Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

0101590
CC RECD: 03/13/01

01-RCA-192

MAR 09 2001

Mr. F. C. Jamison, Manager
Waste Management Project
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Jamison:

REQUEST TO FORMALIZE 221-T TANK SYSTEM CLOSURE AGREEMENT

The U.S. Department of Energy, Richland Operations Office (RL) requests the State of Washington Department of Ecology (Ecology) agreement with the following proposed approach for closure of the Resource Conservation and Recovery Act (RCRA) 221-T Tank System and for management of the waste currently in this tank system. This approach allows the 221-T Tank System to remain in place and tank waste to remain in the system. The system will be monitored until final tank system closure in coordination with future 221-T "canyon" disposition. Tank system closure and management of tank waste is documented in Chapter 11.0 of the Draft T Plant Complex Part B Permit Application.

This approach has been previously provided to Ecology and the U.S. Environmental Protection Agency (EPA). (Please see Attachments 1, 2, and 3.) In August 1999, a demonstration to delay closure in accordance with Washington Administrative Code (WAC) 173-303-610 (4)(c) was submitted to Ecology identifying 221-T Tank System closure constraints (Attachment 1). The combined tank system closure and tank waste management approach was presented to Ecology and the U.S. Environmental Protection Agency (EPA) on March 22, 2000, (Attachment 2). The approach is also contained in a working draft (WD-1) of the "Hanford Facility Dangerous Waste Part B Permit Application, T Plant Complex" (Part B) (DOE/RL-95-36), Chapter 11.0 (Closure), which was submitted to Ecology on August 25, 2000 (Attachment 3). Ecology has not formally responded to the tank system closure and tank waste management approach and no formal agreement has been reached.

Ecology agreement with this approach is necessary to allow the tank system to remain unclosed until the time of final canyon disposition. The 221-T Tank System has received its final volume of dangerous waste and therefore requires closure under dangerous waste regulations (WAC 173-303). However, because the tank system is located within the 221-T Building, a "canyon" structure that presents significant structural, radiological, and budgetary closure constraints, the system cannot be closed until the time of final canyon disposition.

The tank system currently contains liquids and sludge having mixed waste constituents and polychlorinated biphenyls (PCB) at levels regulated under Toxic Substances Control Act of 1976 (TSCA). RL, EPA, and Ecology have agreed to work together to resolve PCB waste management issues across the Hanford Site. However, no clear management pathway currently

exists for this radioactive PCB waste. Because tank system secondary containment does not meet all RCRA requirements for storage of liquids and cannot be upgraded, Ecology agreement is necessary to allow continued storage of liquids.

RL continues to work with EPA and Ecology to determine the best management approach for the waste. RL will continue to keep Ecology involved with all discussions regarding the 221-T Tank System.

After formal Ecology approval of the proposed tank system closure and tank waste management approach by inclusion of T Plant Complex into the Hanford Facility RCRA Permit, changes to the approach would require Ecology approval via the permit modification process.

If you have questions or need further information please contact Ellen M. Mattlin, of my staff, at (509) 376-2385 or Michael S. Collins, Waste Management Division, on (509) 376-6536.

Sincerely,

Joel Hebdon

Joel Hebdon, Director
Regulatory Compliance and Analysis Division

RCA:EMM

Attachments:
1. RL Letter 99-EAP-425
2. Presentation to Ecology and EPA
3. RL Letter 01-RCA-120

cc w/attachs:
Ecology Library, Kennewick
J. H. Richards, CTUIR
G. P. Davis, Ecology
D. R. Sherwood, EPA
B. M. Barnes, FHI
R. H. Engelmann, FHI
R. H. Gurske, FHI
S. N. Luke, FHI
Environmental Portal, LMSI
P. Sobotta, NPT
R. Jim, YN

Enclosure 1

RL Letter 99-EAP-425

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

99-EAP-425

AUG 02 1999

Mr. R. J. Julian, Project Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Julian:

REQUEST TO EXTEND THE TIME FOR WASTE REMOVAL AND CLOSURE OF THE 221-T TANK SYSTEM, AS PER WASHINGTON ADMINISTRATIVE CODE (WAC) 173-303-610 (4)(c)

The U. S. Department of Energy, Richland Operations Office (RL) is requesting that the State of Washington Department of Ecology (Ecology) approve a time extension to remove waste from, and accomplish closure of, the 221-T Tank System as allowed in WAC 173-303-610 (4)(c). Waste was last added to the tank system on June 3, 1999. This request is based on the following demonstrations.

Several issues prevent the removal of all of the waste from the 221-T Tank System within 90 days of receiving the final volume of waste as specified in WAC 173-303-610 (4)(a). These issues are:

- The most appropriate option for handling wastes removed from 221-T is to transfer those wastes to the Double Shell Tank (DST) System. However, recent sampling has determined that several of the 221-T tanks contain Toxic Substances Control Act (TSCA) regulated polychlorinated biphenyl (PCB) wastes. The current DST System waste acceptance criteria do not allow acceptance of any waste which is subject to TSCA regulation. In order for the DST System to receive the waste it must first be treated to remove the PCBs. If such treatment is determined to be cost prohibitive or impractical, another method for managing the waste will be required. Methods for treating the waste and alternative management pathways are currently being evaluated. Until it is determined how to address the TSCA compliance issue, waste cannot be removed from the 221-T Tank System.

- Even without the severe complication presented by the TSCA compliance situation, logistical constraints prevent transfer of the waste to the DST within the 90 day time period. A 219-S Tank Trailer is the only tanker available for transferring waste to the DST System. It is estimated that six loads will be required to accomplish transfer to the DST System.

- The methods available for pumping waste from the tank system will leave tank heels due to loss of pump suction (loss of suction generally occurs at one foot above tank bottom). In order to minimize personnel radiation exposures, these tank heels are planned to remain in the tank pending final tank closure actions. Waste volumes that will remain in the tank system are estimated as follows: 211-T sump less than 150 gallons, tank 6-1 heel less than 1,200 gallons, tank 5-6 heel approximately 370 gallons, tank 5-7 heel approximately 600 gallons, tank 5-9 heel approximately 45 gallons, tank 11-R heel less than 270 gallons, and tank 15-1 heel less than 2000 gallons. It is expected that the liquids remaining in the 6 tanks and sump will eventually evaporate, leaving only a sludge in the bottom of the tanks and sump. The tanks and sump will remain in this condition until final closure, presenting only a minimal risk of release. There is a concern that the sludge may dry and form a hard pan like material. This hard pan may present problems with future closure options for rinsing and/or solids removal. Options on how to best manage the sludge material until final closure are currently being evaluated and may include the periodic addition of water.

It is also not possible to complete partial and final closure activities for the 221-T Tank System within 180 days after receiving the final volume of waste as specified in WAC-173-303-610 (4)(b). As previously described, it will take more than 90 days to transfer waste out of the Tank System. Additional time will be needed for:

- Characterizing the tank system waste and ancillary equipment for subsequent management.
- Evaluating alternatives for tank closure in light of potential TSCA treatment issues.

Further detail on RL's planned Resource Conservation and Recovery Act closure approach and schedule are described in the enclosed "Demonstration for Delay In Closure of the 221-T Tank System."

RL requests approval of the waste removal and closure schedule set forth in this letter and the enclosure. Approval is requested prior to September 1, 1999, the existing completion date for the Hanford Federal Facility Agreement and Compliance Order Milestone M-32-03.

AUG 02 1999

Should you have any questions regarding this request for an extension to remove waste from and accomplish closure of 221-T Tank System, please contact Ellen Mattlin, of my staff, at (509) 376-2385; Elizabeth Bowers, of Waste Programs Division, on (509) 373-9276; or Tony Miskho, of Fluor Daniel Hanford, Inc., on (509) 376-7313.

Sincerely,

for James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division

EAP:EMM

Enclosure:
Demonstration for Delay in Closure
of the 221-T Tank System

cc w/encl:
Ecology Library, Kennewick
J. R. Wilkinson, CTUIR
A. Valero, Ecology
W. D. Adair, FDH
S. M. Price, FDH
J. D. Williams, FDH
Environmental Portal, LMSI
P. Sobotta, NPT
R. C. Bowman, WMH
R. H. Engelmann, WMH
C. K. Girres, WMH
L. L. Powers, WMH
R. Jim, YIN

Demonstration for Delay In Closure of the 221-T Tank System

Introduction

This demonstration presents a proposal for closing the 221-T Tank System over the next four to five years under the requirements of Washington Administrative Code (WAC) 173-303-610. Initiation of closure and closure planning activities are necessary because there are no plans to receive dangerous waste into the tank system after June 1999.

Although consideration was given early in 1999 to manage the 221-T Building (including the tank system) under Section 8.0 of the Hanford Federal Facility Agreement and Consent Order (TPA), and for cost efficiency to defer full closure of the tank system until final decontamination and decommissioning, a determination has been made that the 221-T Building is not ready for such a status. There currently are a number of potential future missions under consideration for the building. Decision points pertaining to these are shown on the schedule (see pp. 4-5). Potential missions include:

- Treatment and/or storage of remote-handled transuranic waste (RH-TRU).
- Interim storage of K Basins sludge (storage until RH-TRU treatment facility is available). Note the U.S. Department of Energy, Richland Operations Office (RL) directed Fluor Daniel Hanford, Inc. on July 6, 1999 to proceed with necessary planning for interim sludge storage at the 221-T Building.
- Canyon Disposal Initiative pilot or demonstration activities

This proposal is designed to satisfy the following criteria:

- Be compatible with potential new missions for the 221-T Building.
- Be protective of human health and the environment.
- Satisfy WAC 173-303-610 closure requirements for areas where dangerous and mixed waste was stored and managed.
- Minimize costs, especially before mission decisions are made.

Assumptions

The following assumptions underlie the proposal:

1. The last date of waste receipt into the 221-T Tank System was June 3, 1999.

2. A draft partial closure plan for the 221-T Tank System will be developed and submitted to State of Washington, Department of Ecology (Ecology) by October 31, 1999. The plan will focus on tank system closure, and provide an extended closure schedule.

3. Decisions concerning future missions will be made according to the included schedule (see pp. 4-5).

4. At any time during partial closure activities, RL might decide there is no further mission for 221-T, and seek to manage the facility under Section 8.0 of the TPA.

Proposal

It is proposed to close the 221-T Tank System with a four-phase process. The phases and activities are shown on the schedule (pp. 4-5), and described as follows.

Phase I. Tanks will be pumped to a low level, with liquids transferred via tanker trailer to the Double-Shell Tank (DST) System through the 204-AR Waste Unloading Station. In addition, isolation measures will be taken to prevent future introduction of liquid waste into the system, including, but not limited to:

- Removal of all liquid chemical and liquid waste stored on the 221-T Building canyon deck.
- Disconnection of safety showers (which drain to the system).
- Plugging of floor drains.

These actions will minimize the potential for release of dangerous waste to the environment.

In addition, the waste will be characterized in preparation for the transfer to the DST system. The goal is to complete Phase I by March 31, 2000. Completion of Phase I is contingent upon:

- Resolution of Toxic Substances Control Act (TSCA) concerns with the 221-T Tank System. Currently, the DST System will not accept TSCA regulated waste. In order for the DST System to accept the 221-T Tank System waste, it will be necessary to treat the waste, or change DST System acceptance criteria. Treatment methods, and alternative management pathways, are being evaluated.

- Availability of the 204-AR Waste Unloading Station to receive waste during the period.

Following pump down of the tanks, the heels will be allowed to dry, unless it is determined that drying will form a hard pan-like material. A hard pan might foreclose later closure options for rinsing and/or solids removal. Also, a risk analysis based on analytical data will be done to ensure the sludge will not become unstable over time. The hard pan evaluation and risk analysis will be conducted during Phase I.

Transfer activities for moving waste to 204AR are funded in fiscal year (FY) 1999. Funding has not yet been identified for addressing TSCA concerns.

Phase II. This will involve the development and execution of a sampling and analysis plan designed to provide a characterization of waste in the 221-T Tank System necessary for subsequent management of the waste and closure of the tank system. The results from this phase will assist in developing and evaluating cost-effective closure options.

This activity is proposed to take place in the FY 2000 timeframe.

Currently there is no funding identified for Phase II, with the exception that there is limited funding available for maintenance and operation of the 221-T canyon crane. The crane will be needed for conducting sampling activities. An approved schedule will allow funding requests to be initiated.

Phase III. The third phase will involve the development and evaluation of options for further closure actions. The chosen option will be incorporated into a revision of the 221-T Tank System partial closure plan, which will be submitted to Ecology for review and comment before finalization.

It is anticipated this phase will take approximately 1½ years, beginning in FY 2001.

There is no funding currently identified for this activity. An approved schedule will allow funding requests to be initiated.

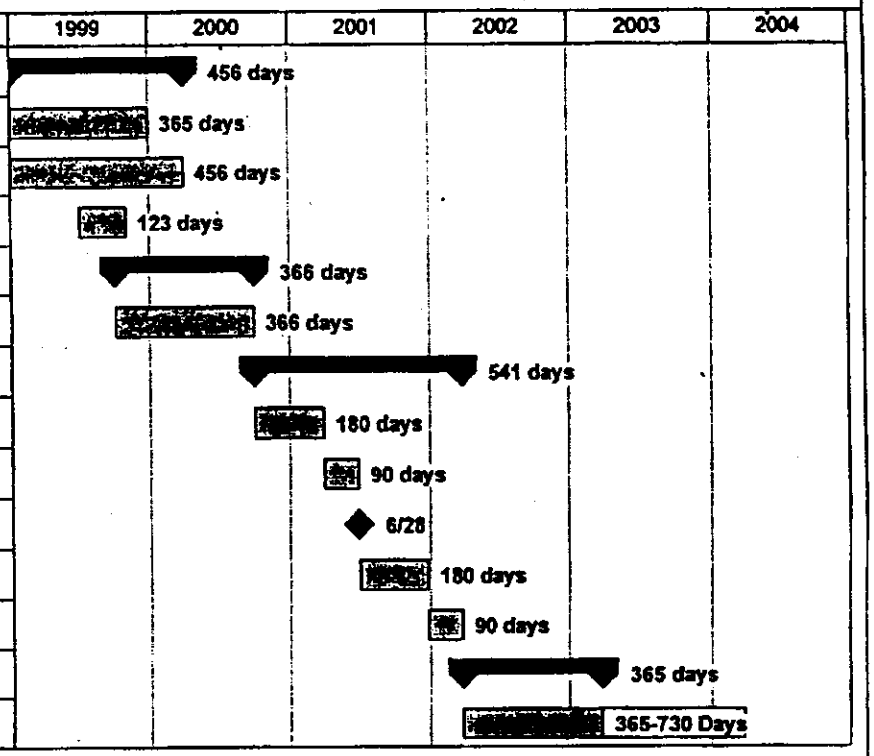
Phase IV. This is the implementation phase of the closure plan. There are a number of possibilities for closure. Depending on the results of the Phase II characterization, it is possible some portions of the tank system could be clean closed without further closure work. Some components may be segregated as low-level waste. Components of the system that cannot be clean closed in such a fashion could be:

- Rinsed to meet clean closure requirements.
- Declared a waste, and accepted for storage as debris in the 221-T containment building.
- Removed to another on-site facility.
- Some combination of these.

The schedule for accomplishing this depends on funding and the closure approach taken, but would likely take one to two years. An approved schedule will allow funding requests to be initiated.

221-T Tank System Closure
Proposed Schedule

ID	Task Name	Start	Finish
1	Phase I Activities	1/1/99	3/31/00
2	Obtain Tank Farms Approval to Ship Waste	1/1/99	12/31/99
3	221-T Tank System Pump Down	1/1/99	3/31/00
4	Prepare 221-T Tank System Partial Closure Plan Rev. 0	7/1/99	10/31/99
5	Phase II Activites	10/1/99	9/30/00
6	Baseline Sampling for Partial Closure Plan Preparation	10/1/99	9/30/00
7	Phase III Activities	10/1/00	3/25/02
8	Prepare/Submit Partial Closure Plan, Rev. 1	10/1/00	3/29/01
9	Ecology Review Partial Closure Plan, Rev. 1	3/30/01	6/27/01
10	Ecology Submit Notice of Deficiencies (NODs)	6/28/01	6/28/01
11	Negotiate Issues	6/29/01	12/25/01
12	Resubmit for Ecology Approval	12/26/01	3/25/02
13	Phase IV Activities	3/26/02	3/25/03
14	Implement Closure	3/26/02	3/25/03

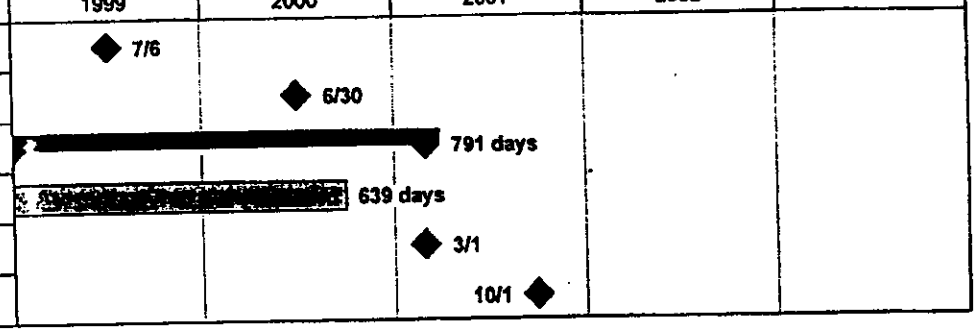


Project: 221TClousre
Date: Mon 8/2/99
File: 221TClosure

Contingency
Task
Progress
Milestone
Summary

221-T Operation/Decisions
Proposed Schedule

ID	Task Name	Start	Finish
1	K-Basin Sludge Interim Storage at T-Plant Decision	7/6/99	7/6/99
2	M91-03 Program Management Plan Issued	6/30/00	6/30/00
3	Canyon Disposal Initiative (CDI) (1)	1/1/99	3/1/01
4	CERCLA Process	1/1/99	9/30/00
5	CDI ROD	3/1/01	3/1/01
6	Begin Removal of Fuel From T-Plant (2)	10/1/01	10/1/01



Project: 221TClousre
Date: Mon 8/2/99
File: 221Toperation-decision

Task Progress Milestone Summary

(1) Source: Bechtel

(2) Source: PBS #RL-WM04

Enclosure 2

Presentation to Ecology and EPA

221-T Tank System

Proposed Closure Approach

221-T Tank System

- **221-T TANK SYSTEM INFORMATION**

- The 221-T Tank System operated from 1957 to June, 1999, in storage of liquid mixed waste generated in the 221-T and 2706-T Buildings during decontamination of radioactive tools and equipment.

- The 221-T Tank System does not meet WAC 173-303-640 secondary containment, leak detection, and inspection requirements. The system can't be upgraded and so will be closed. The tank system is now permanently isolated.

- A WAC 173-303-610 (4)(c) demonstration to delay closure recognizing tank system closure constraints was submitted to Ecology in August 1999 (99-EAP-425).

- The tank system is part of the T Plant Complex TSD unit for which a DRAFT Part B Permit Application (including closure Chapter 11.0) is scheduled for submittal to Ecology in June 2000 for inclusion into the Hanford Facility RCRA Permit during Mod H, 2002.

221-T Tank System

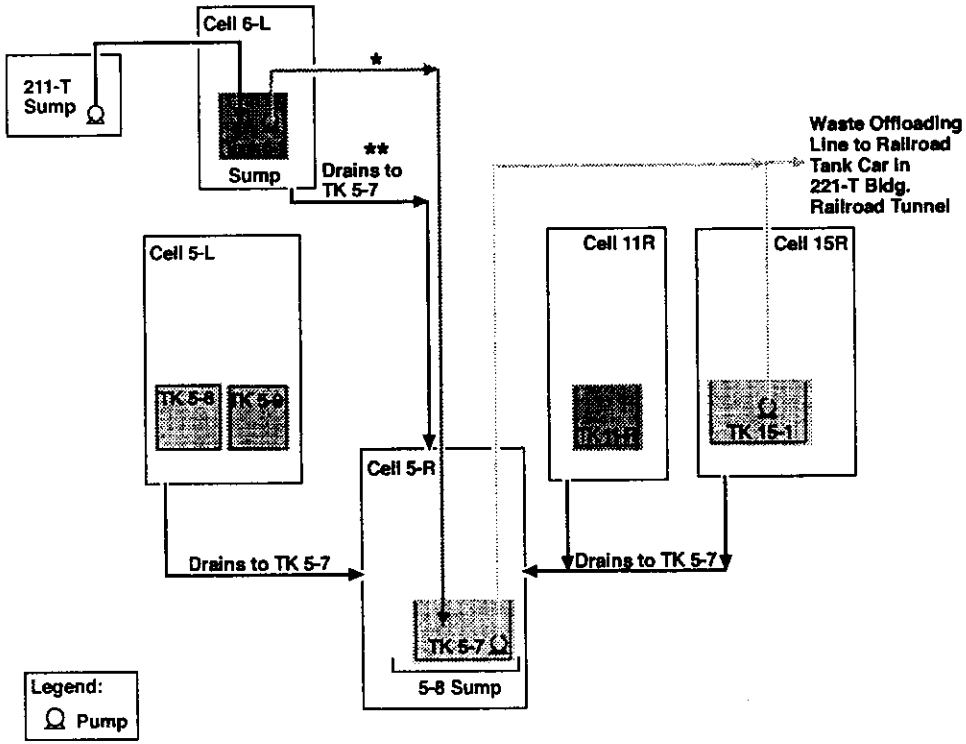
- **TANK SYSTEM INFORMATION** (Continued)

- T Plant is identified in the Long-Term Facility Decommissioning Plan, (DOE/RL-96-0046) as the "T Plant facility complex" and as a "Candidate Key Facility" for future decommissioning under Section 8.0 of the Tri-Party Agreement but has not yet formally been declared a Key Facility.

- 221-T Tank System is comprised of six, solid-bottom, stainless steel tanks located in the 221-T 'canyon' and the 211-T sump located between 221-T and 2706-T. The system currently contains approximately 21,260 gallons of liquids and sludge:
  - Tank 15-1 contains 6724 gallons.
  - Tank 5-7 (in Cell 5R) contains 6472 gallons. Cell 5R holds Sump 5-8 that is dry.
  - Tank 5-6 (closed-top) contains 416 gallons.
  - Tank 5-9 (closed-top) contains only sludge (no liquids).
  - Tank 6-1 contains 7500 gallons.
  - Tank 11R contains only sludge (no liquids).
  - 211-T Sump contains 150-gallons.

221-T Tank System

Current 221-T Tank System Waste Transfer Configuration



* portable pump and transfer line

** drains no longer used to transfer waste but would collect spills (if any) and transport to TK-5-7.

H00020156.1

221-T Tank System

- **TANK SYSTEM INFORMATION** (Continued)

- The liquid fraction of the tank waste is primarily rainwater mixed with some dilute radioactive decontamination solutions. Sludge is highly radioactive solids.

- Tank waste is 'F-listed' mixed waste due to potential contact with various spent organic solvents. Based on recent sampling, it is possible liquids would not designate as characteristic dangerous waste. Sludge has not recently been analyzed for dangerous waste constituents.

- Tank waste also contains PCBs and the requirements pertaining to 'PCB remediation waste' could apply. Recent sampling shows no detections of PCBs in liquids. PCB concentrations in sludge on a dry weight basis are:
  - TK 5-7 at 702 ppm PCBs
  - TK 6-1 at 282 ppm PCBs
  - TK 15-1 at 98 ppm PCBs
  - 211-T Sump at 30 ppm PCBs

221-T Tank System

- **INFORMATION** (Continued)
- Tanks 6-1, 5-7, and 15-1 are open topped and ventilate to the monitored canyon atmosphere. Liquid is naturally evaporating from these tanks @ approximately 10.5 gallons per day (3800 gallons per year) and could be gone by mid-2005.

- The 221-T Tank System currently poses minimal (and declining) risk to human health and the environment:
  - Tank system components (except the essentially empty 211-T Sump) are in the 221-T canyon that is a containment building located in the remote 200 Area of the Hanford Site.
  - Tank liquid level monitoring shows no signs of tank leakage. Tank levels are not declining and TK 5-7 (that would receive any spills via building drains) levels are not increasing.
  - Tank waste (liquids and sludge) is stable (incompatible, reactive, or ignitable wastes were not added to the tank system) and sludge is expected to remain stable after liquids are gone. Stability of dry sludge is being evaluated to ensure its safety during storage.
  - Because the tank system is isolated from further waste additions and liquid waste is naturally evaporating, the risk of tank spills is declining.

221-T Tank System

- Because of radionuclides and PCBs, tank waste treatment, storage, and/or disposal options are very limited for waste removed from the system:
  - **Treatment:** Options limited for liquids - none for sludge
    - The TSCA 'free release' level of .5 ppb PCBs for liquids could be achievable by filtration but .5 ppb is below current method detection level for radioactive waste and so cannot be analytically verified.
    - Sludge is above the 1 ppm TSCA cleanup standard for PCB remediation waste and requires treatment or disposal; however, no treatment or disposal method is currently available due to high radioactivity.
  - **Storage:** Options limited for liquids - none for sludge
    - In the past, tank liquids were transferred to the Double Shell Tank System (DST) for storage but due to the presence of PCBs, this waste does not meet current DST waste acceptance criteria.
    - Because no large-volume, TSCA-compliant containers (e.g., tanker trucks or railcars) are available, removed TSCA-regulated liquids would have to be drummed (approximately 350 drums), provided with secondary containment, and stored.
  - **Disposal:** No disposal options currently exist for liquids or sludge
    - No incinerator currently exists for disposal of radioactive PCB liquids or sludge.
    - In the future, ATG will be available to thermally treat low-level PCB waste but not yet.

221-T Tank System

- **TANK SYSTEM RCRA CLOSURE IS NOT ACHIEVABLE AT THIS TIME**

- Tank waste cannot be removed from the tank system at this time because no reasonable treatment, storage, or disposal pathway currently exists (Page 6).

- Performing closure activities would interrupt the proposed, accelerated schedule for storage of K-Basins sludge in the 221-T canyon.

- Closure of 221-T Tank System (tanks, ancillary equipment, and containment) cannot be achieved until the entire 221-T canyon is dispositioned because of significant structural, radiological, and budgetary constraints:
  - Access to tanks, components, and containment for decontamination and/or removal is limited by building structure and tank design (i.e., tightly installed tanks, small tank access ports, waste transfer piping is imbedded in concrete, and the vitrified clay drain system used to transfer waste is embedded in concrete and is likely not amenable to decontamination).

  - High radiation dose rates in tanks and cells (4 REM per hour from a 20 ml sludge sample) pose significant ALARA concerns.

221-T Tank System

- **RCRA CLOSURE NOT ACHIEVABLE AT THIS TIME** (continued)

  - No budget currently exists for tank system closure activities. However, the following treatment, storage, and disposal options for tanks and tank waste, although generally NOT available, were evaluated for cost and schedule:
    - **Option #1**:
      - Remove liquids & sludge; containerize & store, or, decontaminate & store PCB liquids; store sludge.
      - Triple-rinse tanks & accessible piping to exit TSCA & remove tanks from cells for RCRA treatment or disposal.
      - 591 working days (approximately 2 years) costing **$5.9 Million**.
    - **Option #2**:
      - Remove liquids; containerize & store, or, decontaminate & store PCB liquids.
      - Tanks & sludge to remain in-place
      - Control airborne radioactive emissions
      - 447 working days (approximately 11/2 years) costing **$2.8 Million**.
    - **Option #3**:
      - Liquids, sludge, & tanks to remain in-place and monitored
      - Control airborne radioactive emissions
      - 145 days (primarily to control radioactive air emissions after shielding from liquids is gone, beginning mid-2005 and after K-Basin sludge is stored at T Plant Complex) - costing **$913,000**.

221-T Tank System

- **PREFERRED TANK SYSTEM CLOSURE APPROACH (Option #3)**

- Because 221-T Tank System waste cannot be removed at this time and tank system closure cannot be completed until 221-T 'canyon' disposition, the following closure path forward is proposed:
  - 221-T Tank System tanks, ancillary equipment, and tank waste (liquids, sludge, and residues) will remain in-place and be monitored to ensure that these materials pose only minimal risk to human health and the environment until final tank system closure in coordination with future 221-T 'canyon' disposition. The tank system closure approach and activities will be documented in Chapter 11.0 of the T Plant Complex Part B Permit Application.

- Tank system closure actions:
  - Keep the tank system permanently isolated from further waste additions.
  - Evaluate safety of dry sludge for long-term storage.
  - Continue monitoring for leaks while liquids remain.
  - Control tank system radioactive air emissions.
  - Continue appropriate tank system monitoring until final closure in coordination with future 221-T canyon disposition.

221-T Tank System

- **PREFERRED TANK SYSTEM CLOSURE APPROACH (continued)**

- Closure documentation actions:
  - Document 221-T Tank System closure in Chapter 11.0 of the T Plant Complex Part B Permit Application.
  - Resolve tank system closure issues via the Part B Permit Application Notice of Deficiency (NOD) process.
  - Chapter 11.0 will document:
    - Tank system closure agreements as enforceable Permit condition(s).
    - Tank system monitoring requirements until final closure.
    - Final tank system closure (including disposition of remaining tank waste) to be in coordination with future 221-T canyon disposition and will meet requirements of WAC 173-303-610 and all applicable regulations.
  - Necessary regulator notifications and tank waste disposal approval as required by 40 CFR 761.61will be pursued at the time of final closure.

221-T Tank System

- **JUSTIFICATION**

- Proposed approach is the most protective and cost-effective option:
  - Facilitates ALARA by eliminating radiological and chemical exposures from waste removal and treatment activities and by minimizing exposures during tank system monitoring to the time of final closure.
  - Allows K-Basins sludge storage planning to continue without interruption of schedule.
  - Saves from $1.8 to $5.0 million over the cost of alternative closure activity options without added risk to human health or the environment.
  - Ensures consistency of site cleanup actions by coordinating final tank system closure with future 221-T canyon disposition initiatives (e.g., Canyon Disposal Initiative, Section 8.0 decommissioning process).

221-T Tank System

- **JUSTIFICATION** (Continued)

- Inclusion into Chapter 11.0 is appropriate:
  - Eliminates costly duplication of effort in developing, reviewing and approving a stand- alone 221-T Tank System closure plan that would overlap the T Plant Complex Part B, Chapter 11.0 that is due to Ecology in June.
  - Delay of closure demonstration (99-EAP-425) and subsequent Ecology discussions provide a basis to approve including tank system closure into Chapter 11.0 thereby allowing closure discussions to focus on risk and cost-effectiveness considerations.
  - The T Plant Complex Part B Permit Application NOD process provides a schedule and administrative mechanism for resolving tank system closure issues and approving a closure approach.
  - Inclusion into the Part B and subsequently the Hanford Facility RCRA Permit, provides a method to enforce tank system closure conditions and to incorporate tank system monitoring into T Plant Complex operating requirements.

221-T Tank System

- REGULATOR AGREEMENTS
  - Liquids and sludge may remain in tanks and tanks may remain in place until the time of final closure.
  - Final 221-T Tank System closure (and disposition of remaining tank waste) will be coordinated with future 221-T canyon disposition.
  - Tank system closure will be documented in Chapter 11.0 of the T Plant Complex Part B Permit Application.

Enclosure 3

RL Letter 01-RCA-120

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

01-RCA-120

JAN 25 2001

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Wilson:

TRANSMITTAL OF CHAPTERS 1.0 AND 11.0 OF THE HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION (PART B) FOR THE T PLANT COMPLEX, WORKING DRAFT-1 (WD-1)(TSD-2-7)

Enclosed is Chapter 1.0 Part A, Form 3 (Enclosure 1) and Chapter 11.0 Closure and Financial Assurance (Enclosure 2) of the "Hanford Facility Dangerous Waste Permit Application, T Plant Complex (Part B)," DOE/RL 95-36, Working Draft-1 (WD-1). WD-1 was submitted to the State of Washington Department of Ecology (Ecology) June 7, 2000, without Chapters 1.0, 3.0 (Waste Analysis Plan), and 11.0 to support the Hanford Facility Resource Conservation and Recovery Act of 1976 Permit, Modification H, June 2002 Part B submittal date. Chapters 1.0 and 11.0 were informally submitted to Ecology July 26, 2000, and August 25, 2000, respectively, so that issue resolution could begin as soon as possible. Chapter 3.0 will be submitted to Ecology after Modification E of the Permit Waste Analysis Plan issues are resolved.

Should you have any questions regarding this transmittal, please contact Ellen Mattlin, of my staff, on (509) 376-2385 or Michael Collins, Waste Management Division, on (509) 376-6536.

Sincerely,

Steven H. Wisness, Acting Director
Regulatory Compliance and Analysis Division

RCA:EMM

Enclosures:
1. Chapter 1.0
2. Chapter 11.0

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Enclosure 2

DRAFT Chapter 11.0 (Closure and Financial Assurance)

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FIGURES

Figure 11-1. Example Decontamination and Inspection Checklist for T Plant Complex Closure. F11-1

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11.0 CLOSURE AND FINANCIAL ASSURANCE [I]

This chapter describes the planned activities for closure of the T Plant Complex in accordance with the requirements of WAC 173-303-610. The date for T Plant Complex closure has not been established. Closure will begin when T Plant Complex waste management units are no longer managing regulated waste.

11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE [I-1]

T Plant Complex closure will not occur until well into the future (Section 11.4). Consequently, a closure method for this unit (i.e., clean closure, 'modified' closure, or landfill closure) has not yet been determined. Clean closure as a *possible* closure option might be pursued for some or all T Plant Complex waste management units.

This chapter presents the performance standards and general closure activities for clean closure. Where pursued, clean closure would be with respect to dangerous waste contamination from RCRA TSD unit operations. For clean closing waste management unit(s), postclosure activities would not be applicable or required. Any portion of a unit unable to clean close before T Plant Complex decommissioning (e.g., 221-T canyon, Section 11.3.5.2) would be placed in a safe and stable condition protective of human health and the environment and closed during T Plant Complex decommissioning.

As described in Condition II.H.3 of the Hanford Facility RCRA Permit (Dangerous Waste Portion), federal facilities are not required to comply with financial assurance requirements of WAC 173-303-620.

11.2 CLOSURE PERFORMANCE STANDARD [I-1a]

Clean closure would eliminate future maintenance and be protective of human health and the environment. Clean closure as defined by the Hanford Facility RCRA Permit (Condition II.K.1) requires decontamination or removal and disposal of all dangerous waste, waste residue, or contaminated equipment, soil, or other material to clean closure performance standards of WAC 173-303-610(2). Clean closure will be achieved for soil and structures when removal and decontamination standards prescribed by WAC 173-303-610(2)(b) are visually or analytically verified.

11.2.1 Clean Closure Standard for Structures and Components

The clean closure removal and decontamination standard for metal or concrete materials (e.g., tanks, ancillary equipment, secondary containment, and storage area structures) remaining after closure will be a 'clean debris surface'. This standard meets clean closure requirements for containment buildings of WAC 173-303-695, for tank systems of WAC 173-303-640(8), and for container management areas of WAC 173-303-630(10). The standard is a visually verifiable standard established in accordance with alternative treatment standards for hazardous debris of 40 CFR 268.45, Table 1, even though such material is not hazardous debris. This standard is as prescribed in WAC 173-303-610(2)(b)(ii) and is consistent with Ecology guidance (Ecology 94-111). When the visual standard is met, the materials will be considered clean. The clean debris surface standard is as follows: "A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and dangerous waste, except that residual staining from soil and waste consisting of light shadows, slight streaks, and

minor discoloration; and soil and waste in cracks, crevices, and pits shall be limited to no more that 5 percent of each square inch of surface area" (40 CFR 268.45).

Initially, structures and components will be inspected visually to identify surfaces that meet the clean debris surface standard as-is (i.e., without decontamination). Surfaces shown by initial inspections to be potentially contaminated will be decontaminated to meet the clean debris surface standard. Decontamination could use appropriate physical or chemical extraction technology for hazardous debris (40 CFR 268.45 Table 1). Chemical extraction methods will not be subject to residence time requirements. Physical extraction methods used to meet this standard for concrete will not be required to remove 0.6 centimeter of the concrete surface. However, dangerous and/or mixed waste spill(s) to asphalt would be cleaned up by removal at the spill location of 0.6 centimeter of the asphalt surface.

As an alternative to the use of the clean debris surface standard for decontaminated surfaces, the rinsate generated during decontamination could be tested for 'constituents of concern' to this unit. Clean closure then would occur when constituents of concern in the rinsate are verified through analytical sampling and analysis to exist below health-based action levels. Constituents of concern will be identified from Chapter 1.0 and their action levels will be determined at the time of closure.

11.2.2 Clean Closure of Soil

Clean closure of soil will be with regard to contamination from TSD unit operations. Soil will be clean closed if no cracks or openings exist in containment that could have provided a pathway to soil for dangerous waste *and* if no other potential source of soil contamination from TSD operations is identified. Material surfaces will be inspected for cracks or openings and for evidence of dangerous and/or mixed waste contamination at such openings. Operating records will be checked for possible leaks to the location of openings. Cracks, if any, will be mapped and investigated to determine if these are through the thickness of the concrete. Seams and expansion joints will be considered when identifying potential contamination pathways. Soil beneath concrete surfaces that is not accessible for crack inspection cannot be clean closed in this manner (e.g., the 221-T Building).

Soil beneath cracks or openings will be sampled only to verify the absence of contamination above clean closure levels. Clean closure would be met when constituents of concern in soil are verified through analytical sampling and analysis to exist at or below health-based action levels as defined by the Hanford Facility RCRA Permit (Condition II.K.1) and as specified in WAC 173-303-610(2)(b)(i). The constituents of concern to this unit and their cleanup levels will be identified at the time of closure.

To minimize duplication of RCRA and CERLCA unit sampling efforts and to ensure consistency of Hanford Site soil cleanup actions, soil characterization sampling and soil remediation will not occur under this chapter. Information regarding contaminated soil will be entered into the *Waste Identification Data System* (WIDS) for future characterization and remediation in conjunction with facility decommissioning processes and with the appropriate *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) *of 1980* operable unit (OU) remedial action for soil. The results of operable unit activities in support of TSD unit closure will be documented in a later revision to this chapter.

11.3 CLOSURE ACTIVITIES [I-1b]

This section identifies methods that could be used to achieve clean closure of the various T Plant Complex waste management units. At the time of closure, this chapter will be reviewed and closure

activities modified as necessary to reflect current regulations, interagency agreements, and use of up-to-date closure methods.

Access to locations undergoing closure will be controlled during the closure period. Access will be limited to personnel required to support unit closure activities. All closure activities will be performed to keep personnel exposure as low as reasonably achievable (ALARA).

11.3.1 Maximum Extent of Operation [I-1b(1)] and Maximum Waste Inventory [I-1c]

The maximum extent of TSD unit operations of tank systems, container management areas, and containment buildings requiring closure under this plan is identified in Chapter 1.0. Section 11.3.4.2 identifies the 221-T Tank System that did not operate under this permit but will be closed under this chapter.

The maximum waste inventory for T Plant Complex waste management units is based on information contained in Chapter 1.0, latest revision.

11.3.2 Removing Dangerous Waste [I-1b(2)]

At the beginning of closure, all dangerous waste inventories (including liquid waste in tank systems, containerized waste in container management areas, and noncontainerized waste in containment buildings) will be removed and transferred to an appropriate receiving unit. Where required, noncontainerized waste will be packaged for transfer. Designation of waste and debris will meet the requirements of WAC 173-303 and disposal will meet the land disposal notification and certification requirements of WAC 173-303-140.

11.3.3 Closure Activities [1b(3)]

Clean closure of T Plant Complex waste management units will follow the same general steps:

- Remove and dispose of dangerous and/or mixed waste inventory
- Remove contaminated process equipment and components for reuse or disposal
- Review operating records and interview personnel to determine spill history
- Inspect structures and components to:
  - Identify surfaces that already meet the clean debris surface standard and clean close
  - Identify surfaces requiring removal or decontamination to meet the clean closure standard
  - Identify cracks or openings that could have allowed the escape of contamination to soil and if none, clean close soil if no other sources of contamination exist.
- Remove and dispose of potentially contaminated structures or decontaminate structures and components that will remain after closure to meet clean closure standards
- Re-inspect decontaminated surfaces for a clean debris surface or sample decontamination rinsate as described in Section 11.2.1 and clean close

- Sample soil beneath through-thickness cracks (if any) and clean close soil *or*, if contaminated, document soil contamination for disposition in conjunction with facility decommissioning processes and with the appropriate CERCLA OU remedial action for soil

- Decontaminate or dispose of closure waste and equipment

- Certify that closure activities were completed in accordance with the approved closure plan (this chapter).

Operating records for each waste management unit will be reviewed and cognizant operations personnel could be interviewed to obtain spill history. Spill history is necessary to help determine the need for and extent of decontamination necessary for clean closure. The records review will entail a review of all available records related to RCRA operations in waste management areas. The records review will include operations logbooks, RCRA weekly inspection records, a search for 'offnormal' event reports, and WIDS. Former and current cognizant operation personnel could be interviewed. Where the records review identifies spills during RCRA operations that were not cleaned up completely, affected surfaces will be closely inspected.

11.3.4 Closure of Tank Systems

Closure of the 2706-T Tank System and the 221-T Tank System (that did not operate under this permit) are within the scope of T Plant Complex closure. Tank system closure will occur in accordance with WAC 173-303-610 and WAC 173-303-640. To achieve tank system clean closure, all waste residues, contaminated containment system components, contaminated tanks and equipment, and contaminated soils must be decontaminated or removed and managed as dangerous waste [WAC 173-303-640(8)]. Piping beyond the unit boundary or that did not manage dangerous waste under RCRA permitted operations is outside the scope of this chapter.

11.3.4.1 2706-T Tank System Closure

The following tanks, ancillary equipment, and containment comprise the 2706-T Tank System that will be closed under this chapter:

- 2706-T railroad pit and sump
- 2706-TA sump
- 2706-TA HVAC sump
- 2706-TB Tank System (tanks T-XX-2706-220 and T-XX-2706-221)
- 2706-TB sump
- Pumps - 203, 204, 206, 207, 210, 211, 212, 215, 216.

11.3.4.1.1 Tanks and Ancillary Equipment

Tanks and ancillary equipment (including pumps, piping, stainless steel liners) could be removed as debris, designated, and transported to an appropriate TSD unit for disposal. Tanks and equipment that will remain at the unit after closure will be decontaminated to meet clean closure performance standards from Section 11.2.1. Decontamination will be by hand, using brushes, scouring pads, rags and nonregulated cleaners, or high pressure/low-volume steam or water spray. Decontamination solutions could combine water and approved cleaners or chemicals (e.g., nitric acid, citric acid) to remove mixed waste constituents. Decontamination will be conducted to minimize the quantity of rinsates generated. Rinsate and decontamination waste will be collected, designated, and managed accordingly.

Decontamination will be documented on a checklist similar to the *T Plant Complex Closure Decontamination and Inspection Checklist,* Figure 11-1. The decontaminated surfaces will be inspected visually as described in Section 11.2.1 and acceptance documented on the checklist used to document the decontamination. Copies of completed visual inspection checklist(s) will be filed in the Hanford Facility Operating Record.

Alternately, decontamination rinsate could be collected and sampled to verify clean closure as described in Section 11.2.1.

11.3.4.1.2 Secondary Containment

2706-T Tank System secondary containment consists of sealed or lined concrete floors and sumps of the 2706-T, 2706-TA, and 2706-TB Buildings. The 2706-T and TA Buildings are also 40 CFR Subpart DD containment buildings. Clean closure activities for tank system secondary containment also will meet the requirements for clean closure of containment buildings. Concrete surfaces will be removed *or* if remaining after closure will be inspected for a clean debris surface (Section 11.2.1). Radiation surveys and/or chemical field screening could be used to assist locating contamination. Acceptance will be documented on an inspection checklist.

Surfaces that do not meet clean closure standards would be decontaminated. Decontamination could be by hand using mops, rags, brushes, water, and appropriate nonregulated detergent or by mechanical means using a power scrubber or high-pressure/low-volume steam or water spray. Extreme contamination could be removed using more aggressive physical extraction technologies such as abrasive blasting, grinding, or scarification. Cleaning will be conducted so as to minimize the quantity of rinsates or residues generated. Sumps used as rinsate collection areas will be cleaned and inspected last. Rinsate and decontamination waste will be collected, designated, and managed accordingly. Decontamination and visual acceptance will be documented on a checklist and the checklist filed as described in Section 11.3.4.1.1.

Alternately, decontamination rinsate could be collected and sampled to verify clean closure as described in Section 11.2.1.

11.3.4.1.3 Closure of Underlying Soils

No pathway to soil is anticipated to exist for 2706-T Tank System contaminants. Engineered secondary containment of the 2706-T, TA, and TB Buildings is designed to prevent escape of waste to the environment and is maintained to ensure its integrity (Chapter 4.0). Nevertheless, the 2706-T Tank System concrete secondary containment surfaces will be inspected for cracks or openings. Acceptance will be documented on an inspection checklist. Cracks or other openings (if any) will be mapped and investigated. If found to be through-thickness of the concrete, the underlying soil would be sampled as described in Section 11.2.2 for clean closure.

Sample data would be evaluated and sample results compared to clean closure action levels for soil (Section 11.2.2). Constituents of concern that exceed the regulatory cleanup levels would be identified and the location documented for disposition outside the scope of this closure plan as described in Section 11.2.2.

11.3.4.2 221-T Tank System

The 221-T Tank System stored and treated liquid mixed waste generated during decontamination activities in the 2706-T and the 221-T Buildings. Except for the 211-T collection sump and associated

buried piping, 221-T tank system tanks and components are located in the 221-T Building. The following tanks systems and structures comprising the 221-T Tank System currently remain in place at the unit.

- Piping from 2706-T Building to the 211-T collection sump
- 211-T (belowgrade) concrete collection sump, including piping to the 221-T Building
- Tank 6-1, including cell 6L
- Tank 5-7, including containment sump 5-8 and the 610-millimeter liquid collection system
- Tanks 5-6 and 5-9, including transfer piping and cell 5L containment
- Tank 11-R, including containment cell 15L and transfer piping
- Tank 15-1, including cell containment and transfer piping.

11.3.4.2.1 221-T Tank System Closure Agreement

Final closure of the 221-T Tank System will occur in conjunction with 221-T canyon disposition.

In accordance with TPA milestone M-32-03-T03, the 221-T Tank System received its final volume of dangerous and/or mixed waste in June 1999. This action initiated the need to begin closure activities. In August 1999, a demonstration to delay closure in accordance with WAC 173-303-610 (4)(c) was submitted to Ecology to identify tank system closure constraints (99-EAP-425, Appendix 11-A). The basis for this demonstration was that significant structural, radiological (ALARA), and budgetary constraints presented by the canyon structure prevented tank system closure from being completed until canyon disposition. Further information was provided characterizing the remaining dry waste residues as stable **[Reference currently ongoing study when completed]**. Because these tanks and residues pose little risk to human health and the environment, Ecology agreed that tanks and the waste residues in the tank system could remain in place and monitored until final tank system closure in conjunction with the 221-T canyon disposition **[Reference agreement when formalized]**.

11.3.4.2.2 211-T Sump, Piping, and Soil

The 211-T collection sump of the 221-T Tank System includes the sump; its buried, abandoned piping between the 221-T and 2706-T Buildings; and, potentially impacted soils. These materials and media could be closed separately from portions of the tank system located in the 221-T Building.

The 211-T concrete collection sump could be excavated and disposed of as debris or could be inspected, decontaminated (as necessary), and clean closed in-place as described in Sections 11.2.1 and 11.3.4.1.2.

Buried, abandoned tank system piping will be excavated, designated, and disposed of accordingly. Buried piping had no secondary containment but was regularly tested to ensure its integrity (Chapter 4.0). Consequently, soil contamination from tank system operations is not anticipated. During excavation activities, radiation surveys and/or chemical field screening could be used to assist locating potential dangerous and/or mixed waste soil contamination. Because the excavation will be occurring within a CERCLA OU and therefore on a CERCLA site, contaminated soil will be returned to the excavation and the location documented for future disposition as described in Section 11.2.2.

11.3.5 Closure of Containment Buildings

The following are T Plant Complex containment buildings: 2706-T, 2706-TA, and 221-T (that includes the railroad tunnel, canyon deck, and canyon cells). Noncontainerized dangerous and/or mixed waste can be stored in these buildings under containment building storage provisions.

Clean closure of containment structures with regard to contamination from containment building storage operations will occur in accordance with WAC 173-303-610 and with WAC 17-303-695 that incorporates the requirements of 40 CFR 264.1102 by reference. At closure, all waste residues, contaminated containment system components, subsoil, structures, and equipment are to be decontaminated or removed and manage as hazardous waste [40 CFR 264.1102(a)]. Containment building(s) that cannot clean close are required by 40 CFR 264.1102(b) to be considered for closure as a landfill that could invoke postclosure requirements of WAC 173-303-610(8).

11.3.5.1 2706-T and 2706-TA Containment Buildings

Because the 2706-T and 2706-TA containment buildings are attached structurally and of similar design, their closures will be considered together and can follow the same general steps. These buildings have engineered secondary containment meeting the requirements of 40 CFR 264.1101 (Chapter 4.0). As described in Section 11.3.4.1.3, soil beneath these buildings is expected to be clean closed.

At closure, any noncontainerized waste will be containerized, as necessary and practicable, for transport to a receiving unit. Operating records will be reviewed and personnel interviewed to obtain spill history. Containment building storage area surfaces already not clean closed as a portion of 2706-T Tank System secondary containment closure (Section 11.3.4.1.2), will be inspected to identify surfaces that already meet clean closure standards. The inspection will look for cracks or openings that could harbor contamination or could have provided a pathway to soil for contamination. Radiation surveys and/or chemical field screening could be used to assist locating contamination. Contaminated containment storage surfaces will be decontaminated, reinspected for a clean debris surface, and the inspections documented as described in Section 11.3.4.1.2. Rinsate and decontamination waste will be collected, designated, and managed accordingly.

Alternately, rinsate from the decontaminated surfaces could be sampled to verify clean closure standards as described in Section 11.2.1.

11.3.5.2 221-T Containment Building

The 221-T Building is a 'canyon' structure. The final closure method for this structure has not been identified. This structure has been identified in *Long-Term Facility Decommissioning Plan* (DOE/RL-96-0046) as part of the 'T Plant facility complex' and as a candidate 'key facility' for decommissioning under the *Facility Decommissioning Process* of Section 8.0 of the Tri-Party Agreement. The *Facility Decommissioning Process* is intended to coordinate disposition of this structure with other similar Hanford Site structures and, where appropriate, with future disposition initiatives (e.g., Canyon Disposal Initiative). Because of the size and design of such structures, clean closure is not possible without significant demolition to gain access to potentially contaminated structure surfaces or underlying soils. If this structure formally is declared a key facility at the time of shutdown, the *Facility Decommissioning Process* could define a decommissioning pathway other than demolition and clean closure. At that time, this chapter will be modified to identify a final closure method and to address any required postclosure activities.

11.3.6 Closure of Container Management Areas

The container management areas requiring closure under this plan are as follows:

- 221-T tunnel
- 221-T canyon deck

- 2706-T Building (includes 2706-T, 2706-TA, 2706-T pad, and 2706-T yard)
- 214-T Building
- 271-T Cage
- 211-T Cage
- 211-T Pad
- 221-T R-5
- Treatment/Storage Pad (TSP)
- 221-T Head End.

Clean closure of container management areas will occur in accordance with WAC 173-303-610 and WAC 173-303-630(10). Clean closure requires removal of all dangerous waste and dangerous waste residues from the containment system and remaining containers, liners, bases, and contaminated soil must be removed or decontaminated. Asphalt pads are not used as secondary containment for waste containing free liquids. Consequently, contamination of asphalt pads is not anticipated.

The following activities will be performed to clean close container management areas:

- Remove any remaining containers of dangerous and/or mixed waste to an appropriate receiving unit
- Review operating records and interview personnel for spill history
- Perform initial visual inspection of container management area surfaces to identify surfaces that already meet the clean debris surface standard and clean close
- Identify cracks or openings that could have allowed the escape of contamination to soil
- Remove, *or* decontaminate as described in Section 11.3.4.1.2, storage area pads/floors having visible evidence of contamination (e.g., discoloration, material degradation, wetness, and odor) or where a history of unremediated spills exists. Radiation surveys and/or chemical field screening could be used to assist in locating contamination
- Visually inspect decontaminated surfaces or sample rinsate from decontaminated surfaces as described in Section 11.2.1 to verify the achievement of clean closure standards
- Investigate soil contamination pathways and, if necessary, sample to clean close soil *or* disposition potentially contaminated soil as described in Section 11.2.2.. Asphalt will not be sampled.
- Collect rinsate and decontamination waste, designate, and manage accordingly.

11.3.7 Closure of Containers

Operation of the T Plant Complex involves the storage and/or treatment of dangerous and/or mixed waste in various containers. Such containers can be constructed of wood, metal, cardboard, or fiberglass in the form of boxes, drums, and secondary containment pans. Pumps are herein considered containers with regard to decontamination of internals for clean closure.

Containers that held dangerous and/or mixed waste could be removed and transported to a permitted unit for disposition or rendered 'empty' at the T Plant Complex in accordance with WAC 173-303-160(2). Containers could be rendered empty by being triple rinsed following the requirements of WAC 173-303-160(2)(b). Container liners will be removed as waste, designated, and disposed

accordingly. Container decontamination solutions or waste residues generated onsite will be collected, designated, and managed accordingly.

11.3.8 Sampling Quality Control [I-1b(4)]

Laboratory sampling and analysis of soil or rinsate could be required. Sampling would be in accordance with an approved sampling and analysis plan (SAP). The SAP will document the type of data, quality of data, and the number and location of samples appropriate to demonstrate the achievement of action levels.

To ensure data quality, sampling and analytical procedures will be conducted in accordance with standard EPA methods described in the most recent edition of *Test Methods for the Evaluation of Solid Waste: Physical/Chemical Methods*, SW-846, or equivalent methods. The appropriate field QC will be ensured through use of field QC samples. A laboratory QC program that will ensure the validity of analytical results is defined in the laboratory QA program plan.

11.3.9 Decontamination of Equipment

Closure equipment or materials could be decontaminated for reuse or disposal or could be managed as dangerous waste. Materials used during closure activities could include the following:

- Swabs, brushes, rags, towels, and mops
- Absorbent material
- Plastic bags
- Protective clothing
- Cleaning compounds
- Steam cleaner
- Pressure washer
- Grit blaster
- Collection containers.

Decontamination of closure equipment could be accomplished by high-pressure, low-volume steam cleaning coupled with detergent washes. Equipment that is not reusable will be designated and disposed accordingly. Portable pumps and waste transfer lines used to collect decontamination rinsate will be triple rinsed for nonregulated reuse or disposal.

11.4 SCHEDULE FOR CLOSURE [I-1f]

Closure of the T Plant Complex is not anticipated to occur within the next 25 years (i.e., not before 2025). When a more definite closure date is established, a revised closure chapter and closure schedule will be submitted to Ecology that will contain detailed information regarding specific activities and their implementation timeframes.

11.4.1 Extension of Closure Time [I-1g]

A revised closure plan will be prepared before the beginning of closure that will provide a detailed schedule for closure activities. The schedule is expected to identify closure activities that will exceed 180 days from the start of closure activities.

11.4.2 Certification of Closure and Survey Plat

Within 60 days of final closure, the DOE-RL will submit to Ecology a certification of closure in accordance with General Information Portion, Chapter 11.0 (DOE/RL-91-28).

11.5 CLOSURE COST ESTIMATE [I-1h]

An annual report updating projections of anticipated closure and postclosure costs will be submitted in accordance with General Information Portion, Chapter 11.0 (DOE/RL-91-28).

EXAMPLE

T PLANT COMPLEX CLOSURE DECONTAMINATION AND INSPECTION CHECKLIST

This checklist is intended to document a 'clean debris surface'[1] for the following T Plant Complex components, structures and/or materials.

1. Building/location: _____
2. Component(s)/area(s) _____
3. Material (e.g., concrete metal, plastic): _____
4. No cracks or openings are visible that could have provided a pathway to soil for contamination. _____

_____ Signature _____ Date

5. The above materials have been inspected visually and have attained a clean debris surface[1].

_____ Signature _____ Date

6. Decontamination:
   A. Method (NA 6.C if no decontamination performed): _____
   B. Parameters (check appropriate parameters):
      - ☐ Temperature _____
      - ☐ Propellant _____
      - ☐ Solid media (e.g., shot, grit, beads) _____
      - ☐ Pressure _____
      - ☐ Surfactant(s) _____
      - ☐ Detergents _____
      - ☐ Grinding/striking media (e.g., wheels, piston heads). _____
      - ☐ Depth or surface layer removal _____
      - Other _____

   C. Decontamination (steps 6.A and B) is complete.

_____ Signature _____ Date

7. The identified materials have been visually inspected and have attained a clean debris surface[1]. Authorized Representative:

_____ Signature _____ Date

[1] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."

Figure 11-1. Example Decontamination and Inspection Checklist for T Plant Complex Closure.

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