan, until the risk is mitigated and reduced to an acceptable level.

V.4.H POST-CLOSURE CARE

Post-closure care is required after closure for any WMA in which the closure performance standards of Permit Condition V.4.G.2.b are not met upon closure (i.e., waste has been left in place). In this event, the WMA will enter a post-closure care period during which surface barrier inspection, barrier maintenance and performance

monitoring, administrative controls, and groundwater monitoring will be implemented and performed.

V.4.H.1 General Requirements

V.4.H.1.a If any portion of the SST System is closed as landfill, the Permittees will perform post-closure care for that portion closed as a landfill in accordance with the following requirements.

V.4.H.1.b Post-closure care will be performed on WMA basis. If any portion of the 200-IS-1 OU is closed as landfill(s) separate from WMAs, post-closure care will be performed for that portion of the 200-IS-1 OU, unless otherwise approved by Ecology.

V.4.H.1.c The Permittees will implement the post-closure care requirements specified in the Contingent Landfill Closure and Post-Closure Plan developed under Permit Condition V.4.G.4.b.ii (c), as approved by Ecology under Permit Condition V.4.G.4.a.iv.

V.4.H.1.d The potential integration of WMA closures with other cleanup activities will not change SST System points of compliance, which remain the physical boundaries of subject WMAs.

V.4.H.2 Certification of Post-Closure Performance

V.4.H.2.a No later than 60 days after completion of the established post-closure care period for each WMA and the entire SST System, the Permittees shall submit by registered mail a certification that the post-closure period for the WMA (or the SST System, as appropriate) was performed according to permit conditions and specifications in the approved Contingent Landfill Closure and Post-Closure Plan. The certification will be signed by the Permittees and an IQRPE. Documentation supporting the IQRPE's certification must be supplied to Ecology within 60 days of completion of post closure.

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Addendum A

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Dangerous Waste Permit Application Part A Form

Date Received	Reviewed by: Kristi Wold	Date: 05 31 2011
Month Day Year	Approved by: [illegible]	Date: 05 31 2011
02 25 2011		

I. This form is submitted to: (place an "X" in the appropriate box)

☐	Request modification to a final status permit (commonly called a "Part B" permit)	
☒	Request a change under interim status	
☐	Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).	
☐	Establish interim status because of the wastes newly regulated on:	(Date)
	List waste codes:	

II. EPA/State ID Number

W A 7 8 9 0 0 0 8 9 6 7

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352

County Code (if known)	County Name
0 0 5	Benton

B. Land Type	C. Geographic Location Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	D. Facility Existence Date Month Day Year
F	Refer to TOPO Map (Section XV.)		03 02 1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 450

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)		
Name (last)	**(first)**	
Dowell	Jonathan	
Job Title	**Phone Number (area code and number)**	
Acting Manager	(509) 372-2315	
Contact Address		
Street or P.O. Box		
P.O. Box 450		
City or Town	**State**	**ZIP Code**
Richland	WA	99352

VII. Facility Operator Information	
A. Name	**Phone Number**
Department of Energy Owner/Operator Washington River Protection Solutions, LLC Co-Operator for Single-Shell Tank System*	(509) 372-2315 (509) 372-9138*
Street or P.O. Box	
P.O. Box 450 P.O. Box 850*	

City or Town	State	ZIP Code
Richland	WA	99352

B. Operator Type	F	
C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	Month	Day / Year
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.	☐ Yes ☒ No	

VIII. Facility Owner Information	
A. Name	**Phone Number (area code and number)**
Jonathan A. Dowell, Operator/Facility-Property Owner	(509) 372-2315
Street or P.O. Box	
P.O. Box 450	

City or Town	State	ZIP Code
Richland	WA	99352

B. Operator Type	F	
C. Does the name in VII.A reflect a proposed change in operator?	☐ Yes ☒ No	
If yes, provide the scheduled date for the change:	Month	Day / Year

IX. NAICS Codes (5/6 digit codes)													
A. First							**B. Second**						
5	6	2	2	1		Waste Treatment & Disposal	9	2	4	1	1	0	Administration of Air & Water Resource & Solid Waste Management Programs
C. Third							**D. Fourth**						
5	4	1	7	1		Research & Development in the Physical, Engineering, & Life Sciences							

X. Other Environmental Permits (see Instructions)

A. Permit Type	B. Permit Number	C. Description
E	AIR-06-1206	WAC 246-247, Radiation Protection – Air Emissions
E	FF-01	WAC 246-247, Hanford Site Radioactive Air Emission License
E	FF-01-486	Emission Unit ID 200 Area Diffuse/Fugitive
E	FF-01-50	Emission Unit ID Stack # 296-P-45
E	FF-01-53	Emission Unit ID Stack # 296-P-22
E	FF-01-56	Emission Unit ID Stack # 296-P-23
E	FF-01-59	Emission Unit ID Stack # 296-S-25
E	FF-01-93	Emission Unit ID Stack # 296-A-42
E	FF-01-96	Emission Unit ID Stack # 296-A-26
E	FF-01-156	Emission Unit ID Stack # 296-A-28
E	FF-01-174	Emission Unit ID Stack # 296-A-20
E	FF-01-204	Emission Unit ID Stack # 296-A-40
E	FF-01-205	Emission Unit ID Stack # 296-A-41
E	FF-01-216	Emission Unit ID Stack # 296-A-43
E	FF-01-217	Emission Unit ID Stack # 296-A-18
E	FF-01-218	Emission Unit ID Stack # 296-A-19
E	FF-01-228	Emission Unit ID Stack # 296-A-30
E	FF-01-735	Emission Unit ID Stack # 296-A-44
E	FF-01-736	Emission Unit ID Stack # 296-A-45
E	FF-01-855	Emission Unit ID Stack # 296-A-46
E	FF-01-856	Emission Unit ID Stack # 296-A-47
E	FF-01-1130	Emission Unit ID Breather filter # 241-AZ-154
E	DE00NWP-001	WAC 173-400 & 173-460, NOC Nonradioactive Air
E	NOC 94-07-01	WAC 173-400 & 173-460, NOC Nonradioactive Air
E	TSCA2008-31	40 CFR 761, TSCA approval

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

The mixed waste stored in the SST System was generated by four major chemical reprocessing operations: the bismuth phosphate (BiPo) process, the reduction-oxidation (REDOX) process, the plutonium-uranium extraction (PUREX) process, and the tributyl phosphate (TBP) process.

The dangerous waste numbers listed under the description of dangerous waste are based on computer model and past process knowledge rather than on chemical analysis of waste. The Estimated Annual Quantity of Dangerous Waste (Section XIV.B.) listed is 165,100,000 kilograms (364,865,044 pounds) and is based on an average density of the waste calculated from the densities of 26 core samples taken of waste stored in the various SSTs. The average density (1.4 kilograms/liter [12 pounds/gallon]) was multiplied by 114,800,000 liters (30,327,000 gallons) and rounded-up to 165,100,000 kilograms (364,865,044 pounds). The figure 114,800,000 liters (30,327,000 gallons) represents the estimated volume of liquid mixed waste remaining in the SST System.

The quantity of waste lead stored in the diversion boxes is based on previous research of historical records. Because of the radiological hazards associated with individual inspection of the diversion boxes, a quantity of 23 kilograms (50 pounds) of waste lead was estimated for each box. This represents a conservative estimate, as 23 kilograms (50 pounds) is the maximum quantity of waste lead known to be in any one-diversion box.

S02, T01:

The Single-Shell Tank (SST) System includes 149 tanks that were built between the years 1943 and 1964 to store mixed waste (S02) generated on the Hanford Site. There are two types of tanks in the SST System, the 100 series and the 200 series. The 133 100-series SSTs are 23 meters (75 feet) in diameter with operating capacities of 1,892,700 to 3,785,400 liters (500,000 to 1,000,000 gallons). The sixteen 200-series SSTs are smaller and of a similar design with a 6 meter (20 foot) diameter and a capacity of 208,197 liters (55,000 gallons). The SST System also includes five waste transfer vault systems: 244-AR, 244-BXR, 244-CR, 244-TXR, and 244-UR Vaults. Each vault system contains four tanks of varying capacities.

The maximum process design capacity for tank storage at the SST System is 348,390,160 liters (92,035,230 gallons). Treatment of the mixed waste in the SST System occurs when solids and interstitial liquids are separated and/or cooling liquids are added (T01). These treatment processes involve, but are not limited to, mechanical retrieval, sluicing, and saltwell pumping of the mixed waste. Retrieval liquids may be added to the SSTs only following appropriate Ecology approvals pursuant to applicable Hanford Federal Facility Agreement and Consent Order or other enforceable milestones. Retrieval liquids may include the Double-Shell Tank waste for the purpose of dissolution and to facilitate SST retrieval operations. The SST System has a process design limit of 2,271,240 liters (600,000 gallons) per day based on the simultaneous pumping of two SSTs in a 24-hour period. Ancillary equipment used for the transfer of liquid mixed waste consists of: (1) centrifugal pumps capable of pumping liquid mixed waste at 1,514 liters (400 gallons) per minute, (2) induction pumps capable of pumping liquid waste from the saltwell at 38 liters (10 gallons) per minute, and (3) associated valves and piping to the DST System. Mechanical equipment, sluicing equipment, and similar treatment/processes are not limited to the processes described previously.

The maximum process design capacity for tank treatment at the SST System is 2,271,240 liters (600,000 gallons) per day.

Associated with the SST System are 65 inactive diversion boxes. A summary of the SST System and corresponding diversion boxes is provided in Table 4. All diversion boxes used within the SST System are inactive and presently are isolated (weather covered). "Isolated' as used here means exterior water intrusion has been restricted.

The maximum capacity is approximately 23 kilograms (50 pounds) of waste lead stored in each diversion box (worst-case scenario) accounting for a total of 1,495 kilograms (3,296 pounds) of waste lead in storage.

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ vitrification.*

Section XII. Process Codes and Design Capacities								Section XIII. Other Process Codes								
Line Number		A. Process Codes			B. Process Design Capacity		C. Process Total Number of Units	Line Number		A. Process Codes			B Process Design Capacity		C. Process Total Number of Units	D. Process Description
					1. Amount	2. Unit of Measure							1. Amount	2. Unit of Measure		
X	1	S	0	2	1,600	G	002	X	1	T	0	4	700	C	001	In situ vitrification
X	2	T	0	3	20	E	001									
X	3	T	0	4	700	C	001									
	1	S	0	2	348,390,160	L	149		1							
	2	T	0	1	2,271,240	V	149		2							
	3								3							
	4								4							
	5								5							
	6								6							
	7								7							
	8								8							
	9								9							
1	0							1	0							
1	1							1	1							
1	2							1	2							
1	3							1	3							
1	4							1	4							
1	5							1	5							
1	6							1	6							
1	7							1	7							
1	8							1	8							
1	9							1	9							
2	0							2	0							
2	1							2	1							
2	2							2	2							
2	3							2	3							
2	4							2	4							
2	5							2	5							

XIV. Description of Dangerous Wastes

Example for completing this section: A facility will receive three non-listed wastes, then store and treat them on-site. Two wastes are corrosive only, with the facility receiving and storing the wastes in containers. There will be about 200 pounds per year of each of these two wastes, which will be neutralized in a tank. The other waste is corrosive and ignitable and will be neutralized then blended into hazardous waste fuel. There will be about 100 pounds per year of that waste, which will be received in bulk and put into tanks.

Line Number			A. Dangerous Waste No.				B. Estimated Annual Quantity of Waste	C. Unit of Measure	D. Processes									
									(1) Process Codes									(2) Process Description [If a code is not entered in D(1)]
X	1		D	0	0	2	400	P	S	0	1	T	0	1				
X	2		D	0	0	1	100	P	S	0	2	T	0	1				
X	3		D	0	0	2												Included with above
		1	D	0	0	1	165,100,000	K	S	0	2	T	0	1				Includes Debris
		2	D	0	0	2		K	S	0	2	T	0	1				Includes Debris
		3	D	0	0	3		K	S	0	2	T	0	1				Includes Debris
		4	D	0	0	4		K	S	0	2	T	0	1				Includes Debris
		5	D	0	0	5		K	S	0	2	T	0	1				Includes Debris
		6	D	0	0	6		K	S	0	2	T	0	1				Includes Debris
		7	D	0	0	7		K	S	0	2	T	0	1				Includes Debris
		8	D	0	0	8		K	S	0	2	T	0	1				Includes Debris
		9	D	0	0	9		K	S	0	2	T	0	1				Includes Debris
	1	0	D	0	1	0		K	S	0	2	T	0	1				Includes Debris
	1	1	D	0	1	1		K	S	0	2	T	0	1				Includes Debris
	1	2	D	0	1	8		K	S	0	2	T	0	1				Includes Debris
	1	3	D	0	1	9		K	S	0	2	T	0	1				Includes Debris
	1	4	D	0	2	2		K	S	0	2	T	0	1				Includes Debris
	1	5	D	0	2	8		K	S	0	2	T	0	1				Includes Debris
	1	6	D	0	2	9		K	S	0	2	T	0	1				Includes Debris
	1	7	D	0	3	0		K	S	0	2	T	0	1				Includes Debris
	1	8	D	0	3	3		K	S	0	2	T	0	1				Includes Debris
	1	9	D	0	3	4		K	S	0	2	T	0	1				Includes Debris
	2	0	D	0	3	5		K	S	0	2	T	0	1				Includes Debris
	2	1	D	0	3	6		K	S	0	2	T	0	1				Includes Debris
	2	2	D	0	3	8		K	S	0	2	T	0	1				Includes Debris
	2	3	D	0	3	9		K	S	0	2	T	0	1				Includes Debris
	2	4	D	0	4	0		K	S	0	2	T	0	1				Includes Debris
	2	5	D	0	4	1		K	S	0	2	T	0	1				Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process (1) Process Codes (enter)	D. Process (2) Process Description [If a code is not entered in D (1)]
26	D043		K	S02T01	Includes Debris
27	WP01		K	S02T01	Includes Debris
28	WP02		K	S02T01	Includes Debris
29	WT01		K	S02T01	Includes Debris
30	WT02		K	S02T01	Includes Debris
31	F001		K	S02T01	Includes Debris
32	F002		K	S02T01	Includes Debris
33	F003		K	S02T01	Includes Debris
34	F004		K	S02T01	Includes Debris
35	F005		K	S02T01	Includes Debris
36					
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58					

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

Topographic map is located in the Ecology Library

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (refer to instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to instructions for more detail).

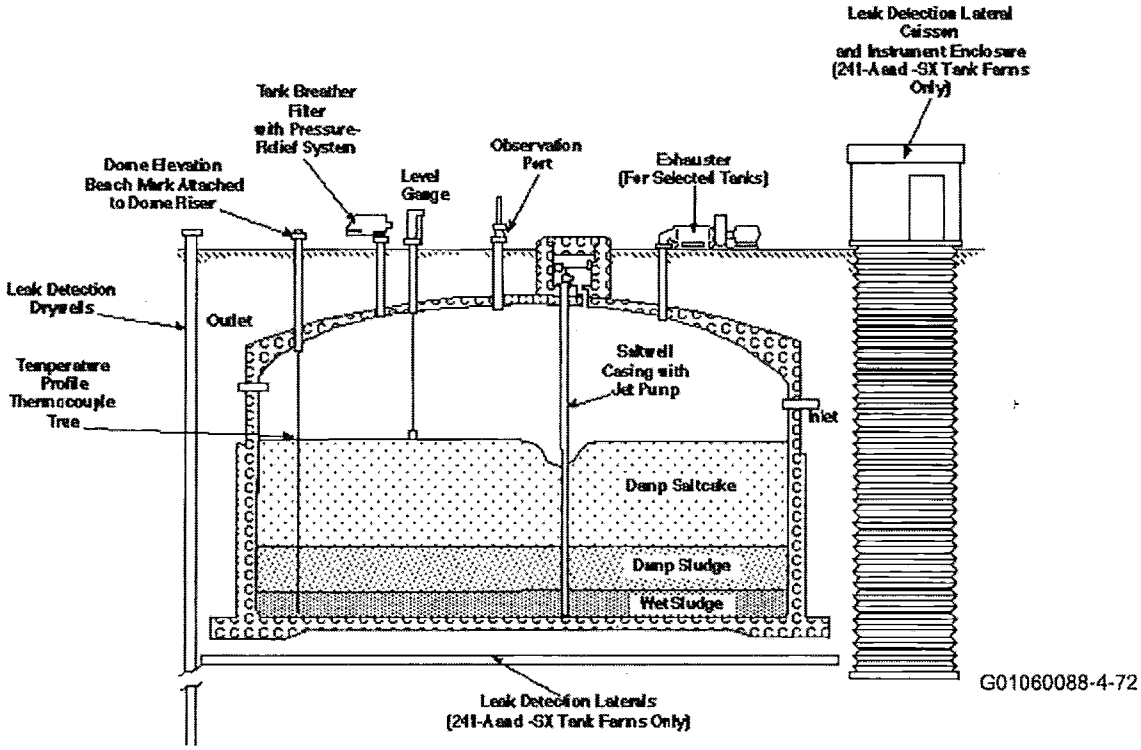
XVIII. Certifications

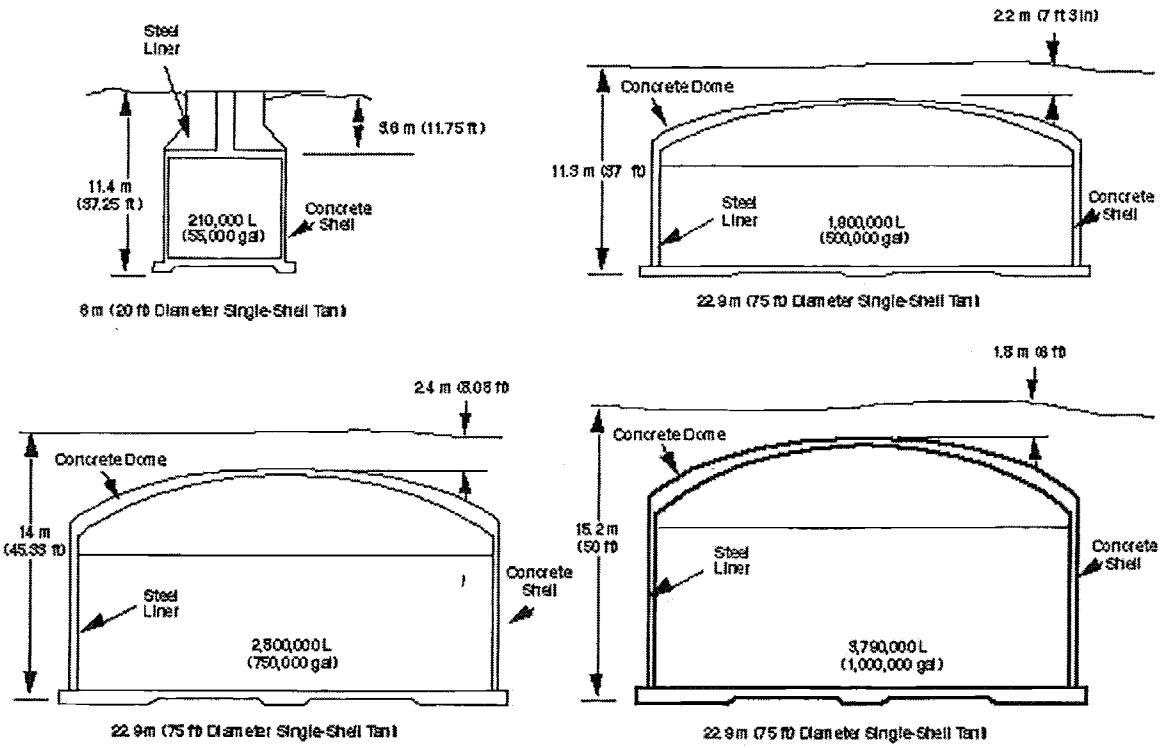
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage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

Operator Name and Official Title (type or print) Jonathan A. Dowell , Acting Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 2/24/11
Co-Operator* Name and Official Title (type or print) Charles G. Spencer President and Project Manager Washington River Protection Solutions, LLC	**Signature**	**Date Signed** 2/24/11
Co-Operator*– Address and Telephone Number P.O. Box 850 Richland, WA 99352 (509) 372-9138		
Facility-Property Owner Name and Official Title (type or print) Jonathan A. Dowell, Acting Manager U.S. Department of Energy Office of River Protection	**Signature**	**Date Signed** 2/24/11

Comments

Single-Shell Tank System – Typical Tank

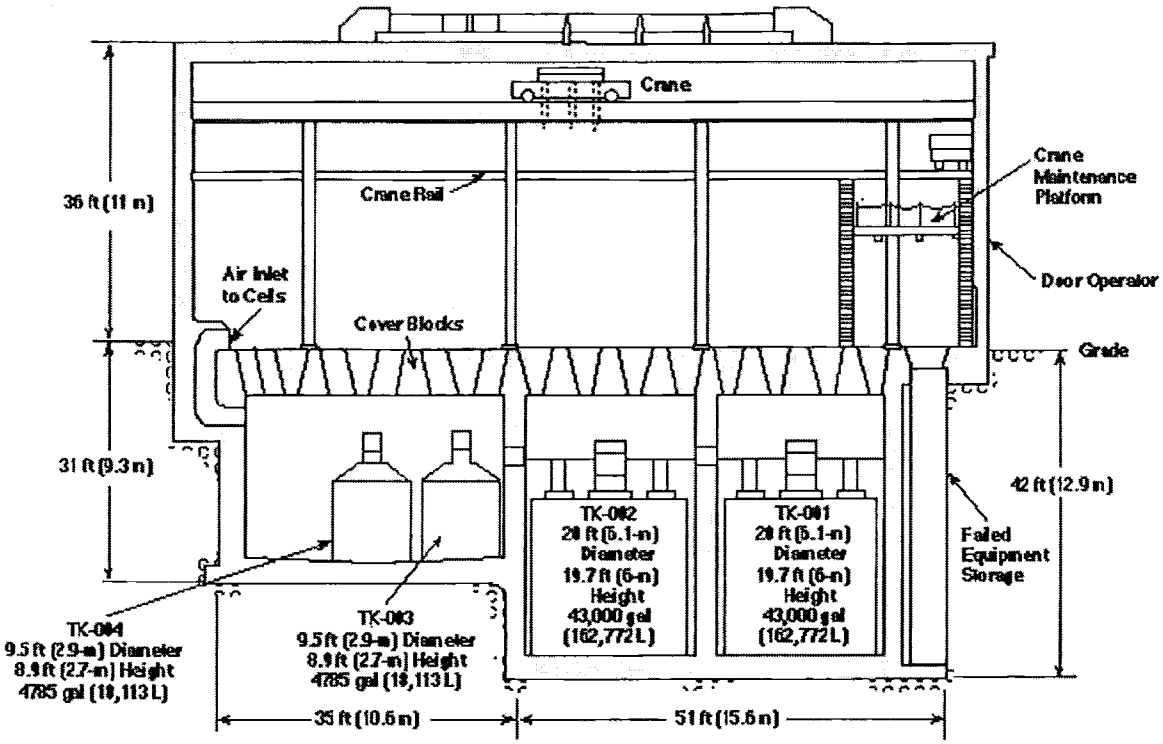




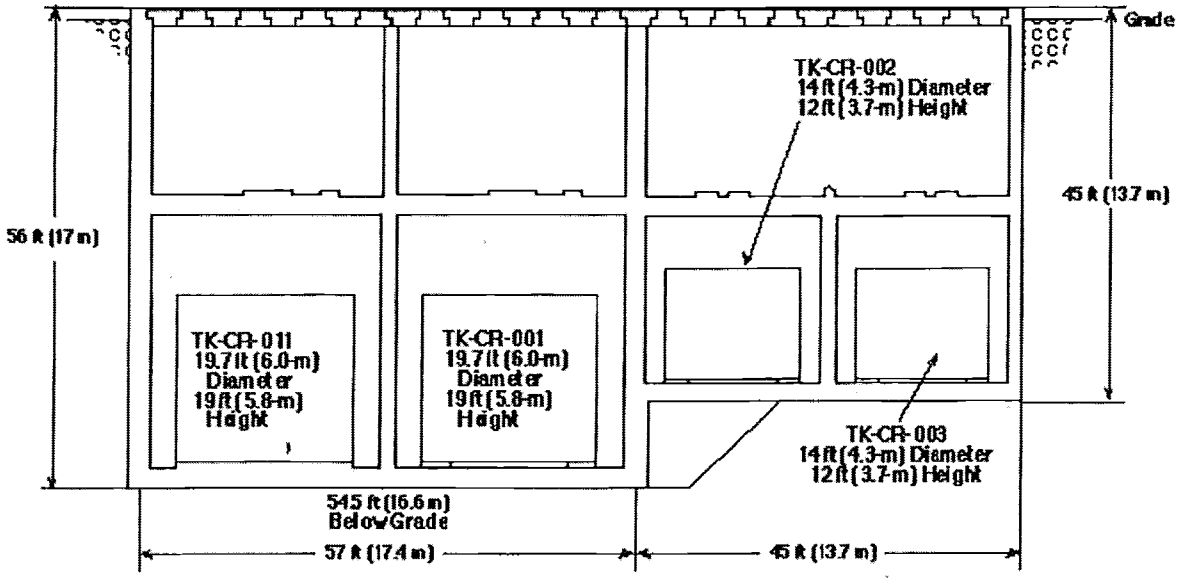
CROSS-SECTIONAL VIEWS

G01060088-1-72

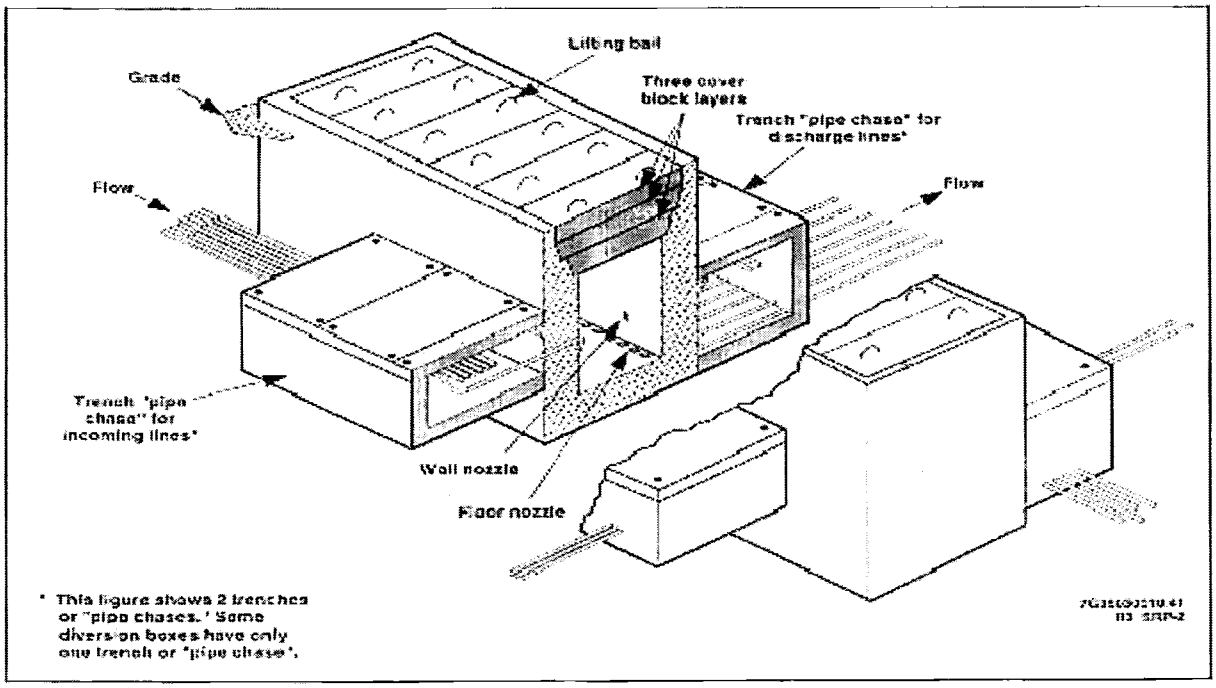
244-AR Vault



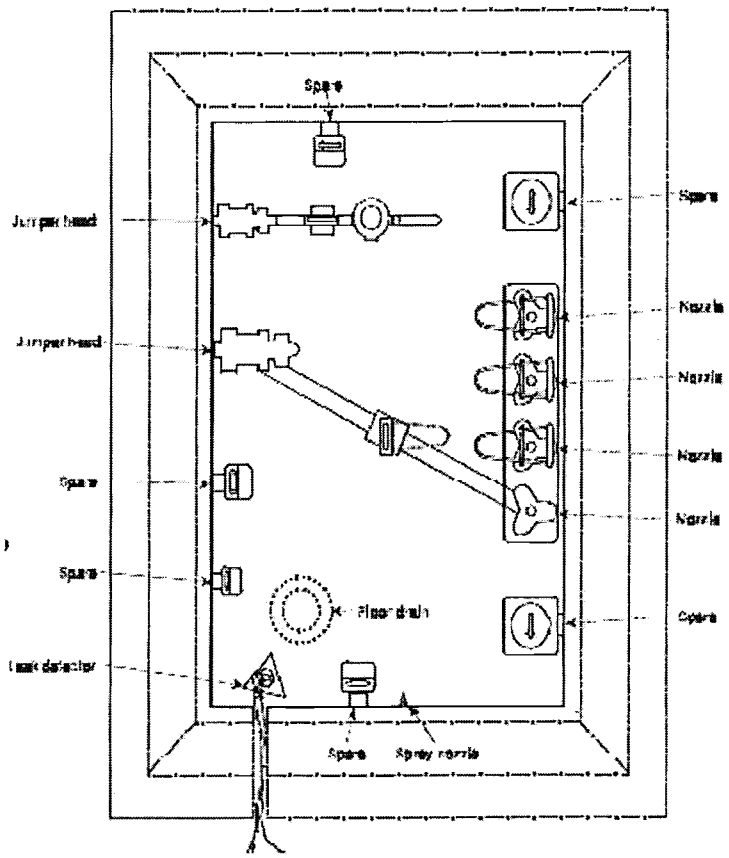
244-CR Vault



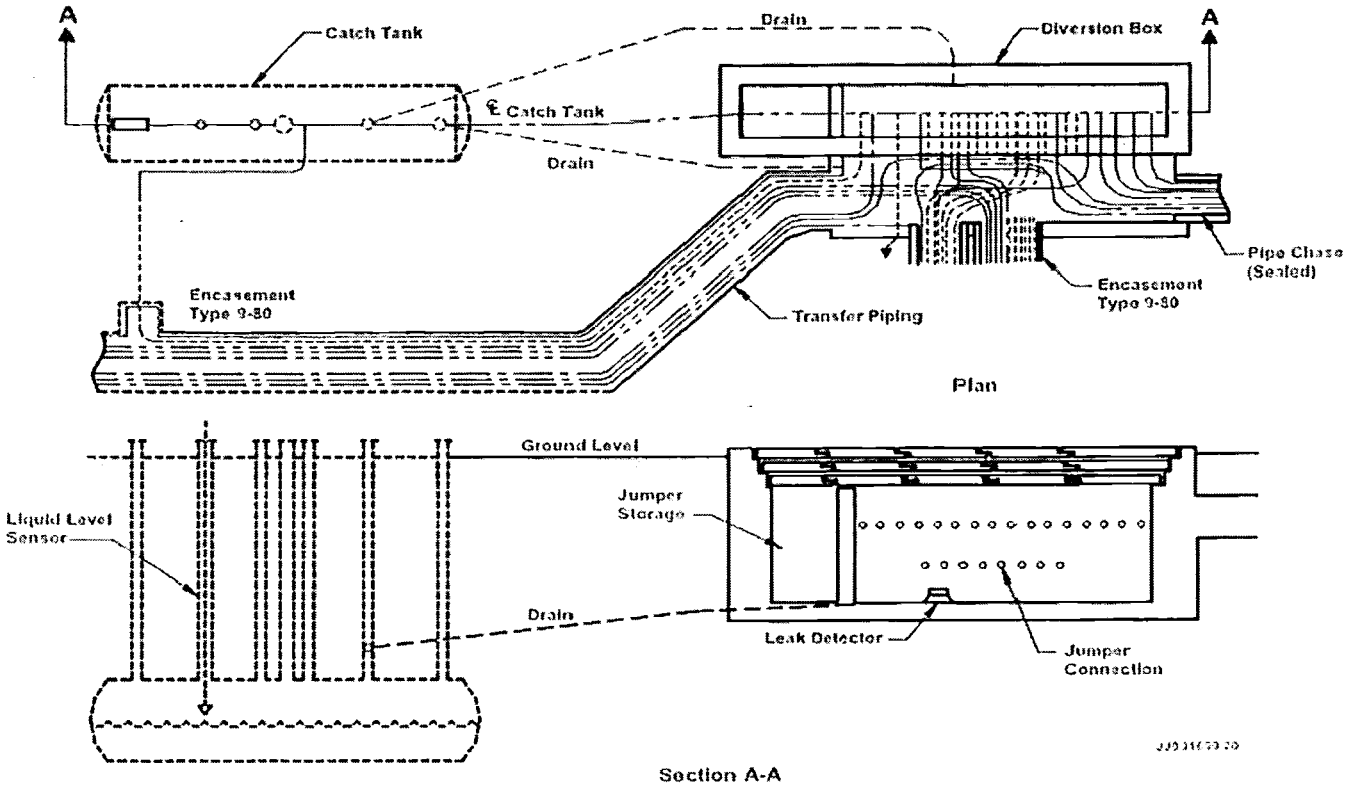
Single-Shell Tank System – Typical Diversion Box



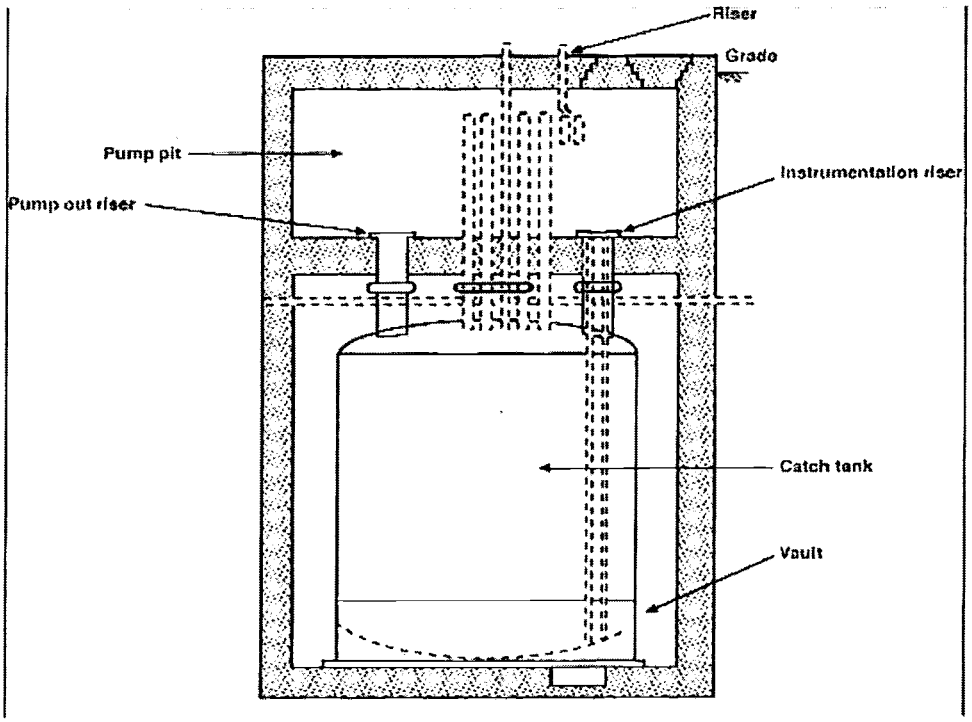
Single-Shell Tank System – Typical Diversion Box Operating Connections



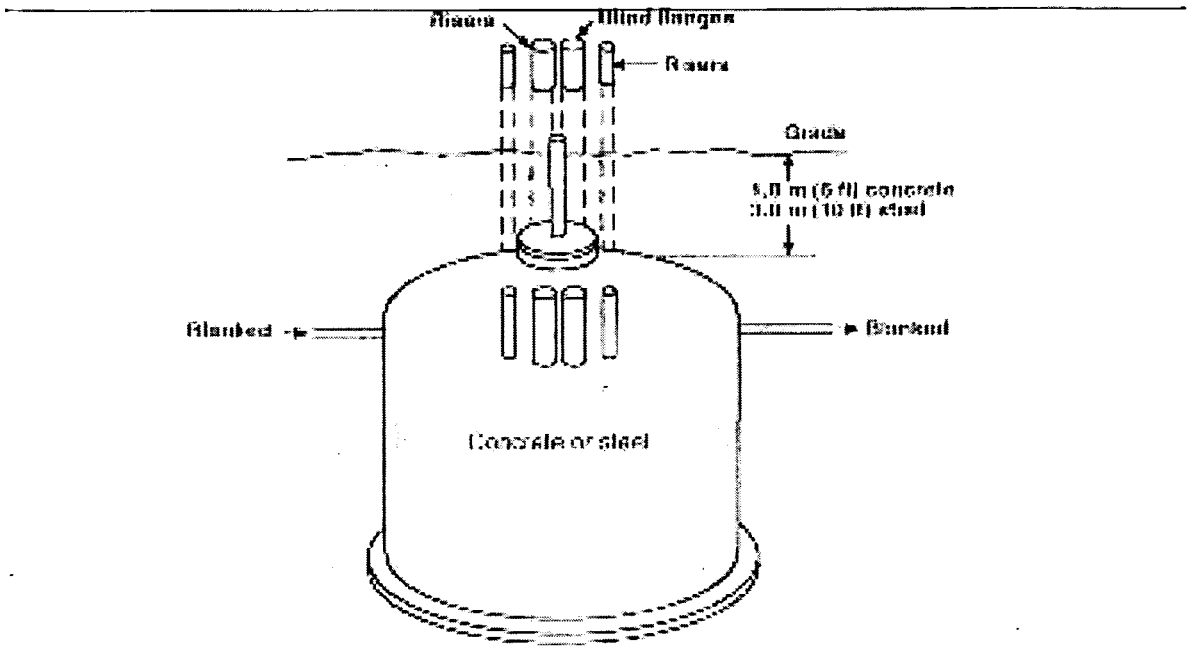
Single-Shell Tank System – Typical Diversion Box and Catch Tank

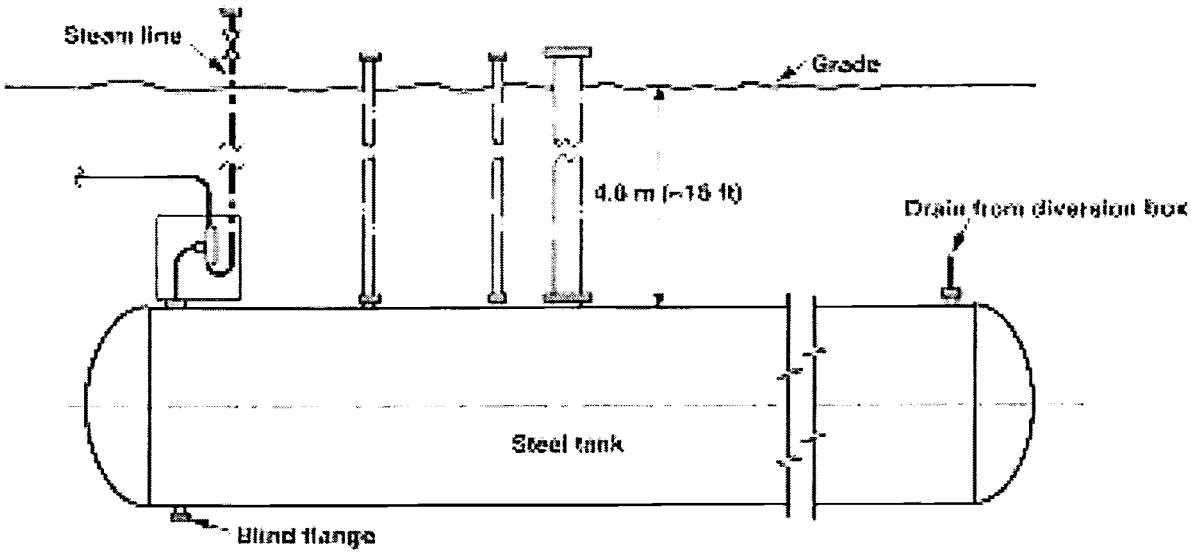


Single-Shell Tank System – Typical Catch Tank in Vault



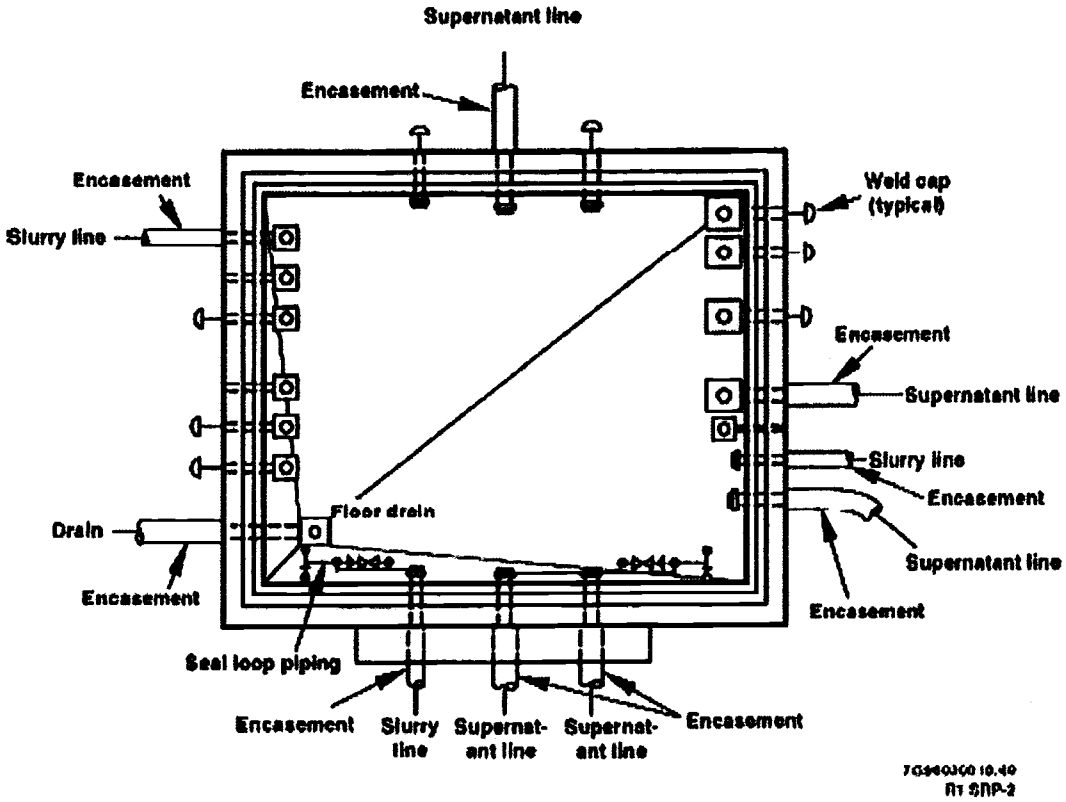
Single-Shell Tank System – Typical Direct Buried Catch Tank Designs





Elevation

Single-Shell Tank System – Typical Valve Pit



Single-Shell Tank System – Typical Double-Contained Receiver Tank

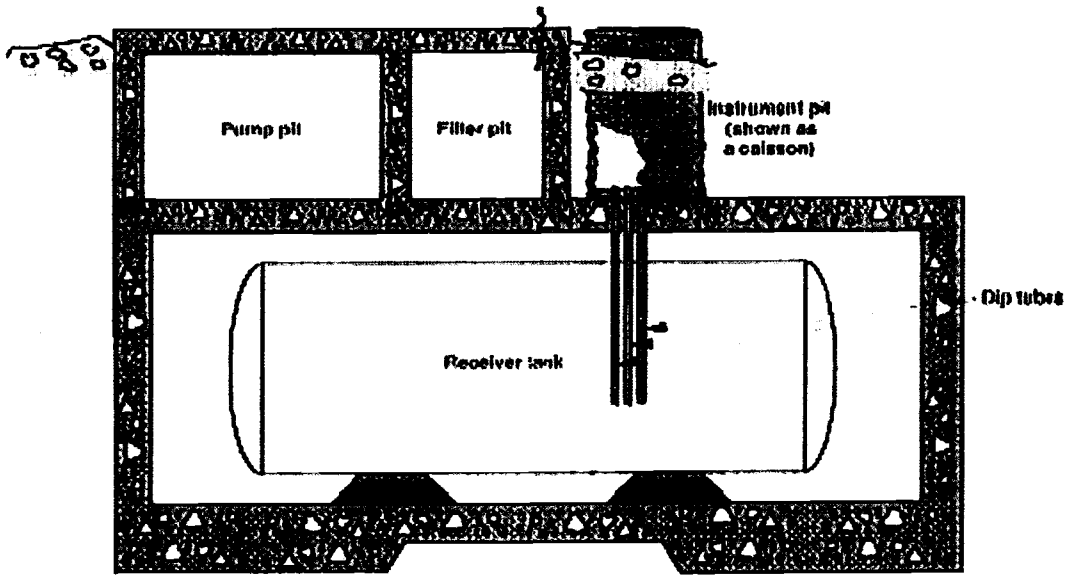
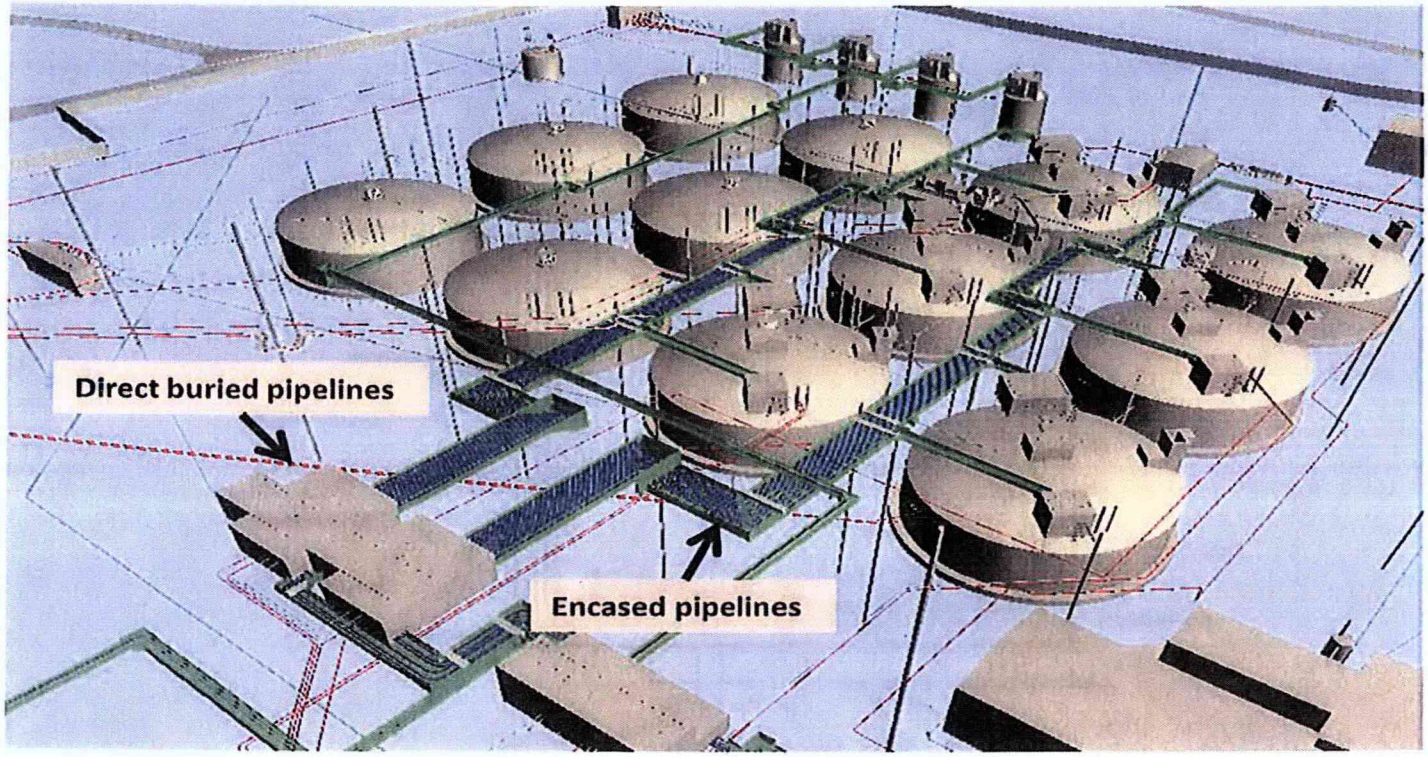
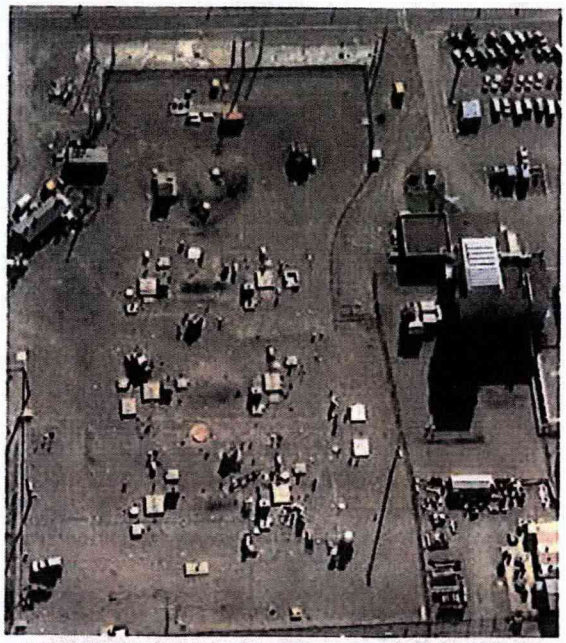


Figure is not drawn to scale

Single-Shell Tank System – Typical Piping



Single-Shell Tank System



241-A Single-Shell Tank Farm 00080128-19CN
200 East Area Photo Taken 2000

241-AX Single-Shell Tank Farm 01050061-43CN
200 East Area Photo Taken 2000

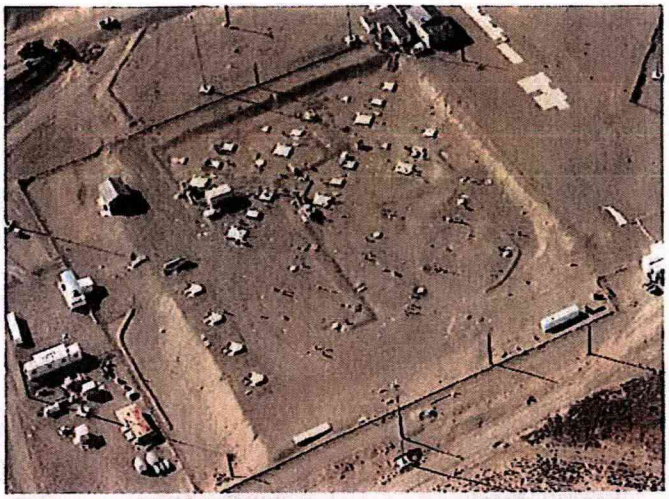
241-B Single-Shell Tank Farm 00060195-47CN
200 East Area Photo Taken 2000

241-BX Single-Shell Tank Farm 00060195-51CN
200 East Area Photo Taken 2000

Single-Shell Tank System

241-BY Single-Shell Tank Farm
200 East Area

00060195-52CN
Photo Taken 2000

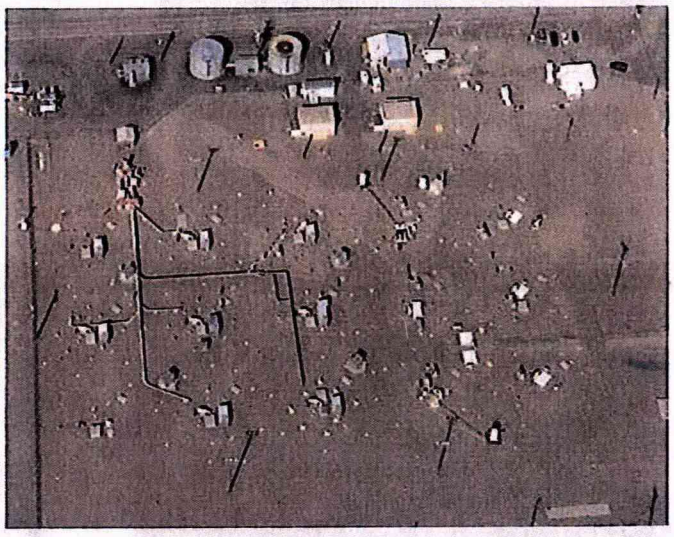


241-C Single-Shell Tank Farm
200 East Area

01050061-30CN
Photo Taken 2000

241-S Single-Shell Tank Farm
200 East Area

0040208-18CN
Photo Taken 2000



241-SX Single-Shell Tank Farm
200 East Area

00040208-17CN
Photo Taken 2000

241-T Single-Shell Tank Farm
200 West Area

00040208-22cn
(Photo Taken 2000)

241-TX Single-Shell Tank Farm
200 West Area

00040208-20
(Photo Taken 200

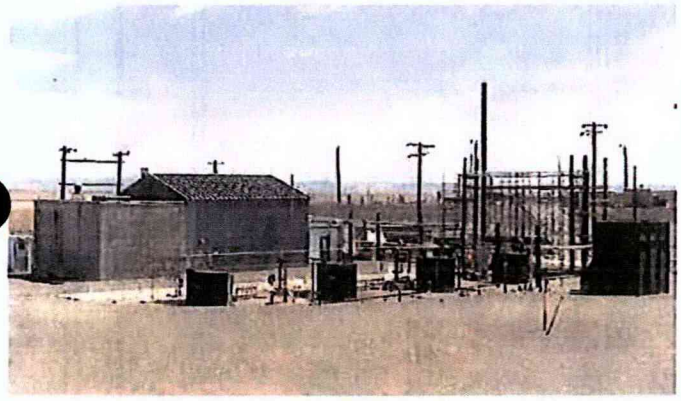
Single-Shell Tank System

241-TY Single-Shell Tank Farm
200 West Area

00040208-21CN
Photo Taken 2000

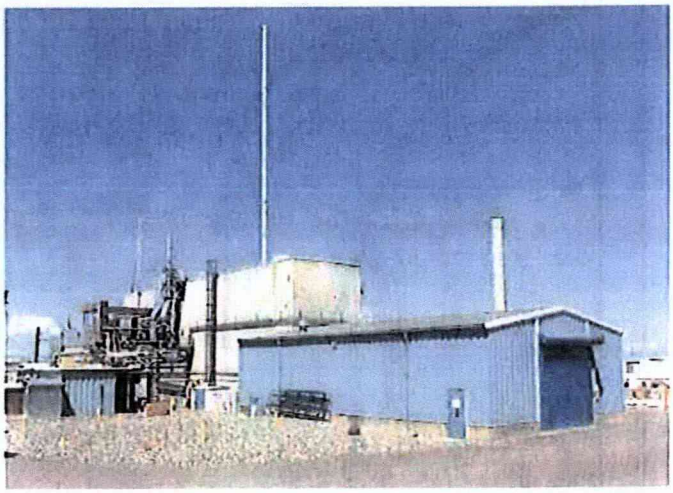
241-U Single-Shell Tank Farm
200 West Area

00040208-19CN
Photo Taken 2000



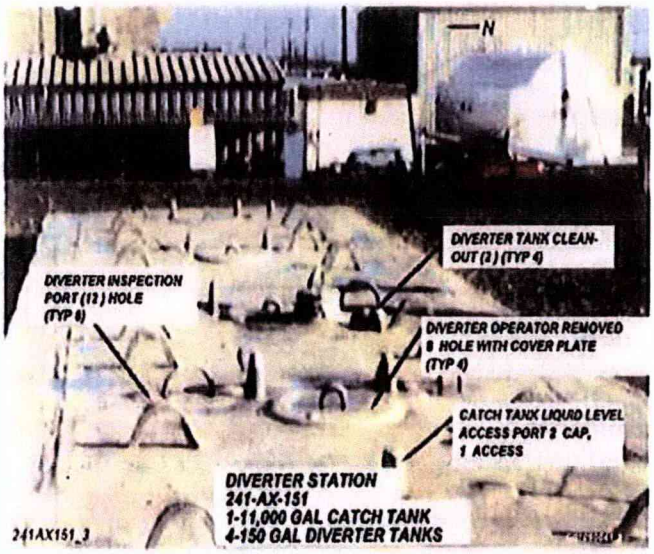
244-CR Vault

8704135-14CN
Photo Taken 1987



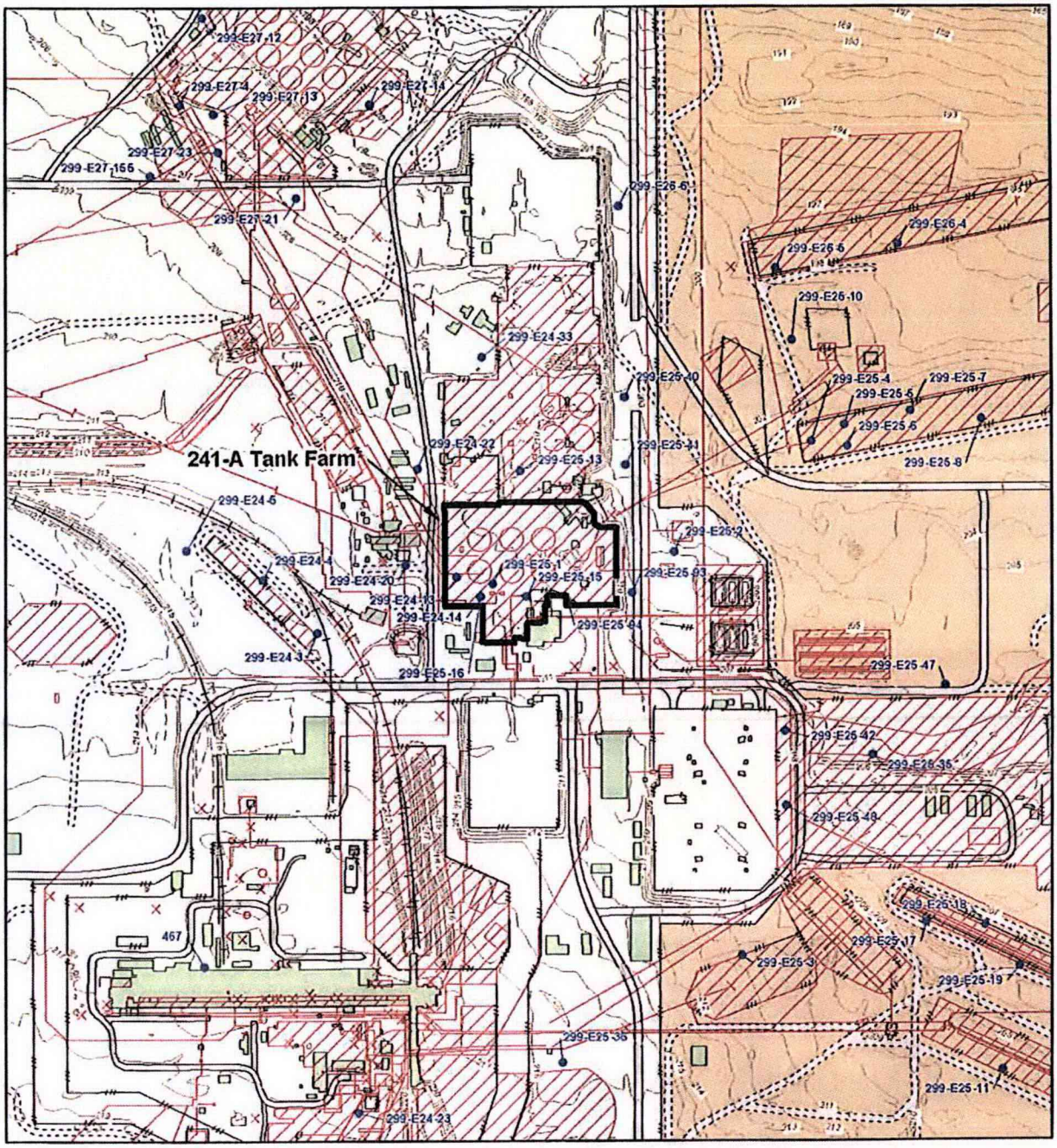
244-AR Vault

8704135-16CN
Photo Taken 1987



241-AX-151 Catch Tank

G01090041.2



241-A Tank Farm

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Hanford Site

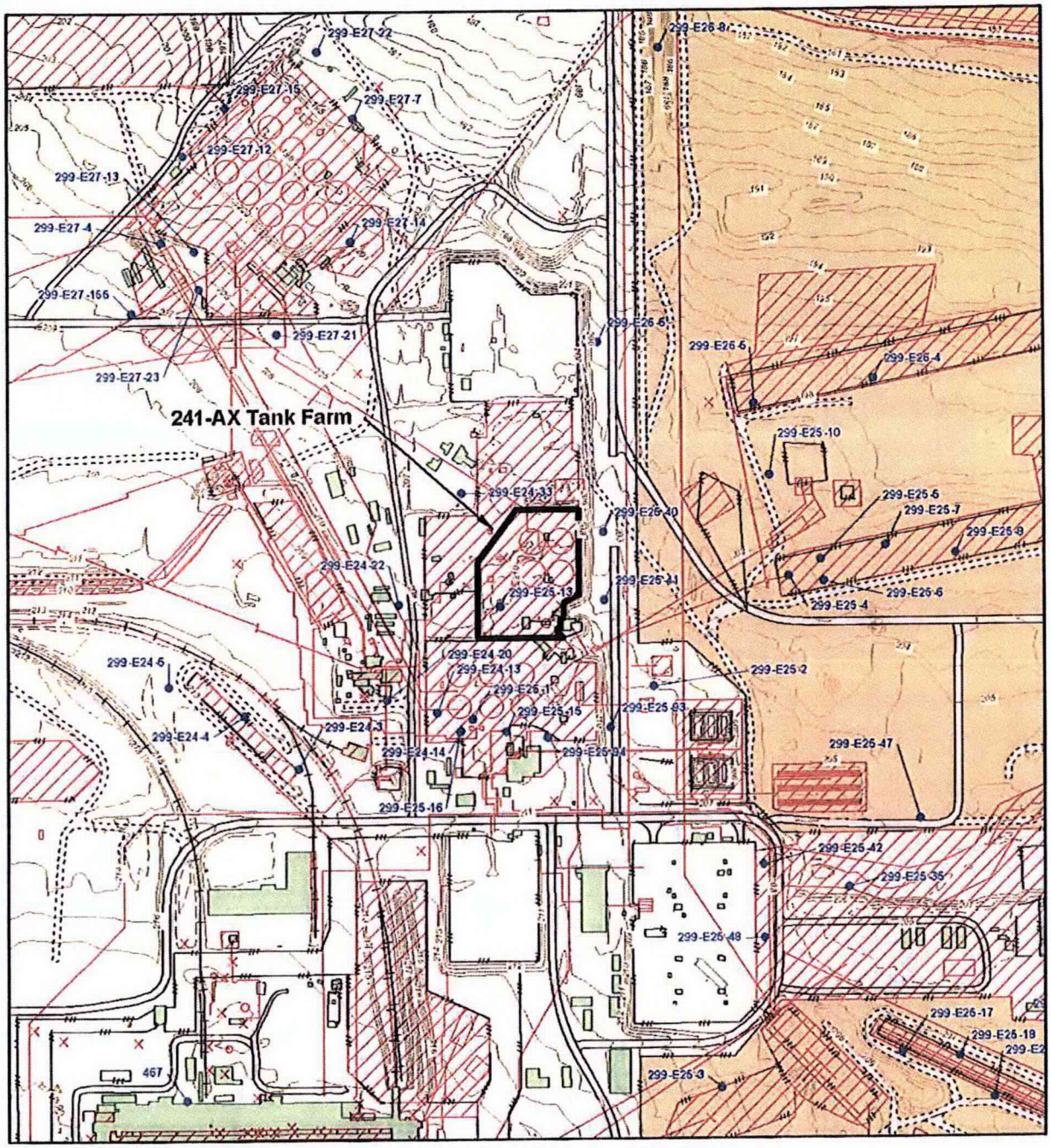
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050705_241ATankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:31:50 AM



241-AX Tank Farm

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Hanford Site

Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

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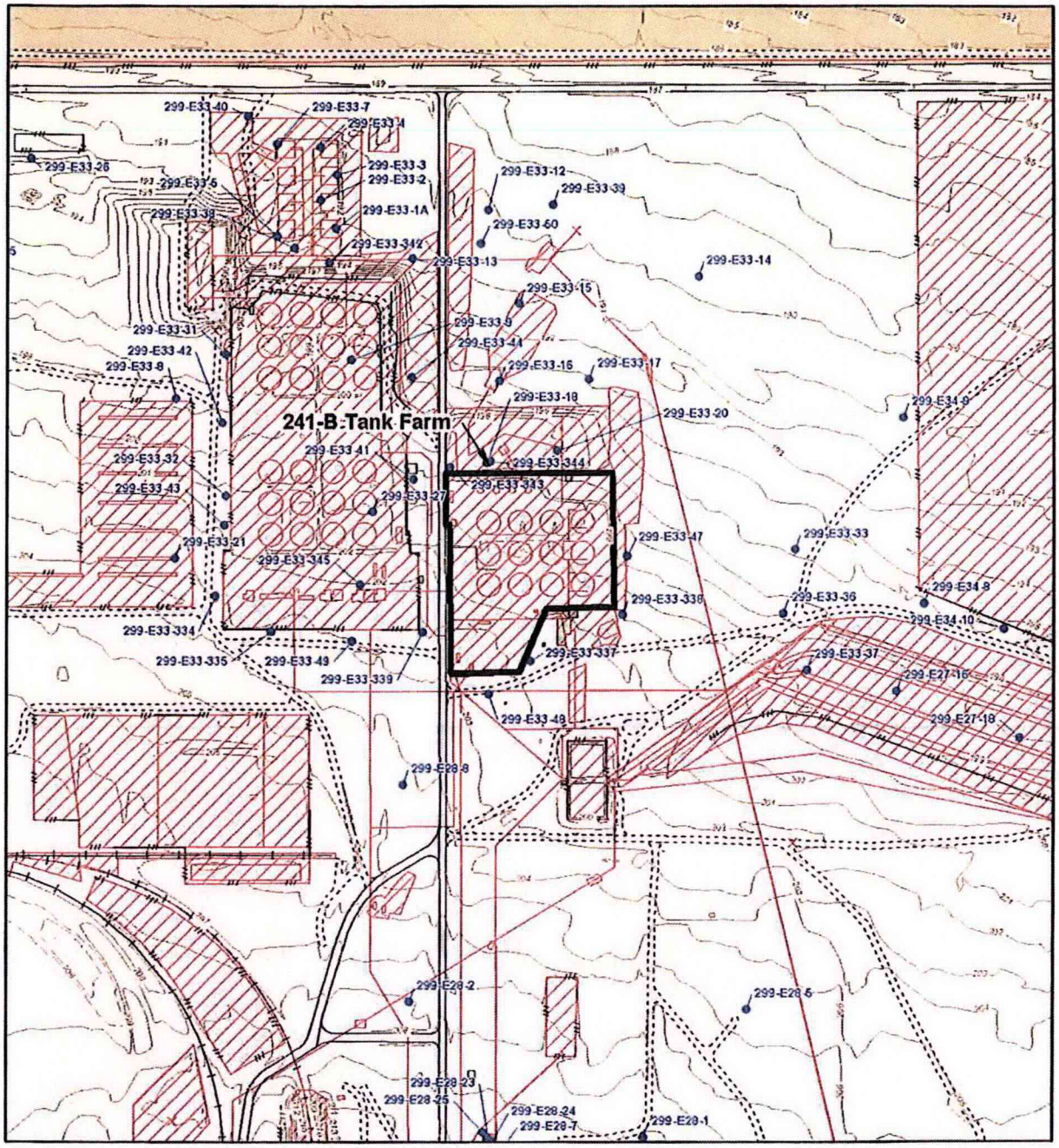

241-B Tank Farm

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Hanford Site

Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

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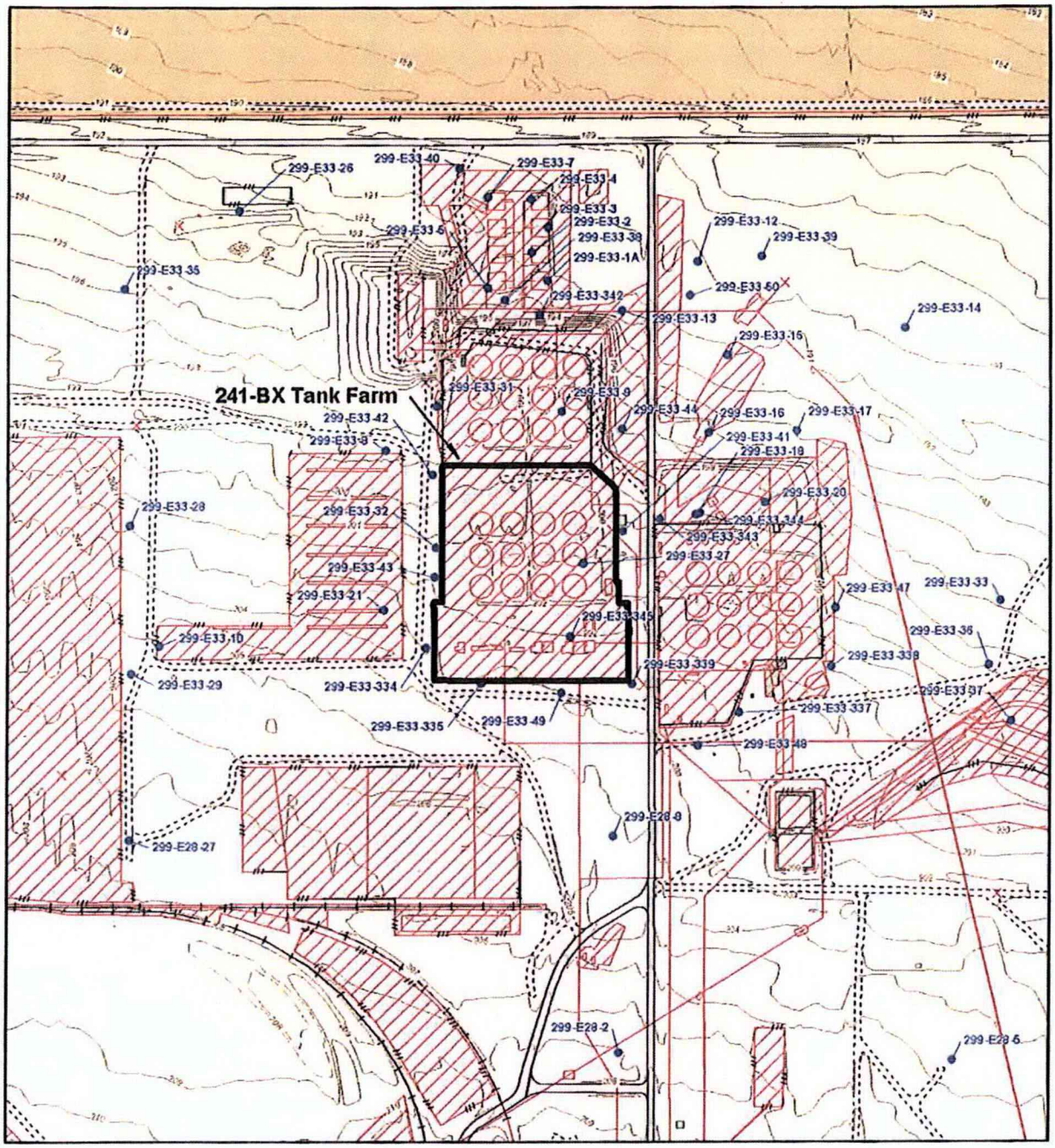

241-BX Tank Farm

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Hanford Site

Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

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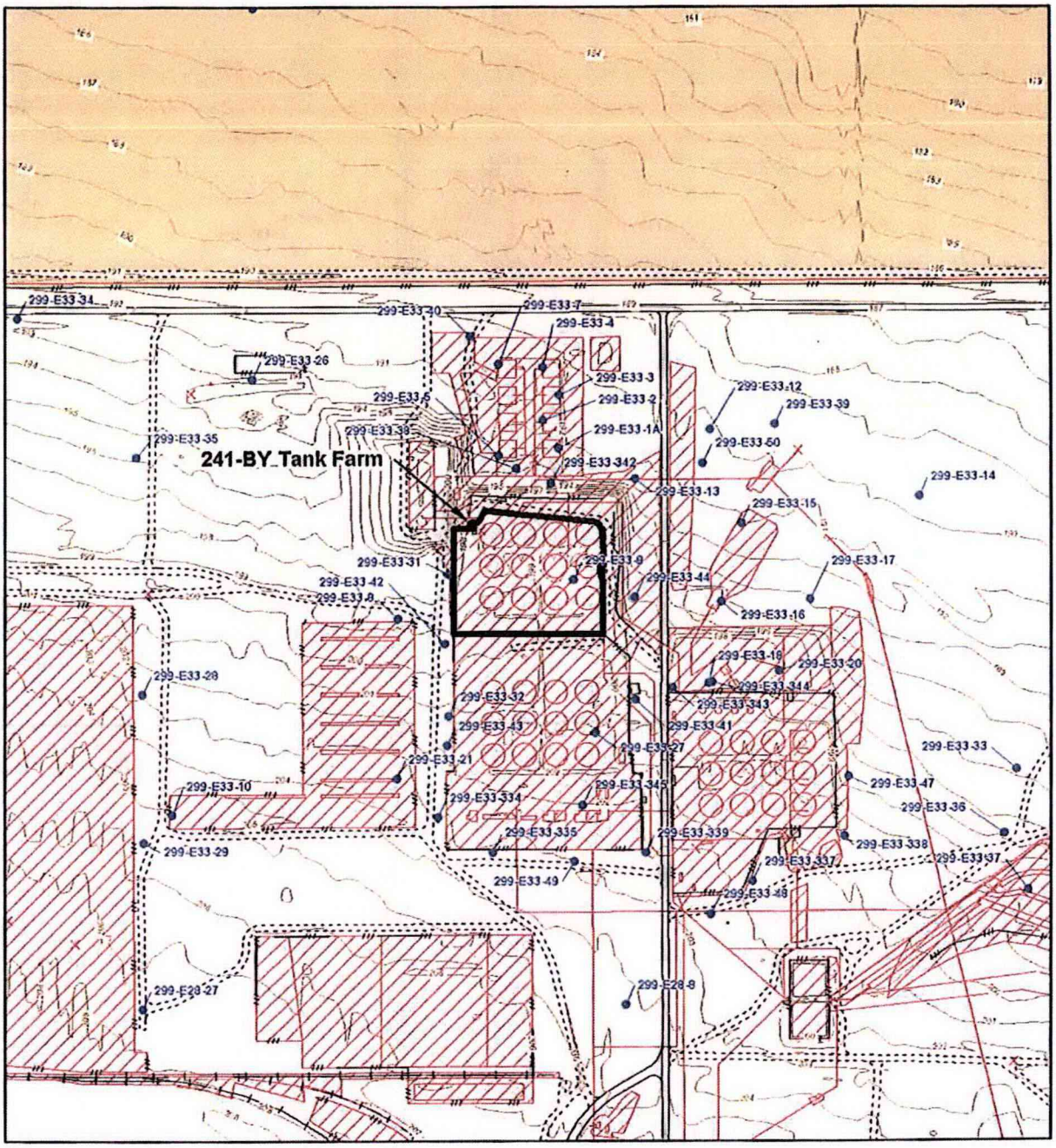

241-BY Tank Farm

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Hanford Site

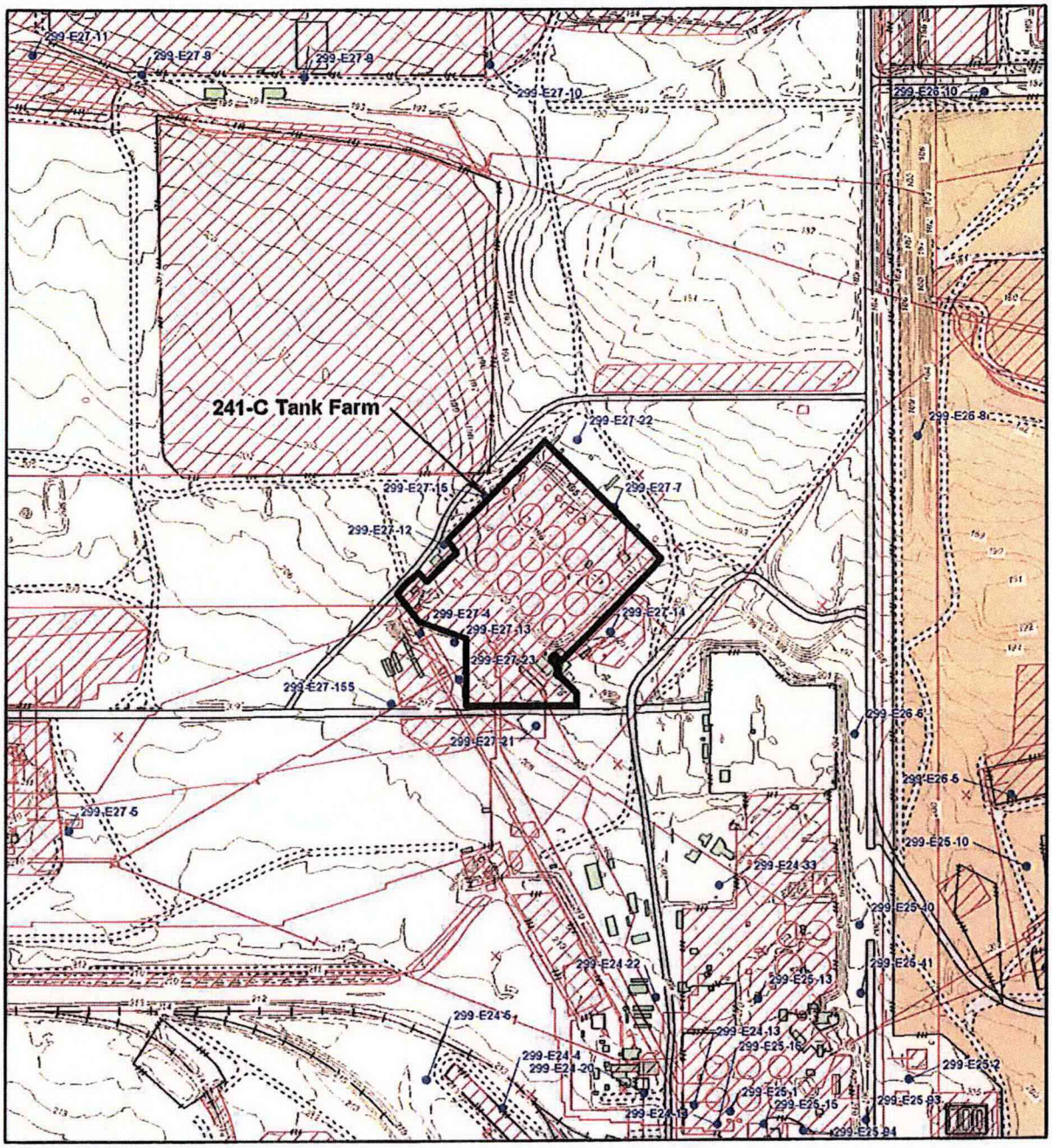
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_Thompson\Maps\050706_241BYTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:45:13 AM



241-C Tank Farm

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Hanford Site

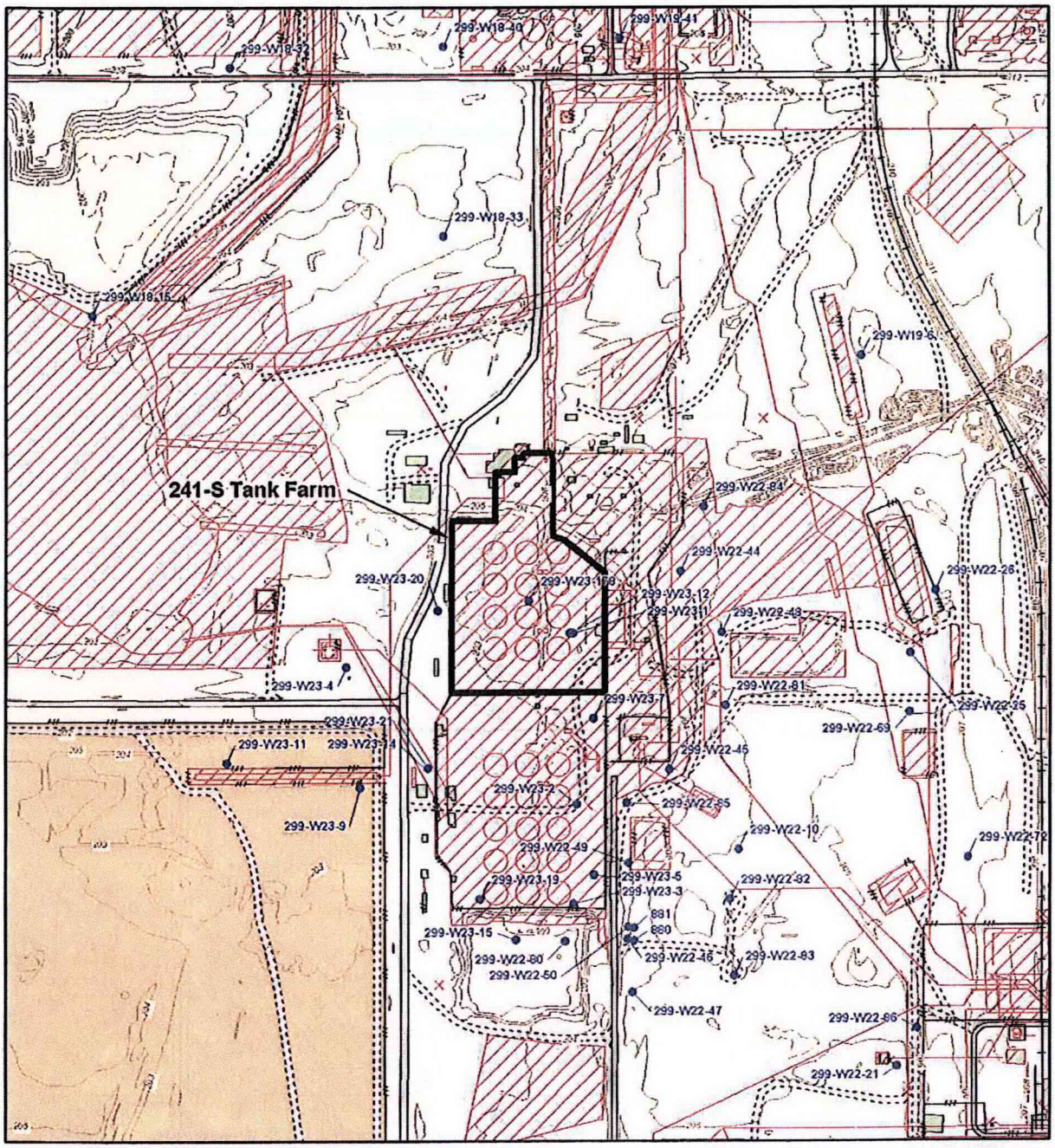
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 60 100 150 200

Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050706_241CTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:48:24 AM



241-S Tank Farm

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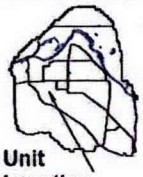
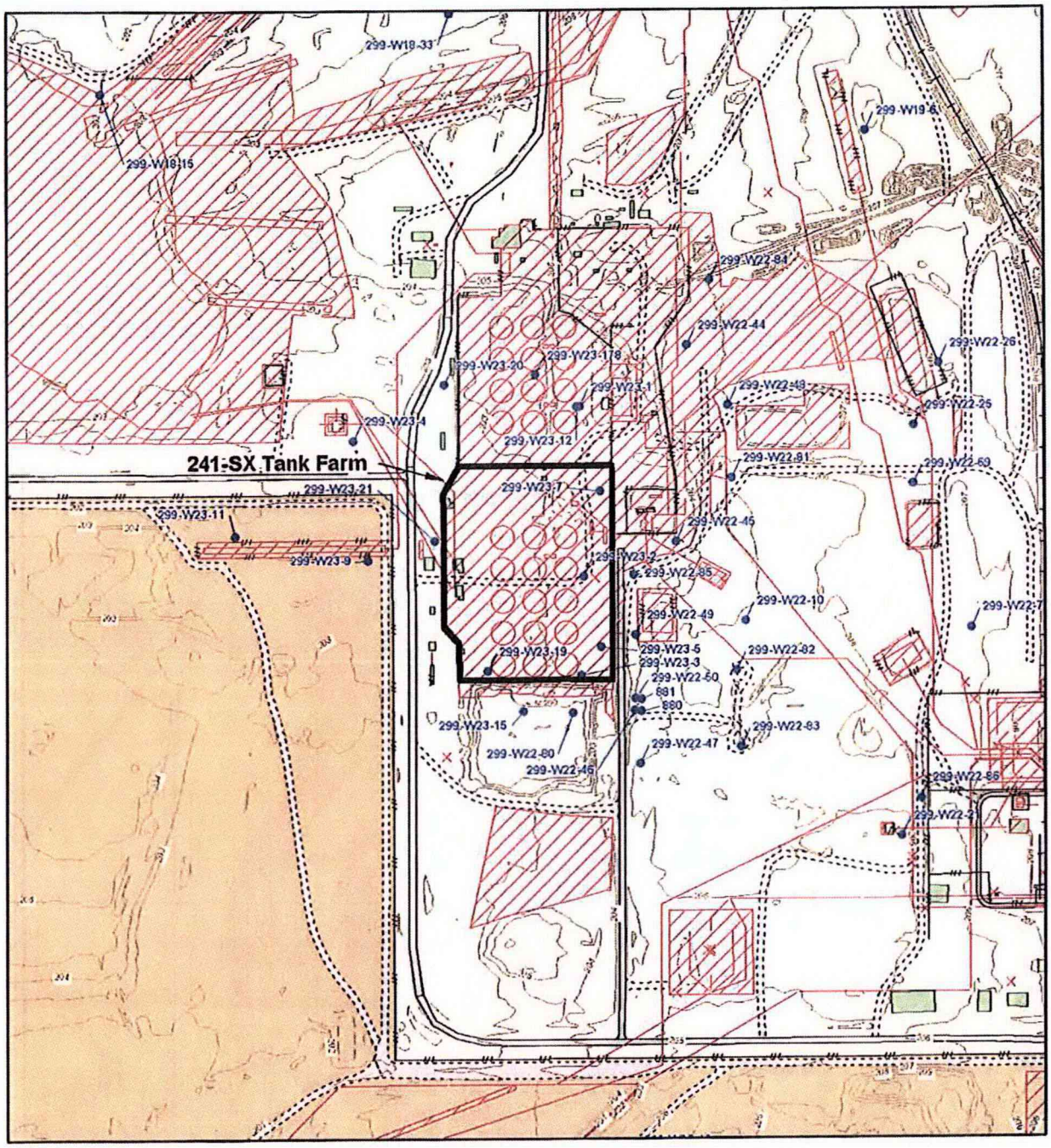


Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050707_241STankFarm_LineDwg_8-5x11_Rev2.mxd - 7/9/2008 @ 11:18:37 AM



241-SX Tank Farm

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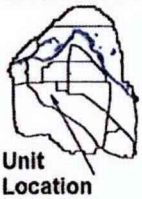

Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Depression Contours
- Contours at 1 Meter Intervals
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

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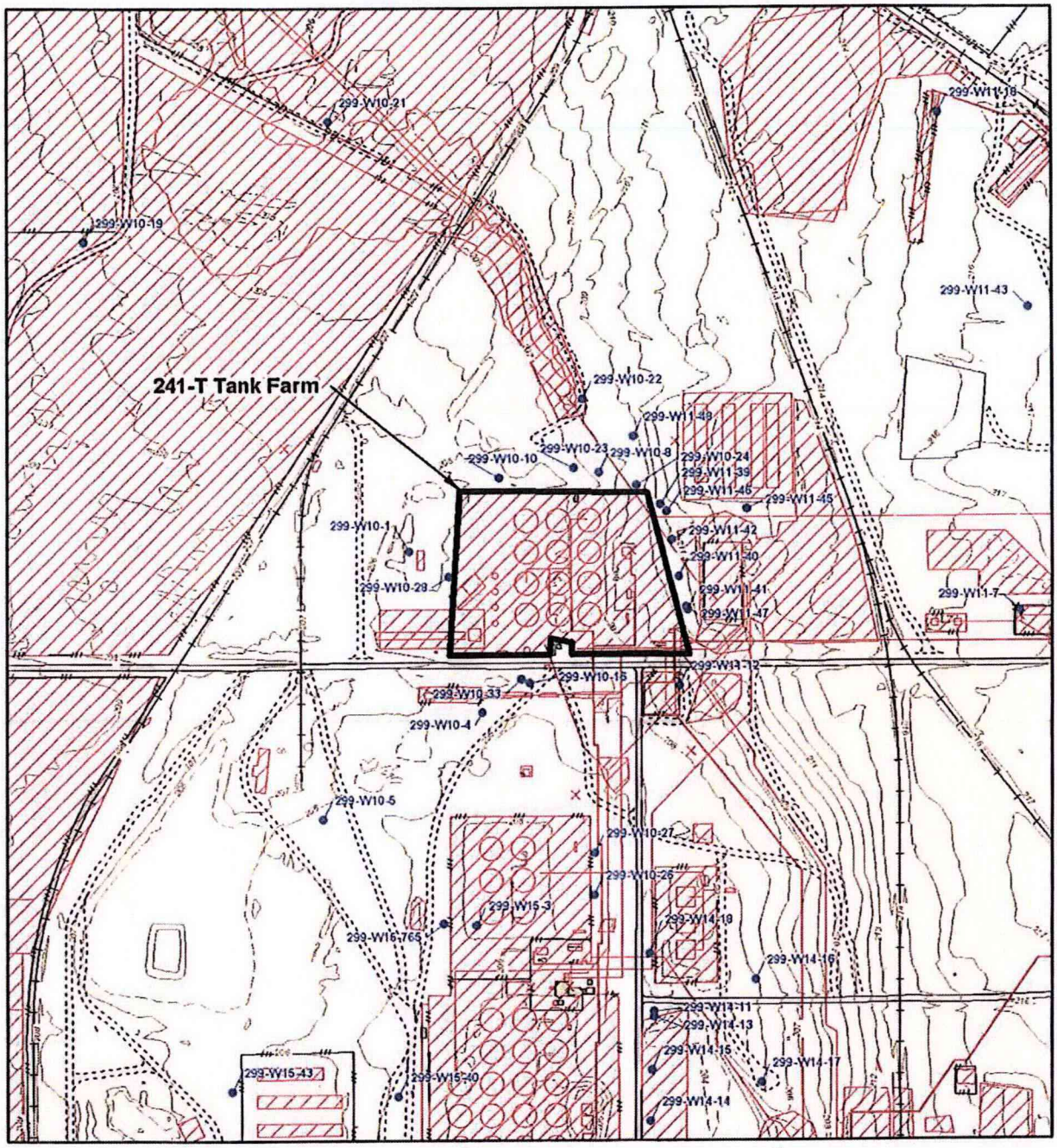

241-T Tank Farm

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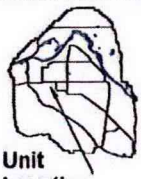


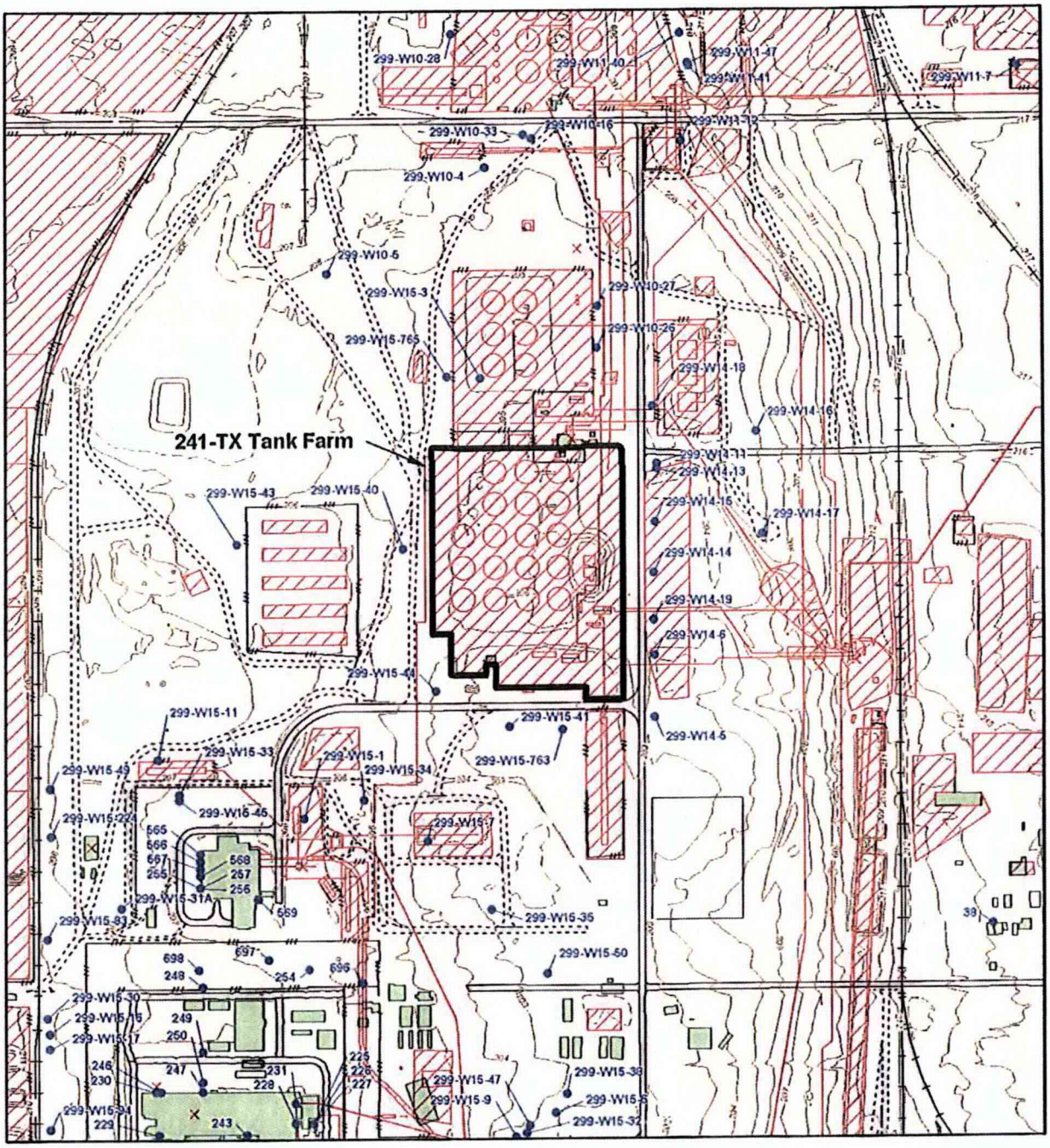
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050707_241TTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:58:00 AM



241-TX Tank Farm

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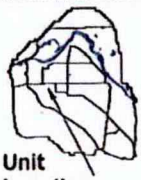
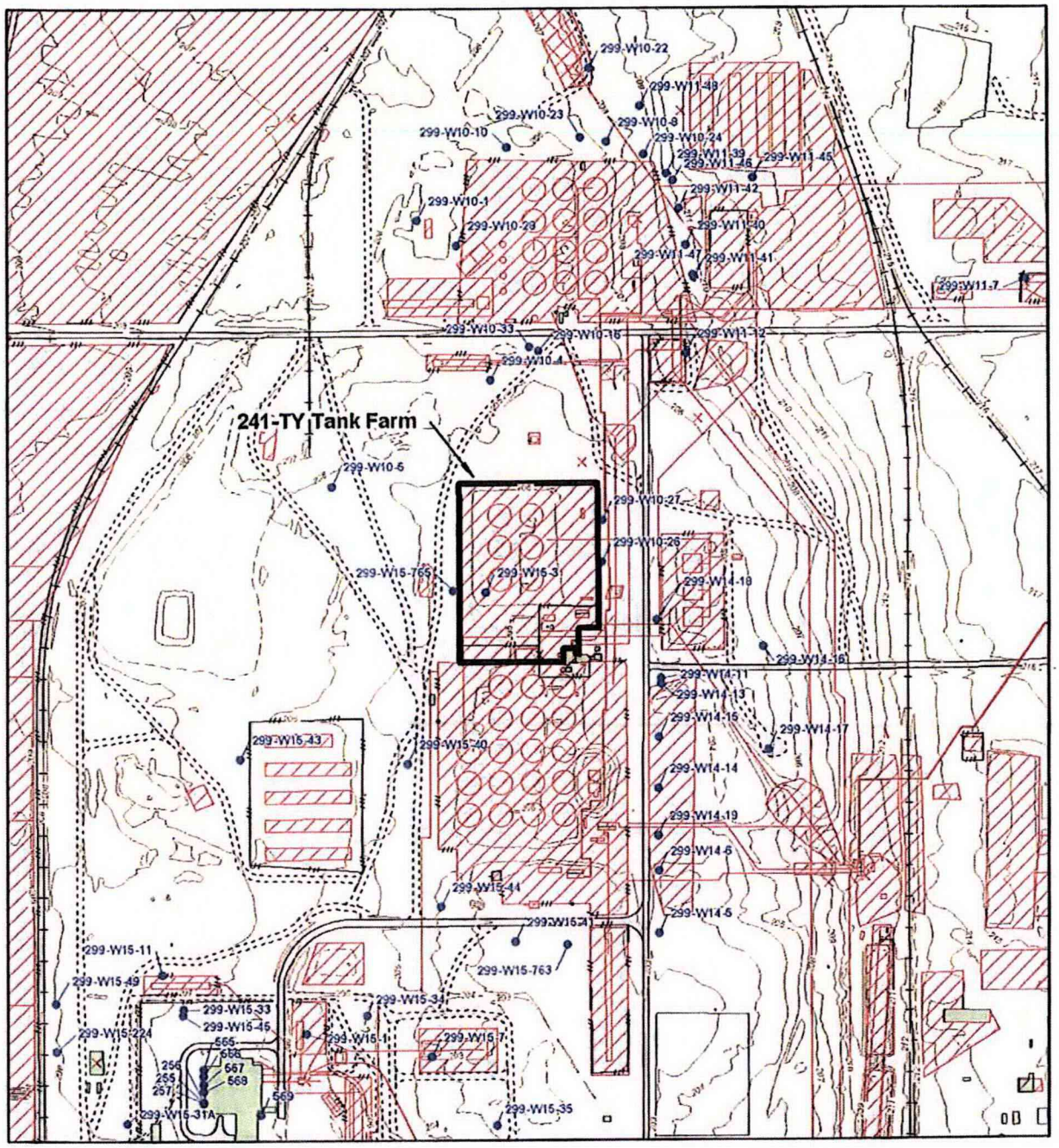


Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050707_241TXTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 1:25:24 PM



241-TY Tank Farm

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Hanford Site

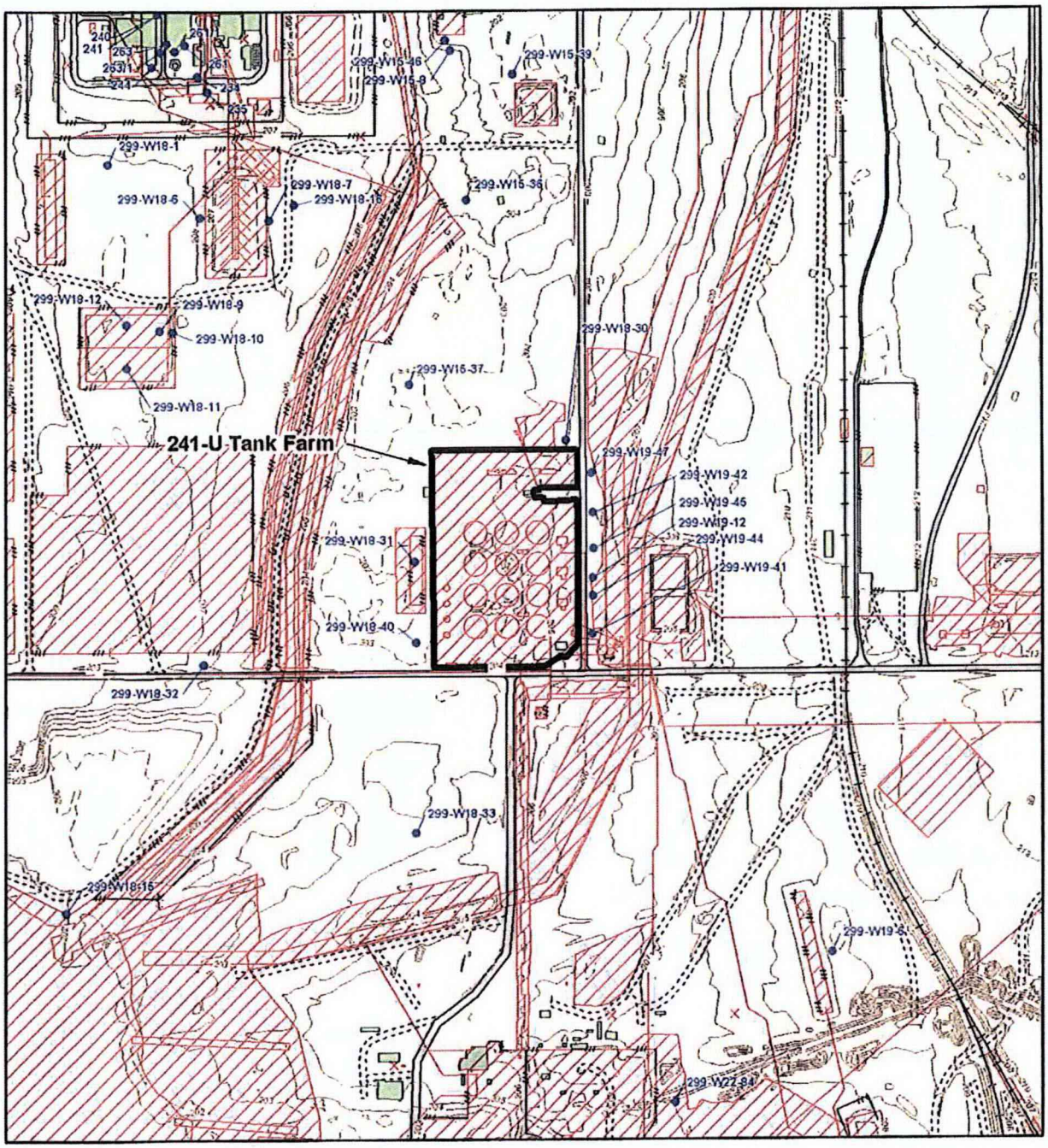
Unit Location

- TSD Unit Boundary
- DOE Operating Areas
- Hanford Facility
- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
- SWMUs and Known Releases
- Linear SWMUs and Known Releases
- Spot SWMUs and Known Releases
- Buildings
- Structures
- Concrete
- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200

Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050707_241TYTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:54:02 AM



241-U Tank Farm

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Hanford Site

Unit Location

- TSD Unit Boundary
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- Injection and Withdrawal Wells
- Contours at 1 Meter Intervals
- Depression Contours
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- Major Roads
- Service Roads
- Railroads
- Fences

Meters: 0 50 100 150 200
Feet: 0 100 200 400 600

O:\Projects\2005\RCRA_TSD\050620_SingleShellTankFarms_ThompsonMaps\050707_241UTankFarm_LineDwg_8-5x11_Rev1.mxd - 7/9/2008 @ 11:54:06 AM

The following tables contain lists of SSTs, Waste Transfer Vaults, Inactive Miscellaneous Underground Storage Tanks, Diversion Boxes, Valve Pits, SST Flush Pits, and SST Transfer Lines.

Table 1. Single-Shell Tank Summary

Tank Number	Year of Construction	Year Removed from Service[1]	Operating Capacity (Liters)
241-A-101	1954-1955	1980	3,785,400
241-A-102	1954-1955	1980	3,785,400
241-A-103	1954-1955	1980	3,785,400
241-A-104	1954-1955	1975	3,785,400
241-A-105	1954-1955	1963	3,785,400
241-A-106	1954-1955	1980	3,785,400
241-AX-101	1963-1964	1980	3,785,400
241-AX-102	1963-1964	1980	3,785,400
241-AX-103	1963-1964	1980	3,785,400
241-AX-104	1963-1964	1978	3,785,400
241-B-101	1943-1944	1974	1,892,700
241-B-102	1943-1944	1978	1,892,700
241-B-103	1943-1944	1977	1,892,700
241-B-104	1943-1944	1972	1,892,700
241-B-105	1943-1944	1972	1,892,700
241-B-106	1943-1944	1977	1,892,700
241-B-107	1943-1944	1969	1,892,700
241-B-108	1943-1944	1977	1,892,700
241-B-109	1943-1944	1977	1,892,700
241-B-110	1943-1944	1971	1,892,700
241-B-111	1943-1944	1976	1,892,700
241-B-112	1943-1944	1977	1,892,700
241-B-201	1943-1944	1971	208,197
241-B-202	1943-1944	1977	208,197
241-B-203	1943-1944	1977	208,197
241-B-204	1943-1944	1977	208,197
241-BX-101	1946-1947	1972	1,892,700
241-BX-102	1946-1947	1971	1,892,700
241-BX-103	1946-1947	1977	1,892,700
241-BX-104	1946-1947	1980	1,892,700
241-BX-105	1946-1947	1980	1,892,700
241-BX-106	1946-1947	1971	1,892,700
241-BX-107	1946-1947	1977	1,892,700
241-BX-108	1946-1947	1974	1,892,700
241-BX-109	1946-1947	1974	1,892,700
241-BX-110	1946-1947	1977	1,892,700
241-BX-111	1946-1947	1977	1,892,700
241-BX-112	1946-1947	1977	1,892,700

241-BY-101	1948-1949	1971	2,839,050
241-BY-102	1948-1949	1977	2,839,050
241-BY-103	1948-1949	1973	2,839,050
241-BY-104	1948-1949	1977	2,839,050
241-BY-105	1948-1949	1974	2,839,050
241-BY-106	1948-1949	1977	2,839,050
241-BY-107	1948-1949	1974	2,839,050
241-BY-108	1948-1949	1972	2,839,050
241-BY-109	1948-1949	1979	2,839,050
241-BY-110	1948-1949	1979	2,839,050
241-BY-111	1948-1949	1977	2,839,050
241-BY-112	1948-1949	1978	2,839,050
241-C-101	1943-1944	1970	1,892,700
241-C-102	1943-1944	1976	1,892,700
241-C-103	1943-1944	1979	1,892,700
241-C-104	1943-1944	1980	1,892,700
241-C-105	1943-1944	1979	1,892,700
241-C-106	1943-1944	1979	1,892,700
241-C-107	1943-1944	1978	1,892,700
241-C-108	1943-1944	1976	1,892,700
241-C-109	1943-1944	1976	1,892,700
241-C-110	1943-1944	1976	1,892,700
241-C-111	1943-1944	1978	1,892,700
241-C-112	1943-1944	1976	1,892,700
241-C-201	1943-1944	1977	208,197
241-C-202	1943-1944	1977	208,197
241-C-203	1943-1944	1977	208,197
241-C-204	1943-1944	1977	208,197
241-S-101	1950-1951	1980	2,839,050
241-S-102	1950-1951	1980	2,839,050
241-S-103	1950-1951	1980	2,839,050
241-S-104	1950-1951	1968	2,839,050
241-S-105	1950-1951	1974	2,839,050
241-S-106	1950-1951	1979	2,839,050
241-S-107	1950-1951	1980	2,839,050
241-S-108	1950-1951	1979	2,839,050
241-S-109	1950-1951	1979	2,839,050
241-S-110	1950-1951	1979	2,839,050
241-S-111	1950-1951	1972	2,839,050
241-S-112	1950-1951	1974	2,839,050

241-SX-101	1953-1954	1980	3,785,400
241-SX-102	1953-1954	1980	3,785,400
241-SX-103	1953-1954	1980	3,785,400
241-SX-104	1953-1954	1980	3,785,400
241-SX-105	1953-1954	1980	3,785,400
241-SX-106	1953-1954	1980	3,785,400
241-SX-107	1953-1954	1964	3,785,400
241-SX-108	1953-1954	1962	3,785,400
241-SX-109	1953-1954	1965	3,785,400
241-SX-110	1953-1954	1976	3,785,400
241-SX-111	1953-1954	1974	3,785,400
241-SX-112	1953-1954	1969	3,785,400
241-SX-113	1953-1954	1958	3,785,400
241-SX-114	1953-1954	1972	3,785,400
241-SX-115	1953-1954	1965	3,785,400
241-T-101	1943-1944	1979	1,892,700
241-T-102	1943-1944	1976	1,892,700
241-T-103	1943-1944	1974	1,892,700
241-T-104	1943-1944	1974	1,892,700
241-T-105	1943-1944	1976	1,892,700
241-T-106	1943-1944	1973	1,892,700
241-T-107	1943-1944	1976	1,892,700
241-T-108	1943-1944	1974	1,892,700
241-T-109	1943-1944	1974	1,892,700
241-T-110	1943-1944	1976	1,892,700
241-T-111	1943-1944	1974	1,892,700
241-T-112	1943-1944	1977	1,892,700
241-T-201	1943-1944	1976	208,197
241-T-202	1943-1944	1976	208,197
241-T-203	1943-1944	1976	208,197
241-T-204	1943-1944	1976	208,197
241-TX-101	1947-1948	1980	2,839,050
241-TX-102	1947-1948	1977	2,839,050
241-TX-103	1947-1948	1980	2,839,050
241-TX-104	1947-1948	1977	2,839,050
241-TX-105	1947-1948	1977	2,839,050
241-TX-106	1947-1948	1977	2,839,050
241-TX-107	1947-1948	1977	2,839,050
241-TX-108	1947-1948	1977	2,839,050
241-TX-109	1947-1948	1977	2,839,050
241-TX-110	1947-1948	1977	2,839,050
241-TX-111	1947-1948	1977	2,839,050
241-TX-112	1947-1948	1974	2,839,050
241-TX-113	1947-1948	1971	2,839,050
241-TX-114	1947-1948	1971	2,839,050
241-TX-115	1947-1948	1977	2,839,050
241-TX-116	1947-1948	1969	2,839,050
241-TX-117	1947-1948	1969	2,839,050
241-TX-118	1947-1948	1980	2,839,050

241-TY-101	1951-1952	1973	2,839,050
241-TY-102	1951-1952	1979	2,839,050
241-TY-103	1951-1952	1973	2,839,050
241-TY-104	1951-1952	1974	2,839,050
241-TY-105	1951-1952	1980	2,839,050
241-TY-106	1951-1952	1959	2,839,050
241-U-101	1943-1944	1960	1,892,700
241-U-102	1943-1944	1979	1,892,700
241-U-103	1943-1944	1978	1,892,700
241-U-104	1943-1944	1951	1,892,700
241-U-105	1943-1944	1978	1,892,700
241-U-106	1943-1944	1977	1,892,700
241-U-107	1943-1944	1980	1,892,700
241-U-108	1943-1944	1979	1,892,700
241-U-109	1943-1944	1978	1,892,700
241-U-110	1943-1944	1975	1,892,700
241-U-111	1943-1944	1980	1,892,700
241-U-112	1943-1944	1970	1,892,700
241-U-201	1943-1944	1977	208,197
241-U-202	1943-1944	1977	208,197
241-U-203	1943-1944	1977	208,197
241-U-204	1943-1944	1977	208,197

[1]The last year the Tank was capable of receiving waste; actual date of last waste receipt might have been earlier.

Table 2. Waste Transfer Vaults

Tank Number	Year of Construction	Year Removed from Service[1]	Operating Capacity (Liters)
244-AR-001	1976	NA	162,970
244-AR-002	1976	NA	162,970
244-AR-003	1976	NA	17,813
244-AR-004	1976	NA	17,813
244-BXR-001	1948	1985	50,000
244-BXR-002	1948	1985	15,000
244-BXR-003	1948	1985	15,000
244-BXR-011	1948	1985	50,000
244-CR-001	1946	1988	189,500
244-CR-002	1946	1988	56,850
244-CR-003	1946	1988	56,850
244-CR-011	1946	1988	189,500
244-TXR-001	1950	1957	50,000
244-TXR-002	1950	1957	15,000
244-TXR-003	1950	1957	15,000
244-UR-001	1952	1975	50,000
244-UR-002	1952	1975	15,000
244-UR-003	1952	1975	15,000
244-UR-004	1952	1975	8,230

[1]The last year the Tank was capable of receiving waste; actual date of last waste receipt might have been earlier.
NA = information not available

Table 3. Inactive Miscellaneous Underground Storage Tanks

Tank Number	Year of Construction	Year Removed from Service[1]	Operating Capacity (Liters)
241-A-302-A[3]	1954	2005	31,941
241-A-302-B[3]	1943	1985	51,100
241-A-350	1978	2005	2,937
241-A-417	1959	2003	167,315
244-A DCRT	1975	2005	67,380
241-AX-151-CT	1960	1985	41.690
241-AX-152-CT	1962	2001	41,639
241-B-301	1945	1984	137,790
241-B-302-B[3]	1945	1985	66,940
241-BX-302-A	1948	1985	66,940
241-BX-302-B[3]	1948	1985	43,110
241-BX-302-C[3]	1948	1985	43,070
244-BX-DCRT	1980	2005	116,885
241-BY-ITS2-Tank-1[2]	1959	1977	10,233
241-C-301	1946	1985	136,270
241-ER-311[3]	1954	2005	66,993
241-ER-311-A[3]	1950	1954	104,860
241-EW-151-CT	1955	2005	3,030
240-S-302[3]	1950	1987	66,930
241-S-302-A	1949	1991	66,930
241-S-302-B	1952	1985	54,180
241-S-304	1991	2005	23,848
244-S-DCRT	1987	2005	76,760
241-SX-302[3]	1954	1983	67,000
241-T-301-B	1944	1985	136,270
241-TX-302-A	1949	1982	66,930
241-TX-302-B[3]	1949	1982	66,940
241-TX-302BR[3]	1950	1954	45,420
241-TX-302C[3]	1945-1947	2005	54,180
241-TX-302XB	1948	1985	54,180
244-TX-DCRT	1980	2005	117,350
241-TY-302-A	1953	1981	66,930
241-TY-302-B	1953	1981	54,180
241-U-301-B	1944-1946	2005	136,274
241-UX-302A[3]	1945-1947	2005	66,941
244-U-DCRT	1987	Never in service	116, 855

[1] The last year the tank was capable of receiving waste; actual date of last waste receipt might have been earlier.
[2] In-Tank Solidification Unit does not meet the WAC-173-303-040 definition of tank system for the Single-Shell Tanks.
[3] Identified as a past practice unit per the Hanford Federal Facility Agreement and Consent Order, Appendix C or WIDS

Table 4. Single Shell Tank System Diversion Box Matrix

Unit	SSTs	Diversion box	Construction date
A	241-A-101 through 241-A-106	241-A-151[1]	1956
		241-A-152 (inactive)	1955
	241-AX-101 through 241-AX-104	241-A-153 (inactive)	1966
		241-AR-151	1976
		241-AX-151 (inactive)	1963
		241-AX-152	1963
		241-AX-153	NA
		241-AX-155	1983
B	241-B-101 through 241-B-112	241-B-151 (inactive)	1951
	241-B-201 through 241-B-204	241-B-152 (inactive)	1951
	241-BX-101 through 241-BX-112	241-B-153 (inactive)	1951
		241-B-154[1] (inactive)	1945
		241-B-252 (inactive)	1951
		241-BR-152 (inactive)	1952
		241-BX-153 (inactive)	1951
		241-BX-154[1] (inactive)	1948
		241-BX-155[1] (inactive)	1948
		241-BXR-151 (inactive)	1952
		241-BXR-152 (inactive)	1952
		241-BXR-153 (inactive)	1952
		241-BYR-152 (inactive)	1952
		241-BYR-153 (inactive)	1952
		241-BYR-154 (inactive)	1952
		242-B-151 (inactive)	1945
C	241-C-101 through 241-C-112	241-C-151 (inactive)	1951
	241-C-201 through 241-C-204	241-C-152 (inactive)	1951
		241-C-153 (inactive)	1951
		241-C-154[1] (inactive)	1946
		241-C-252	1951
		241-CR-151 (inactive)	1952
		241-CR-153 (inactive)	1952
		241-CR-152 (inactive)	1952
ER		241-ER-151[1]	1952
		241-ER-152[1]	1945
		241-ER-153	1945
S	241-S-101 through 241-S-112	240-S-151[1] (inactive)	1950
	241-SX-101 through 241-SX-115	240-S-152[1] (inactive)	1977
		241-S-151	1952
		241-S-152	1975
		241-SX-151	1953
		241-SX-152	1957
T	241-T-101 through 241-T-112	241-T-151	1950
	241-T-201 through 241-T-204	241-T-152	1951
	241-TX-101 through 241-TX-118	241-T-153	1951
	241-TY-101 through 241-TY-106	241-T-252	1951
		242-T-151	1951
		241-TR-152	1951
		241-TR-153	1952
		241-TX-152[1]	1949
		241-TX-153	1951
		241-TX-154[1]	1949
		241-TX-155[1]	1949
		241-TXR-151	1951
		241-TXR-152	1952
		241-TXR-153	1952
		241-TY-153	1952

Table 4. Single Shell Tank System Diversion Box Matrix

Unit	SSTs	Diversion box	Construction date
U	241-U-101 through 241-U-112	241-U-151[1]	1946
	241-U-201 through 241-U-204	241-U-152[1]	1946
		241-U-153	1951
		241-U-252	1951
		241-UR-151	1951
		241-UR-152	1952
		241-UR-153	1952
		241-UR-154	1952
		241-UX-154[1]	1946

[1] Identified as a past practice unit per the Hanford Federal Facility Agreement and Consent Order, Appendix C or WIDS
NA = information not available

Table 5. Single Shell Tank Valve Pits

241-A-A
241-A-B
241-A-501
241-AX-A
241-AX-B
241-AX-501
241-AY-501
241-BY-109
241-C
241-S-01A
241-S-02A
241-S-03A
241-S-04A
241-S-05A
241-S-06A
241-S-07A
241-S-08A
241-S-09A
241-S-110A
241-S-111A
241-S-112A
241-S-A
241-S-B
241-S-C
241-S-D
241-SX-01A
241-SX-02A
241-SX-02B
241-SX-03A
241-SX-03B
241-SX-04A
241-SX-05A
241-SX-05B
241-SX-06A
241-SX-07A (inactive)
241-SX-08A (inactive)
241-SX-09A (inactive)
241-SX-110A (inactive)
241-SX-111A (inactive)
241-SX-112A (inactive)
241-SX-113A (inactive)
241-SX-114A (inactive)
241-SX-115A (inactive)
241-SX-A
241-SX-B
241-T-01A
241-T-01B
241-T-01C (inactive)
241-T-02A (inactive)
241-T-02B (inactive)
241-T-02C (inactive)
241-T-03A (inactive)
241-T-03B (inactive)
241-T-03C
241-T-04 (no pit; covered salt well Caisson)
241-T-05 (no pit; covered salt well Caisson) (inactive)
241-T-06 (no pit) (inactive)
241-T-07 (no pit; covered salt well Caisson)
241-T-08 (no pit) (inactive)
241-T-09 (no pit; covered salt well Caisson)
241-T-110 (no pit; covered salt well Caisson)
241-T-111 (no pit; covered salt well Caisson)
241-T-112 (no pit) (inactive)
241-T-201 (no pit; covered salt well Caisson)
241-T-202 (no pit; covered salt well Caisson)
241-T-203 (no pit; covered salt well Caisson)
241-T-204 (no pit; covered salt well Caisson)
241-TX-01A (inactive)
241-TX-01C (inactive)
241-TX-01D (inactive)
241-TX-02A (inactive)
241-TX-02C (inactive)
241-TX-02D (inactive)
241-TX-03A (inactive)
241-TX-03C (inactive)
241-TX-03D (inactive)
241-TX-04A (inactive)
241-TX-04C (inactive)
241-TX-04D (inactive)
241-TX-05A (inactive)
241-TX-05C (inactive)
241-TX-05D (inactive)
241-TX-06A (inactive)
241-TX-06C (inactive)
241-TX-06D (inactive)
241-TX-07A (inactive)
241-TX-07C (inactive)
241-TX-07D (inactive)
241-TX-08A (inactive)
241-TX-08C (inactive)
241-TX-08D (inactive)
241-TX-09A (inactive)
241-TX-110A (inactive)
241-TX-111A (inactive)
241-TX-112A (inactive)
241-TX-113A (inactive)
241-TX-114A (inactive)
241-TX-115A (inactive)
241-TX-116A (no pit) (inactive)
241-TX-117A (inactive)
241-TX-118A (inactive)
241-TX-14B (inactive)
241-TX-15B
241-TX-15X
241-TY-01A (inactive)
241-TY-02A (inactive)
241-TY-03A (inactive)
241-TY-04A (inactive)
241-TY-05 (no pit; covered salt well Caisson) (inactive)
241-TY-06 (no pit) (inactive)
241-U-01A (inactive)
241-U-01B (inactive)
241-U-01C (inactive)
241-U-02A
241-U-02B
241-U-02C
241-U-03A
241-U-03B
241-U-03C
241-U-04A (inactive)
241-U-04B (inactive)
241-U-04C (inactive)
241-U-05A
241-U-05B
241-U-05C
241-U-06A
241-U-06B
241-U-06C
241-U-07A
241-U-07B
241-U-07C
241-U-08A
241-U-08B
241-U-08C
241-U-09A
241-U-09B
241-U-09C
241-U-110A (inactive)
241-U-110B (inactive)
241-U-111A
241-U-111B
241-U-112 (no pit; covered salt well Caisson) (inactive)
241-U-201 (inactive)
241-U-202 (inactive)
241-U-203 (inactive)
241-U-204 (inactive)
241-UA
241-UB
241-UC
241-UD
241-UR-09A
241-UR-09B

Table 6. Single Shell Tank Flush Pits

241-A-A	241-S-A	244-TX-Flush Pit Unknown Number
241-A-B	241-S-B	241-UA
241-AX-A	241-S-C	241-UB
241-AX-B	241-S-D	241-UC
244-BX-Receiver Vault Unknown Number	241-SX-A	241-UD
244-S-Catch Station Unknown Number	241-SX-B	

Table 7. Active 200 East and 200 West Area Transfer Lines

Transfer line identification	Notes	Size		Encasement	Materials	Connection Facility	Connection Facility
		Mm	In.				
4006/4908	L1, V1	102	4	Concrete/double	SSTL, Sch 40	244-AR Vault	241-AX-152
108/837/8649/8901	L1, V1	51	2	Concrete	Sch 40	221-B	244-CR DCRT-U11
814/4002/4028/G026	L1, V1	76	3	Concrete	SSTL A312, 304L	244-AR Vault-T16, Unknown	PUREX
833/8618/8612/809	L1, V1	76	3	Concrete	SSTL A312, 304L	221-B	244-AR Vault
834/8615/8653/818	L1, V1	76	3	Concrete	SSTL A312, 304L	221-B	244-AR Vault-T10
9653/243	L1, V1	76	3	Concrete	Sch 10 SSTL	221-B	241-ER-151-L7
D088	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151
D020	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX-U3, U4	241-A-151-U19
D040	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U27
D070	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U26
D149	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U18
D186	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U5
E006	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX-E5	241-A-151-U24
E167	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U23
F241	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U21
F274	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX-F18	241-A-151-U9
F377	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U14
F429	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U13
F719	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U20
F791	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U8
G057	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U17
G180	L1, V1	51	2	Concrete	SSTL A312, 304L	PUREX	241-A-151-U11
G212	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX-G8	241-A-151-U16
LLW4002	L1, V1	51	2	Direct buried	SSTL A312, 304L	241-ER-152	221-B
LLW4076	L1, V1	51	2	Direct buried	SSTL A312, 304L	241-ER-152	221-B
M044	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U10
M045	L1, V1	76	3	Concrete	SSTL A312, 304L	PUREX	241-A-151-U22
SN244	L1, V1	76	3	Concrete	SSTL A312, 304L	244-CR Vault-U13,CT3	241-ER-153-9
U039	L1, V1	51	2	Concrete	SSTL A312, 304L	PUREX	241-A-151-U6
U136	L1, V1	51	2	Concrete	SSTL A312, 304L	PUREX	241-A-151-U7
V021	L1, V1	76	3	Concrete/double	SSTL A312, Sch 40	241-A-151-L25	241-AW-A-L12
V714	L1, V1	76	3	Double	Sch 40, SSTL	241-AX-155-10	241-AR-151-1
V714	L1, V1	76	3	Double	SSTL A312, 304L	PUREX-F16	241-AR-151-2
SL118	L1, V1	NA	NA	Direct buried	NA	241-S-D-R10	241-SX-B-R3
SN7624	L, V1	51	2	Concrete	CS A53, Sch 40	244-T-111	241-T-110
SN7624	L, V1	51	2	Concrete	CS A53, Sch 40	244-TX-I	241-T-111
V657	L2, V1	76	3	Direct buried	SSTL	241-T-151-L1	241-T-153-U1
V658	L2, V1	76	3	Direct buried	SSTL	241-T-151-L2	241-T-153-U8
V730	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U1
V732	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U2
V734	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U4
V735	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U5
V737	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U7
V738	L, V1	89	3.5	Concrete	11 Ga 18-8 SSTL	221-T	241-TX-154-U8

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
A	SL-104	241-A-A	241-A-B
A	SN-216	241-A-B, R-16	244-A, P-9
A	SN-215	241-A-A, L-16	244-A, P-7
A	SN-232	244-A, P-3	241-ER-153,P-3
A	SN-234	244-A, P-2	241-ER-153,P-5
A	EFD-02	241-A-401 Condensate Building	241-A-401-Diversion Caisson
A	EFD-92	241-A-401 Condensate Building	241-A-401-Diversion Caisson
A	V004	241-A-152	241-A-151
A	V005	241-A-152	241-A-151
A	V006	241-A-152	241-A-151
A	V006	241-A-152	241-A-151
A	V006	241-A-152	241-A-151
A	V006	241-A-152	241-A-151
A	V007	241-A-152	241-A-151
A	V007	241-A-152	241-A-151
A	V021	241-A-151-L-25	241-AN-Valve Pit-L12
A	V007	241-A-152	241-A-151
A	V050	241-A-152	241-C-104
A	V051	241-A-152	241-C-104
A	153A	241-A-101	241-A-153
A	400/T029	202-A	241-A-B-Valve Pit-R12
A	404/V-029/4004/G34/4029	202-A	241-A-A-Valve Pit-L12
A	801	244-AR-T-6	241-A-153-A
A	805	244-AR-T-13	241-A-153-B
A	4106	241-AX-151	241-A-106
A	4105	241-AX-151	241-A-105
A	4101	241-AX-151	241-A-101
A	4102	241-AX-151	241-A-102
A	4104	241-AX-151	241-A-104
A	4103	241-AX-151	241-A-103
A	SN-202	241-A-B-R11	241-A-106-06C-Nozzle A
A	SN-205	241-A-B-Valve Pit-R14	241-A-103-03C-A
A	SN-207	241-A-A-L14	241-A-101-01B-A
A	F-562	241-F505	241-A-417
A	SN-233	244-A,P-4	241-ER-153, 4
A	DR-300	207-A	241-A-350
A	PW-481/SN-234	241-A-350	242-A,14
A	Drain-316	Clean Out Box-A-8	Drain-301
A	Drain-304	Clean Out Box-A-9	Drain-301
A	V044	241-A-152-10	241-A-104-04A
A	V045	241-A-152-11	241-A-104-04A
A	V046	241-A-152-12	241-A-105-05B
A	V047	241-A-152-13	241-A-105-05B
A	V039	241-A-152-5	241-A-101-01A
A	V038	241-A-152-6	241-A-101-01A
A	SI-107	241-A-A	241-A-101-01H
A	F-100	241-A-417, 22	241-AX-501, U-1
A	V028	241-A-151	241-A-302A
A	V027	241-A-151,U-4	241-302-A
A	V023	241-A-151,L-23	241-AW-B, R-11
A	V041	241-A-152-3	241-A-102-02A
A	V040	241-A-152-4	241-A-102
A	05C	241-A-105-05C-B	241-A-103 & 241-A-153-U2
A	05D	241-A-105-05D-U1	241-A-153-L2
A	05B	241-A-105-05B-U1	241-A-103-03A-U4
A	SL-102	241-A-106-06D-A	241-A-B-R7

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
A	V048	241-A-106	241-A-152-14
A	V049	241-A-106	241-A-152-15
A	V032	241-A-106-A-U1	241-A-152-7
A	V043	241-A-103	241-A-152-1
A	V042	241-A-103	241-152-2
A	SN-205	241-A-103-03C-A	241-A-B-R14
A	03C	241-A-103-03C-U1	241-A-153-L7
A	03A	241-A-103-03A-U7	241-A-153-U6
A	03B	241-A-103-03B-U1	241-A-153-L12
A	SL-106	241-A-B-R10	241-A-102-02D-A
A	SL-107	241-A-01H-A	241-A-A-L5
A	SN-235	241-A-102-02B-2	Capped off
A	Flush Line	241-A-A-Valve Pit L6, L8	241-A-A-Flush Pit
A	Flush line	241-A-B-Flush Pit	241-A-102-02B-4
A	Flush line	241-A-B-R17	241-A-B-Flush Pit
A	Flush Line	241-A-A-Flush Pit	241-A-A-Valve Pit L17
A	Flush Line	241-A-B-Valve Pit-R17	241-A-B-Valve Pit-R6, R8
A	01C	241-A-101-01C-U1	241-A-153-L9
A	01A	241-A-101-01A-U7	241-A-153-U5
A	01B	241-A-101-01B-U1	241-A-153-L10
A	SL-102	241-A-Valve Pit-R7	Clean Out Box-A-6
A	SL-105	241-A-103-03D-A	241-A-B-R5
A	SL-106	241-A-Valve Pit-B-R10	241-A-102-Side Wall
A	Drain-341	Clean Out Box-A-1	Drain-301
A	Drain-309	Drain-301	Clean Out Box-A-4
A	Drain-308	Drain-301	Clean Out Box-A-3
A	V052	241-A-152-9	Capped
A	V061	241-A-152-L6	Capped
A	V058	241-A-152-A	Nozzle A
A	V059	241-A-152-B	Nozzle B
A	V060	241-A-152-C	241-A-302B
A	06C	241-A-106-06C-U1	241-A-153-L1
A	06A	241-A-106-06A-U7	241-A-153-U3
A	SN-201/214	241-A-A, L-1	241-AX-A, Li
A	SN-219	241-A-B, R-2	241-AW-B, R-2
A	Sn-650	241-A-B, R-15	241-AP-102
A	V022	241-A-151, L-24	241-AW-B, R-12
A	SN-200/213	241-A-B, R-1	241-AX-B,R-1
A	DR-310	241-A-B	241-A-350
A	SN-204	241-A-A, L-19	241-A-B, R-19
A	DR-311	241-A-A	241-A-350,C
A	06B	241-A-106-06B-U1	241-A-153-L5
A	Drain-315	Clean Out Box-A-10	Drain-317
A	Drain-317	Clean Out Box-A-11	Drain-301
A	04C	241-A-104-04C-U1	241-A-153-L3
A	04B	241-A-104-04B-U1	241-A-153-L4
A	05B	241-A-105-05B-U1	241-A-153-L6
A	Unknown (02C)	241-A-102-02C-U1	241-A-153-L8
A	Overflow	241-A-106-Side Wall	241-A-350-Side Wall
A	Flush Line	241-A-B-R8 & R6	241-A-B-Flush Pit
A	Flush Line	241-A-A	241-A-A-L6 & L8
A	02B	241-A-102-02B-U1	241-A-153-L11
A	02A	241-A-102-02A-U7	241-A-153-U4
A	SN-206	241-A-102-02C-3	241-A-102-02B-3
A	Unknown	241-A-104-04A-U2	241-A-105-05C-A
A	Unknown	241-A-104-04A-U1	241-A-101-01A-U1

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
A	Unknown	241-A-105-05A-U1	241-A-102-02A-U1
A	Unknown	241-A-106-06A-U1	241-A-103-03A-U1
A	DR-307	241-A-A/A-B	241-A-350
A	DR-302	241-A-350	COB A-2
A	4001/T029	241-A-B, R-12	202A, T029
A	4004/6341/4029/V029	241-A-A, L12	202A
A	D008	241-A-151,U-25	202A
A	D020	241-A-151, U-19	202A
A	D040	241-A-151, U-27	202A
A	D070	241-A-151, U-26	202A
A	D149	241-A-151, U-18	202A
A	D186	241-A-151, U-5	202A
A	E006	241-A-151,U-24	202A
A	E167	241-A-151,U-23	202A
A	F241	241-A-151,U-21	202A
A	F274	241-A-151,U-9	202A
A	F377	241-A-151,U-14	202A
A	F429	241-A-151,U-13	202A
A	F719	241- A-151,U-20	202A
A	F791	241- A-151,U-8	202A
A	G057	241- A-151,U-17	202A
A	G180	241- A-151,U-11	202A
A	M044	241- A-151,U-10	202A
A	M045	241- A-151,U-22	202A
A	R 165	241- A-151,U-12	202A
A	R 345	241- A-151,U-15	202A
A	U039	241- A-151,U-6	202A
A	U136	241- A-151,U-7	202A
A	V001	241- A-151,U-3	Spare
A	V002	241- A-151,U-2	Spare
A	V003	241- A-151,U-1	Spare
A	DR-301	241- A-350	Spare
AW	V-016 (3)	241-A-151-L3	Crib V016
AW	V-016 (1)	241-A-151-L4	Crib V016
AW	V-016 (2)	241-A-151-L10	Crib V016
AW	V-014 (4)	241-A-151-L5	Tank V014/216A
AW	V-014 (3)	241-A-151-L6	Tank V014/216A
AW	V-011 (2)	241-A-151-L7	Crib V011
AW	V-011 (1)	241-A-151-L9	Crib V011
AW	V-014 (2)	241-A-151-L11	TO216A Tank V014
AW	V-014 (1)	241-A-151-L12	TO216A Tank V014
AW	V010	241-A-151	Crib V010
AW	V008 (3)	241-A-151-L14	241-A-152-U10
AW	V008 (2)	241-A-151-L15	241-A-152-U10
AW	R345	202A-R8	241-A-151-U15
AW	R-165	202-A	241-A-151-U12
AW	4003/T037/4017	202-A	241-AX-152-B
AX	4001	241-AX-151	None Identified
AX	4002	241-AX-151	None Identified
AX	4003	241-AX-151	None Identified
AX	4004	241-AX-151	None Identified
AX	4006	241-AX-151	None Identified
AX	4007	244-AR Vault	241-AX-151
AX	4009	241-AX-151	None Identified
AX	4012	241-CR-153	241-AX-151
AX	4509/4507	241-AX-155,5	241-AZ-101

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
AX	4512/4600	241-AX-155,4	241-AZ-102
AX	SN-400	241-AX-155,U--3	241-AX-152-B
AX	SL-502	241-AX-B, R-16	241-AY-102, 02D,U-3
AX	SL-108	241-AX-A	241-AX-101, 01A
AX	SL-110	241-AX-A	241-AX-B
AX	SN-247	241-AX-B, R-11	241-AN-01E, A
AX	SL-100	241-AX-B	241-A-B
AX	4014	241-AX-151	None Identified
AX	4017	241-AX-151	None Identified
AX	4018	241-AX-151	None Identified
AX	4019	241-AX-151	None Identified
AX	4020	241-AX-151	None Identified
AX	4021	241-AX-151	241-AY-151
AX	4021	241-AY-151	241-AX-152
AX	4022	241-AX-151	241-AX-152
AX	4530	241-AY-151	241-A-153
AX	4026	241-AX-101-01A-2	241-AX-101-01A-2
AX	4026	241-AX-101-01A-2	241-AX-102-02A-2
AX	4026	241-AX-101-01A-2	241-AX-103-03A-2
AX	4026	241-AX-101-01A-2	241-AX-104-04A-2
AX	4026	241-AX-101-01A-2	241-AX-153-01
AX	4026	241-AX-101-01A-2	Leak Detection Pits-01E, 02E, 03E, 04E
AX	A102	241-AX-102	241-AX-152
AX	C102	241-AX-102	241-AY-501
AX	B102	241-AX-102	241-AX-152
AX	B101	241-AX-101	241-AX-152
AX	C101	241-AX-101	241-AY-501
AX	A101	241-AX-101	241-AX-152
AX	8041	241-AX-101-01A-U6	241-AX-101-01C-U4
AX	8038	241-AX-101-01AU4	241-AX-101-01C-U3
AX	8039	241-AX-101-01A-U9	241-AX-101-01B-U5
AX	SN-208	241-AX-101-01B-A	241-AX-A-L15
AX	8040	241-AX-101-01B-U3	241-AX-101-01D-U5
AX	8042	241-AX-102-02C-U5	241-AX-102-02A-U9
AX	8035	241-AX-102-02C-U4	241-AX-102-02A-U7
AX	8036	241-AX-102-02A-U4	241-AX-102-02B-U3
AX	8037	241-AX-102-02B-U5	241-AX-102-02D-U3
AX	8062	241-AX-102-02A-U5	241-AY-152-L6
AX	SN-209	241-AX-102-02D-A	241-AX-B-R14
AX	8029	241-AX-103-03A-U4	241-AX-103-03C-U3
AX	8043	241-AX-103-03A-U6	241-AX-103-03C-U4
AX	SL-500	241-AX-14, L-5	241-AZ-02A, U-10
AX	F-101	241-AX-501, L-1	241-AY-501
AX	F-102	241-AX-501, L-2	241-AX-152 B
AX	DR-325/330/333/347/348	COBS AX-20/24//25	None Identified
AX	DR-314/317/320/322/329	COBS AX-19/17/15, A-11/13	None Identified
AX	DR-370	AX SEAL POT	241-AY-102, R24
AX	DR-326/336	AX SEAL POT	241-AX-A/B
AX	8031	241-AX-103-03A-U9	241-AX-103-03B-U5
AX	8030	241-AX-103-03B-U3	241-AX-103-03D-U5
AX	SL111	241-AX-103-03A-A	241-AX-A-L7
AX	A-104	241-AX-104	241-AX-152

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
AX	C-104	241-AX-104	241-AY-501
AX	B-104	241-AX-104	241-AX-152
AX	B-103	241-AX-103	241-AX-152
AX	A-103	241-AX-103	241-AX-152
AX	C-103	241-AX-103	241-AY-501
AX	SN211	241-AX-103-03D-A	241-AX-A-L14
AX	Drain-325, 348,333,342	241-AX-107C	Clean Out Boxes AX-20, 24,25,26
AX	SN212	241-AX-104-04B-A	241-AX-B-R15
AX	SL112	241-AX-104-04A-A	241-AX-B-R9
AX	8032	241-AX-104-04D-U3	241-AX-104-04B-U5
AX	8034	241-AX-104-04C-U5	241-AX-104-04A-U4A
AX	8044	241-AX-104-04C-U4	241-AX-104-04A-U7
AX	Drain-314	241-AX-102-R24	Clean Out Boxes-AX12, 13,14,15,16,17,18,19
AX	4010	241-AX-151	241-AX-151-F-CELL
AX	4011	241-AX-151	241-AX-151-E-CELL
AX	4016	241-AX-151	241-AX-151-E-CELL
AX	4024	241-AX-152-B	Capped
AX	4030	241-PX-152	241-AX-152
AX	806	244-AR-Vault	241-AX-152-A
AX	802	244-AR-Vault	241-AY-152-B
AX	T15/T05	244-AR-Tank-001	244-AR-Tank-004
AX	837	244-AR-Tank-001	244-AR-Tank002, 003,004
AX	819	244-AR-Tank-001	244-AR-Tank-003-T14
AX	4026	241-AX-152	153-AX-Jumper Box –2
AX	4510/A107	241-AX-152-7	Capped
AX	8033	241-AX-104-04A-U4	241-AX-104-04B-U3
AX	Flush Line	241-AX-A-L17	241-AX-A-Flush Pit
AX	Flush Line	241-AX-B-R8, R6	241-AX-B-Flush Pit
AX	SN-210	241-AX-A-L19	241-AX-B-R19
AX	Drain-329	Drain-314	Clean Out Box-AX-19
AX	Drain-323	Drain-314	Clean Out Box -AX-18
AX	Drain-321	Drain-314	Clean Out Box -AX-16
AX	Drain-322	Drain-314	Clean Out Box -AX-17
AX	Drain-320	Drain-314	Clean Out Box -AX-14
AX	Drain-318	Drain-314	Clean Out Box -AX-12
AX	DR-0030	241-AX-501	241-A-417
AX	4505B/B106/B1061	241-AX-152,N-6	241-AY-102
AX	4511/B109	241-AX-152, 7	241-AZ-102
AX	DR-301/314/315/317/318/321/323	COBS A-10/12/,	AX
AX	Drain-349	Drain-314	Clean Out Box -AX-13
AX	RW-3019	RW-Flush Pit	241-AX-152 Catch Tank
AX	Drain-0029	241-AX-153	241-AX-152 Catch Tank
AX	Drain-Unknown	SP-100	Drain-0029
AX	Drain-0067	SP-550	Drain-0029
AX	Drain-0050	241-AY-501	Drain-0029
AX	Drain-0016	SP-110	241-AX-152 Catch Tank
AX	V100	702-A-SP	Drain-0016
AX	Drain-V713	241-AX-155	241-AX-152 Catch Tank
AX	Drain-0036	241-AX-152 Diversion Box	241-AX-152 Catch Tank
AX	Drain-0035	241-AX-152 Diversion Box	Drain-0036
AX	RW-4030	Unknown	241-AX-152 Diversion Box
AX	PW-4022	241-AX-151	241-AX-152 Diversion Box
AX	V0152	Vent Header	241-AX-152 Diversion Box
AX	PW-4026	241-AX-153	241-AX-152 Diversion Box
AX	RW-3015	Flush	241-AX-152 Diversion Box
AX	PW-A101	241-AX-101	241-AX-152 Diversion Box

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
AX	PW-A102	241-AX-102	241-AX-152 Diversion Box
AX	PW-A103	241-AX-103	241-AX-152 Diversion Box
AX	PW-A104	241-AX-104	241-AX-152 Diversion Box
AX	PW-B101	241-AX-101	241-AX-152 Diversion Box
AX	PW-B102	241-AX-102	241-AX-152 Diversion Box
AX	PW-B103	241-AX-103	241-AX-152 Diversion Box
AX	PW-B104	241-AX-104	241-AX-152 Diversion Box
AX	FLO-4025	Capped	241-AX-152 Diversion Box
AX	PW-4510/A701	Capped	241-AX-152 Diversion Box
AX	4507/A105	Capped	241-AX-152 Diversion Box
AX	RW-3018	Flush	241-AX-152 Diversion Box
AX	RW-3020	Flush	241-AX-152 Diversion Box
AX	RW-3016	Flush	241-AX-152 Diversion Box
AX	RW-3017	Flush	241-AX-152 Diversion Box
AX	FLO-4024	Capped	241-AX-152 Diversion Box
AX	PW-4017/4003/1037	241-202-A	241-AX-152 Diversion Box
AX	PW-4018/4006	244 AR	241-AX-152 Diversion Box
AX	CNDS-F102	241-AX-501	241-AX-152 Diversion Box
AX	PW-4027/4526	PW-4523/4522	241-AX-152 Diversion Box
AX	PW-4523	PW-4027/4526	LPD-AY-102A
AX	PW-4522	PW-4526	LPD-AY-101B
AX	PW-4522	PW-4522	LPD-AY-101A
AX	PW-4551	Capped	PW-4027/4526
AX	PW-4021	241-AY-151	241-AX-152 Diversion Box
AX	PW-4021 Bypass	241-AX-153	PW-4021
AX	4508/B105	241-AX-152.-155	241-AZ-101
AX	U173	241-AX-155	241-AX-152
AX	4503/C108	241-AX-155, N-3	241-AY-101
AX	SL-101	241-AX-A	241-A-A
AX	SL-109	241-AX-B, R-7	241-AX-02A, A
AX	4001	241-AX-151	CAPPED
AX	4022	241-AX-152-CT	241-AX-151
AX	4020	241-AX-151	241-AY-151
AY	8021	241-AY-152	241-AX-103
AY	8022	241-AY-152	241-AX-103
AY	8023	241-AY-152	241-AX-102
AY	8024	241-AY-152	241-AX-102
AY	8025	241-AY-152	241-AX-101
AY	8026	241-AY-152	241-AX-101
AY	8027	241-AY-152	241-AX-104
AY	8028	241-AX-104-04D-U5	241-AY-152-U7
AY	8061	241-AY-152	241-AX-104
AY	8063	241-AY-152	241-AX-101
AY	8064	241-AY-152	241-AX-103
AY	8064	241-AY-152	241-AX-102
AY	8656	241-AX-151	244-CR DCRT
B	9653/141	221-B	None Identified
B	D601D505	241-AZ-152	241-AY-152
B	V-341	241-BX-154	221-B
B	V200	241-B-154	221-B
B	V2000	241-BXR-152	241-BX-155
B	V2001	241-BX-155	241-BR-152
B	V210V111	241-B-154	241-C-151

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
B	V214/8902	241-B-154	221-B
B	V225	241-B-151	241-ER-151
B	V235	241-BX-153	241-B-151
B	V236	241-BX-153	241-B-151
B	V237	241-B-151	241-BX-101
B	V242	241-BX-153	241-B-152
B	V252	241-BX-153	241-B-152
B	V253	241-BX-153	241-B-152
B	V285	241-BX-154	241-B-252
B	V305	241-B-252	241-BY-109
B	V130	241-B-154	241-C-152
B	V313	242-B-151	242-B Evaporator
B	V314	241-BX-155	241-B-151
B	V314	242-B-151	242-B Evaporator
B	V319	241-BX-155	241-B-152
B	V329	241-B-154	221-B
B	V330	241-B-154	221-B
B	V331	241-B-154	221-B
B	V332	241-B-154	221-B
B	V333	241-B-154	221-B
B	V334	241-B-154	221-B
B	V336	241-BX-154	221-B
B	V337	241-BX-154	221-B
B	V339	241-BX-154	221-B
B	V340	241-BX-154	221-B
B	V342	241-BX-154	221-B
B	V718/817	241-AR-151	244-AR Vault
B	V743	221-B	241-C-154
B	829	241-B-106-06A-C	241-B-109-09A-A
B	BWCTL	241-B-103-03A-C	241-B-106-06A-A
B	Unknown	241-B-201	241-B-109
B	Unknown	241-B-112	241-B-111
B	Unknown	241-B-111	241-B-110
B	231/232/233/234	244-BXR-Vault	241-B-104, 107,110
B	227/228	244-BXR-Vault	241-B-108, 111
B	223/224/225/226	244-BXR-Vault	241-B-106, 105,109
B	827	241-BX-103-03A-UA	241-BX-102-02A-U4
B	V290	241-B-201	241-B-252-L1
B	V291	241-B-201	241-B-252-L2
B	V292	241-B-202	241-B-252-L3
B	V293	241-B-202	241-B-252-L4
B	V294	241-B-203	241-B-252-L5
B	V295	241-B-203	241-B-252-L6
B	V296	241-B-204	241-B-252-L7
B	V297	241-B-204	241-B-252-L8
B	V243	241-B-252-U6	241-B-152-L2
B	V289	241-BX-154-U9	241-BX-302B
B	Drain Line	241-BX-302B	241-BX-154
B	V335	221-B	241-BX-154
B	V238	241-B-151	241-153 & 241-B-252
B	Drain Line	241-B-301B	241-B-252 & 241-B-153
B	V230	241-B-153-U1	241-B-151-L1
B	V247	241-B-153-U4	241-B-153-L6
B	V246	241-B-153-U5	241-B-152-L5
B	V245	241-B-153-U6	241-B-153-L4
B	V231	241-B-153-U8	241-B-151-L2

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
B	V260	241-B-153-L2	241-B-111
B	V261	241-B-153-L3	241-B-110
B	V262	241-B-153-L4	241-B-110
B	V263	241-B-153-L5	241-B-110
B	V266	241-B-153-L8	241-B-107
B	V267	241-B-153-L9	241-B-107
B	V268	241-B-153-L10	241-B-107
B	V271	241-B-153-L13	241-B-104
B	V272	241-B-153-L14	241-B-104
B	V273	241-B-153-L15	241-B-104
B	V201	241-B-154-U8	241-B-302B
B	Drain Line	241-B-302B	241-B-154
B	V203	241-B-154-L2	Crib
B	V204	241-B-154-L3	Sump
B	V208	241-B-154-L7	241-B-152-U6
B	V130	241-B-154-L8	241-C-152-U4
B	V209	241-B-154-L9	241-B-152-U5
B	V211	241-B-154-L11	241-B-152-U4
B	V213	241-B-154-L13	241-B-151-U4
B	V215	241-B-154-L15	241-B-151-U3
B	V238	241-B-152	241-B-151
B	V240	241-B-152-U3	241-B-151-U5
B	V233	241-B-151-L4	241-B-101 Failed
B	V234	241-B-151-L5	241-B-101
B	V250	241-B-152-L11	241-B-106
B	PL2021	242-B	241-B-106
B	Unknown	242-B	241-B-106
B	V314	242-B	242-B-151-U2
B	V307	242-B-151	241-B-108
B	V308	242-B-151-L2	241-B-109
B	V309	242-B-151	241-B-107
B	V310	242-B-151	241-B-105
B	V311	242-B-151	241-B-104
B	826	241-B-109-09A-D	241-B-108-08A-D
B	824	241-B-112-012A-C	241-B-108-08A-A
B	BWCTL-M2	241-B-102-02A-A	241-B-108-08A-C
B	9017	241-B-102-02C-U1	241-BR-152-L7
B	9047	241-B-101-01C-U2	241-BR-152-U1
B	9044	241-B-101-01A-U2	241-BR-152-U2
B	9041	241-B-102-02C-U2	241-BR-152-U3
B	9038	241-B-102-02A-U2	241-BR-152-U4
B	9035	241-B-103-03C-U2	241-BR-152-U5
B	9032	241-B-103-03A-U2	241-BR-152-U6
B	9020	241-B-101-01C-U1	241-BR-152-L9
B	9014	241-B-103-03C-U1	241-BR-152-L10
B	9010	241-B-101-01A-U1/01B-U2	241-BR-152-L11
B	9006	241-B-102-02A-U1/02B-U2	241-BR-152-L12
B	9002	241-B-103-03A-U1/03B-U2	241-BR-152-L13
B	9031	241-B-101-01A-U3	241-BR-152-L14
B	9037	241-B-102-02A-U3	241-BR-152-L15
B	V312	241-B-104	241-B-151
B	6253	241-B-302A	241-BXR-152 & 241-BR-152
BX	9012	241-BXR-151	241-BR-152
BX	9025	241-BXR-151	241-BR-152
BX	6249	241-BYR-152	241-BXR-152
BX	6449	241-BYR-153	241-BXR-153

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
BX	7412	241-BYR-154	241-BXR-151
BX	7425	241-BYR-154	241-BXR-151
BX	9212	241-BYR-152	241-BXR-151
BX	9212	241-BYR-152	241-BXR-152
BX	9225	241-BYR-152	241-BXR-151
BX	9225	241-BYR-152	241-BXR-152
BX	9249	241-BYR-152	241-BXR-152
BX	9412	241-BYR-153	241-BXR-151
BX	9425	241-BYR-153	241-BXR-151
BX	9425	241-BYR-153	241-BXR-153
BX	9449	241-BYR-153	241-BXR-153
BX	9623	241-BYR-154	241-BXR-151
BX	9624	241-BXR-151	241-BR-152
BX	9626	241-BYR-153	241-BXR-151
BX	9626	241-BYR-153	241-BXR-153
BX	9630	241-BXR-151	241-BR-152
BX	9631	241-BYR-152	241-BXR-152
BX	9631	241-BYR-152	241-BXR-151
BX	9632	241-BYR-153	241-BXR-151
BX	9632	241-BYR-153	241-BXR-153
BX	9633	241-BYR-154	241-BXR-151
BX	9633	241-BYR-154	241-BXR-151
BX	9633	241-BYR-154	241-BXR-151
BX	9633	241-BYR-154	241-BXR-151
BX	9633	241-BYR-154	241-BXR-151
BX	9636	241-BXR-151	241-B-252
BX	9644	241-BXR-151	None Identified
BX	9644	241-BXR-151	None Identified
BX	9644	241-BXR-151	None Identified
BX	4005/810	241-AX-151	244-AR Vault
BX	4107VO331	241-AX-151	241-A-152
BX	6307/V336	241-BYR-152	241-BX-153
BX	7435/9385/V304	241-BYR-154	241-B-252
BX	7507/9712	241-BYR-154	B-Swamp
BX	814/4015	241-AX-151	None Identified
BX	9247	241-BX-101-01C-U2	241-BXR-152-U1
BX	9241	241-BX-102-02C-U2	241-BXR-152-U3
BX	9217	241-BX-102-02C-U1	241-BXR-152-L7
BX	9235	241-BX-103-03C-U1	241-BXR-152-U5
BX	9214	241-BX-103-03C-U2	241-BXR-152-L10
BX	9232	241-BX-103-03A-U2	241-BSR-152-U6
BX	9202	241-BX-103-03A-U2	241-BXR-152-L13
BX	9256	241-BX-103-03B-U2	241-BX-103-03A-U1
BX	Unknown	241-BX-103	241-BX-102
BX	Unknown	241-BX-102	241-BX-101
BX	9263	241-BX-102-02B-U2	241-BX-102-02A-U1
BX	9270	241-BX-101-01B-U2	9270
BX	9237	241-BX-102-02A-U3	241-BXR-152-L15
BX	9238	241-BX-102-02A-U2	241-BXR-152-U4
BX	9206	241-BX-102-02A-U1	241-BXR-152-L12
BX	9465	241-BX-106-06B-U2	9402/9456
BX	9435	241-BX-106-06C-U2	241-BXR-153-U5
BX	9414	241-BX-106-06C-U2	241-BXR-153-L10
BX	819/818	241-BX-106-06A-U4	241-BX-110-C
BX	820	241-BX-106-C	241-BX-105-05A-A

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
BX	9432	241-BX-106-06A-U2	241-BXR-153-U6
BX	9441	241-BX-105-05C-U2	241-BXR-153-U3
BX	9417	241-BX-105-05C-U1	241-BXR-153-L7
BX	9437	241-BX-105-05A-U3	241-BXR-153-L15
BX	9438	241-BX-105-05A-U2	241-BX-153-U4
BX	9406/9463	241-BX-105-05A-U1	241-BXR-153-L12
BX	9463	241-BX-105-05B-U2	9406/9463
BX	9231	241-BX-101-01A-U3	241-BXR-152-L14
BX	9244	241-BX-101-01A-U2	241-BXR-152-U2
BX	V355	241-BX-101	241-BX-153-L17
BX	822	241-BX-105-05A	241-B-109-09A-C
BX	823	241-BX-105-05A-E	241-B-112-012A-A
BX	9420	241-BX-104-04C-U1	241-BXR-153-L9
BX	9447	241-BX-104-04C-U2	241-BXR-153-U1
BX	SN-230/215/214/213	241-BX-104-04B-U1	244-BX-Tanks-109, 111,112
BX	V353	241-BX-104	241-BX-153-L15
BX	9470/9410	241-BX-104-04B-U2	241-BX-104-04A
BX	V352	241-BX-104	241-BX-153-L14
BX	V351	241-BX-104	241-BX-153-L13
BX	9444	241-BX-104-04A-U2	241-BXR-153-U2
BX	9431	241-BX-104-04A-U3	241-BXR-153-L14
BX	9456/9402	241-BX-106-06A-U1	241-BXR-153-L13
BX	816	241-BX-112-012A-C	241-BX-111-011A-A
BX	817	241-BX-111-011A-C	241-BX-110-010A-A
BX	V345	241-BX-109	241-BX-153-L11
BX	V350	241-BX-112	241-BX-153-L7
BX	SN216/217	241-BX-107	241-BX-110 & 244 BX
BX	V347	241-BX-107	241-BX-153-L9
BX	V348	241-BX-107	241-BX-153-L10
BX	V346	241-BX-107	241-BX-153-L8
BX	V349	241-BX-104	241-BX-153
BX	V344	241-BX-110	241-BX-153-L6
BX	V343	241-BX-110	241-BX-153-L5
BX	V342	241-BX-110	241-BX-153-L4
BX	9210/9270	241-BX-101-01B-U2	241-BXR-152-L11
BX	V318	241-BX-153-U7	241-BX-155-L5
BX	V317	241-BX-153-U8	241-BX-155-L4
BX	V316	241-BX-153-U9	241-BX-155-L3
BX	V338	241-BX-153-U12	241-BX-302A
BX	DrainCB-302A	241-BX-302A	241-BX-153
BX	V282	241-BX-155-U2	241-BX-154-L3
BX	V283	241-BX-155-U3	241-BX-154-L4
BX	V284	241-BX-155-U4	241-BX-154-L5
BX	V323	241-BX-155-U7	241-BX-302C
BX	Drain (BX-302B)	241-BX-155	241-BX-302C
BX	V315	241-BX-155	241-B-151-U6
BY	9625/9212	241-BYR-152	241-BXR-151
BY	9625/9212	241-BYR-152	241-BXR-152
BY	6402	241-BYR-153-L13	241-BY-106-06A-U1
BY	6414	241-BYR-153-L10	241-BY-106-06C-U1
BY	6444	241-BYR-153-U2	241-BY-104-04D-U2
BY	6438	241-BYR-153-U4	241-BY-105-05D-U2
BY	6432	241-BYR-153-U6	241-BY-106-06D-U2
BY	6435	241-BYR-153-U5	241-BY-106-06C-U2
BY	6441	241-BYR-153-U2	241-BY-105-05C-U2
BY	6417	241-BYR-153-L7	241-BY-105-05C-U1

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
BY	6406	241-BYR-153-L12	241-BY-105-05A-U1
BY	6410	241-BYR-153-L11	241-BY-104-04A-U1
BY	6420	241-BYR-153-L9	241-BY-104-04C-U1
BY	6447	241-BYR-153-U1	241-BY-104-04C-U2
BY	6443/9453	241-BYR-153	241-BXR-153 & 241-BX-104-04C
BY	6232	241-BY-103-03D-U2	241-BYR-152-U6
BY	6202	241-BY-103-03A-U1	241-BYR-152-L13
BY	SN-201	241-BY-103-U2	SN-200 & SN-203
BY	6214	241-BY-103-03C-U1	241-BYR-152-L10
BY	6235	241-BY-103-03C-U2	241-BYR-152-U5
BY	810	241-BY-103-03C	241-BY-106-06D-A
BY	809	241-BY-103-03C-A	241-BY-105-05D-C
BY	SN-207	241-BY-103-03A	244-BX-D
BY	808	241-BY-102	241-BY-105-05D-D
BY	806	241-BY-102-02A-U8	241-BY-111-U4-011D
BY	814	241-BY-102-02B	241-BY-111-U8-011D
BY	6238	241-BY-102-02D-U2	241-BYR-152-U4
BY	6206	241-BY-102-02A-U1	241-BYR-152-L12
BY	6217	241-BY-102-02C-U1	241-BYR-152-L7
BY	6241	241-BY-102-02C-U2	241-BYR-152-U3
BY	SN-200	241-BY-102-02A-U2	SN-201
BY	SN-202	241-BY-105-05A-U2	SN-201
BY	807	241-BY-105-05D-A	241-BY-104-04D-C
BY	806	241-BY-104-04D-A	241-BY-107-07A-D
BY	6247	241-BY-101-01C-U2	241-BYR-152-U1
BY	6244	241-BY-101-01D-U2	241-BYR-152-2
BY	6210	241-BY-101-01A-U1	241-BYR-152-L11
BY	6220	241-BY-101-01C-U1	241-BYR-152-L9
BY	822	241-BY-101-01C-C	241-BY-104-04D
BY	821	241-BY-101-01C-A	241-BX-105-05A-C
BY	Unknown	241-BY-106-06D, C	241-BY-109
BY	PL-P11	241-BY-112-012D	241-BY-109-09A-U6
BY	SN-205/207	241-BY-109-09A-U5	Capped
BY	7406/9394	241-BY-109-09A-U4	241-BYR-154-L12
BY	PL-P22	241-BY-109	241-BY-108
BY	SN-204	241-BY-108-08A-U1	Capped
BY	813	241-BY-108-08A-A	241-BY-107-07A-C
BY	805	241-BY-107-07A-A	241-BY-110-010A-C
BY	801	241-BY-11-012D-U7	241-BY-111-011D-U7
BY	SN-207	241-BY-112-012A	801
BY	7406/9394	241-BY-112-012A-U1	241-BY-109-09A-U4
BY	800	241-BY-112-012D-U6	241-BY-111-011D-U6
BY	7437	241-BY-112-012D-U1	241-BYR-154-L15
BY	7438	241-BY-112-012D-U2	241-BYR-154-U4
BY	7417	241-BY-112-012C-U1	241-BYR-154-L10
BY	7441	241-BY-112-012C-U2	241-BYR-154-U3
BY	7447	241-BY-111-011C-U2	241-BYR-154-U2
BY	7420	241-BY-111-011C-U1	241-BYR-154-L9
BY	7410	241-BY-111-011A-U1	241-BYR-154-L11
BY	SN-206	241-BY-111-011A-U2	Capped
BY	7444	241-BY-111-011D-U2	241-BYR-154-U2
BY	7431	241-BY-111-011D-U1	241-BYR-154-L14
BY	Unknown	241-BY-112	241-BY-111
BY	804	241-BY-110-010-A	241-BY-111-A
BY	SN-211	241-BY-110-01A	SN-204
BY	815	241-BY-110-010A-D	241-BX-112-012-A-A

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
BY	9613	244-BXR-Tank-003-U2	244-BXR-011
BY	9604	244-BXR-Tank-003	244-BXR-011-U2
BY	Unknown	244-BXR-Tank-002-U2	244-BXR-011
BY	9648	244-BXR-Tank-002-U1	241-BXR-151-L6
BY	9647	244-BXR-Tank-003-U1	241-BXR-151-L4
BY	9622	244-BXR-Tank-001-U3	241-BXR-151-L3
BY	9601	244-BXR-Tank-001	241-BXR-151-L1
BY	9616	244-BXR-011-U1	241-BXR-151-L5
BY	9765	241-BXR-157	244-BXR Vault
BY	Drain Line	241-BYR-154	244-BXR Vault
BY	6253	241-BYR-152	241-BXR-152
BY	9719	241-BXR-151-U24	241-ER-151-L3
C	V1000	241-CR-152	244-CR Vault
C	Wall Drain	241-CR-152	241-CR-01C
C	V101	241-C-153	None Identified
C	V109	241-C-151-U2	241-A-101-A
C	V110	241-C-151	244-CR Vault
C	V111	241-C-151-U4	Capped
C	V113	241-C-151	241-A-01-A
C	V113	241-C-151	241-AX-103
C	V114	241-C-151	241-C-301
C	V121	241-C-152	Stubbed off
C	V130	241-C-152-U4	241-B-154-L8
C	V136	241-C-153	Stubbed off
C	V137	241-C-153	C-110
C	V141	241-C-153	C-110/valve box
C	V142	241-C-153	None Identified
C	V147	241-C-153	Stubbed off
C	SN275	241-C-Valve Pit	244-CR-Vault
C	Cascade Line	241-C-101	241-C-102
C	Cascade Line	241-C-102	241-C-103
C	Cascade Line	241-C-104	241-C-105
C	Cascade Line	241-C-105	241-C-106
C	Cascade Line	241-C-109	241-C-108
C	Cascade Line	241-C-108	241-C-107
C	Cascade Line	241-C-112	241-C-111
C	Cascade Line	241-C-111	241-C-110
C	Cascade Line Cleanout (2 Pipes)	241-C-104	241-C-105
C	Cascade Line Cleanout (2 Pipes)	241-C-105	241-C-106
C	Cascade Line Cleanout (2 Pipes)	241-C-101	241-C-102
C	Cascade Line Cleanout (2 Pipes)	241-C-102	241-C-103
C	8552	241-C-201, 202,203,204	241-CR-151-U2
C	8555	241-CR-151	C-200's
C	V175	241-C-252-U5	201-C Hot Semi Works
C	V107	241-C-252-U4	241-C-151-l8
C	V172	241-C-252-U1	241-C-109
C	V163	241-C-204	241-C-252-L8
C	V162	241-C-204	241-C-252-L7
C	V160	241-C-203	241-C-252-L5
C	V161	241-C-203	241-C-252-L6
C	V159	241-C-202	241-C-252-L4
C	V158	241-C-202	241-C-252-L3
C	V157	241-C-201	241-C-252-L2
C	V156	241-C-201	241-C-252-L1
C	V839	241-C-154	201-C Hot Semi Works
C	8900	201-C	244-CR-Tank-003-U10

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
C	V122	241-C-105-05A-U4	241-C-152-L8
C	V120	241-C-152-L6	241-C-153-U4
C	V119	241-C-152-L5	241-C-153-U5
C	V118	241-C-152-L4	241-C-153-U6
C	V115	241-C-105-05A-U5	241-C-152-L1
C	8032	241-C-103-03A-U2	241-CR-152-U6
C	8035	241-C-103-03C-U2	241-CR-152-U5
C	8014	241-C-103-03C-U1	241-CR-152-L10
C	8002	241-C-103-03A-U1	241-CR-152-L13
C	Unknown	241-C-103-03B-U1	241-C-Valve Pit
C	Unknown	241-C-103-03B-U2	Line 8002
C	Drain Line	241-C-103	241-C-Valve Pit
C	SN250	241-C-Valve Pit	241-C-103
C	SN254	241-C-104	241-C-Valve Pit
C	8037	241-C-102-02A-U3	241-CR-152-L15
C	8038	241-C-102-02A-U2	241-CR-152-U4
C	8006	241-C-102-02A-U1	241-CR-152-L12
C	V843	241-C-102	241-CR-151-L9
C	V844	241-C-102	241-CR-151-L9
C	Drain Line	241-C-102-02B-U3	241-C-Valve Pit
C	Unknown	241-C-102-02B-U2	Line 8006
C	8041	241-C-102-02C-U2	241-CR-152-U3
C	8017	241-C-102-02C-U1	241-CR-152-L7
C	8630	241-CR-152-L1, 2,3,4,5,6	241-CR-151-U9
C	8047	241-C-101-01C-U2	241-CR-152-U1
C	8044	241-C-101-01A-U2	241-CR-152-U3
C	V1001	241-CR-152-U4A	241-CR-153-U3A
C	8648	241-CR-151-L6	244-CR-Tank-002-U1
C	8636/V105	241-CR-151-U1	241-C-151-L6
C	Drain Line	244-CR-Tank-002	241-CR-151
C	8653/8618	241-ER-151-L9	241-CR-151-U14
C	Unknown	241-C-106-06B-U2	Line 8202
C	Drain-301	241-C-106-06C-U8	To Metal Filter Drain
C	Drain-302	241-C-106-06C-U9	To Process Building Floor Drain
C	Unknown	241-C-105-05B-U2	Line 8206
C	V150	241-C-104	241-C-153-L15
C	V149	241-C-104	241-C-153-L14
C	V148	241-C-104	241-C-153-L13
C	V138	241-C-110	241-C-153-L3
C	V139	241-C-110	241-C-153-L4
C	V140	241-C-110	241-C-153-L5
C	V143	241-C-107	241-C-153-L8
C	V144	241-C-107	241-C-153-L9
C	V145	241-C-107	241-C-153-L10
C	V100	241-C-151-L1	241-C-153-U9
C	V108/812	241-C-151-U1	244-AR-Tank-002-T9
C	V102	241-C-101	241-C-151-L4
C	V103	241-C-105	241-C-151-L3
C	V104	241-C-101	241-C-151-L4
C	Drain Line	241-C-252	241-C-153 & 241-C-151
C	V210	241-C-151	241-B-154
C	V219	241-ER-151-L4	Capped
C	V365	241-ER-151-U8	Flow meter Box
C	Unknown	241-C-104-04B-U3	241-C-Valve Pit
C	Unknown	241-C-105-05B-U3	Capped
C	Unknown	241-C-104-04B-U2	Line 8210

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
C	Drain Line	241-C-104-04C	241-C-Valve Pit & 241-CR-153
C	Drain Line	241-C-107-U1	241-C-Valve Pit
C	Unknown	241-C-112	241-C-Valve Pit
C	V155	142-C-252	241-C-301
C	V172	241-C-252	241-C-109, 112
C	Unknown	241-C-110-U1	241-C-Valve Pit
C	Process Waste Feed Line	241-C-103	241-C-801
C	Unknown	241-C-105	Unknown
C	V1002	241-CR-152-U6A	241-CR-153-U1A
C	8107/V844	241-C-102	241-CR-152-L8
C	8020	241-C-101-01C-U1	241-CR-152-L9
C	8010	241-C-101-01A	241-CR-152-L11
C	Unknown	241-C-101-01B-U1	8010 to 241-CR-152
C	8031	241-C-101-01A-U3	241-CR-152-L14
C	8025	241-CR-151	241-CR-152
C	8052	251-CR-152	Unknown
C	8053	241-C-101C	241-CR-152
C	8624	241-CR-152-U8	241-CR-151-U9
C	8012	241-CR-152-U9, U11, U12	241-CR-151-U4
C	8625	241-CR-153-U8	241-CR-151-U6
C	V228	241-CR-153-U6A	241-ER-153-7
C	8232	241-C-106-06A-U2	241-CR-153-U6
C	8235	241-C-106-06C-U2	241-CR-153-U5
C	8238	241-C-105-05A-112	241-CR-153-U4
C	8241	241-C-105-05C-U2	241-CR-153-U3
C	8244	241-C-104-04A-U2	241-CR-153-U2
C	8247	241-C-104-04C-U2	241-CR-153-U1
C	8225	241-CR-153-U10	241-CR-151-U10
C	8237	241-C-105-05A-U3	241-CR-153-L15
C	8231	241-C-104-04A-U3	241-CR-153-L14
C	8202	241-C-106-06A-U1	241-CR-153-L13
C	8206	241-C-105-05A-U1	241-CR-153-L12
C	8210	241-C-104-04A-U10	241-CR-153-L11
C	8214	241-C-106-06C-U1	241-CR-153-L10
C	8220	241-C-104-04C-U1	241-CR-153-L9
C	8217	241-C-105-05C-U1	241-CR-153-L7
C	8631	241-CR-153-L (1-6)	241-CR-151-U8
C	8644	241-CR-151-U12, 13,15	241-CR-151
C	8601	241-CR-151-L1	244-CR-Tank-001
C	8647	241-CR-151-L4	244-CR-003-U1
C	8616	241-CR-151-L5	244-CR-011-U1
C	8263	241-CR-05B-U2	Line 8206
C	8253	241-C-104	241-CR-153 (grouted)
C	8270	241-C-104	Line 8210
C	8212	241-CR-151	241-CR-153
C	8400	8402	8408
C	8402	241-C-201	8400
C	8404	241-C-202	8400
C	8406	241-C-203	8400
C	8408	241-C-204	8400
C	8410	8411	8423
C	8411	241-C-201	8410
C	8415	241-C-202	8410
C	8419	241-C-203	8410
C	8423	241-C-204	8410
C	855-2	241-CR-151	241-C-105

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
C	8604	244-CR-001	241-CR-002
C	8609	244-CR-011	244-CR-003Q
C	8622	241-CR-151	241-CR-001-TK
C	8653/8901	241-ER-151	241-CR-TK-003
C	8764/8765/8675	241-CR-151	244-CR Vault Sump
C	8670	Unknown	244-CR-Vault
C	SW Main	C Valve Box (between 241-C-111 and 241-C-112)	C Valve Box (between 241-C-110 and 241-C-111)
C	SW 104	SW Main	241-C-104
C	SW 107	SW Main	241-C-107
C	SW 108	C Valve Box (between 241-C-111 and 241-C-112)	241-C -108
C	SW 109	C Valve Box (between 241-C-111 and 241-C-112)	241-C-109
C	SW 110	SW Main	241-C-110
C	SW 111	C Valve Box (between 241-C-111 and 241-C-112)	241-C-111
C	SW 112	C Valve Box (between 241-C-111 and 241-C-112)	241-C-112
C	2805-E1	BY cribs to valve pit	Valve pit connection to 241-C Valve Pit between C-111 and C-112 and to BC cribs
C	2805-E2	BY cribs to valve pit	Valve pit connection to 241-C Valve Pit between C-111 and C-112 and to BC cribs
C	2904-E1	241--C-103 Pump Pit 241-CR-03A	2904-E1 Corrugated Metal Pipe to B Pond
C	V050 (segment)	241-CR-151	Capped
C	V0511	241-CR-151	Capped
C	V0512	244-CR Vault	Capped
C	A4013	241-CR-152	241-AX-151
S	1006	205-S	240-S-152
S	1115	240-S-151	202-S
S	1140	240-S-151	202-S
S	1145	240-S-151	202-S
S	1236	240-S-151	202-S
S	1540	240-S-151	202-S
S	1541	240-S-151	202-S
S	3130	240-S-151	202-S
S	3591	240-S-151	202-S
S	3592	240-S-151	202-S
S	3603	240-S-151	None
S	3610	240-S-151	202-S
S	3635	240-S-151	202-S
S	3658	240-S-151	202-S
S	3666	240-S-151	202-S
S	4242	240-S-151	202-S
S	Unknown	242-S Evaporator	241-S-103
S	Unknown	242-S Evaporator	241-S-103
S	Unknown	240-S-152	204-S
S	SL101	241-S-152	Blocked
S	SL115	241-S-A	241-S-C
S	SL117	241-S-C	241-SX-A
S	SL126	241-S-D	None Identified
S	SL138	241-S-152	242-S Evaporator
S	SL139	241-S-152	Blocked
S	SL139/SL114	242-S Evaporator	241-S-B
S	SN217	241-S-C	241-SX-A
S	SN218	241-S-D	241-SX-B

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
S	SL-121	241-S-101-01A-B	241-S-B-R5
S	SN221	241-S-101-01-A	241-S-B-R14
S	V541	241-S-101	101-S Caisson 241-S-151-L19
S	V538	241-S-104	241-S-151-L16
S	V539	241-S-104	241-S-151-L17
S	V536	241-S-107	241-S-151-L14
S	V5006	241-S-104-04A	241-S-107-07A
S	540	241-S-107-07A	241-S-151-L18
S	V537	241-S-107	241-S-151-L15
S	SN245	241-S-107	244-S
S	SN246	241-S-107	244-S
S	SN247	241-S-107	244-S
S	SN248	241-S-107	244-S
S	SN249	241-S-107	244-S
S	Drain Line	241-S-107	241-S-C Flush Pit
S	Drain Line	241-S-107	241-S-D Flush Pit
S	Flush Line	241-S-C-L17	241-S-C Flush Pit
S	Flush Line	241-S-D-R17	241-S-D Flush Pit
S	SN226	241-S-107-07A-A	241-S-D-R14
S	SN246	241-S-107-07A-B	241-S-D-R2
S	V534	241-S-110	241-S-151-L12
S	V535	241-S-110	241-S-151-L13
S	SL127	241-S-110-10A	241-S-D-R7
S	SN227	241-S-110-10A	241-S-D-R15
S	Drain Line	241-S-302-B	241-S-302-A
S	SN242	241-S-02A-U6	241-S-A-L12
S	SN214	241-S-102	241-S-V-R14
S	SN213	241-S-102	241-S-A-L1
S	SL140	241-S-02B-U2	241-S-A-L5
S	234	241-S-102-02A-A	Unknown
S	235	241-S-102-02A-AA	Unknown
S	Unknown	241-S-102-BB	Flush Pit
S	Drain Line	241-S-102-02A-F	241-S-152
S	SL125	241-S-112-12A-B	241-S-C-L9
S	SL123	241-S-109-09A-B	241-S-C-L7
S	SL124	241-S-108-08A-B	241-S-C-L5
S	SN224	241-S-108-08A-A	241-S-C-L14
S	SN222	241-S-105-05A	241-S-B-R16
S	SN220	241-S-106-06A-A	241-S-A-L16
S	SL122	241-S-105-05A	241-S-B-R9
S	Flush Line	241-S-B-R8/R17	241-S-B Flush Pit
S	SN225	241-S-112-12A-A	241-S-C-L16
S	SL120	241-S-106-B	241-S-A-L9
S	SL128	241-S-111-11A-B	241-S-D-R9
S	SN228	241-S-111-11A-A	241-S-D-R16
S	SN239	241-S-C-L19	241-S-D-R19
S	SN223	241-S-109-09A-A	241-S-C-L15
S	SN215	A-L14	241-S-C-L1
S	SL134	241-S-A-L18	241-S-D-R18
S	Unknown	241-S-A-L19	241-S-B-R19
S	SL219	241-S-103-03A-A	241-S-A-L15
S	SL119	241-S-103-03A-B	241-S-A-L7
S	Flush Line	241-S-A-L8/L17	241-S-A Flush Pit
S	V519	240-S-151-L2	241-S-151-U18
S	V517	202-S	241-S-151-U16
S	V516	240-X-151-L7	241-S-151-U15

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
S	V515	240-S-151-L7	241-S-151-U14
S	V514	240-S-151-L6	Capped
S	V513	240-S-151-L12	241-S-151-U11
S	V512	240-S-151-L16	241-S-151-U10
S	V509	240-S-151-L16	241-S-151-U7
S	V508	240-S-151-L17	241-S-151-U8
S	V521	241-S-151-L17	241-S-151-B1
S	V533	241-S-151-L11	216-S-1 Crib
S	V560	244-S Catch Station	241-S-S-151
S	SL116	211-S-B-R10	241-S-D-R3
S	SN216	241-S-B-R12	241-S-D-R1
S	Unknown	241-S-C-L18	241-S-D-R19
S	SN200	241-S-102	241-S-152-5
S	SL139	241-S-152-4	Capped
S	SN201	241-S-102	241-S-152-7
S	Unknown	241-S-103	Clean Out Boxes-9, 10
S	Unknown	241-S-109	Clean Out Boxes-13, 14
S	V557	240-S-151	240-S-302
S	V556	240-S-151	240-S-302
S	V555	240-S-152-L1	240-S-151-U17
S	V554	240-S-151	240-S-152-L3
S	1238	202-S	240-S-151-U10
S	V553	240-S-151-U8	240-S-152-L3
S	V552	240-S-151-U3	240-S-152-L2
S	1045	240S-152	204-S
S	V544	240-S-151-L1	216-S Swamp
S	V517	240-S-151	Capped
S	V547	240-S-151	216-S Crib
S	V548	240-S-151	V544 to 216-S-17 Crib
S	V550	240-S-151	V544 to 216-S-17 Crib
S	V-510	241-S-151	241-S-304
S	V-520	241-S-151	244-S
S	V-522	241-S-151	244-S
S	V-542	241-S-151	241-S-304
S	V-560	241-S-151	244-S
SX	V569	241-SX-302-A	241-SX-151-L1
SX	V762/4853	241-SX-152	241-UX-154
SX	SN241	241-SX-101-01A-A	241-SX-B-R14
SX	SL137	241-SX-101-01A	241-SX-B-R5
SX	V578	241-SX-101	241-SX-151-L10
SX	SL133	241-SX-104-04A-B	241-SX-B-R7
SX	SN233	241-SX-104-04A-A	241-SX-B-R15
SX	V584	241-SX-104	241-SX-151-L16
SX	312	241-SX-102	Clean Out Boxes-15, 16,17,18,19,20,21,22
SX	318	241-SX-102	241-SX-A Flush Pit
SX	SL130	241-SX-102-02B-B	241-SX-A-L5
SX	SN230	241-SX-102-02B-A	241-SX-A-L14
SX	V579	241-SX-105-05A-A	241-SX-B-R16
SX	V583	241-SX-105	241-SX-151-L15
SX	SL132	241-SX-105	241-SX-B-R9
SX	105	241-SX-105	241-SX-152
SX	108	241-SX-108-08A-1	241-SX-152
SX	109	241-SX-109-09A-1	241-SX-152
SX	107	241-SX-107-07A-1	241-SX-152
SX	V576	241-SX-107	241-SX-151-L8
SX	V575	241-SX-108	241-SX-151-L7

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
SX	V570	241-SX-110	241-SX-151-L2
SX	V571	241-SX-111	241-SX-151-L2
SX	110	241-SX-110-10A-1	241-SX-152
SX	111	241-SX-111-11A-1	241-SX-152
SX	112	241-SX-112-12A-1	241-SX-152
SX	113	241-SX-113-13A-1	241-SX-152
SX	114	241-SX-114-14A-1	241-SX-152
SX	115	241-SX-115-15A-1	241-SX-152
SX	V574	241-SX-109	241-SX-151-L6
SX	V582	241-SX-106	241-SX-151-L14
SX	V580	241-SX-103-03	241-SX-151-L12
SX	SL129	241-SX-103-03B-B	241-SX-A-L7
SX	SN229	241-SX-103-03B-A	241-SX-A-15
SX	103	241-SX-103-03-A	Capped
SX	V572	241-SX-112	241-SX-151-L4
SX	V591	241-SX-114	241-SX-151-L23
SX	SL131	241-SX-106-06A-B	241-SX-151-L9
SX	SN231	241-SX-106-06A-A	241-SX-A-L16
SX	Unknown	241-SX-A-L19	241-SX-B-R19
SX	Unknown	241-SX-A-L18	241-SX-B-R18
SX	Flush Line	241-SX-A-L17	241-SX-A Flush Pit
SX	Flush Line	241-SX-A-R17	241-SX-B Flush Pit
SX	Drain Line	241-SX-B	241-SX-A Flush Pit
SX	Unknown	241-SX-106	Clean Out Boxes-24, 25
SX	V577	241-SX-151-L9	241-SX-152
SX	V567/V581	241-SX-151-U7	241-SX-152
SX	V595	241-SX-302-A	241-SX-152
SX	456	241-SX-152	Capped
SX	V526	241-SX-152-U13	241-S-151-L4
SX	V564	241-SX-151-U11	241-SX-151-U2
SX	V527	241-SX-151-U10	241-S-151-L5
SX	V566	241-SX-151-U9	241-SX-151-U5
SX	V530	241-SX-151-U4	241-S-151-L5
SX	V528	241-SX-151-U8	241-S-151-L6
SX	V529	241-SX-151-U6	241-S-151-L8
SX	V563	241-SX-151-U1	241S-302A
SX	V542	241-S-304	241-S-151
SX	V543	241-S-304	241-S-151
SY	SN282	241-S-152-11	Failed
SY	SN216	241-S-152-9	Capped
SY	SL175	241-S-152-8	Failed
SY	SN281	241-S-152-10	Failed
SY	SL100	241-S-152	241-UC-L3
SY	SL175	241-SY-A-L3	R-231 Project
T	V399	241-T-152	241-TX-155
T	V405	241-T-152	241-TX-155
T	V405	241-TX-155	241-T-152
T	V411	241-T-151	241-TX-155
T	V412	241-TX-155	Blocked
T	V597	241-TY-153	241-TX-153
T	V6002	241-TR-152	241-T-103
T	V6006	241-TR-152	241-T-102
T	V601	241-T-152	241-TX-153
T	V6010	241-TR-152	241-T-101
T	V610	241-TX-153	242-T Evaporator
T	V653	241-T-151	221-T

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
T	V654	241-T-151	221-T
T	V657	241-T-153	241-T-151
T	V658	241-T-153	241-T-151
T	V667	241-T-152	221-T
T	V668	241-T-152	221-T
T	V669	241-T-152	221-T
T	V671	241-T-152	224-T
T	V675	241-T-153	241-T-152
T	V676	241-T-153	241-T-152
T	V707	241-T-252	241-T-252
T	V695	241-T-107	241-T-153-L8
T	V692	241-T-110	241-T-153-L5
T	V691	241-T-110	241-T-153-L4
T	V690	241-T-110	241-T-153-L2
T	7624	241-TR-153-U14	Capped
T	6012	241-TR-153-U13	Capped
T	6165	241-TR-153-U6	241-TR-152-L1, 2,3,4,5,6
T	6017	241-T-102-02C-U1	241-TR-152-L7
T	6041	241-T-102-02C-U2	241-TR-152-U3
T	Unknown	241-T-102-02C-U2	6006
T	6037	241-TR-02-U3	241-TR-152-L15
T	6038	241-T-102-02A-U2	241-TR-152-U4
T	6035	241-T-103-03C-U2	241-TR-152-U5
T	6014	241-T-103-03C-U1	241-TR-152-L10
T	Unknown	241-T-103-03B-U2	6002
T	6032	241-T-103-03A-U2	241-TR-152-U6
T	6170	241-TR-152-U8	241-TR-153-U1
T	6160	241-TR-152-U9, 11,12	241-TR-153-U2
T	V718	241-T-204	241-T-252-L8
T	V717	241-T-204	241-T-252-L7
T	V716	241-T-203	241-T-252-L6
T	V715	241-T-203	241-T-252-L5
T	Unknown	241-T-203	241-T-101
T	Unknown	241-T-204	241-T-101
T	Unknown	241-T-202	241-T-101
T	Unknown	241-T-202	241-T-101
T	V714	241-T-202	241-T-252-L4
T	V713	241-T-202	241-T-252-L3
T	V712	241-T-201	241-T-252-L2
T	V711	241-T-201	241-T-252-L1
T	V707	221-T-10	241-T-252
T	V663	241-T-151-L8	216-T-36 Crib
T	V664	241-T-152	241-T-151
T	V727	241-T-301-B	241-T-252
T	V664	241-T-301-B	241-T-153
T	Unknown	241-T-101	241-T-102
T	Unknown	241-T-104	241-T-105
T	Unknown	241-T-107	241-T-108
T	Unknown	241-T-110	241-T-111
T	Unknown	241-T-111	241-T-112
T	Unknown	241-T-108	241-T-109
T	Unknown	241-T-105	241-T-106
T	Unknown	241-T-102	241-T-103
T	6047	241-T-101-01C-U2	241-TR-152-U1
T	6053	241-T-101-01C	241-TR-152
T	6020	241-T-101-01C-U1	241-TR-152-U2

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
T	Unknown	241-T-101	241-T-102-02B-U3
T	Unknown	241-T-101-01B-U3	241-T-105
T	Unknown	241-T-101-01B-U2	6010
T	6031	241-T-101-01A-U3	241-TR-152-L14
T	3044	241-T-101-01A-U2	241-TR-152-U2
T	V660	241-T-101	241-T-151-L4
T	V661	241-T-101	241-T-151-L5
T	V677	241-T-152-L8	241-T-153-U4
T	6172	241-T-102	241-TR-153
T	V698	241-T-106	241-T—153-L11
T	V699	241-T-105	241-T-153-L12
T	V701	241-T-104	241-T-153-L14
T	V700	241-T-104	241-T-153-L13
T	V702	241-T-104	241-T-153-L15
T	V697	241-T-107	241-T-153-L10
T	V696	241-T-107	241-T-153-L9
T	V695	241-T-107	241-T-153-L8
T	V692	241-T-110	241-T-153-L5
T	V691	241-T-110	241-T-153-L4
T	V690	241-T-110	241-T-153-L2
T	7624	241-TR-153-U14	Capped
T	6012	241-TR-153-U13	Capped
T	6165	241-TR-153-U6	241-TR-152-L1, 2,3,4,5,6
T	6017	241-T-102-02C-U1	241-TR-153-L7
T	6041	241-T-102-02C-U2	241-TR-153-U3
T	Unknown	241-T-102-02B-U2	6006
T	6037	241-T-02A-U3	241-TR-152-L15
T	6038	241-T-102-02A-U2	241-TR-152-U4
T	6035	241-T-103-03C-U2	241-TR-152-U5
T	6014	241-T-103-03C-U1	241-TR-152-L10
T	Unknown	241-T-103-03B-U2	6002
T	6032	241-T-103-03A-U2	241-TR-152-U6
T	3170	241-TR-152-U8	241-TR-153-U1
T	6160	241-T-152-U9, 11,12	241-TR-153-U2
TX	V625	241-TX-116	241-TX-153-L19
TX	SN200	241-TX-116	241-TX-E
TX	SN201	241-TX-113-13A	SN206
TX	V414/415	241-TX-155	241-TX-302B
TX	V621	241-TX-113	241-TX-153-L15
TX	V622	241-TX-113	241-TX-153-L16
TX	718	241-TX-113-13A	241-TX-115
TX	V827	241-TX-113	242-T-151-L2
TX	Unknown	241-TX-113	241-TX-114-14A
TX	Unknown	241-TX-113	241-TX-114
TX	Unknown	241-TX-109-09A-D	241-TX-117
TX	704	241-TX-109-09A-D	241-TX-103-A
TX	703	241-TX-109-09A-A	242-T-15-U3
TX	V618	241-TX-109	241-TX-153-L12
TX	V613	241-TX-105	241-TX-153-L7
TX	V619	241-TX-109	241-TX-153-L13
TX	Unknown	241-TX-109-09A-C	241-TX-05A-A
TX	Unknown	241-TX-109	241-TX-110
TX	V612	241-TX-105	241-TX-153-L6
TX	7359	241-TX-115-U4	241-TX-153-L17
TX	V616	241-TX-118	241-TX-153-L10
TX	720	241-TX-114	241-15V Valve Pit

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
TX	Drain	241-TX-105-05D	241-TXR-153
TX	7231	241-TX-105-05D-U1	241-TXR-153-L17
TX	7210	241-TX-105-05A-U1	241-TXR-153-L14
TX	Unknown	241-TX-105	241-TX-106
TX	706	241-TX-105-05A-C	241-TX-102-02A-A
TX	7220	241-TX-105-05C-U1	241-TXR-153-L12
TX	7247	241-TX-105-05C	241-TXR-153-U1
TX	7404	241-TX-101-01D-U2	241-TXR-152-U2
TX	7031	241-TX-101-01D-U1	241-TR-152-L18
TX	SN213/SN211	241-TX-101-01A	244-TX-B
TX	730	241-TX-110	241-TX-14B Valve Pit
TX	724	241-TX-111	TX-14B Valve Pit
TX	V831	241-TX-114	TX-14B Valve Pit
TX	SN204	244-TX-D	241-TX-117-17A
TX	SN205	241-TX-114-14A	SN204
TX	SN206	241-TX-110-10A	SN204
TX	SN207	241-TX-106-06A	SN204
TX	707	241-TX-06A-A	241-TX-02-C
TX	V625	241-TX-116	241-TX-153-L19
TX	SN200	241-TX-116	244-TX-E
TX	SN201	241-TX-113-13A	SN206
TX	V621	241-TX-113	241-TX-153-L15
TX	V622	241-TX-113	241-TX-153-L16
TX	718	241-TX-113-13A	241-TX-115
TX	V827	241-TX-113	242-T-141-L2
TX	Unknown	241-TX-113	241-TX-114-14A
TX	Unknown	241-TX-113	241-TX-114
TX	Unknown	241-TX-116	241-TX-117
TX	704	241-TX-109-09A-D	241-TY-103-A
TX	703	241-TX-109-09A-A	242-T-151-U3
TX	V618	241-TX-109	241-TX-153-L12
TX	V613	241-TX-105	241-TX-153-L7
TX	V619	241-TX-109	241-TX-153-L13
TX	Unknown	241-TX-109-09A-C	241-TX-05A-A
TX	Unknown	241-TX-109	241-TX-110
TX	V612	241-TX-105	241-TX-153-L6
TX	7359	241-TX-115A-U4	241-TXR-153-L17
TX	V616	241-TX-118	241-TX-153-L10
TX	720	241-TX-114	241-15B Valve Pit
TX	Drain	241-TX-105-05D	241-TXR-153
TX	7231	241-TX-105-05D-U1	241-TXR-153-L17
TX	7210	241-TX-105-05A-U1	241-TXR-153-L14
TX	Unknown	241-TX-105	241-TX-106
TX	706	241-TX-105-05A-C	241-TX-102-02A-A
TX	7220	241-TX-105-05C-U1	241-TXR-153-L12
TX	7247	241-TX-105-05C	241-TXR-153-U1
TX	7404	241-TX-101-01D-U2	241-TXR-153-U2
TX	SN213/SN211	241-TX-101-01A	241-TX-B
TX	730	241-TX-110	241-TX-14B Valve Pit
TX	724	241-TX-111	241-TX-14B Valve Pit
TX	V831	241-TX-114	241-TX-14B Valve Pit
TX	SN204	241-TX-D	241-TX-117-17A
TX	SN205	241-TX-114-14A	SN204
TX	SN206	241-TX-110-10A	SN204
TX	SN207	241-TX-106-06A	SN204
TX	707	241-TX-06A-A	241-TX-02A-C

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
TX	714	241-TX-110-10A-C	241-TX-111-11A-A
TX	731	241-TX-117-17A	241-TX-118
TX	Unknown	241-T-117	241-TX-118
TX	Unknown	241-TX-114	241-TX-115
TX	721	241-TX-114-14A	241-TX-115
TX	715	241-TX-111-11A-C	241-TX-112-12A-A
TX	Unknown	241-TX-110	241-TX-111
TX	Unknown	241-TX-110A-A	241-TX-106-06A-C
TX	7238	241-TX-106-06D-U2	241-TXR-153-U4
TX	7235	241-TX-107-07C-U2	241-TXR-153-U5
TX	7217	241-TX-106-06C-U1	241-TXR-153-L9
TX	7244	241-TX-105-05D-U2	241-TXR-153-U2
TX	V615	241-TX-115	241-TX-153-L9
TX	SN209	241-TX-115-15A	SN208
TX	SN210	241-TX-111-11A	SN208
TX	SN208	241-TX-118-18A	244-TX-C
TX	V609	241-TX-101	241-TX-153-L3
TX	7010	241-TX-101-01A-U1	241-TXR-152-L14
TX	7020	241-TX-101-01C-U1	241-TXR-153-L12
TX	7047	241-TX-101-01C-U2	241-TXR-152-U1
TX	Drain	241-TX-101	241-TXR-152
TX	V608	241-TX-101	241-TX-153-L2
TX	7041	241-TX-102-02C-U2	241-TXR-152-U3
TX	7017	241-TX-102-02C-U1	241-TXR-152-L9
TX	708	241-TX-102-02A-D	241-TX-103-03A-A
TX	7006	241-TX-102-02A-U1	241-TXR-152-L14
TX	7037	241-TX-102-02D-U1	241-TXR-152-L19
TX	7237	241-TX-106-06D-U1	241-TXR-153-L19
TX	7241	241-TX-106-06C-U2	241-TXR-153-U3
TX	7038	241-TX-102-02D-U2	241-TXR-152-U4
TX	Unknown	241-TX-106-06A-D	241-TX-107-07A-C
TX	7206	241-TX-106-06A-U1	241-TXR-153-L15
TX	7035	241-TX-103-03C-U2	241-TXR-152-U5
TX	7032	241-TX-103-03D-U2	241-TXR-152-U6
TX	7164	241-TX-104-04C-U2	241-TXR-152-U7
TX	7166	241-TX-104-04D-U2	241-TXR-152-U8
TX	7632	241-TXR-152-L1, 2,3,4,5,6,7,8	241-TXR-151-U12
TX	7162	241-TX-104-04C-U1	241-TXR-152-L11
TX	7014	241-TX-103-03C-U1	241-TXR-152-L13
TX	7002	241-TX-103-03A-U1	241-TXR-152-L16
TX	7159	241-TX-105-05A-B	241-TXR-152-L17
TX	7628	241-TXR-152-U9	241-TXR-151-U7
TX	7012	241-TXR-152-U10, 12,13	241-TXR-151-U8
TX	7025	241-TXR-152-U11	241-TXR-151-U19
TX	V600	241-TXR-152-U14	241-TXR-153-U14/241-TX-153-U8
TX	7214	241-TX-107-07C-U1	241-TXR-153-L13
TX	7232	241-TX-107-07D	241-TXR-153-U6
TX	V617	241-TX-107	241-TX-153-L11
TX	709	241-TX-103-03A-C	241-TX-104-04A-A
TX	710	241-TX-108-08A-A	241-TX-104-04A-C
TX	Unknown	241-TX-107	241-TX-108
TX	711	241-TX-107-07A-A	241-TX-108-08A-C
TX	Unknown	241-TX-111	241-TX-112
TX	717	241-TX-118	15-D-Valve Pit/241-TX-112
TX	5193	241-TX-115-15A-U6	15-B Valve Pit
TX	5191	241-TX-115-15A-U1	15-X

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
TX	Unknown	241-TX-115	15-X
TX	750	241-TX-118-18A	241-TX-TX-115-15A-U2
TX	5185	241-TX-15A-U3	241-TXR-151-U11
TX	728	241-TX-118	241-TY-104-A
TX	723	241-TX-118-18A	242-T
TX	724	241-TX-118	242-T
TX	V831	TX-14B-Valve Pit	242-T-151-L1
TX	5185	242-T-151-U2	242-T
TX	7202	241-TX-107-07A-U1	241-TXR-153-L15
TX	7631	241-TXR-151-U15	24`-TXR-153-L1, 2,3,4,5,6,7,8
TX	7384	241-TX-108-08C-U2	241-TXR-153-U7
TX	7366	241-TX-108-08D-U2	241-TXR-153-U8
TX	7362	241-TX-108-08C-U1	241-TXR-153-L11
TX	Unknown	241-TA	242-T
TX	7613	241-TXR-244-U2-Tank-003	241-TXR-151-L1
TX	Unknown	241-TXR-244-Tank-003	241-TXR-244-U2-Tank-001
TX	Unknown	241-TXR-244-Tank-002	241-TXR-244-U1-Tank-001
TX	7647	241-TXR-244-U1-Tank-003	241-TXR-151-L8
TX	7809	241-TXR-244-U2-Tank-002	241-TXR-151-L3
TX	7648	241-TXR-244-U1-Tank-002	241-TXR-151-L10
TX	7622	241-TXR-244-U3-Tank-001	241-TXR-151-L7
TX	7601	241-TXR-244-Tank-001	241-TXR-151-L5
TX	7625	241-TXR-151-U13	241-TXR-153-U9
TX	7616	241-TX-155-L1	241-TX-151-U2, U3
TX	7212	241-TXR-151-U6	241-TXR-153-U10, 12, 13
TX	7225	241-TXR-151-U18	241-TXR-153-U11
TX	7644	241-TXR-151-U21, 23, 25	241-TXR-151-U21, 23, 25
TX	6025	241-TXR-151-U20	241-TR-152-U10
TX	7630	241-TXR-151-U17	241-TR-153-U9
TX	7636	241-TXR-151-U5	241-TX-153-L4
TX	7624	241-TXR-151-U14	Capped
TX	6012	241-TXR-151-U10	Capped
TX	Drain	241-TXR-244-002-Sump	241-TXR-151
TX	SN249	244-TX-A	704
TX	6012	244-TX-104	244-TX
TX	V604	241-TX-153-B1	241-TX-153-B2
TX	V606	241-TX-153-C2	219-T Crib
TX	V603	241-TX-153-A1	241-TX-153-A2
TX	Drain	241-TX-302A	241-TX-153
TX	V598	241-TX-153-U1	241-TX-302A
TX	Drain	241-TX-302B	Encasement Drain
TX	Drain	241-TX-302A	Crib
TX	V413	241-TX-155-L20	241-TX-153-U3
TX	V401	241-TX-155-L8	241-TX-153-U12
TX	V-406	244-TX	241-TX-152
TX	V-410	241-TX-155	241-U-151
TX	V741	241-TX-154	241-TX-302C
TX	V742	241-TX-154	241-TX-302C
TX	V396	241-TX-155-L2	241-TX-153-U12
TX	V397	241-TX-155-L4	241-TX-153-U14
TX	V-408	244-TX	241-TX-152
TX	V-402	244-TX	241-TX-152
TX	SN-202/203	PFP	244-TX
TX	V387	B155-U10	Capped
TX	V-387	241-TX-152	241-TX-154
TX	V-739	241-TX-302C	241-TX-154

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
TY	Unknown	241-TY-105	241-TY-106
TY	704	241-TY-103-A	241-TY-102
TY	Unknown	241-TY-103	241-TY-104
TY	Unknown	241-TY-101	241-TY-102
TY	V648	241-TY-101	241-TY-153-L11
TY	V649	241-TY-101	241-TY-153-L12
TY	724	241-TY-101-01A-A	241-TY-103-03A-A
TY	Unknown	241-TY-103-03A-A	241-TY-103-C
TY	726	241-TY-01A-C	241-TY-102-02A-A
TY	727	241-TY-102-02A-C	241-TY-104-04A-C
TY	V644	241-TY-103	241-TY-153-L7
TY	V645	241-TY-103	241-TY-153-L8
TY	Drain	241-TY-302A	241-TY-153
TY	V402	Capped	Capped
TY	V406	Capped	Capped
TY	V408	Capped	Capped
U	5012	241-UR-152	241-UR-151
U	5025	241-UR-152	241-UR-151
U	5225	241-UR-151	241-UR-153
U	5412	241-UR-151	241-UR-154
U	5425	241-UR-151	241-UR-154
U	5624	241-UR-152	241-UR-151
U	5626	241-UR-151	241-UR-154
U	5630	241-UR-152	241-UR-151
U	5632	241-UR-151	241-UR-154
U	4859/4703	241-TX-155	241-UX-154
U	SL101	241-UD	Blocked
U	V426	241-U-152	241-U-153
U	V458	241-U-153	240-S-151
U	V459	241-U-153	240-S-151
U	V460	241-U-153	240-S-151
U	V465	241-U-153	241-U-110
U	V466	241-U-153	241-U-110
U	V467	241-U-153	241-U-110
U	V470	241-U-153	241-U-107
U	V471	241-U-153	241-U-107
U	V471	241-U-153	241-U-107
U	V472	241-U-153	241-U-107
U	V472	241-U-153	241-U-107
U	5447	241-U-107-07C-U2	241-U-UR-154-1
U	5444	241-U-107-07A-U2	241-U-154-U2
U	5441	241-U-108-08C-U2	241-UR-154-U3
U	5438	241-U-108-08A-U2	241-UR-154-U4
U	5435	241-U-109-09C-U2	241-UR-154-U5
U	5432	241-U-109-09A-U2	241-UR-154-U6
U	5417	241-U-108-08C-U1	241-U-154-L7
U	5507	241-UR-154-L8	241-U-153-L8
U	5107/V473	241-UR-152	241-U-153-L11
U	5420	241-U-107-07C-U1	241-UR-154-L9
U	5414	241-U-109-09C-U1	241-UR-154-L10
U	5410	241-U-107-07A-U1	251-UR-154-L11
U	5406	241-U-108-08A-U1	241-UR-154-L12
U	5402	241-U-109-09A-U1	241-UR-154-L13
U	5431	241-U-107-07A	241-UR-154-L14
U	5437	241-U-108-08A-U3	241-UR-154-L15
U	Drain	241-U-107-07C	241-UR-154

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
U	SL108	241-U-107-07B-A	241-UD-R9
U	5076	241-UR-Tank-001	U-103, 109,108,105,107,102
U	SN206	241-U-107-07A-A	241-UD-R14
U	Drain	241-U-107-07A	Clean Out Box-U-31
U	SL108	241-U-110-10B-A	241-UD-R7
U	5041	241-U-102-02C-U2	241-UR-152-U3
U	5053	241-U-102-02C-U1	241-UR-152
U	SL111	241-U-102-02B-A	241-UB-R7
U	Drain	241-U-102-02A	P19 K1 Exhauster
U	5038	241-U-102-02A-U2	241-UR-152-U4
U	5006	241-U-102-02A-U1	241-UR-152-L12
U	SN211	241-U-102-02A-A	241-UB-R14
U	Drain	241-U-102-02A-C	Clean Out Boxes-U32, 33, 34
U	5037	241-U-102-02A-U3	241-UR-152-L15
U	5241	241-U-105-05C-U2	241-UR-153-U3
U	5631	241-UR-153-L1-6	241-UR-151-U13
U	5212	241-UR-153-U-9, 11,12	241-UR-151-U8
U	5644	241-UR-151-U-18, 19,21	241-UR-151-U-18, 19,21
U	SN2025	241-U-108-08A-A	241-UC-L15
U	SL105	241-U-108-08B-A	241-UC-L9
U	Drain	241-U-108-08A-C	Clean Out Box U-29
U	Drain	241-U-108-08A-B	P-20 Exhauster
U	5237	241-U-105-05A-U3	241-UR-153-L15
U	Drain	241-U-105-05C-U11	241-UR-153
U	Drain	241-U-105-05C-B	241-UA, 241-UB Flush Pits
U	SL112	241-U-105-05B-A	241-UA-L7
U	5238	241-U-105	241-UR-153-U4
U	SN212	241-U-105-05C-A	241-U-L14
U	Drain	241-U-111-11A-E	241-UC
U	SN207	251-U-111-11A-A	241-UD-R20
U	SN215	241-U-111-11A-B	241-UD-R15
U	SN213	241-U-111-11A-C	241-UC-L15
U	SN207	241-U-111-11B-A	241-UC-L15
U	5235	241-U-106-06C-U2	241-UR-153-U5
U	5232	241-U-106-06A-U2	241-UR-153-U6
U	5625	241-UR-153-U8	241-UR-151-U11
U	5214	241-U-105-05A-U1	241-UR-153-L10
U	5206	241-U-105-05A-U1	241-UR-153-L12
U	5202	251-U-106-06A-U1	241-UR-153-L13
U	SN210	241-U-106-06C-A	241-UA-L15
U	SL110	241-U-06B	241-UA-L9
U	5002	241-U-103-03A-U1	241-UR-152-L13
U	5014	241-U-103-03C-U1	241-UR-152-L10
U	5035	241-U-103-03C-U2	241-UR-152-U5
U	5032	241-U-103-03A-U2	241-UB-R9
U	SL109	241-U-103-03B-A	Service Pit
U	SN209	241-U-103-03A-A	241-UB-R-15
U	SN202	241-UC-L12	241-UA-L1
U	SL102	241-UC-L10	241-UA-L3
U	SL104	241-U-109-09B-A	241-UC-L7
U	SL205	241-U-109-09A-A	241-UC-L14
U	V407	V201	241-U-252-L1
U	V488	241-U-201	241-U-252-L2
U	V489	241-U-202	241-U-252-L3
U	V490	241-U-203	241-U-252-L4
U	V491	241-U-203	241-U-252-L5

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
U	V492	241-U-203	241-U-252-L6
U	V493	241-U-204	241-U-252-L7
U	SL103	241-UD-RID	241-UB-R3
U	SN203	241-UC-R12	241-UB-R2
U	Flush	241-UC-L17	241-UC Flush Pit
U	Unknown	241-UC-L19	241-UD-R18
U	Unknown	241-UC-L19	241-UD-R19
U	Flush	241-UD-R17, R21	241-UD-Flush Pit/R-8
U	SN264	241-UD-R5	244-U-A Vault
U	SN265	241-UD-r4	244-UB-Vault
U	SN266	242-U-C	Capped
U	SN216	241-UD-R1/SN282	241-SY-B-R2
U	V427	241-U-152-15	241-U-153-U5
U	V461/V428	241-U-152-L6	241-U-153-U4
U	V478	241-U-301-B	241-U-152
U	V716	241-U-301-B	244-U-E-Vault
U	V450	241-U-153-U9	241-U-151-L1
U	V410	241-U-151-U2	241-TX-155-L17
U	Unknown	241-UA-L18	241-UB-R-18
U	Unknown	241-UA-L19	241-UB-R19
U	Flush	241-UB-R-17, R-8, R-6	241-UB Flush Pit
U	Flush	241-UA-L8, L-7, L-6	241-UA Flush Pit
U	V416	241-U-152-U1	241-TX-153-U10
U	V422/V452	241-U-151	241-U-152
U	V398	241-U-152	241-TX-152
U	V-404	241-U-152	241-TX-152
U	V421/V453	241-U-151	241-U-152
U	241-U-151 Drain Line	241-U-152	241-U-301B
U	241-U-151 Drain Line	241-U-151	241-U-301B
U	SN-216/282	241-U-D	241-SY-B
U	SL-107	241-U-111	241-U-C
U	V-455	241-U-151	241-S-151
U	V-456	241-U-151	244-S
U	V-473	241-U-301B	241-U-152
UA	No number	241-UA	241-UB
UA	No number	241-UA	241-UB
UX	V-503/4700	241-UX-154	241-S-151
UX	V-505/4701	241-UX-154	241-S-151
UX	4977	241-UX-152-U4	241-WR
UX	V374	241-UX-U6	221-U
UX	V363	241-UX-154-U7	241-ER-151-U6
UX	V384	241-UX-154-U8	241-TX-155-U6
UX	V375	241-UX-154-U9	241-TX-155-U17
UX	V376	241-UX-154-U10	241-TX-155-U15
UX	V362	241-UX-154	241-ER-151-U4
UX	V361	241-UX-154-U12	241-ER-151-U3
UX	V366	241-UX-154-U13	241-ER-151-U9
UX	V360	241-UX-154-L1	241-ER-151-U2/241-E1-151-Vent Station
UX	V379	241-UX-154-U16	241-UX-302A
UX	Drain	241-UX-302A	241-UX-154
UX	Unknown	241-UX-302A	291-U Stack
UX	4878	241-UX-154-L-2	241-WR
UX	V382	241-UX-154	241-TX-155-U11
UX	4851	241-UX-154-L-4	241-TX-155-U3
UX	4702	241-UX-154-L-6	241-WR
UX	5613	244-UR-Tank-002-U2	241-UR-151-L1

Table 8. Inactive Transfer Lines

Farm	Transfer line identifier	Connection facility	Connection facility
UX	5609	244-UR-Tank-002-U2	251-U4-151-L3
UX	5653	244-UR-Tank-004	241-U4-151-L4
UX	5601	244-UR-Tank-001	241-U4-151-L5
UX	5622	244-UR-Tank-001-U3	241-UR-151-L7
UX	5647	244-UR-U1-Tank-001	241-UR-151-L8
UX	5648	244-UR-U1-Tank-002	241-UR-151-L10
UX	7785	244-UR	241-UR-151
UX	V392	241-TX-154-L2	241-TX-155-U18
UX	V736	241-TX-154-U6	291-S STACK
UX	V391	241-TX-154	241-TX-155-U16
UX	V388	241-TX-154-L4	241-TX-152-U3
UX	V387	241-TX-154-L5	241-TX-152-U1
UX	V385	241-TX-154	Capped
UX	V384	241-TX-154-L7	Capped
UX	V383	241-TX-154-L8	Capped
UX	Drain	241-TX-308C	241-TX-154
UX	V386	241-TX-155-U8	Capped
UX	V394	241-TX-155-A1	241-TX-155-A2
UX	V395	241-TX-155-B1	241-TX-155-B2
UX	V388	241-TX-155-U112	Capped
UX	V393	241-TX-302B	241-TX-155-V19
UX	Drain	241-TX-302B	241-TX-155
UX	V936	241-TX-155-L2	241-TX-153-U15
UX	V445	241-U-151-U1	241-T-151-L6
UX	820	241-TX-152-U5	To Drain
UX	V407	241-TX-155-L14	241-TX-153-U6
UX	V406	241-TX-155-L13	Capped
UX	V408	241-TX-155-L15	Capped
UX	V410	241-TX-155-L17	Capped
UX	V409	241-TX-155-L16	241-TX-153-U4
UX	V403	241-TX-155-L10	241-TX-153-U11
UX	V741 & V742	241-TX-302B	241-TX-155
ER[1]	V224	241-ER-311	241-ER-151, U-1
ER[1]	V244ER	241-ER-152,2	241-ER-153,1
ER[1]	SN-9808	241-ER-151,E-5	244-BX,N
ER[1]	V-228	241-ER-151, U-10	241-ER-153,2
ER[1]	V-229	241-ER-151, U-11	241-ER-152,3
ER[1]	DR311	241-ER-152	241-ER-311
ER[1]	V-226	241-ER-151	241-ER-311
ER[1]	V-226-1	241-ER-151	241-ER-311
ER[1]	241-ER-153 to 244-A Drain Line	241-ER-153	244-A
ER[1]	V-361	241-ER-151	241-UX-154
ER[1]	V-244CR	241-ER-153,9	244-CR-3, U-13
ER[1]	V228	241-ER-151-U10	241-ER-153-U6A
ER[1]	V244	241-ER-152	241-ER-153
ER[1]	V244	241-ER-152	221-B
ER[1]	V-362	241-ER-151	241-UX-154
ER[1]	V-363	241-ER-151	241-UX-154
ER[1]	V-364	241-ER-151	241-UX-154
ER[1]	V-365	241-ER-151	241-UX-154

1 - The ER designation is for components that are not part of a specific tank farm. These components are located south of B-Plant.

Table 9. Single-Shell Tank System/Double-Shell Tank System Interface Points

Farm	Transfer Line	From Facility	Interface Point	To Facility	Interface Point
A	Unknown Drain	241-A-164 Seal Pot	DST	241-A-350-Side Wall	N/A
A	Overflow	241-A-106 Side Wall	N/A	241-A-350-	DST
A	Drain-307	241-A-Service Pit	DST	241-A-350-D	N/A
A	Drain-306	241-A-A Flush Pit Floor Drain	DST	Drain-307	N/A
A	Drain-305	241-A-B-Floor Drain	DST	Drain-307	N/A
A	Drain-300	207-A-Pump Pit Floor Drain	DST	241-A-350-A	N/A
A	Drain-303	Clean Out Box A-5	DST	Drain-301	N/A
A	Drain-316	Clean Out Box A-8	DST	Drain-301	N/A
A	Drain-304	Clean Out Box A-9	DST	Drain-301	N/A
A	SL-107	241-A-01H-A	N/A	241-A-A-Valve Pit-L-5	DST
A	Flush Line	241-A-A-Flush Pit	N/A	241-A-A-Valve Pit-L17-L6-L8	DST
A	404/V-029/4004/G34/4029	202-A	N/A	241-A-A-Valve Pit-L-12	DST
A	SL-105	241-A-03D-A	N/A	241-A-B-Valve Pit-R5	DST
A	Flush Line	241-A-B-Flush Pit	N/A	241-A-B-Valve Pit-R6-R8-R17	DST
A	4001/T029	202-A	N/A	241-A-B-Valve Pit-R12	DST
A	V-021	241-A-151-L-25	N/A	241-AN-Valve Pit-L-12	DST
A	CND-323	216-A-40-Crib	DST	244-A-P-6	N/A
A	EFD-02	241-A-401 Condensate Building	N/A	241-A-401-Diversion Caisson	DST
A	EFD-92	241-A-401 Condensate Building	N/A	241-A-401-Diversion Caisson	DST
A	SN-207	241-A-A-L14	DST	241-A-01B-A	N/A
A	SL-102	241-A-B-R7	DST	241-A-06D-A	N/A
A	SL-106	241-A-B-R10	DST	241-A-02D-A	N/A
A	SN-202	241-A-B-R11	DST	241-A-06C-A	N/A
A	SN-205	241-A-B-R14	DST	241-A-03C-A	N/A
AW	V023 Encasement Drain	V-023 Encasement	N/A	241-AW-B-Valve Pit-Side Wall	DST
AW	V-021 Encasement Drain	V-021 Encasement	N/A	241-AW-A-Valve Pit-Side Wall	DST
AW	V-023	241-A-151-L-23	N/A	241-AW-B-Valve Pit-R-11	DST
AW	V-021	241-A-151-L-25	N/A	241-AW-A-Valve Pit-L-12	DST
AW	V-022 Encasement Drain	V-022 Encasement	N/A	241-AW-B-Valve Pit-Side Wall	DST
AW	V-022	244-AR-T-9-A	N/A	241-AW-B-Valve Pit-R12	DST
AX	CNDS-F102	241-AX-152	N/A	241-AX-S01	DST
AX	PW-4508/B105	241-AX-152	DST	241-AZ-101	N/A
AX	PW-4511/B107/4601	241-AX-152	DST	241-AZ-102	N/A
AX	PW-4502/B1081/B108	241-AX-152	DST	241-AY-101	N/A
AX	SL-111	241-AX-A-L7	DST	241-AX-03A-A	N/A
AX	Drain-V713	241-AX-155	DST	241-AX-152	N/A
AX	Drain-331	Clean Out Box AX-22	DST	Drain-314	N/A
AX	PW-B-103	241-AX-101 – Side Wall	N/A	241-AX-152-B3	DST
AX	PW-4501/A1081/A108	241-AX-152	DST	241-AY-101	N/A
AX	PW-4505/B1061/B106	241-AX-152	DST	241-AY-102	N/A
AX	PW-4504/A1061/A106	241-AX-152	DST	241-AY-102	N/A
AX	SN-211	241-AX-A-L14	DST	241-AX-03D-A	N/A
AX	SN-208	241-AX-A-L15	DST	241-AX-01B-A	N/A
AX	SL-112	241-AX-B-R9	DST	241-AX-04A-A	N/A
AX	SN-209	241-AX-B-R14	DST	241-AX-02D-A	N/A
AX	SN-212	241-AX-B-R14	DST	241-AX-04B-A	N/A
AX	SL-108	241-AX-01A-A	N/A	241-AX-A-Valve Pit-L9	DST
AX	Flush Line	241-AX-A-Flush Pit	N/A	241-AX-A-Valve Pit-L6/L8/L17	DST
AX	SL-109	241-AX-02A-A	N/A	241-AX-B-Valve Pit-R7	DST
AX	Flush Line	241-AX-13-Flush Pit	N/A	241-AX-B-Valve Pit-R6/R8/R17	DST
AX	Drain-324	Clean Out Box-AX-21	DST	Drain-314	N/A
AX	Drain-332	Clean Out Box-AX-23	DST	Drain-314	N/A
AX	Drain-327	241-AX-SP-Floor Drain	DST	241-AX-WT-SP-137	N/A
AX	Drain-328	241-AX-B-Flush Pit	DST	Drain-327	N/A
AX	Drain-337	241-AX-A-Flush Pit	DST	Drain-327	N/A
AX	RW-Unknown	Hose Connection	N/A	241-AX-155-Exterior Wall	DST

Table 9. Single-Shell Tank System/Double-Shell Tank System Interface Points

Farm	Transfer Line	From Facility	Interface Point	To Facility	Interface Point
AY	PW-4021	241-AX-151-G-Cell	NA	2241-AY-151-L2	DST
AY	PW-4530	241-A-153-U1	NA	241-AY-151-U4	DST
AY	PSW-8028	241-AX-04D-U5	NA	241-AY-152-U7	DST
AY	PSW-8061	241-AX-04A-U5	NA	241-AY-152-L7	DST
AY	PSW-8027	241-AX-04C-U3	NA	241-AY-152-U16	DST
AY	PSW-8024	241-AX-02D-U5	NA	241-AY-152-U15	DST
AY	PSW-8062	241-AX-02A-U5	NA	241-AY-152-L6	DST
AY	PSW-8023	241-AX-02C-U3	NA	241-AY-152-U14	DST
AY	PSW-8063	241-AX-01A-U8	NA	241-AY-152-L5	DST
AY	PSW-8026	241-AX-01C-U5	NA	241-AY-152-U13	DST
AY	PSW-8025	241-AX-01D-U3	NA	241-AY-152-U12	DST
AY	PSW-8022	241-AX-03C-U5	NA	241-AY-152-U11	DST
AY	PSW-8021	241-AX-03D-U3	NA	241-AY-152-U10	DST
AY	PSW-8064	241-AX-03A-U8	NA	241-AY-152-L4	DST
AY	PSW-806	244-AR-T11	NA	241-AY-152-A	DST
AY	PSW-802	244-AR-T4	NA	241-AY-152-B	DST
AY	Condensate-101	241-AX-101-Side Wall	NA	241-AY-501-	DST
AY	Condensate-102	241-AX-102-Side Wall	NA	241-AY-501-	DST
AY	Condensate-103	241-AX-103-Side Wall	NA	241-AY-501-	DST
AY	Condensate-104	241-AX-104-Side Wall	NA	241-AY-501-	DST
AY	Condensate	Ion Exchange Effluent	NA	241-AY-501	DST
AY	NHW-V-714	202-A-F16	NA	241-AR-151-2	DST
AY	NHW-V-714-Encasement Drain	NHW-V-714-Encasement	NA	241-AR-151-3	DST
AY	PAW-V-716	244-AR-T-8	NA	241-AR-151-9	DST
AY	NHW-V-718/817/4019	244-AR-T-15	NA	241-AR-151-10	DST
AY	DrainV-717	244-AR-T9	DST	241-AR-151-Floor Drain	NA
AY	DR-0050	241-AY-501	DST	DR-0029	N/A
AY	PW-4523	LPD-AY-102A	DST	PW-4027/4526	N/A
AY	PW-4522	LPD-AY-101B	DST	PW-4526	N/A
AY	PW-4522	LPD-AY-101A	DST	PW-4522	N/A
AY	PW-4021	241-AY-151	DST	241-AX-152	N/A
AZ	Condensate-F-561	216-A-08	N/A	241-AZ-F505	DST
BX	SN-215	241-BX-111	NA	244-BX-A	DST
BX	SN-208	241-BX-101	NA	244-BX-B	DST
BX	SN-200	241-BX-102	NA	244-BX-C	DST
BX	SN-207	241-BX-103-03A	NA	244-BX-D	DST
BX	SN-216	241-BX-110	NA	244-BX-E	DST
BX	SN-231	241-B-104/107/110	NA	244-BX-F	DST
BX	SN-227	241-B-108	NA	244-BX-G	DST
BX	SN-223	241-B-103	NA	244-BX-H	DST
BX	PAS-244	221-B-25.1	NA	241-ER-152-1	DST
BX	Overflow To Encasement	PAS-244-Encasement	NA	241-ER-152-5	DST
BX	V-228 (PAS)	241-CR-153-U6A	NA	241-ER-153-7	DST
BX	PAS-244	244-CR-U13	NA	241-ER-153-9	DST
BX	Overflow To Encasement	PAS-228 Encasement	NA	241-ER-153-8	DST
BX	9719/979	241-BXR-151-U24	NA	241-ER-151-L3	DST
BX	9653/243	221-B	NA	241-ER-151-L7	DST
BX	8653/8618	241-CR-151-U14	NA	241-ER-151-L9	DST
BX	V-225	241-B-151-U1	NA	241-ER-151-L10	DST
BX	V-365	Flow Transmitter Box	NA	241-ER-151-U8	DST
BX	V-219	B Facility Aqueous Waste	NA	241-ER-151-L2	DST
C	SL-100	241-C-06A-U9	DST	241-AY-02A-U11	NA
C	SL-100 Encasement Drain	241-C-06A-U8	DST	SL-100 Encasement	NA
C	SN-200	241-C-06C-U6	DST	241-AY-02E-U2	NA
C	SN-200 Encasement Drain	241-C-06C-U7	DST	SN-200 Encasement	NA

Table 9. Single-Shell Tank System/Double-Shell Tank System Interface Points

Farm	Transfer Line	From Facility	Interface Point	To Facility	Interface Point
S	SN-245	241-S-107-07A-8	N/A	244-S-18	DST
S	SN-246	241-S-107-07A-7	N/A	244-S-17	DST
S	SN-247	241-S-107-07A-7	N/A	244-S-17	DST
S	SN-248	241-S-107-07A-5	N/A	244-S-15	DST
S	SN-249	241-S-107-07A-4	N/A	244-S-14	DST
S	V-526	241-SX-151-U13	N/A	241-S-151-L4	DST
S	V-527	241-SX-151-U10	N/A	241-S-151-L5	DST
S	V-528	241-SX-151-U8	N/A	241-S151-L6	DST
S	V-529	241-SX-151-U6	N/A	241-S-151-L7	DST
S	V-530	241-SX-151-U4	N/A	241-S-151-L8	DST
S	V-533	216-S-Crib	N/A	241-S-151-L11	DST
S	V-534	241-S-110	N/A	241-S-151-L12	DST
S	V-535	241-S-110	N/A	241-S-151-L13	DST
S	V-536	241-S-107	N/A	241-S-151-L14	DST
S	V-537	241-S-107	N/A	241-S-151-L15	DST
S	V-538	241-S-104	N/A	241-S-151-L16	DST
S	V-539	241-S-104	N/A	241-S-151-L17	DST
S	V-540	241-S-107	N/A	241-S-151-L18	DST
S	V-541	241-S-101	N/A	241-S-151-L19	DST
S	V-508	240-S-151-L17	N/A	241-S-151-U6	DST
S	V-509	240-S-151-L16	N/A	241-S-151-U7	DST
S	V-512	240-S-151-L13	N/A	241-S-151-U10	DST
S	V-513	240-S-151-L12	N/A	241-S-151-U11	DST
S	V-514	240-S-151-L6	N/A	241-S-151-U12	DST
S	V-515	240-S-151-L9	N/A	241-S-151-U14	DST
S	V-516	240-S-151-L7	N/A	241-S-151-U15	DST
S	V-517	202-S-Lab Waste	N/A	241-S-S-151-U16	DST
S	V-519	240-S-151-L2	N/A	241-S-151-U18	DST
SY	SN-283	242-S-13	N/A	241-SY-102-023-A	DST
SY	SN-283 Encasement Drain	SN-283-Encasement	N/A	241-SY-102-02E- Side Wall	DST
SY	SN-284	242-S-14	N/A	241-SY-02E-B	DST
SY	SN-284 Encasement Drain	SN-284-Encasement	N/A	241-SY-102-02E Side Wall	DST
SY	Drain-375	Clean Out Box-SY-1	N/A	241-SY-102-02D-B	DST
SY	Drain-375-Encasement Drain	Drain-375-Encasement	N/A	241-SY-102-02D Side Wall	DST
SY	SN-275	241-S-A-L20	N/A	241-SY-A-Valve Pit-L1	DST
SY	SN-281	241-S-152-10	N/A	241-SY-A-Valve Pit-L2	DST
SY	SN-281 Encasement	SN-281 Encasement	N/A	241-SY-A-Valve Pit Side Wall	DST
SY	SL-175	242-S-19	N/A	241-SY-A-Valve Pit-L3	DST
SY	SL-175 Encasement Drain	SL-175 Encasement	N/A	241-SY-A-Valve Pit Side Wall	DST
SY	SN-276	241-S-B-R-20	N/A	241-SY-B-Valve Pit-R1	DST
SY	SN-282/SN-216	241-U-D-R1	N/A	241-SY-B-Valve Pit-R2	DST
SY	SN-282/SN-216 Encasement Drain	SN-282/SN-216 Encasement	N/A	241-SY-B-Valve Pit-Side Wall	DST
SY	SL-176	241-S-152-8	N/A	241-SY-B-Valve Pit-R3	DST
SY	SL-176 Encasement Drain	SL-176 Encasement	N/A	241-SY-B-Valve Pit-Sidewall	DST

Table 9. Single-Shell Tank System/Double-Shell Tank System Interface Points

Farm	Transfer Line	From Facility	Interface Point	To Facility	Interface Point
TX	SN-249	241-TY-103/241-TX-109	NA	244-TX-A	DST
TX	SN-211	241-TX-112	NA	244-TX-B	DST
TX	SN-208	241-TX-118	NA	244-TX-C	DST
TX	SN-204	241-TX-117	NA	244-TX-D	DST
TX	SN-200	241-TX-116	NA	244-TX-E	DST
TX	SN-6012	241-T-104	NA	244-TX-H	DST
TX	SB-7624	241-T-111	NA	244-TX-I	DST
TX	V-387	241-TX-154-L5	NA	241-TX-152-U1	DST
TX	V-387 Encasement Drain	V-387 Encasement	NA	241-TX-152-L2	DST
TX	V-388	241-TX-154-L4	NA	241-TX-152-U3	DST
TX	V-388 Encasement Drain	V-388 Encasement	NA	241-TX-152-L4	DST
TX	Drain-820	V-383, 4,5,7,8,391,392 Concrete Encasement	NA	241-TX-152-U5	DST
TX	Drain-820 Encasement Drain	Drain-820-Encasement	N/A	241-TX-152-L6	DST
TX	RW-	Hose Connection	N/A	241-TX-152-Spray Nozzle	DST
TX	RW-	Hose Connection	N/A	241-TX-152 External	DST
TX	RW-	Hose Connection	N/A	241-TX-152 Wall	DST
TX	RW-	Hose Connection	N/A	241-TX-152	DST
TX	RW-	Hose Connection	N/A	241-TX-152	DST
TX	RW-	Hose Connection	N/A	241-TX-152	DST
U	V-450	241-U-153-U9	N/A	241-U-151-L1	DST
U	V-445	241-T-151-L6	N/A	241-U-151-U-1	DST
U	V-410	241-TX-155-L17	N/A	241-U-151-U2	DST
U	V-426	241-U-153-U6	N/A	241-U-152-L4	DST
U	V-427	241-U-153-U5	N/A	241-U-152-L5	DST
U	V-428/V-461	241-U-153-U4	N/A	241-U-152-L6	DST
U	V-416	241-TX-153-U10	N/A	241-U-152-U1	DST
U	V-473	241-U-252-Floor Drain	N/A	241-U-301-B-Catch Tank	DST
U	4878	241-WR-Tank-Pump	N/A	241-UX-154-L2	DST
U	V-382	241-TX-155-U-11	N/A	241-UX-154-L3	DST
U	4851	241-TX-155-U3	N/A	241-UX-154-L4	DST
U	4703/4859	241-TX-155-U2	N/A	241-UX-154-L5	DST
U	4702	241-WR	N/A	241-UX-154-L6	DST
U	4853/V-762	241-SX-152	N/A	241-UX-154-L9	DST
U	V-374	221-USEC-5CONN-101	N/A	241-UX-154-U6	DST
U	V-375	241-TX-155-U17	N/A	241-UX-154-U9	DST
U	V-376	241-TX-155-U15	N/A	241-UX-154-U10	DST
U	4977	241-WR-Vault	N/A	241-UX-154-U4	DST

Table 10. Miscellaneous Structures

Structure Number	Associated Line Number /Component	Year of Construction	Year Removed from Service
COB-A-10	SL-101	1955	2005
COB-A-11	SL-100	1955	2005
COB-A-12	SL-101	1955	2005
COB-A-13	SL-100	1955	2005
COB-A-30	DR-334	1955	2005
COB-AX-14	SL-101	1964	2005
COB-AX-15	SL-100	1964	2005
COB AX-16	SL-101	1964	2005
COB AX-17	SL-100	1964	2005
COB AX-18	SL-101	1964	2005
COB AX-19	SL-100	1964	2005
COB AX-24	SL-100	1964	2005
COB AX-25	SL-100	1964	2005
SP-137, AX (Seal Pot)	DR-326,DR-327,DR -314	1964	2005
241-AZ-154	F560, F602, F604, DR-0079	1976	2006
200-W-126[1]	N/A	1967	1995

[1] Vertical Storage Units do not meet the WAC-173-303-040 definition of tank system for the Single-Shell Tanks.

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ADDENDUM B

SINGLE SHELL TANK SYSTEM PROCESS INFORMATION

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ADDENDUM B

SINGLE SHELL TANK SYSTEM PROCESS INFORMATION

For more than four decades beginning in 1944, the Hanford Site produced defense materials, primarily from uranium fuels. The process of extracting defense materials from irradiated fuels generated radioactive and dangerous wastes. Between 1943 and 1964, 149 the Single Shell Tanks (SST) were constructed in the 200 East and 200 West Areas to store waste underground. All waste contained in the SSTs are considered mixed waste (MW).

From 1944, the U.S. Department of Energy (DOE) and its predecessors routed wastes from spent fuel processing and other operations in the Hanford Site 200 East and 200 West Areas via buried lines to underground tanks for storage. Waste was also routed from tanks to processing facilities and between tanks. The maximum quantity of waste in the SSTs at one time was approximately 293,400,000 L (77,500,000 gal) in 1966. As of February, 2011, the SSTs contained 111,529,000 L (29,463,000 gal) of mixed wastes in the states of sludge, salt cake, and a small portion of supernatant (Washington River Protection Solutions, Waste Tank Summary Report for Month Ending February 28, 2011). Over time, some waste has leaked from the SST System or has been discharged in an unplanned manner immediately adjacent to or within the SST farms. The estimated volume of leaked waste from the SSTs is approximately 3,800,000 L (1,000,000 gal).

The SST System includes twelve SST farms that contain a total of 149 mixed-waste storage tanks, ancillary equipment, active and miscellaneous underground storage tanks, miscellaneous facilities, and soils and groundwater that are contaminated from past leaks and unplanned releases.

Overall, the SST System contains:

- 133 100-series SSTs (2 to 3.8 million L [530,000 to 1 million gal] capacity)
- 16 200-series SSTs (200,000 L [55,000 gal] capacity)
- Waste transfer vaults and associated tanks
- Tank pits, valve pits, and flush pits
- Pumps and valves
- Diversion boxes
- Numerous pipelines
- Above ground buildings and structures
- Other mechanical equipment
- Waste piles
- Contaminated soils
- Contaminated ground water

Each of the SSTs is constructed of a reinforced concrete shell that contains a single liner of carbon steel that extends from the base of the tank to near the upper limit of the cylindrical part of the concrete shell. The bottom and sidewalls in the A and AX tanks intersect orthogonally; the remaining SSTs contain dished bottoms (i.e., the bottom and sidewalls intersect in a curving manner).

The system piping is made of carbon steel and stainless steel. Much of the piping was placed underground to provide radiation shielding to protect workers. Transfer piping consisted of direct-buried pipe, steel-encased pipe, or single-wall pipe embedded in concrete encasements.

Temporary waste transfer lines are in use in the SST System to transfer liquid waste. The temporary waste transfer lines generally consist of pipelines with a primary hose encased in a secondary hose, and

therefore called hose-in-hose transfer lines (HIHTL). After the waste transfer completed, these HIHTLs are to be removed following regulations and requirements of this Permit.

The twelve SST tank farms are located in 200 East Area and 200 West Area of the Hanford Site. The 200 East Area SST Tank farms are 241-A, 241-AX, 241-B, 241-BX, 241-BY, and 241-C. The 200 West Area SST Tank Farms are 241-S, 241-SX, 241-T, 241-TX, 241-TY, and 241-U.

These twelve SST tank farms have been geographically grouped into seven WMAs for regulatory purposes. The seven WMAs are treatment and storage units under the Ecology Hazardous Waste Management Act of 1976 (HWMA), Revised Code of Washington (RCW) 70.105, and "Dangerous Waste Regulations" contained in Washington Administrative Code (WAC) 173-303. Most of the SST System is located within the WMAs; however, some components of the system, such as transfer lines and support facilities, are located outside WMA boundaries. These components outside the WMA boundaries consist part of 200-IS-1 Operable Unit (OU) (see 200-IS-1 OU definitions for details).

The SST System received mixed (radioactive and dangerous) wastes during 1940s to 1980 from various Hanford Site facilities. The chemical constituents of the single shell tank waste are approximated by the Best Basis Inventory (BBI), maintained and updated quarterly by the Permittees in the Tank Waste Information System (TWINS). The TWINS is a database for characterization of the overall waste in the SSTs including two levels of waste inventories, tank-by-tank waste inventories and global waste inventories.

The tank-by-tank best-basis waste inventories include 25 chemical and 46 radionuclide components for each of the 177 double- and single-shell underground waste storage tanks, which are most often based on sample analysis results. The chemical composition is based on processing records or knowledge, or application of available data. In addition to the several separations methods, there were several campaigns to selectively extract individual elements or constituents for various needs.

The global waste inventories include five chemicals in addition to the chemicals and radionuclides reported in the tank-by-tank inventories. The best-basis global inventories are independent estimates of the total amount of chemical or radionuclide components in all tanks. The chemical analyte list selected represents 99 percent by weight of the tank contents, and the radionuclides represent over 99 percent of the activity. Information used to establish global inventories originated from key historical records (e.g., essential material purchase records), from various chemical flowsheets used in processing of irradiated Hanford Site reactor fuels, and from calculations of radionuclide isotope generation and decay.

In general, the waste is very high in sodium (5 Molar, much higher than seawater, seawater is approximately 0.6M); and high pH (to prevent stress crack corrosion of the steel tank liners). In an effort to reduce the volume of liquids held in storage, the waste has had water evaporated off to concentrate the liquids and thus reduce the amount of tank space used. The highly concentrated mixed wastes are in the states of sludge, salt cake, with a small portion of supernatant. Interstitial liquid may exist in the pores or fractures of the solid state wastes in some tanks. In the past, in some cases after the waste was put into the SSTs, a wide variety of inorganic and organic complexing agents were added in the separation processes to allow for separation of the desired products, those complexing agents remained in the mixed wastes in the SSTs and may form chelate compounds. In addition, the radioactive decay generates large amounts of heat (which is monitored) which can cause the organic materials to break down. Mineralization of the tank waste has occurred in some instances over time.

As required by HFFACO Appendix I and in *Washington v. Chu* Consent Decree, the waste in SSTs must be retrieved and transferred to other storage facilities, namely, double-shell tanks (DSTs) for safer storage before they can be treated, however, certain amount of residual waste may remain in the tanks after the retrieval is complete due to the limitation of the current retrieval technology.

The residual wastes remain in the SSTs may be significantly different from BBI in TWINS database. Considering the nature and limitations of the retrieval technologies used (sluicing, high pressure spray,

and the mobile retrieval system also called MRS) and the physical and chemical heterogeneity of the tank wastes, it is likely that the residual wastes remained in the tanks after retrieval may be significantly different from BBI, and potentially significantly different among tanks. Therefore, the Permittees are required to conduct residual tank waste characterization after retrieval and before closure, as specified in the next several Permit sections.

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Addendum C

ADDENDUM C
WMA FACILITY DESCRIPTION

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ADDENDUM C
WMA FACILITY DESCRIPTION

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ADDENDUM C
WMA PROCESS INFORMATION

C.1 Waste Management Areas (WMA)

Seven Single Shell Tanks (SST) System WMAs have been identified in Hanford Federal Facility Agreement and Consent Order (HFFACO) Appendix B, as follows:

- WMA A-AX: 241-A and AX tank farms
- WMA B-BX-BY: 241-B, BX, and BY tank farms
- WMA C: 241-C tank farm
- WMA S-SX: 241-S and SX tank farms
- WMA T: 241-T tank farm
- WMA TX-TY: 241-TX and TY tank farms
- WMA U: 241-U tank farm

All WMAs contain additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems; all the WMAs contain unplanned release (UPR) waste sites that will require remediation decisions or corrective actions prior to final WMA closure.

A brief description of each WMA are provided below and this description will be replaced once the required WMA description and process information are submitted to Ecology and incorporated into this Permit as Addendum C.

C.1.1 WMA C

The 241-C tank farm is located in the 200 East Area and contains sixteen buried SSTs. The 241-C tank farm contains twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks with a tank capacity of 208,000 liters (55,000 gallons). The 241-C tank farm was constructed between 1943 and 1944, and removed from service between 1976 and 1980. WMA C contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.2 WMA A/AX

This WMA includes 241-A tank farm and 241-AX tank farms, both located in the 200 East Area. The 241-A tank farm contains six 3.8 million liter (1 million gallons) buried SSTs built in the mid-1950s and retired from service between 1963 and 1980. The tanks are numbered 241-A-101 through 241-A-106.

The 241-AX tank farm is located adjacent to the 241-A tank farm in the 200 East Area and contains four 3.8 million liter (1 million gallons) tanks. The 241-AX tanks were the last SSTs to be built, and were operated from the 1960s to 1980. The tanks in the 241-AX tank farm are numbered 241-AX-101 through 241-AX-104.

WMA A/AX also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.3 WMA B/BY/BX

This WMA includes 241-B, 241-BY, and 241-BX tank farms, all located in the 200 East Area. WMA B/BY/BX contains a total of forty buried SSTs.

The 241-B tank farm contains twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks with a tank capacity of 208,000 liters (55,000 gallons). The 241-B tank farm was constructed between 1943 and 1944, and was retired from service between 1971 and 1978.

The tanks in the 241-B tank farm are numbered 241-B-101 through 241-B-112, and 241-B-201 through 241-B-204.

The 241-BX tank farm contains twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons). The tank farm was built between 1946 and 1947, and was removed from service between 1971 and 1980. The 241-BX tank farm is located adjacent to the 241-BY tank farm, and the tanks are numbered 241-BX-101 through 241-BX-112.

The 241-BY tank farm contains twelve 100-series tanks with capacities of 2.8 million liters (0.75 million gallons). The tanks were placed in service between 1950 and 1953, and were removed from service between 1971 and 1979. The tanks in the 241-BY tank farm are numbered 241-BY-101 through 241-BY-112.

WMA B/BX/BY also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.4 WMA S/SX

This WMA includes 241-S and 241-SX tank farms, both located in the 200 West Area, and contains a total of twenty-seven buried 100-series SSTs.

The 241-S tank farm is comprised of twelve tanks with capacities of 2.8 million liters (0.75 million gallons). The tanks were placed in service in 1950 and 1951, and were retired between 1968 and 1980. The tanks in the 241-S tank farm are numbered 241-S-101 through 241-S-112.

The 241-SX tank farm has fifteen 3.8 million liters (1 million gallons) tanks that were constructed in 1953 and 1954, and were removed from service between 1958 and 1980. The tanks are numbered 241-SX-101 through 241-SX-115.

WMA S/SX also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.5 WMA T

This WMA includes only tank farm 241-T and is located in the 200 West Area, WMA T contains sixteen buried SSTs, including twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks with a tank capacity of 208,000 liters (55,000 gallons). The tanks were built in 1943 and 1944, and removed from service between 1973 and 1979. The tanks in the 241-T tank farm are numbered 241-T-101 through 241-T-112, and 241-T-201 through 241-T-204.

WMA T also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.6 WMA TX/TY

This WMA includes both 241-TX and 241-TY tank farms. WMA TX/TY is located in the 200 West Area and contain twenty-four buried SSTs.

The 241-TX tank farm contains eighteen 100-series tanks with capacities of 1.8 million liters (0.75 million gallons). The tanks were placed in service in 1949 and were retired between 1969 and 1980. The tanks in the 241-TX tank farm are numbered 241-TX-101 through 241-TX-118.

The 241-TY tank farm is located adjacent to the 241-TX tank farm, and contains six 100-series tanks with capacities of 1.8 million liters (0.75 million gallons). The tanks were built in 1951 and 1952, and were removed from service between 1959 and 1980. The tanks in the 241-TY tank farm are numbered 241-TY-101 through 241-TY-106.

WMA T/TY also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.1.7 WMA U

The WMA U only includes one tank farm, 241-U, which is located in the 200 West Area, and contains sixteen buried SSTs, including twelve 100-series tanks with capacities of 1.9 million liters (0.5 million gallons), and four 200-series tanks with a tank capacity of 208,000 liters (55,000 gallons). The 241-U tanks were constructed in 1943 and 1944, and were retired from service between 1951 and 1980. The tanks in the 241-U tank farm are numbered 241-U-101 through 241-U-112, and 241-U-201 through 241-U-204, for 100-series and 200-series tanks, respectively.

WMA U also contains additional ancillary equipment, piping, and other equipment that supported the operation of the tank systems.

C.2 Requirements for WMA Process Information

As the SST System is permitted to be closed on WMA basis, detailed facility descriptions of the WMAs with process information are required to be submitted to Ecology, as specified within this Permit subsection, to furnish the closure actions of each WMA.

The submitted process information for each WMA will become Addendum C. The submission and updating of the WMAs process information are subject to Ecology approval under the terms of Permit Condition I.C.3. The WMAs process information, along with SST System process information will become the supporting information for WMA and SST System closure decisions.

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ADDENDUM K
CONTINGENCY PLAN

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ADDENDUM K
CONTINGENCY PLAN

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K CONTINGENCY PLAN

The requirements in this Contingency Plan are applicable to waste that is regulated by WAC 173-303, and according to the provisions of this Addendum K, the Hanford Facility Permit WA7890008967 (Permit) Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), and the Building Emergency Plan specific to Single-Shell Tank (SST) System will be amended to incorporate requirements of WAC 173-303-350 and WAC 173-303-360 within 30 days of the effective date of the permit.

Table K.1 identifies the sections of the unit-specific building emergency plan written to meet WAC 173-303-350(3) contingency plan requirements identified in this addendum. In addition, Section 12.0 of the unit-specific SST System building emergency plan is written to meeting WAC 173-303-350 and WAC 173-303-360 requirements. Copies of Permit Attachment 4, Hanford Emergency Management Plan (DOE/RL-94-02) and the building emergency plan are located and maintained on the Hanford Facility and available as identified in Section K.6. Revisions to Addendum K require a permit modification subject to WAC 173-303-830 and Permit Condition I.C.3.

The unit-specific building emergency plan also serves to satisfy a broad range of requirements (e.g., Occupational Safety and Health Administration standards (29 CFR 1910), *Toxic Substance Control Act of 1976* (40 CFR 761) and U.S. Department of Energy Orders]. Therefore, revisions made to portions of this unit-specific building emergency plan that are not governed by the requirements of WAC 173-303-350 and WAC 173-303-360 will not be considered as a modification subject to WAC 173-303-830 or Permit Condition I.C.3.

Any changes to sections of Attachment 4 or the BEP that are governed by the requirements of WAC 173-303-350 and WAC 173-303-360 (identified in Table K.1) will be provided to Ecology for review to ensure with the requirements of Addendum K and determine if a permit modification request is required.

TABLE K.1 Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173 303-350(3)

Requirement	Permit Attachment 4 Hanford Emergency Management Plan (DOE/RL-94-02)	Part V, Closure Unit Group 4, Addendum K	Building Emergency Plan[1] (RPP-27869)
-350(3)(a) - A description of the actions which facility personnel must take to comply with this section and WAC 173-303-360	X[2] Section 1.3.4	X[2] Sections K.3.1, K.3.2 K.3.3[3] Sections K.3, K.3.4, K.3.5, K.3.6, and K.5	X[2] Sections 7.1, 7.2 through 7.2.5, and 7.3[3] Sections 4.0, 8.2, 8.3, 8.4, and 12.0

An 'X' indicates requirement applies.

[1] Portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) are not enforceable through Appendix A of that document are not made enforceable by reference in the building emergency plan.

[2] Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) contains descriptions of actions relating to the Hanford Site Emergency Preparedness System. No additional descriptions of actions are required at the site level. Other credible scenarios that exist at the SST System and all emergency procedures SST System that are different from those in Attachment 4, must be identified in the SST System BEP.
The description of actions contained in the building emergency plan will be used during an event by a building emergency director.

[3] Sections K.3.2.1 through K.3.2., and K.3 of this Addendum are those sections subject to the Class 1 or Class 2 "Changes in emergency procedures (i.e., spill or release response procedures)", described in WAC 173-303-830, Appendix I Section B.6.a).

TABLE K.1 Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173 303-350(3)

Requirement	Permit Attachment 4 Hanford Emergency Management Plan (DOE/RL-94-02)	Part V, Closure Unit Group 4, Addendum K	Building Emergency Plan[1] (RPP-27869)
-350(3)(b) - A description of the actions which shall be taken in the event that a dangerous waste shipment, which is damaged or otherwise presents a hazard to the public health and the environment, arrives at the facility, and is not acceptable to the owner or operator, but cannot be transported pursuant to the requirements of WAC 173-303-370(5), Manifest system, reasons for not accepting dangerous waste shipments	X[2] Section 1.3.4	X[2,4] Section K.3.2.5.1	X[2,4] Section 7.2.5.1
-350(3)(c) - A description of the arrangements agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams to coordinate emergency services as required in WAC 173-303-340(4)	X Sections 3.2.3, 3.3.1, 3.3.2, 3.4, 3.4.1.1, 3.4.1.2, 3.4.1.3, 3.7, and Table 3-1		
-350(3)(d) - A current list of names, addresses, and phone numbers (office and home) of all persons qualified to act as the emergency coordinator required under WAC 173-303-360(1). Where more than one person is listed, one must be named as primary emergency coordinator, and others must be listed in the order in which they will assume responsibility as alternates.		X[5] Sections K.2 and K.7	X[1] Sections 3.1 and 13.0

[4] Emergency Coordinator names and home telephone numbers are maintained separate from any contingency plan document, on file in accordance with Permit Condition II.A.3, and are updated, at a minimum, monthly.

TABLE K.1 Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173 303-350(3)

Requirement	Permit Attachment 4 Hanford Emergency Management Plan (DOE/RL-94-02)	Part V, Closure Unit Group 4, Addendum K	Building Emergency Plan[1] (RPP-27869)
-350(3)(e) - A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.		X Section K.4	X Section 9.0
-350(3)(f) - An evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe the signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes.	X[5] Figure 7-3 and Table 5-1	X[6] Section K.1 and facility operating record	X[6] Section 1.5

K.1 Building Evacuation Routing (Building Layout)

Evacuation routing maps are maintained in the facility operating record and provide identification of the primary and secondary staging areas and a general layout of the SST System. Alternate evacuation routes will be used on a case-by-case basis, based on meteorological conditions and hazards present at the time of the event.

K.2 Building Emergency Director

The Incident Command System (ICS) and staff, with supporting on-call personnel, will meet the requirements of the Emergency Coordinator as identified in WAC 173-303-360(1). The Building Emergency Director (BED) will direct emergency response until the Incident Commander (IC) arrives. The BED becomes a member of the Incident Command Post (ICP) and functions under the direction of the IC. In this role, the BED continues to manage and direct SST operations. During events, SST System personnel will perform response duties under the direction of the BED. The senior Hanford Fire Department official manages the ICP unless the event is determined to be primarily a security event, in which case the Hanford Fire Department and Hanford Patrol will operate under a unified command system with Hanford Patrol making all decisions pertaining to security. These individuals are designated as the IC and, as such, have the authority to request and obtain any resources necessary for protecting people and the environment. A listing of BEDs by title, work location, and work telephone number is contained in Section K.7 of this plan. The BED is on the premises or is available through an "on-call" list

[5] The Hanford Facility (site-wide) signals are provided in Attachment 4, Table 5.1. SST-specific communication equipment and warning systems are provided in section K.4.3.
[6] Evacuation routes for occupied buildings adjacent to the SST System are provided through information boards posted within buildings.

24-hours-a-day. Names and home telephone numbers of the BEDs are available from the Patrol Operations Center (POC) in accordance with Permit Condition II.A.3.

K.3 Implementation of the Plan

In accordance with WAC 173-303-360(2)(b), whenever there is a release, fire, or explosion, the BED will ensure that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion of any released materials. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. During the emergency, if samples of materials are required, sampling will be performed by qualified personnel and the samples analyzed as appropriate. The BED will use the following emergency procedures of WAC 173-303-360(2)(d) to implement an emergency event:

"If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health or the environment, he must report his findings as follows:

(i) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(ii) He must immediately notify the department and either the government official designated as the on-scene coordinator, or the National Response Center (using their 24-hour toll free number (800) 424-8802)."

As soon as possible after stabilizing event conditions, the BED will determine, in consultation with the site contractor environmental single-point-of-contact, if notification to Washington State Department of Ecology (Ecology) is needed to meet WAC 173-303-360(2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 4.2.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect personnel health and safety, the environment, and the facility (in that order of priority). If assistance from Hanford Patrol, Hanford Fire Department, or ambulance units is required, the Hanford Emergency Response Number (911 from site office phones or 373-0911 from cellular phones) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the SST System, the POC business number is used (373-3800).

K.3.1 Protective Action Responses

Protective action responses are discussed in the following sections. The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

K.3.1.1 Evacuation

If an evacuation is ordered or the evacuation siren sounds, personnel must leave the building or tank farm by the nearest safe exit and proceed to the staging area (refer to Section K.1, of this addendum) for accountability unless told otherwise.

The order to evacuate will be via the Hanford Site Emergency Alerting Systems. When possible, the following steps must be conducted concurrently.

AREA EVACUATION PROCESS
• Halt any operations or work and place the SST structures in a safe condition, if personnel health and safety is not threatened and time permitting. Use emergency shutdown procedures if necessary.
• Use whatever means are available (PA system, bullhorns, runners, etc.) to pass the evacuation information to personnel.
• Sound the evacuation siren (if available), or issue the order to evacuate by any available means.
• Evacuate personnel to the staging area. Assist those needing help (temporary/permanent/ disabled).
• Conduct personnel accountability. If unable to account for personnel, report personnel accountability results to the Protective Action Coordinator in the Hanford-Emergency Operations Center (Hanford-EOC).
• Inform IC of any potentially affected personnel (e.g., injured, contaminated, exposed, etc.) once the IC arrives at the ICP.
• Segregate personnel into the following general groups: PPE clothing-clad personnel, persons with keys to immediately available private vehicles, persons with keys to government vehicles, and all others.
• Load personnel in civilian clothes into private and government vehicles, load PPE-clad persons into a separate government vehicle, if possible, and try to provide reserve transportation for people with late shutdown duties.
• Relay pertinent evacuation information (routes, destination, etc.) to personnel with vehicle keys.
• Dispatch vehicles as soon as the vehicles are loaded.
• Load remaining personnel into vehicles, maintaining segregation if possible.
• Report status to the Hanford-EOC, request additional transportation if required, and report if any personnel remain who are performing late shutdown duties.

K.3.1.2 Take Cover

When the Take Cover Alarm is activated, personnel take cover in the nearest habitable building or trailer. A message followed by the Take Cover siren is transmitted over the area emergency sirens. The following actions will be taken or considered:

- Shut doors and windows and wait for further instructions.
- Secure unfiltered ventilation.
- Lock up classified documents, follow normal exit procedures from radiological areas (in preparation for a possible evacuation) etc.
- Report your location to the Accountability Aide or the BED.
- Accountability Aides provide accountability status to the Staging Area Manager for facility personnel during an event.
- Inform IC of potentially affected personnel (i.e., injured, contaminated, exposed, etc.) once the IC arrives at the ICP.

K.3.2 Response to Facility Operations Emergencies

Depending on the severity of the event, the BED reviews the site-wide and SST emergency response procedure(s) and, as required, categorize and/or classify the event. If necessary, the BED will initiate area protective actions and Hanford Site Emergency Response Organization[7] activation. The steps identified in the following description of actions do not have to be performed in sequence because of the unanticipated sequence of incident events.

K.3.2.1 Loss of Utilities

A case-by-case evaluation is required for each event to determine loss of utility impacts. When a BED determines a loss of utility impact, actions are taken to ensure dangerous and/or mixed waste is being properly managed. As necessary, the BED will stop operations and take appropriate actions until the utility is restored.

K.3.2.2 Major Process Disruption/Loss of Plant Control

The results of a major process disruption in the SST System are inclusive of the specific hazards discussed in the other Sections K.3.2.3 through K.3.2.7 of this addendum.

K.3.2.3 Pressure Release

Response to a pressure release includes the following:

- Notify personnel to leave the area of the hazard. In the event of any injuries, personnel will immediately call 911 from site office phones or 373-0911 from cellular phones for medical response.
- Inform the BED.
- If appropriate and safe to do so, shut off the affected system's source (e.g., steam decontamination unit by use of valves).
- Evacuate affected areas if directed by the BED.
- Determine impacts/risks associated with reentry (e.g., hazardous or radioactive releases, moisture or heat conditions).
- Inform appropriate maintenance personnel for repair.

K.3.2.4 Fire and/or Explosion

In the event of a fire, the discoverer will activate a fire alarm (if available); calls 911 from Site office phones or 373-0911 from cellular phones, or verify that the Hanford Emergency Response Number has been called. Automatic initiation of a fire alarm (through the smoke detectors and sprinkler systems) is also possible.

- Unless otherwise instructed, personnel shall evacuate the area/building by the nearest safe exit and proceed to the designated staging area for accountability.
- On actuation of the fire alarm, ONLY if personnel health and safety is not endangered and if time permits, personnel will shut down equipment, secure waste, and lock up classified materials (or hand carry them out). The alarm automatically signals the Hanford Fire Department.
- The BED will proceed directly to the ICP, obtain all necessary information pertaining to the incident, and send a representative to meet the Hanford Fire Department.
- The BED will provide a formal turnover to the IC, when the IC arrives at the ICP.
- The BED will inform the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste and mixed waste quantities released to the environment).

[7] The description of this organization is found in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

- If operations are stopped in response to the fire, the BED will ensure that systems are monitored for leaks, pressure buildup, gas generation, and ruptures if personnel health and safety are not endangered.
- Hanford Fire Department firefighters will extinguish the fire as necessary.

NOTE: *Following a fire and/or explosion, WAC 173-303-640(7) will be followed for the SST System regarding fitness for use.*

K.3.2.5 Hazardous Material, Dangerous and/or Mixed Waste Spill

Spills can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazards posed by the presence of *Atomic Energy Act* materials.

- The discoverer notifies the BED and initiates SWIM response:
  - **S**tops work
  - **W**arns others in the vicinity
  - **I**solates the area
  - **M**inimizes exposure to the hazards.
- The BED will determine which additional facility actions are required (i.e., securing ventilation)
- The BED will determine if emergency conditions exist requiring response from the Hanford Fire Department based on classification of the spill and injured personnel, and evaluates need to perform additional protective actions.
- If the Hanford Fire Department resources are not needed, the spill will be mitigated with resources identified in Section K.4 of this addendum and proper notifications are made.
- If the Hanford Fire Department resources are needed, the BED will call 911 from site office phones or 373-0911 from cellular phones.
- The BED will send a representative to meet the Hanford Fire Department.
- The BED will provide a formal turnover to the IC when the IC arrives at the ICP.
- The BED will inform the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste and mixed waste quantities released to the environment).
- If operations are stopped in response to the spill, the BED will ensure that systems are monitored for leaks, pressure buildup, gas generation, and ruptures if personnel health and safety are not endangered.
- Hanford Fire Department will stabilize the spill.

NOTE: *For response to leaks or spills and disposition of leaking or unfit-for-use tank systems follow WAC 173-303-640(7).*

K.3.2.5.1 Damaged or Unacceptable Shipments

Closure Unit Group 4 was designed to receive waste through existing underground piping from the Double-Shell Tank (DST) System (Operating Unit Group 12). This capability was removed by isolating the SST System from the DST System. The SST System does not receive dangerous waste or mixed waste shipments that require manifesting, therefore this section does not apply to Closure Unit Group 4.

K.3.3 Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The BED, as part of the ICP, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The BED will take measures, where applicable, to stop processes and operations; collect and contain released wastes and remove or isolate containers. The BED shall also

monitor for leaks, pressure buildups, gas generation, or ruptures in valves, pipes or other equipment, whenever this is appropriate and safe to do so.

K.3.4 Incident Recovery and Restart of Operations

A written recovery plan is needed following an event when the recovery actions could result in further risk to human health or the environment. This written recovery plan will be developed when necessary in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 9.2. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 5.1, also discusses different reports to outside agencies. If the contingency plan was implemented, Ecology will be notified before operations can resume [WAC 173-303-360(2)(j)]. This notification must include the following statements.

- No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed [WAC 173-303-360(2)(i)]; and
- All emergency equipment listed in the Contingency Plan is cleaned, and fit for its intended use before operations are resumed. [WAC 173-303-360(2)(ii)].

The notification required by WAC 173-303-360(2)(j) may be made via telephone and documentation of the notification will be included in the Hanford Facility Operating Record, SST System file. Additional information that Ecology requests will be included in the required 15-day report identified in Section K.5 of this addendum and required by WAC 173-303-360(2)(k).

For emergencies not involving activation of the Hanford-EOC, the BED will ensure that conditions are restored to normal before operations are resumed. If the Hanford Site Emergency Response Organization was activated and the emergency phase is complete, a special recovery organization could be appointed at the discretion of DOE to restore conditions to normal. This process is detailed in DOE and contractor emergency procedures. The makeup of this organization depends on the extent of the damage and the effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

K.3.5 Incompatible Waste

After an event, the BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup procedures are completed pursuant to WAC 173-303-360(2)(i). Clean up actions will be taken by SST System personnel or other assigned personnel. Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 9.2.3, describes actions to be taken.

Waste from cleanup activities will be designated and managed as newly generated waste. A field check for compatibility will be performed before storage. Incompatible wastes will not be placed in the same container and will follow the requirements of WAC 173-303-630(9). Containers of waste will be placed in approved storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the BED or the onsite recovery organization will ensure that the cause is corrected.

K.3.6 Post Emergency Equipment Maintenance and Decontamination

The BED will ensure that all listed in Section K.4 is cleaned and fit for its intended use before operations are resumed in accordance with WAC 173-303-360(2)(i)(ii). Depleted stocks of neutralizing and absorbing materials will be replenished; protective clothing will be cleaned or disposed of and restocked, etc.

All equipment used during an incident will be decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment will be checked for proper operation before storage for subsequent use. Consumable and disposed materials will be restocked. Fire extinguishers will be replaced.

K.4 Emergency Equipment

Emergency resources and equipment for the SST System are presented in this section.

K.4.1 Fixed Emergency Equipment

Fixed emergency equipment is not used to respond to emergencies in the SST System.

K.4.2 Portable Emergency Equipment

Type	Location	Capability
Fire Extinguisher	Throughout the SST System	Assists in control of a small fire.
Eye Wash/Safety Shower	Throughout the SST System	Flushes unwanted chemical/material from eyes, clothes, and body.
Decontamination Trailers	200 East and 200 West Area	Flushes unwanted chemical/material from eyes, clothes, and body.

K.4.3 Communications Equipment and Warning Systems

Type	Location	Capability
Operational Alarms	242-S 2750 Building/ (TMACS) Tank Farms Instrument Buildings	Notification of process upsets, equipment failure, hazardous material/waste release, loss of tank ventilation
Public Address (PAX)	272-AW	Communicate messages to personnel in noted locations
SST radio system	Various buildings, vehicles, and hand-carried radios	Two-way radio communications
Telephones	Various buildings throughout 200 East and 200 West Area	Communication

Note: *Site-wide communications and warning systems are identified in Permit Attachment 4, Hanford Emergency Management Plan (DOE/RL-94-02), Section 5.2.5.*

K.4.4 Personal Protective Equipment

Type	Location	Capability
Self-Contained Breathing Apparatus	Tank Farm Change Trailers 278-AW 2704-HV	Protects personnel from exposure to hazardous atmosphere and airborne particulates.
Respirators	2704-HV 278-AW	Protects personnel from exposure to hazardous atmosphere and airborne particulates
Personal Protective Clothing	Tank farm change rooms and trailers	Protects personnel from exposure to hazardous chemicals/materials

K.4.5 Spill Kits and Spill Control Equipment

Type	Location	Capability
Spill kits (Absorbents, spill pigs and pillows, dikes, and gloves)	• 242-S Evaporator • 241-AZ-701 Generator Building • 241-A-701 Compressor Building • 200-West Area, HS-0085 • 272-AW • 272-WA • 252-S Substation	Use to control and clean up most liquid spills and some solids

K.4.6 Incident Command Post

The ICPs will be identified in a fixed location or the IC will determine a location appropriate for the event. Emergency resource materials are stored at each location. The IC could activate the Hanford Fire Department Mobile Command Unit if necessary.

K.5 Required Reports

Post-incident written reports are required for certain incidents on the Hanford Site. The reports are described in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 5.1.

Facility management will note in the Hanford Facility Operating Record , SST System file, the time, date and details of any incident that requires implementation of the Contingency Plan (refer to Section K.3 of this addendum). Within fifteen (15) days after the incident, a written report must be submitted to Ecology. The report must include the elements specified in WAC 173-303-360(2)(k).

K.6 Plan Location and Amendments

Copies of Attachment 4 [*Hanford Emergency Management* Plan (DOE/RL-94-02)] will be maintained per Permit Condition I.M.1. Copies of this Building Emergency Plan, and SST System Permit Addendum K, will be maintained at the following location:

- MO-268

This plan will be reviewed and immediately amended as necessary, in accordance with Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 14.3.1.1.

K.7 Facility/Building Emergency Response Organization

K.7.1 SST System Building Emergency Director

Title	Work Location	Work Phone
Building Emergency Director	Various	373-2689

Names and home telephone numbers of the BEDs are available from the POC (373-3800) in accordance with Permit Condition II.A.3.

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Addendum P

ADDENDUM P
SINGLE SHELL TANK CLOSURE PERMIT
COMPLIANCE SCHEDULE

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ADDENDUM P
SINGLE SHELL TANK CLOSURE PERMIT
COMPLIANCE SCHEDULE

Permit Subsections	Requirements	Submission Date/Deadline	Update/Renewal frequency
V.4.B.2.a	Addendum B: SST system process information	Within 180 days after the effective date of this Permit SST System process information that has been identified as of the effective date of this Permit	
V.4.B.2.b	Update Addendum B with new or information		Annually, by March 1
V.4.B.3.b	Addendum C: WMA process information (including component process information)	Within 180 days after the effective date of this Permit for WMA C with the permit modification required to meet HFFACO milestone M-045-82	
V.4.B.3.c	Addendum C: WMA Process Information, except WMA C	By December 30, 2015, provide Ecology with a schedule for submittal of all WMA process information, except WMA C to define how all of the WMA process information will be submitted to Ecology no later than December 30, 2025, with no more than one WMA submittal to Ecology per year	Annually according to the approved schedule.
V.4.B.3.d	Update Addendum C with new or revised information		Annually by March 1
V.4.B.3.e	Submit a letter to Ecology if new or revised information identified		Annually, by March 1
V.4.C.1.d.ii	Addendum D: Groundwater Monitoring Plans	Within 120 days of the effective date of this Permit, submit groundwater monitoring plan for WMA C; Within 180 days of the submittal of groundwater monitoring plan for WMA C, submit groundwater monitoring Plans for another three WMAs at Permittees' selection; Within 365 days of the submittal of groundwater	Submit revised Groundwater Monitoring Plans within 90 days when conditions warrant a monitoring plan revision follow Permit Condition V.4.C.1.d.vi

Permit Subsections	Requirements	Submission Date/Deadline	Update/Renewal frequency
		monitoring plans for WMA C, submit Groundwater Monitoring Plans for the remaining three WMAs	
V.4.C.1.d.i	Groundwater Monitoring Plan implementation	Within 45 days after Groundwater Monitoring Plan is approved	NA
V.4.C.1.c.ii	Data Quality Objectives (DQO) for groundwater monitoring	60 days prior to the submission of a groundwater monitoring plan	When a groundwater monitoring plan is revised
V.4.C.3.a	Hanford Site Groundwater Monitoring and Performance Report		Annually, by July 31 for the previous calendar year
V.4.D.2, V.4.D.3	Phase 2 RFI/CMS Report for WMA C and modification request to Ecology for selection of a corrective action related to WMA C	Following schedules of HFFACO milestone M-045-61	
V.4.D.4	Corrective Measures Implementation (CMI) Work Plan for WMA C	Following schedules of HFFACO milestone M-045-62	
V.4.D.5	Preliminary schedule and enabling assumptions for completing corrective action at all WMAs except WMA C	December 31, 2014	
V.4.D.6	Complete implementation of interim measures in accordance with the requirements of HFFACO milestone M-045-56	Following schedules in HFFACO Milestone M-045-56	
V.4.D.7	Control surface water infiltration in the WMAs in accordance with the requirements of HFFACO milestone M-045-59	Following schedules in HFFACO milestone M-045-59	
V.4.D.8	Interim barrier installation	Following schedules in HFFACO milestone M-045-92	
V.4.E.1.a.i	Addendum O: Preparedness and Prevention description of the practices to prevent hazards in the SST System or provide Ecology with a justification of any request for a waiver of the preparedness and prevention requirements	Within 60 days of the effective date of the Permit	
V.4.E.1.a.i (c)	Notification of any pumping activities (excluding tank waste retrieval)	60 days prior to conducting pumping activities or provide Ecology with a schedule and basis for conducting the pumping activities in less than 60 days	

Permit Subsections	Requirements	Submission Date/Deadline	Update/Renewal frequency
V.4.E.1.d.i.	Mapping and Marking Plan for the SST System	Within three hundred and sixty five (365) days after the effective date of this Permit	Update annually
V.4.E.1.d.iii	Implementation of Mapping and Marking Plan for the SST System	In accordance with the schedule within the Plan	
V.4.E.1.e.i	Comply with the requirements of the HFFACO, Milestone M-045-91 series to perform SST System Integrity Assessment	Follows the schedules in HFFACO, Milestone M-045-91 series	
V.4.E.1.f.ii	New SST components design and installation information package	Prior to installation, and time needed per Permit Condition I.C.3	
V.4.E.1.g	Provide Ecology with a schedule to evaluate leak detection monitoring technology every five (5) years and provide a report to Ecology	Within two (2) years of the effective date of this Permit	
V.4.E.2.c.ii (c)	Submit a report identifying methods and equipment used for monitoring liquid level changes in the SSTs	Within ninety (90) days after the effective of this Permit	
V.4.E.2.e.vii	Annual Leak Detection and Intrusion Monitoring Report		Annually, by March 31
V.4.E.4.a.	Addendum L: Training Matrix	Within 60 days of the effective date of this Permit	
V. 4. E. 5. a.	Addendum E: Security, submit a description of security procedures	Within 90 days of the effective date of this Permit	
V.4.E.6.c	Addendum I: SST System Inspection Schedule	Within 90 days of the effective date of this Permit	
V.4.F.1.a.i and V.4.F.1.a.ii	Complete tank waste retrieval from SSTs	Follow the schedules contained in Permit Conditions V.4.F.1.a.i and V.4.F.1.a.ii	
V.4.F.5.c	SST System temporary waste transfer lines tracking system information and quarterly update	Follow Permit Condition V.4.F.5.c	
V.4.F.5.g	Submit a revision to RPP-12711, Revision 3K, to include a leak response plan for leaks from any temporary waste transfer line	Within 180 days of the effective date of this Permit	
V.4.G.3	SST System Closure	Follow schedules specified in Permit Condition V.4.G.3 for closure of WMA C, and all other WMAs	
V.4.G.4.a.i	SST System Closure Plans submission	To be submitted in a timely manner to support the SST System closure schedule specified in Permit Condition V.4.G.3	

Permit Subsections	Requirements	Submission Date/Deadline	Update/Renewal frequency
V.4.G.6.d	Interim Risk Assessment Report for a WMA	At least three years prior to the submittal of the closure plan for the WMA	
V.4.H.2	Certification Of Post Closure Performance	No later than 60 days after completion of the established post closure care period for each WMA and the entire SST System	

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