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**TANK FARMS AND BURIAL GROUNDS  
ENVIRONMENTAL STATUS  
AS OF MARCH 25, 1988**

**PERFORMED BY  
ICF TECHNOLOGY INCORPORATED  
FOR**

**WESTINGHOUSE HANFORD COMPANY  
UNDER SUBCONTRACTS  
SA-432163 AND W-518974-NP  
TASK TF-4**

DSTs



**ICF TECHNOLOGY  
INCORPORATED**





## Department of Energy

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Dear Ms. Gregoire and Mr. Russell:

### HANFORD ENVIRONMENTAL SELF-ASSESSMENT REPORT

Enclosed is a Hanford self-assessment report of facility environmental status against six major environmental statutes. This report reflects the Department of Energy, Richland Operations Office (DOE-RL) and Westinghouse Hanford Company (WHC) self-initiated program to assess and comply with the letter and spirit of applicable environmental regulations at the Hanford Site.

This report presents the results of an internal and ongoing assessment of Hanford facility compliance with environmental regulations. In many areas, it calls out areas of potential non-compliance with regulations. Many of these areas are procedural and simply require a change in the manner of conducting operations to ensure compliance. Some areas represent potential changes that are more difficult to make and may require extensive planning, budgeting and operational changes. In all cases, DOE-RL and WHC are committed to implement the appropriate changes and conduct operations in compliance with all applicable environmental regulations.

Findings represent conditions and conclusions derived on the date of the self assessment as indicated in each report. WHC with DOE-RL concurrence has moved expeditiously to correct problems as they were identified during the assessment and will continue to do so in the future. The changing status of compliance activities is tracked by a computer commitment control system dedicated to this purpose.

Ms. Gregoire and Mr. Russell

-2-

This self-assessment is viewed by DOE-RL and WHC as healthy, productive, and supportive of DOE-RL and WHC commitment of environmental compliance. We believe that providing this assessment to you will strengthen our relationship and should be looked upon as a positive commitment from Hanford.

Sincerely,



R. D. Izatt, Director  
Environmental Restoration Division  
Richland Operations Office

ERD:AJK



R. E. Lerch, Manager  
Environmental Division  
Westinghouse Hanford Company

Enclosure

cc: R. E. Lerch, WHC

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# ICF TECHNOLOGY INCORPORATED

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Table of Contents

EXECUTIVE SUMMARY. . . . . ES - 1  
     Background. . . . . ES - 1  
     Key Findings -- Tank Farms. . . . . ES - 2  
     Key Findings -- Burial Grounds. . . . . ES - 4

1.0 INTRODUCTION. . . . . 1 - 1  
     1.1 Scope. . . . . 1 - 1  
     1.2 Data Reviewed. . . . . 1 - 3  
     1.3 Report Organization. . . . . 1 - 5  
     1.4 Assessment Team. . . . . 1 - 6

2.0 WASTE MANAGEMENT UNIT AND STREAM ANALYSIS . . . . . 2 - 1  
     2.1 Recurring Dangerous Waste Issues . . . . . 2 - 1  
         2.1.1 Containerized MW Waste Segregation  
             and Handling. . . . . 2 - 2  
         2.1.2 Contingency Plans . . . . . 2 - 2  
         2.1.3 Inspection Plans. . . . . 2 - 3  
         2.1.4 Recordkeeping . . . . . 2 - 3  
         2.1.5 Reporting . . . . . 2 - 3  
         2.1.6 Waste Analysis Plans. . . . . 2 - 3  
     2.2 Double-Shell Waste Tanks and Related Facilities. . . . . 2 - 4  
         2.2.1 Permits . . . . . 2 - 5  
         2.2.2 Storage Period Limitation . . . . . 2 - 5  
     2.3 Burial Grounds . . . . . 2 - 6  
         2.3.1 RCRA Permits. . . . . 2 - 6  
         2.3.2 Security. . . . . 2 - 7  
         2.3.3 Run-on, Wind. . . . . 2 - 7  
         2.3.4 Minimum Technology and Groundwater  
             Monitoring Requirements . . . . . 2 - 8  
         2.3.5 Disposal of EHW and Restricted Wastes,  
             Including Lead and Mercury. . . . . 2 - 8  
         2.3.6 Groundwater Contamination . . . . . 2 - 10  
         2.3.7 PCB Disposal. . . . . 2 - 10  
         2.3.8 Summary . . . . . 2 - 11  
     2.4 242-A Evaporator . . . . . 2 - 11  
     2.5 Storage of Mixed Wastes. . . . . 2 - 12  
     2.6 Liquid Effluents Discharged to the Environment . . . . . 2 - 12  
     2.7 TRU. . . . . 2 - 13  
     2.8 Sodium . . . . . 2 - 13  
     2.9 Submarine Cores. . . . . 2 - 14  
     2.10 Gaseous Emissions . . . . . 2 - 14  
     2.11 Underground Storage Tanks . . . . . 2 - 15

3.0	RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)	3 - 1
3.1	Generators of Dangerous Waste	
	(WAC 173-303-170 to 230)	3 - 3
3.1.1	Scope of Law	3 - 3
3.1.2	Applicability	3 - 3
3.1.3	Assessment Analysis	3 - 4
3.1.3.1	Manifest Requirements	
	(WAC 173-303-180)	3 - 4
3.1.3.2	Pre-Transport Requirements	
	(WAC 173-303-190)	3 - 5
3.1.3.3	Dangerous Waste Accumulation	
	Requirements (WAC 173-303-200)	3 - 5
3.1.3.4	Generator Recordkeeping Requirements	
	(WAC 173-303-210)	3 - 6
3.1.3.5	Generator Reporting Requirements	
	(WAC 173-303-220)	3 - 6
3.1.4	Conclusions	3 - 6
3.2	Interim Status TSD Facility Standards	
	(WAC 173-303-400)	3 - 7
3.2.1	Scope of Law	3 - 7
3.2.2	Applicability	3 - 7
3.2.3	Assessment Analysis	3 - 7
3.2.3.1	Required Notices (WAC 173-303-290)	3 - 8
3.2.3.2	Waste Analysis Plan	
	(WAC 173-303-300)	3 - 8
3.2.3.3	Security (WAC 173-303-310)	3 - 10
3.2.3.4	General Inspection Requirements	
	(WAC 173-303-320)	3 - 11
3.2.3.5	Personnel Training Requirements	
	(WAC 173-303-330)	3 - 12
3.2.3.6	Preparedness and Prevention	
	(WAC 173-303-340)	3 - 13
3.2.3.7	Contingency Plan and Emergency	
	Procedures (WAC 173-303-350)	3 - 13
3.2.3.8	Emergencies (WAC 173-303-360)	3 - 16
3.2.3.9	Manifest System Requirements for	
	TSD Facilities	3 - 16
3.2.3.10	Facility Recordkeeping (Operating	
	Record) (WAC 173-303-380)	3 - 18
3.2.3.11	General TSD Facility Reporting	
	Requirements (WAC 173-303-390)	3 - 20
3.2.3.12	Other General Requirements	
	(WAC 173-303-395)	3 - 21
3.2.3.13	Groundwater Monitoring	
	(40 CFR 265 Subpart F)	3 - 21
3.2.3.14	Closure and Post-Closure Care	
	(40 CFR 265 Subpart G)	3 - 22
3.2.4	Conclusions	3 - 22

- 3.3 Tanks (40 CFR 265, Subpart J) . . . . . 3 - 22
  - 3.3.1 Scope of Law. . . . . 3 - 22
  - 3.3.2 Applicability . . . . . 3 - 23
  - 3.3.3 Assessment Analysis . . . . . 3 - 23
    - 3.3.3.1 Tank Labeling [WAC-173-303-395(6), 640(2)(c)] . . . . . 3 - 23
    - 3.3.3.2 Integrity Assessment (40 CFR 265.191, as Revised). . . . . 3 - 24
    - 3.3.3.3 Design and Installation of New Tank Systems or Components (40 CFR 291.192, as Revised). . . . . 3 - 24
    - 3.3.3.4 Containment and Detection of Releases (40 CFR 265.193, as Revised) . . . . . 3 - 24
    - 3.3.3.5 General Operating Requirements, Inspections (40 CFR 265.192, and .194 as Revised). . . . . 3 - 25
    - 3.3.3.6 Response to Leaks or Spills and Disposition of Leaking or Unfit-For-Use Tank Systems (40 CFR 265.196, as Revised). . . . . 3 - 25
    - 3.3.3.7 Closure And Post-Closure Care (40 CFR 265.197) . . . . . 3 - 25
    - 3.3.3.8 Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 CFR 265.198,199) . . . . . 3 - 26
    - 3.3.3.9 Waste Analysis and Trial Tests (40 CFR 265.193, and .200 as Revised). . . . . 3 - 26
    - 3.3.3.10 Storage of Banned Waste (40 CFR 268.50) . . . . . 3 - 26
  - 3.3.4 Conclusions . . . . . 3 - 27
- 3.4 Chemical, Physical, and Biological Treatment (40 CFR 265 Subpart Q) . . . . . 3 - 27
  - 3.4.1 Scope of Law. . . . . 3 - 27
  - 3.4.2 Applicability . . . . . 3 - 28
  - 3.4.3 Assessment Analysis . . . . . 3 - 28
- 3.5 Surface Impoundments (40 CFR 265 Subpart K). . . . . 3 - 28
- 3.6 Landfills (40 CFR 265, Subpart N). . . . . 3 - 29
  - 3.6.1 Scope of Law. . . . . 3 - 29
  - 3.6.2 Applicability . . . . . 3 - 29
  - 3.6.3 Assessment Analysis . . . . . 3 - 30
    - 3.6.3.1 Notification (40 CFR 265.300). . . . . 3 - 30
    - 3.6.3.2 Design Requirements (40 CFR 265.301) . . . . . 3 - 30
    - 3.6.3.3 Groundwater Monitoring (40 CFR 265.91 to 265.94) . . . . . 3 - 30
    - 3.6.3.4 General Operating Requirements (40 CFR 265.302) . . . . . 3 - 30

3.6.3.5	Surveying and Recordkeeping (40 CFR 265.309) and Closure and Post-Closure Care (40 CFR 265.310) . . . . .	3 - 31
3.6.3.6	Ignitable or Reactive Wastes (40 CFR 265.312) and Incompatible Wastes (40 CFR 265.313) . . . . .	3 - 31
3.6.3.7	Bulk and Containerized Waste (40 CFR 265.314) and Lab Packs (40 CFR 265.316) . . . . .	3 - 31
3.6.3.8	Special Requirements (40 CFR 265.315) . . . . .	3 - 32
3.6.4	Conclusions . . . . .	3 - 32
3.7	Use and Management of Containers (40 CFR 265 Subpart I) . . . . .	3 - 32
3.8	Underground Storage Tanks (40 CFR 280) . . . . .	3 - 33
3.8.1	Scope of Law. . . . .	3 - 33
3.8.2	Applicability . . . . .	3 - 33
3.8.3	Assessment Analysis . . . . .	3 - 34
4.0	CLEAN WATER ACT AND SAFE DRINKING WATER ACT . . . . .	4 - 1
4.1	National Pollution Discharge Elimination System (NPDES) . . . . .	4 - 1
4.2	State Waste Discharge Permit Program (WAC 173-216). . . . .	4 - 1
4.3	Spill Prevention, Control and Countermeasures (40 CFR 109-114). . . . .	4 - 2
5.0	SAFE DRINKING WATER ACT . . . . .	5 - 1
6.0	TOXIC SUBSTANCES CONTROL ACT. . . . .	6 - 1
6.1	Scope of Law . . . . .	6 - 1
6.2	Applicability. . . . .	6 - 1
6.3	Assessment . . . . .	6 - 2
6.4	Conclusions. . . . .	6 - 4
7.0	COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA). . . . .	7 - 1
7.1	Scope of Law . . . . .	7 - 1
7.2	Applicability. . . . .	7 - 1
7.3	Assessment Analysis. . . . .	7 - 1
7.4	Conclusions. . . . .	7 - 2
8.0	CLEAN AIR ACT (CAA) . . . . .	8 - 1
8.1	New Source Performance Standards (NSPS). . . . .	8 - 1
8.2	National Emission Standards for Hazardous Air Pollutants (NESHAP). . . . .	8 - 1
8.2.1	Scope of Law. . . . .	8 - 1
8.2.2	Applicability . . . . .	8 - 1

8.2.3 Assessment Analysis . . . . . 8 - 2

8.2.4 Conclusions . . . . . 8 - 2

8.3 Prevention of Significant Deterioration (PSD). . . . . 8 - 3

8.3.1 Scope of Law. . . . . 8 - 3

8.3.2 Applicability . . . . . 8 - 3

8.3.3 Assessment Analysis . . . . . 8 - 3

8.4 BFWWCAPCA. . . . . 8 - 3

8.4.1 Scope of Law. . . . . 8 - 3

8.4.2 Applicability . . . . . 8 - 4

8.4.3 Assessment Analysis . . . . . 8 - 4

8.4.4 Conclusions . . . . . 8 - 4

Appendix A WASTE STREAM IDENTIFICATION FORMS

Appendix B REGULATORY ANALYSIS FLOWSHEETS

Appendix C ENVIRONMENTAL STATUS SUMMARY

Appendix D COMPLETED REGULATORY ANALYSIS CHECKLISTS

EXECUTIVE SUMMARY

TANK FARMS AND BURIAL GROUNDS ENVIRONMENTAL STATUS  
AS OF MARCH 25, 1988

Background

This report, prepared by ICF Technology Inc., assesses tank farm and burial ground status with respect to applicable environmental requirements as of March 25, 1988.

The scope of work for the assessment included the double-shelled tanks, certain ancillary tanks, the 242-A Evaporator, the burial grounds disposal and retrievable storage trenches, the 204-AR waste transfer and treatment station, and transuranic (TRU) and sodium storage facilities. The single-shelled tank farms, and all pipelines and diversion boxes, not included in the Part A permit application, were outside the scope of the assessment.

Field activity for this assessment was conducted during the week of September 1, 1987, with limited additional field activity and interviews also conducted in March, 1988.

The tank farms and burial grounds are principally waste management facilities, so the issues identified in this environmental status assessment are more varied than those identified in similar assessments of other Hanford facilities that are principally regulated as waste generators. In addition to environmental issues related to waste generation, temporary storage, and discharge of liquid and gaseous effluents, the tank farms and burial grounds face environmental issues associated with waste treatment, storage, and disposal.

Management of radioactive mixed waste (MW) at the tank farms and burial grounds (TF/BG) was assessed as though these wastes were subject to regulation under the Washington Administrative Code (WAC) 173-303 at the time the assessment began. From July 26, 1987 to November 23, 1987, however, the applicability of the regulations to MW

was questionable. The Washington Hazardous Waste Disposal Act (RCW 70.105) was amended to regulate MW under WAC 173-303. These amendments became effective July 26, 1987. The Washington Department of Ecology (Ecology) did not become authorized by the Environmental Protection Agency (EPA) to regulate MW under the Resource Conservation and Recovery Act (RCRA) until November 23, 1987. Waste management practices at the tank farms and burial grounds have changed significantly since November 23, 1987, and the focus of this assessment is on environmental status as of late March, 1988 rather than at an earlier date. In particular, it is important to note that Westinghouse Hanford Company (WHC) and the Department of Energy (DOE) ended the burial of identified radioactive mixed wastes as of November 23, 1987.

Key Findings -- Tank Farms

WHC internal procedures currently call for segregation and identification of MW. Prior to November 1987, however, mixed wastes were shipped from the tank farms to the burial grounds as low-level wastes and buried. Efforts to improve segregation and identification practices in the tank farms have begun recently under the Segregation Plan of Action (SPOA), which, when fully implemented, should eliminate most waste segregation and identification errors.

The tank farms continue to retain out-of-service jumpers in diversion boxes. Most of these jumpers are flex hoses that are not regulated as dangerous waste, but some failed jumpers may contain lead. Tank farm managers indicated that some of these jumpers have failed and will never be returned to service. Prompt removal of such failed equipment may be precluded by ALARA concerns, but storage of failed jumpers containing lead other than in tanks or containers, or storage in any manner for more than 90 days constitutes operation of a waste storage unit and requires a Treatment Storage or Disposal (TSD) facility permit application amendment.

Tank farm air emissions present no significant environmental issues. (Dose modelling methods were outside the scope of this assessment.)

Based on characterization data reviewed, tank farm liquid effluents are not dangerous wastes, and are not discharged to cribs that have been designated as landfills. Reportable quantities of Comprehensive Environmental Response, Compensation, and Liability Act hazardous substances have been discharged with the 242-A Evaporator process condensate, and have been properly reported. The applicability of State of Washington regulations (WAC 173-216) to liquid discharges to soil is not yet established, TF/BG facilities do not discharge waste to injection wells so WAC 173-218 does not apply.

Two issues arise with storage and treatment of mixed wastes in the double-shelled tanks. First, there are still minor areas where action is required to meet WAC 173-303 procedural and paperwork requirements. Some required plans or records are missing, deficient, or improperly coded; other "plans" consist of parts of numerous procedures. There does not, however, appear to be a significant substantive deficiency in actual management of tank wastes.

Second, wastes in some tanks are or soon will be restricted from land disposal under RCRA section 3004(d), unless treated prior to disposal. Waste characterizations prepared for the Defense Waste Environmental Impact Statement (EIS) and to support grout facility design and construction suggest that some wastes (e.g., liquid wastes with concentrations of hexavalent chromium greater than 500 mg/l) are currently restricted, but restrictions will be extended to all dangerous wastes within a few years. The requirement for treatment prior to disposal is probably not a problem for tank wastes, because these wastes will be treated. Restricted wastes are also subject to strict conditions on storage periods. These conditions on storage, codified at 40 CFR 268.50, are not met at Hanford. EPA would probably agree to a waiver of the restriction on land disposal of these wastes (which would also allow continued storage of this waste) so that

planned treatment facilities can be constructed, but no waiver has been requested. Storage restrictions apply only to wastes that are not being treated.

In the near future additional tank requirements will be promulgated in Washington state. These requirements will require secondary containment for existing tanks, and could be effective for many tanks at Hanford by July 1990. The double-shelled tanks probably meet these requirements, but some double-contained receiving tanks (DCRTs) may need to be modified or replaced.

Key Findings -- Burial Grounds

Waste trenches at the burial grounds do not meet liner and leachate collection minimum technology requirements. Hanford's requests for waivers from those requirements have been denied; therefore, burial of any dangerous wastes is improper until new trenches are constructed. In addition, land disposal of "extremely hazardous wastes" (EHW) (including lead and mercury) that is mixed waste is prohibited in Washington, unless those mixed wastes are treated prior to disposal using all reasonable methods of treatment, detoxification and neutralization (RCW 70.105 Section 4(2)). Burial of wastes identified by generators as mixed wastes or EHW was ended prior to November 23, 1987. Under a new "Solid Radioactive Mixed Waste Storage Strategy" (Mixed Waste Storage Strategy) developed in January, 1988, contact-handled mixed wastes are now stored in the "retrievable storage" trenches while new above-ground storage facilities are constructed. Although these trenches do not have permits as storage units, Ecology has orally endorsed this temporary procedure. With verbal agreement from Ecology, burial of remote-handled mixed waste has resumed, to provide necessary radiation protection. Stored wastes that can be land disposed will ultimately be transferred to trenches that meet WAC 173-303 requirements. The ultimate fate of stored EHW has apparently not yet been determined.

Mixed waste mischaracterized by generators as low-level waste is still being inadvertently land disposed. Non-radioactive dangerous wastes have also been mischaracterized by generators as radioactive or included in radioactive waste packages without disclosure in the past. Any such packages received at the burial grounds prior to November 23, 1987 would have been buried as low-level wastes. Implementation of the site-wide "segregation plan of action" (SPOA) should improve generator segregation and designation practices, so that non-radioactive wastes are excluded from the burial grounds and so that mixed waste can be more reliably identified by burial grounds operators. Burial grounds management will play a key role in designing and supervising the SPOA effort.

PCB-contaminated oils may have been land disposed at the burial grounds until 1982. (In 1982, Hanford began testing suspect oils, and placing contaminated oils in storage.) Land disposal of PCBs subject to TSCA at Hanford would have been a violation of Toxic Substances Control Act (TSCA) regulations on disposal of PCB (40 CFR 761.60). However, TSCA contains (at Section 3(2)(B)(iv)) an exclusion for source, special nuclear and byproduct materials similar to that found in RCRA, so land disposal of these radioactive PCB wastes would have been viewed by DOE, and possibly by EPA, as outside the scope of TSCA at the time disposal occurred.

Reinterpretation of the RCRA "byproduct" exclusion has resulted in RCRA regulation of Hanford mixed wastes. A similar reinterpretation is appropriate under TSCA, and Hanford has in fact attempted to manage radioactive PCB wastes in compliance with TSCA since 1982.

Under TSCA PCB wastes that were improperly disposed after 1978 must be exhumed and disposed of in conformance with TSCA regulations. It is unclear whether this requirement would apply to wastes that were (or were believed to be) exempt from TSCA when land disposed, but which would be characterized as subject to TSCA today.

Burial grounds air emissions are confined to fugitive dusts, breathers, and ventilation air. These emissions present no significant environmental issues. No liquid effluents are discharged, except for groundwater monitoring well purge water. Management of that purge water is being closely supervised by Ecology, and is outside the scope of this assessment.

Acceptance of TRU mixed wastes at 224-T has been suspended until the unit is brought into compliance with regulatory requirements, but some mixed wastes accepted in the past remain in noncompliant storage.

The status of storage of previously used sodium is under review by WHC. (See discussion in Chapter 3.) At present the 2727-WA drum storage building has a permit, but the tanks in the 2727-W building do not.

Significant steps have been taken by WHC staff to address key burial grounds environmental issues. In some areas strict adherence to regulatory requirements is not feasible --for example, it is necessary to bury non-contact handled wastes in the near term for radiation protection, and it may be necessary to bury some EHW even in the long run. EPA/NRC guidance (at 52 FR 11147) indicates that RCRA requirements will give way to Atomic Energy Act (AEA) requirements when compliance with RCRA would increase radiation hazards. Until alternatives to current burial practices are developed, waivers from RCRA should be available. However, WHC and DOE's oral arrangements with Ecology for practical procedures in these areas should be documented in a written agreement.

WHC is currently upgrading the burial grounds contingency plans in order to meet requirements. Inspection plans and procedures have recently been modified and clarified, and are adequate. The burial grounds closure plan does not provide for partial closures, and probably needs to be upgraded. Burial ground run-on control measures are limited, and may not be sufficient to control a 24-hour, 25-year storm.

Successful implementation of the SPOA and of the Mixed Waste Storage Strategy are important to the current and future environmental status of the burial grounds. Current burial trenches do not meet minimum technology standards established in Federal legislation, and disposal of mixed wastes in these units must be avoided. Similarly, burial of wastes in the retrievable storage trenches constitutes land disposal, and must be avoided where land disposal is not allowable (i.e., for state EHW, and wastes restricted from land disposal under 40 CFR 268.)

1.0 INTRODUCTION

1.1 Scope

ICF Technology Inc. reviewed the Tank Farms/Burial Grounds operation (TF/BG) to assess the status of these operations with respect to applicable environmental regulations. Environmental status was assessed as of March 25, 1988 for the laws listed below as implemented by federal and State of Washington regulations and local air regulations.

- Resource Conservation and Recovery Act (RCRA);
- Clean Water Act (CWA);
- Safe Drinking Water Act (SDWA);
- Toxic Substances Control Act (TSCA);
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
- Clean Air Act (CAA); and
- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Management of MW at the tank farms and burial grounds was assessed as though these wastes were subject to regulation under WAC 173-303 at the time the assessment began. From July 26, 1987 to November 23, 1987, however, the applicability of the regulations to MW was questionable. The Washington Hazardous Waste Disposal Act (RCW 70.105) was amended to regulate MW under WAC 173-303. These amendments became effective July 26, 1987. The Washington Department of Ecology (Ecology) did not become authorized by the EPA to regulate MW under RCRA until November 23, 1987. By March 25, 1988, the "as of" date for this assessment, the applicability of RCRA rules (WAC 173-303, and certain Federal requirements) to MW was clear.

Compliance with U.S. DOE Orders was not within the scope of the assessment. Insecticides, fungicides and rodenticides are not used by TF/BG personnel (except in household quantities and applications),

so the assessment did not address the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

The applicability of the State of Washington regulations (WAC 173-216) to liquid discharges to soil is not yet established. No tank farm or burial ground facilities discharge to injection wells, so WAC 173-218 is not applicable.

The scope of work for the assessment included the double-shelled tanks, double-contained receiver tanks, 241-EW-151 transfer station, and 242-A Evaporator, and waste and effluents from these facilities and related support activities. The scope also encompassed burial grounds disposal and retrievable storage trenches, the 204-AR waste transfer and treatment station, and TRU and sodium storage facilities. The single-shelled tank farm tanks, and operable and abandoned waste transport facilities in general (including pipelines and diversion boxes) were not included in this assessment because WHC and DOE had determined, at the time the assessment began, that these facilities were not waste management units.

The assessment included the following:

- a pre-review orientation to applicable aspects of TF/BG operations by review of documents provided by WHC,
- a walk-down of the TF/BG areas with process engineering staff to identify potential waste streams and their characteristics,
- a review of applicable records, and
- interviews with operations and process engineering staff to complete detailed environmental checklists.

The methodology used to assess environmental status was to compare the characterization of each waste stream and associated units, each in-service system containing Polychlorinated biphenyls (PCBs), and each underground storage tank described in the Waste Stream Identification Forms (Appendix A) with applicable regulations. The comparison was used to determine whether items were adequately characterized, and if so, whether any action was required to improve environmental status.

1.2 Data Reviewed

Data on waste streams and waste management units that were made available by WHC, and observations during facility inspections, were used for this assessment. The data provided varied in completeness and quality, and in some cases inspections were limited due to radiation hazards. Data limitations included incomplete characterization of some waste streams, creating some uncertainty about which regulations apply. The data provided by WHC included waste stream identification forms, filled out by plant staff, for some waste streams. (These forms are included in this report as Appendix A.) The assessment team also reviewed permit applications; reports from past audits and safety analyses; plans and procedures; spill and discharge reports; and other miscellaneous information.

In most cases, the environmental status of individual waste streams and waste management units was determined using the WHC Environmental Status Procedure illustrated in Figure 1-1. This strategy was implemented as follows:

- 1) Prior to this assessment, TF/BG staff characterized each waste stream at the TF/BG, using a waste stream identification form developed by WHC.
- 2) The assessment team reviewed the data on these forms for each waste stream and determined whether the information presented on the waste stream identification form was adequate to characterize the stream. Waste streams with inadequate or incomplete information were initially termed "not sufficient data (NSD)," an indication that more information on the particular stream was needed before an assessment could be performed.  
In many cases additional data on these streams were subsequently located.
- 3) If information present on the waste stream identification form was adequate or arguably adequate to characterize the stream, the assessment team estimated whether the waste stream, based on its .

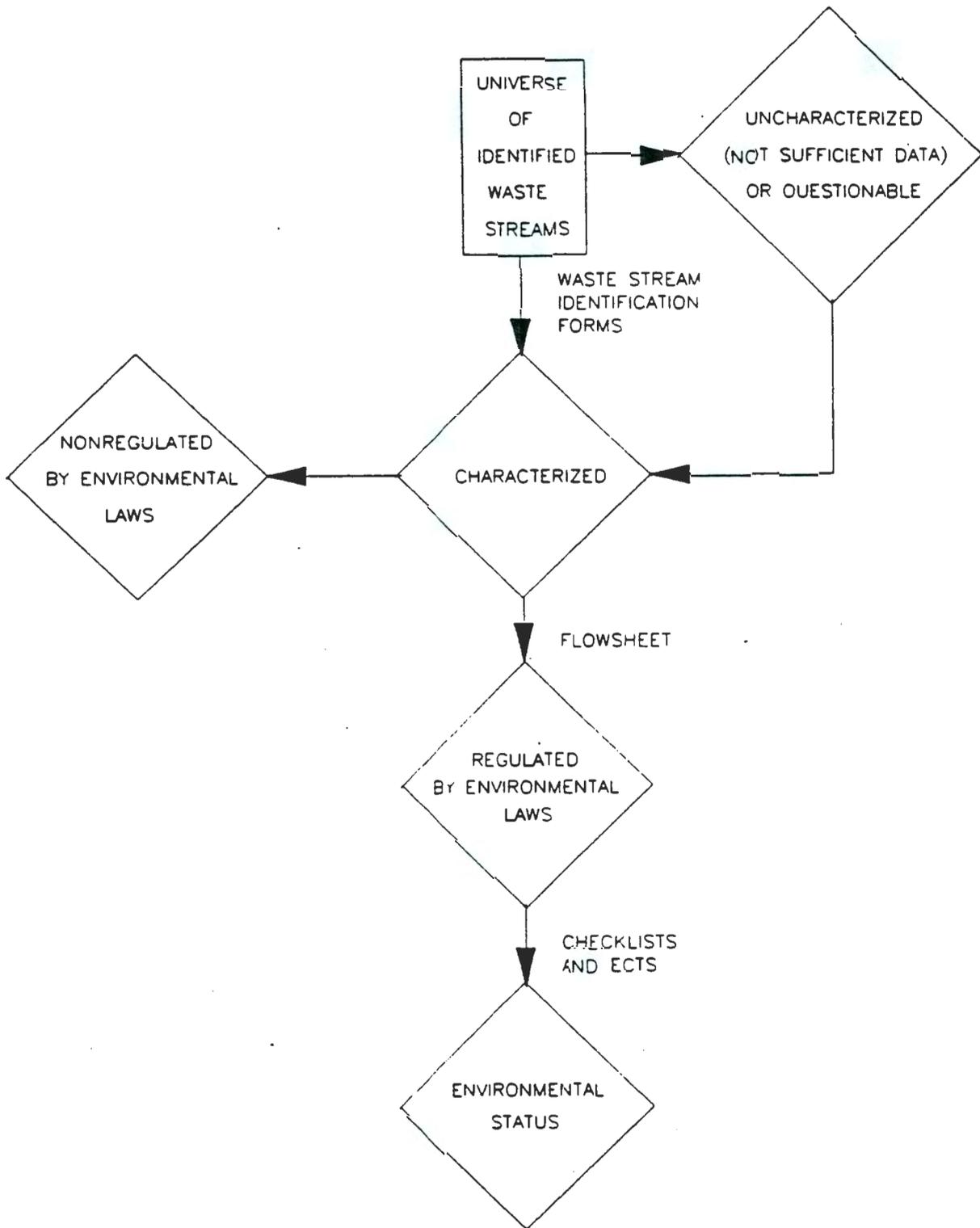


Figure 1-1. Westinghouse Environmental Status Procedure

characteristics, would fall under environmental regulation. Non-regulated waste streams were so labeled and received no further assessment.

- 4) Environmental status was assessed by using checklists based on applicable environmental requirements. Information required to complete checklists was obtained from documents furnished by WHC, interviews with WHC staff, and field observations.
- 5) A draft report was prepared for WHC review, reflecting first-stage work. This report helped to identify areas where additional information or discussion was necessary.
- 6) Additional interviews and field investigations were conducted. In many areas more complete information was acquired. Revised assessment conclusions and potential response actions were reviewed with tank farm and burial grounds management.
- 7) A second draft report was prepared. Following WHC comments, a final report was prepared.

### 1.3 Report Organization

This report presents essentially the same information three times, with different degrees of synthesis and at different levels of detail. Section 2.0 provides a short summary evaluation of significant environmental issues, organized around waste streams and waste management units. Sections 3.0 through 8.0 provide a more detailed narrative assessment, organized around major environmental areas as listed below:

<u>Section</u>	<u>Regulatory Area</u>
3.0	Resource Conservation and Recovery Act (RCRA)
4.0	Clean Water Act (CWA)
5.0	Safe Drinking Water Act (SDWA)
6.0	Toxic Substances Control Act (TSCA)
7.0	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
8.0	Clean Air Act (CAA)

These sections provide perspective on problem areas that affect multiple waste streams or waste management units.

Finally, the appendices provide a more detailed unit-by-unit perspective on environmental issues, with no attempt at an overview. Waste stream identification forms for TF/BG are included in Appendix A. Appendix B contains flow sheets identifying applicable regulations for the waste streams and units. Appendix C provides a detailed and annotated tabular presentation of the environmental status of each waste stream and unit with respect to each identified regulatory requirement.

1.4 Assessment Team

The assessment team for TF/BG consisted of the following ICF Technology staff with the assignments noted:

TF/BG Overview. . . . .	.R. F. Lorang
RCRA. . . . .	.R. F. Lorang, J. R. Long
CWA . . . . .	.R. F. Lorang
TSCA. . . . .	E. A. Wallace
CERCLA. . . . .	C. J. English

## 2.0 WASTE MANAGEMENT UNIT AND STREAM ANALYSIS

This section presents key conclusions on environmental status for TF/BG waste management units and waste streams. More than 80 waste streams and more than 50 waste management units (WMUs) were identified for this assessment, and it would be cumbersome and repetitious to discuss each stream and unit separately. Therefore, this section of the assessment groups issues, streams, and units to allow a reasonably succinct overview of key issues. Grouping is useful for the tank farms and burial grounds because some issues recur at most TSDs, some WMUs generate or manage several waste streams, and some groups of waste streams (e.g., gaseous streams) present identical environmental issues. Sections 3.0 through 8.0 and Appendix C can be used if necessary to clarify whether a general statement about an environmental issue in this section applies to a particular waste stream or unit.

This section first discusses environmental issues that arise repeatedly under the Washington Dangerous Waste Regulations. Next, Sections 2.2 through 2.4 discuss particular environmental status issues for three key WMUs: the double-shelled tank farms and related facilities, the 242-A evaporator, and the burial grounds. Sections 2.5 through 2.11 discuss issues that arise only for particular waste streams or classes of waste streams, or for particular ancillary waste management facilities.

### 2.1 Recurring Dangerous Waste Issues

RCRA regulations applicable to both non-radioactive dangerous wastes and to mixed wastes are found in WAC 173-303. A discussion of assessment assumptions concerning the date on which those regulations become applicable to mixed waste is provided in sections 1.5 and 3.0. It is clear that those regulations were applicable to mixed wastes on or before November 23, 1987. Since that date, WHC and DOE been adjusting their waste management procedures. Efforts to properly

classify waste management units under RCRA are continuing, and additional RCRA units may be identified in the future. Waste handling practices have also been modified. These efforts have had significant beneficial effects; however, some RCRA units have not yet "caught up" to RCRA requirements that are technically applicable.

2.1.1 Containerized MW Waste Segregation and Handling

Tank farm operations generates radioactive wastes, mixed wastes, and non-radioactive dangerous wastes. Some segregation problems probably persist, but site-wide implementation of the SPOA should effectively address these problems. The SPOA will be implemented through new or revised operating procedures.

2.1.2 Contingency Plans

Contingency plans were uniformly deficient, because they did not provide sufficient detail on the location and capabilities of emergency equipment, or unit-specific plans for responses to dangerous waste leaks and spills. Plans also did not provide for the emergency coordinator to directly notify a government on-scene coordinator or the National Response Center if circumstances warrant.

The burial ground contingency plan did not describe arrangements for dealing with unacceptable waste shipments from offsite generators that cannot be transported back to the generator as packaged.

New contingency plans are being developed for all Hanford "buildings." This effort provides an opportunity to develop new plans for facilities that are not "buildings" as well.

2.1.3 Inspection Plans

Written inspection plans and schedules for tank farm units are dispersed, but provide for adequate inspections. Plans for most burial ground units have recently been consolidated in TO-040-005, and are also adequate but were not in use at all covered facilities as of March 25, 1988. Plans and schedules for 2727-W, 2727-WA (if sodium is a waste) are not adequate.

2.1.4 Recordkeeping

Deficiencies in recordkeeping are minor; they include failure to use specified waste and process codes, and lack of closure and post-closure cost estimates. Some operating records are highly dispersed and difficult to assess, because the records are not kept with WAC 173-303 requirements in mind.

2.1.5 Reporting

Reporting appears to be adequate. DOE's 1986 report on mixed wastes contained significant gaps, but a mixed waste report was not required in 1986. Additional wastes and waste management units need to be included in the 1987 report.

2.1.6 Waste Analysis Plans

A written waste analysis plan is required for all TSDs. Tank farms have adequate plans, but these are scattered. The only written plan for the burial grounds is contained in the Part B application, and that plan would require upgrading even if it were in use at this time. The burial grounds currently rely on generators to adequately characterize their waste, but a plan that is sufficient for regulatory purposes must do more. An adequate waste analysis program would

probably require changes in burial grounds procedures, not simply a new plan. A new burial grounds waste analysis plan is being developed. The SPOA will also contribute to improvements in this area.

2.2 Double-Shelled Waste Tanks and Related Facilities

The double-shelled tank farms hold liquid radioactive wastes generated by Hanford facilities. The wastes in the tanks are dangerous wastes due to corrosivity and toxicity, and are State extremely hazardous wastes. Waste characterizations developed for the Defense Waste EIS and to support development of the grout facility suggest that a portion of these wastes may be currently restricted from land disposal under federal law due to concentrations of hexavalent chromium above 500 mg/l. All tank waste will be restricted from land disposal (until treated) in a few years.

Ancillary tank farm facilities include transfer and pretreatment facilities, including the 244-AR and CR vaults, the 204-AR tank car unloading and treatment facility, the 241-EW-151 transfer station tank, and the double-contained receiving tanks (DCRTs).

The tank farms supply feed to the 242-A Evaporator, and receive back a more concentrated waste slurry. In the future, tank wastes will be sent to B Plant for treatment, followed by grouting or vitrification and final disposal. (An analysis of whether grouting or vitrification is an acceptable form of treatment for wastes restricted from land disposal under RCRA section 3004(d) was not within the scope of this assessment.) Tanks, tank annuli, vaults, and so on are vented to the atmosphere through high efficiency particulate air (HEPA) filters, usually with forced drafts. Leak detection is provided by monitoring for radiation in these air streams and in the vadose zone. Tank operations create some liquid effluents (related to tank heating and cooling) that are discharged to the environment.

The pH of wastes stored in double shelled tanks is closely controlled. Treatment to adjust pH occurs at some generating

facilities and at the 204-AR unloading station. Waste is also treated in the 242-A evaporator by heating to reduce moisture content. Some wastes are treated by holding them during a period of rapid radioactive decay that makes the wastes boil; waste heat is removed from these tanks. This is considered treatment under WAC because it qualifies as the physical processing of dangerous waste to make the waste less dangerous and more amenable for storage (WAC 173-303-040(97)). Some tank farm units store wastes without treatment.

2.2.1 Permits

Tank farm units included in the Part A permit application include those units that store and treat wastes, but not the facilities used in transporting wastes from generating facilities. This assessment did not systematically determine whether all tank farm facilities that may be waste management units have been identified as such. The identification of units needing Part A's was performed by another consultant.

The Part A amendments submitted for the tank farm facilities assessed here identify all tank farm tanks as both storage and treatment units. This is proper in a Part A submission for units that may actually be used for treatment. However, storage of waste in a unit that is capable of treatment is only storage, unless treatment actually occurs, so some Part A submissions may be overly broad.

2.2.2 Storage Period Limitation

Wastes that are restricted from land disposal under federal law can be stored only to accumulate a sufficient quantity of waste for proper management. If restricted wastes are present and are not being treated, storage cannot meet this accumulation test. A variance from

the disposal ban (which would also allow longer storage) should be sought, based on lack of available treatment capacity and plans for waste treatment.

### 2.3 Burial Grounds

The burial grounds include disposal trenches for low-level waste and for drag-off burial boxes, and "retrievable storage" trenches. Disposal trenches are unlined. Retrievable storage trenches include an asphalt base under the wastes, and all wastes placed in these trenches are in packages with a minimum 20-year life. The retrievable storage trenches have received wastes that are not suited to permanent disposal for various reasons, and the asphalt base and 20-year packages are intended to facilitate recovery of waste packages at a future date. Wastes in trenches of both kinds were covered with native soils excavated from the trenches. Burial of contact-handled wastes in the retrievable storage trenches has been halted.

The burial grounds accept both radioactive wastes and mixed wastes, from on-site and off-site generators. Part A and Part B permit applications have been submitted for disposal and "retrievable storage" trenches, identifying all burial areas as land disposal facilities.

The burial grounds operating unit is also responsible for some other storage units, including the 2727-W and 2727-WA sodium storage buildings and the 224-T TRU storage building.

#### 2.3.1 RCRA Permits

Recent revisions to the burial ground Part A permit applications have identified WHC as the co-operator of the facility, and have correctly designated the retrievable storage trenches as land disposal units. No permit application has been submitted for the

sodium storage tanks in the 2727-W building. See section 2.8 below for discussion of this issue.

Contingency and waste analysis plans submitted with the Part B permit application are likely to need revision before a final facility permit is issued, but revised plans now being developed may be adequate. The adequacy of the Part B closure plan is questionable, because it provides for a final cover on filled trenches only after all trenches are filled, roughly 100 years from now.

### 2.3.2 Security

The burial grounds rely on the security provided by the Hanford Patrol for the entire 200 area; only a few areas (currently inactive) are separately fenced to exclude unauthorized personnel. Unless Hanford patrol surveillance is adequate to prevent it, any person with access to the 200 areas could potentially enter burial ground waste management areas.

Burial ground areas are typically marked with radiation signs, but this does not meet the regulatory requirement for signs warning unauthorized personnel to keep out.

### 2.3.3 Run-on, Wind

Minimal provisions are made for management of run-on or run-off at the burial grounds, because most precipitation quickly percolates through the unlined trenches and native soil covers. Reliance on percolation for run-on and run-off control will not be feasible when trenches are properly lined and closed. Current controls divert run-on from the asphalt pads in the retrievable storage trenches away from wastes and to areas where percolation can occur. This assessment did not address the ability of these measure to handle run-on from a 25-year 24-hour storm.

The effectiveness of seeding to control wind erosion of temporary covers is also doubtful; however wind dispersal of wastes has not been an issue, due to the nature of the wastes disposed.

2.3.4 Minimum Technology and Groundwater Monitoring Requirements

The Part B application for the burial grounds included requests for waivers from groundwater monitoring and minimum technology requirements. These requests have been denied. A schedule has been established for groundwater monitoring, and Hanford is meeting that schedule. Hanford will not dispose of mixed wastes until the required double liners and leachate collection systems are installed in new disposal trenches. Mixed wastes will be stored until that time.

2.3.5 Disposal of EHW and Restricted Wastes, Including Lead and Mercury

Lead has been used extensively at the tank farms and elsewhere at Hanford in the past. At the tank farms lead is found in some jumper assemblies (used principally in the diversion boxes) and as shielding. Small amounts of lead or mercury are also found in failed equipment and instruments, and in light bulbs.

Neither jumpers nor shielding have been disposed of from the tank farms in recent years. Light bulbs, switches and instruments containing lead and mercury have been disposed, until recently, as low-level waste. Some of this waste may have been nonradioactive dangerous waste packaged with low-level waste. Any lead or mercury wastes that were radioactive were mixed wastes. Lead and mercury have also been disposed from other Hanford facilities.

Both lead and mercury are extremely hazardous wastes in Washington, and are restricted from land disposal. Mixed wastes that are EHW can be buried in radioactive waste disposal facilities if they are treated prior to disposal using all reasonable methods of treatment, detoxification or neutralization (RCW 70.105 Section 4(2)).

Prior to November 23, 1987 the burial grounds accepted mixed wastes containing lead and mercury for land disposal. Mixed waste packages containing F-001 through F-005 spent solvents would also have been accepted for burial in the storage trenches if properly packaged and documented, and might have been buried in the disposal trenches if improperly identified. These spent solvents are restricted from land disposal under federal law.

The burial grounds have never knowingly accepted non-radioactive wastes for disposal, and burial of contact-handled mixed wastes known to be restricted from land disposal under state or federal regulations ended on November 23, 1987. At about the same time, new burial compliance checksheets were issued for some common lead and mercury wastes generated at Hanford, to assist in waste segregation and identification. Only remote-handled mixed wastes that must be buried for radiation protection will be buried in the future; burial of these wastes is planned whether the wastes are restricted from land disposal or not.

EPA/NRC guidance provides that RCRA requirements will give way to AEA requirements where compliance with RCRA would increase radiation hazards, and Ecology and EPA have orally agreed to continued burial of remote-handled mixed wastes. In the long run, additional action is required to assure that disposal practices for remote handled wastes are as consistent with RCRA as is feasible. Burial would also be possible in the long run if the State extremely hazardous waste facility authorized at Hanford by State law was actually established.

Due to waste segregation problems, some restricted wastes that were not mixed wastes, and which were therefore subject to land disposal restrictions, may also have been buried. Implementation of the SPOA should reduce the risk that such inadvertent disposal will recur.

2.3.6 Groundwater Contamination

Purge waters from development of groundwater monitoring wells have shown some contamination by radionuclides and organic chemicals. It is not yet clear whether this contamination represents an increase over "background" levels due to burial grounds operations. Ecology is aware of this contamination and is being consulted on plans for management of these purge waters. This issue was outside the scope of this assessment.

2.3.7 PCB Disposal

PCB-containing mixed wastes may have been buried in the retrievable storage trenches until about 1982. After that date known radioactive PCB wastes were held in the retrievable storage trenches without burial, and were subsequently transferred to the above ground 212-P storage facility, which was opened in 1985. The 212-P facility is unable to accommodate some PCB mixed wastes that have accumulated at generator facilities. An additional aboveground storage facility is being constructed.

Land disposal of PCBs subject to TSCA at Hanford would have been a violation of Toxic Substances Control Act (TSCA) regulations on disposal of PCB (40 CFR 761.60). However, TSCA contains (at Section 3(2)(B)(iv)) an exclusion for source, special nuclear and byproduct materials similar to that found in RCRA, so land disposal of these radioactive PCB wastes would have been viewed by DOE, and possibly by EPA, as outside the scope of TSCA at the time disposal occurred.

Reinterpretation of the RCRA "byproduct" exclusion has resulted in RCRA regulation of Hanford mixed wastes. A similar reinterpretation is appropriate under TSCA, and Hanford has in fact attempted to manage radioactive PCB wastes in compliance with TSCA since 1982.

Under TSCA PCB wastes that were improperly disposed after 1978 must be exhumed and disposed of in conformance with TSCA regulations. It is unclear whether this requirement would apply to wastes that were (or were believed to be) exempt from TSCA when land disposed, but which would be characterized as subject to TSCA today.

2.3.8 Summary

Land disposal of mixed wastes at the burial grounds was suspended on November 23, 1987. Under procedures in effect since February 1, 1988, only remote-handled wastes that must be buried for radiation protection will be buried, until it is possible to comply with requirements for disposal facilities. Adherence to waste storage plans, and improved site-wide waste segregation is extremely important. Written documentation of Ecology's agreement to allow burial of non-contact mixed wastes and EHW would also be desirable.

2.4 242-A Evaporator

The 242-A Evaporator reduces the volume of tank farm wastes by removing moisture; the concentrated waste is then returned to the tank farms. Most side streams generated in the waste treatment process are recycled as evaporator feed. The facility also discharges several liquid effluent streams (cooling water and condensates) to cribs and to B-Pond. These discharges are not dangerous wastes under normal conditions, but process condensate could potentially be dangerous if a hardware failure resulted in cross contamination with the waste feed. The applicability of the State of Washington regulations (WAC 173-216) to liquid discharges to the soil is not yet established. The evaporator does not discharge to injection wells, so WAC 173-218 is not applicable. Discharges from the evaporator are discussed in section 2.6 below, and gaseous emissions from the facility in section 2.10 below.

The Evaporator shares most of the recurring TSD issues identified in Section 2.1, above.

### 2.5 Storage of Mixed Wastes

When jumpers fail at the tank farms they are initially stored in the diversion box where they were in use. This is because removal and disposal must be planned with ALARA considerations in mind. Most jumpers are flex hose and are not dangerous wastes, but some failed jumpers include lead, have been in diversions boxes for long periods of time, and are not scheduled for removal. As this storage is in a "waste pile" rather than a tank or container, it requires a TSD permit, even if storage is for less than 90 days.

At present, mixed waste is also being stored in the retrievable storage trenches, which are permitted as disposal rather than storage facilities. Ecology has given oral consent to this storage, which will end when new storage facilities have been constructed.

### 2.6 Liquid Effluents Discharged to the Environment

This assessment did not identify any liquid effluents discharged to the environment from the tank farms or burial grounds that were dangerous wastes, or any discharges to cribs that have been designated as landfills based on past discharges.

The applicability of the State of Washington regulations (WAC 173-216) to liquid discharges to the soil is not yet established. Tank farm and burial ground facilities do not discharge to injection wells, so WAC 173-218 is not applicable.

## 2.7 TRU

TRU wastes that must be remotely handled are deposited into caissons at the burial grounds. Other TRU wastes are currently stored in the 224-T facility in anticipation of shipment to the Waste Isolation Pilot Plant (WIPP). Some TRU wastes now in storage are mixed wastes, and a Part A permit modification has been submitted for the 224-T facility.

The 224-T facility does not meet requirements for a TSD container storage facility, and so is not currently accepting mixed wastes. An operating plan for the facility is being developed, and it is anticipated that mixed wastes will be accepted again when WAC 173-303 and applicable federal RCRA requirements are met. Contingency, waste analysis, closure, and inspection plans are needed. A greater difficulty will be providing storage arrangement that allow inspection of container condition, and that separate incompatible wastes. Given the nature of TRU packaging, it may be appropriate to seek agreement with Ecology on modified storage requirements.

## 2.8 Sodium

Previously used sodium is stored at Hanford in five 5,000-gallon tanks in the 2727-W building, and in more than 100 55-gallon drums in the 2727-WA building. A Part A permit application has been submitted for the drummed sodium storage, but the need for this permit is under review. No permit application has been submitted for the tanked sodium.

Whether this sodium storage is subject to regulation depends on whether the sodium is a "solid waste" as that term is defined under WAC 173-303. WHC and DOE are reviewing the status of this sodium, based on plans for future disposition of the material. Shipment to the

Idaho National Engineering Laboratory (INEL) for conversion into sodium hydroxide is an option under consideration for at least some of this material. Even if the future disposition would constitute recycling, when implemented, the sodium may be a solid waste while in storage at Hanford.

The sodium storage facilities are already in compliance with most requirements. Requirements for inspection of container condition at the 2727-WA building are not met. If the 2727-W sodium is a solid waste, a Part A application is needed for that facility.

### 2.9 Submarine Cores

WHC/DOE is accepting nuclear submarine reactor cores for storage or disposal at Hanford. These cores contain lead that was originally reactor shielding; that state has indicated that this lead is a solid waste because it is not waste packaging.

The waste in these submarine cores is completely contained by the waste packaging, so that engineered liners and leachate collection systems at a disposal site would serve little practical purpose. Under RCRA minimum technology requirements this is irrelevant, however, so the current unlined submarine core trench does not meet requirements for a dangerous waste land disposal facility. WHC is reviewing whether the trench should instead be permitted as a storage facility.

### 2.10 Gaseous Emissions

Gaseous emissions from the tank farms and burial grounds include ventilation exhausts and vents from tanks, annuli, vaults, buildings and the 242-A evaporator; and open burning of native vegetation. There are no combustion-related emissions, and no chemical processing-related emissions. All emissions points identified (other than fugitive dust) are equipped with HEPA filters, and under normal conditions none releases significant quantities of regulated

pollutants. CERCLA-reportable quantities of ammonia have been released in the past, and there is a continuous release of a reportable quantity of ammonia from the 241-AW tank vent. These releases have been reported. No other issues were identified for gaseous emissions. Monitoring is adequate. Exposure modelling methods were outside the scope of this assessment.

2.11 Underground Storage Tanks

There are two underground diesel storage tanks at the TF/BG and at the 242-A Evaporator, supplying backup generators in the 701-A building and the 244-AR vault. Notification to the state of the existence of these underground tanks was required under 40 CFR 280, but has not been provided. This is currently being addressed by WHC.

3.0 RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

The Resource and Conservation and Recovery Act (RCRA) provides a framework for the management of hazardous wastes. Each hazardous waste generator, transporter, and management facility must comply with regulations promulgated under RCRA, which are codified at 40 CFR 257 through 280. The State of Washington is authorized by EPA to administer the RCRA program in the State, and does so with the Dangerous Waste Regulations (WAC 173-303). The regulations are complex and continue to undergo revision.

It is important to understand the most recent change in the status of radioactive wastes that may also be dangerous wastes. In the May 1, 1987 Federal Register (pp. 15937-15941), the DOE published a final rule on Radioactive Waste Byproduct Material under the Atomic Energy Act (AEA) regulations (10 CFR 962) that have changed the scope of RCRA's applicability to radioactive mixed wastes (MW). The effect of the rule is that the AEA regulations now have a narrower definition of what constitutes "byproduct" material ("byproduct" material is excluded from RCRA's definition of solid waste). Prior to the effective date of the rule (June 1, 1987), most of the MW generated at Hanford was considered by DOE to be byproduct material and excluded from RCRA hazardous waste management requirements.

Upon the effective date of the byproduct rule, generators of MW are required to manage MW in compliance with requirements for dangerous wastes. In addition, existing MW management facilities are required to be operated in compliance with requirements for dangerous waste management facilities. The dangerous waste regulations require facility operators to submit a notification to WDOE/EPA within three months of the effective date of the regulations and to submit a Part A permit application within six months of the effective date of the regulations.

Management of MW at TF/BG was assessed as though these wastes were subject to regulation under WAC 173-303 from the time of the

assessment began. From July 26, 1987 to November 23, 1987, however, the applicability of the regulations to MW was questionable. The Washington Hazardous Waste Disposal Act (RCW 70.105) was amended to regulate MW under WAC 173-303. These amendments became effective July 26, 1987. The Washington Department of Ecology did not become authorized by EPA to regulate MW under RCRA until November, 1987. By March 25, 1988, the "as of" date for this assessment, dangerous waste management requirements were clearly applicable to MW at TF/BG.

Waste management practices at the tank farms and burial grounds have changed very significantly between the start of this assessment in September 1987 and its completion in April 1988. Major changes during this period included ending burial of identifiable contact-handled mixed wastes as of November 23, 1987, until new disposal trenches are constructed; oral agreement with Ecology that remote-handled mixed waste (including EHW) will still be buried; and site-wide implementation of a Segregation Plan of Action (SPOA) to help assure that mixed waste is properly segregated and identified. These initiatives, when fully implemented, will contribute very significantly to improved environmental status at the tank farms and burial grounds.

Prior to implementation of these initiatives, some tank farm and burial ground practices were not consistent with requirements given in WAC 173-303.

The choice of an effective date for regulation of mixed wastes probably does not control whether past practices at the tank farms and burial grounds were fully acceptable under state regulations, because some dangerous wastes and mixed wastes were probably improperly identified as low-level wastes and land disposed both prior to and after November 1987. However, it is important to note that WHC and DOE have now ended the burial of identified mixed wastes.

3.1 Generators of Dangerous Waste (WAC 173-303-170 to 230)

3.1.1 Scope of Law

WAC 173-303-170 establishes requirements for generators of dangerous or extremely hazardous waste. The generator requirements consist primarily of those specified in WAC 173-303-170 through -230. These requirements address manifesting, packaging, labeling, accumulation, recordkeeping and reporting, and imports and exports of waste.

3.1.2 Applicability

The tank farms and burial grounds generate dangerous waste and mixed waste. Dangerous wastes generated at the tank farms and burial grounds include discarded light bulbs containing mercury, solvents, corrosive solids, and failed equipment containing lead. Used containers of Fabrafilm are extremely hazardous waste until residual solvents evaporate, but are not dangerous wastes when dry. Wastes originating from the tank farms and burial grounds includes both MW and EHW. Radioactive EHW is LLW contaminated with lead or mercury and certain radioactive failed equipment (e.g., lead counterweights welded to jumpers and shielded risers). HEPA filters and ion-exchange fines also are potential MW, but further characterization of these wastes is necessary.

Tank farm operations maintains a generator less-than-90-day container storage area at the TX tank farm. No satellite storage areas were identified.

3.1.3 Assessment Analysis

3.1.3.1 Manifest Requirements (WAC 173-303-180)

This section specifies information that must be contained on a manifest, and manifest routing and recordkeeping requirements. Dangerous wastes generated and disposed of on-site need not be manifested. However, it is Hanford convention to manifest on-site waste shipments and tank farm operations have not followed this convention in the past for shipments to the burial grounds. Dangerous waste transported to the 616 building for eventual off-site disposal have been manifested.

Only one generator manifest was on file at the tank farms and burial grounds in September 1987. This manifest was for waste generated from cleanup of a caustic drum spill. The manifest was accurately completed, and WHC staff indicated that no other dangerous wastes have been generated at the tank farms and burial grounds for disposal off-site. Various chemical products that would be dangerous wastes if disposed are used in small amounts for decontamination, but residues evaporate upon use.

Most dangerous wastes generated by the tank farms and burial grounds are managed as mixed wastes in on-site facilities. Past practice has been to ship these wastes to these on-site facilities under burial compliance checksheets (BCC) without a separate dangerous waste manifest. Provided the BCC allows the receiving facility to identify the waste as regulated, use of a BCC alone for on-site shipments meets regulatory requirements. Storage and handling procedures and operating records of the generator and the burial grounds must of course reflect handling of a regulated waste. Prior to November 23, 1987 tank farm operations did not reliably segregate mixed waste from radioactive waste. Failed equipment containing lead has been disposed as radioactive rather than mixed waste, and some dangerous waste (e.g., non-radioactive failed

equipment, or light bulbs) may have been included in low-level waste disposal boxes. Practices in this area have improved and should improve further as the SPOA is implemented.

3.1.3.2 Pre-Transport Requirements (WAC 173-303-190)

The tank farms and burial grounds are in compliance with the pre-transport requirements. These requirements do not apply to dangerous wastes shipments that are entirely on-site on non-public roads, but packaging and labeling procedures would meet requirements in any case. Information obtained from WHC staff suggested that these pre-transport requirements were satisfied for the caustic shipment to 616.

3.1.3.3 Dangerous Waste Accumulation Requirements (WAC 173-303-200)

Tank farm operations management staff indicated that failed jumpers that will never be reused have been stored in diversion boxes for years. Most of these jumpers are flex hose and are not dangerous wastes, but some jumpers include lead. Retention of failed jumpers in diversion boxes causes no operational problems, and removal involves worker radiation exposures that raise ALARA concerns. Nevertheless, storage of failed jumpers containing lead is outside the scope allowed for generator accumulation of wastes, because storage is for greater than 90 days, and is other than in a tank or containers. Action is required, to remove failed jumpers or to permit and operate the diversion boxes as waste piles.

In September 1987 some tank farm waste containers lacked accumulation dates required by this section, and records were inadequate for use to determine whether storage period limitations had been exceeded. Hazard labels were also missing. In March 1988, container labeling and accumulation problems were being corrected.

3.1.3.4 Generator Recordkeeping Requirements  
(WAC 173-303-210)

WAC 173-303-210 requires generators to keep copies of all manifests, annual reports, waste analysis data, inspection logs, operating records, and similar information at the facility for at least three years. Central records and records kept for other purposes can be used to meet this requirement. Generator recordkeeping was adequate, but records are not maintained with WAC 173-303-210 requirements in mind. A review of recordkeeping practices and coordination could facilitate future demonstrations that records are adequate.

3.1.3.5 Generator Reporting Requirements  
(WAC 173-303-220)

Generators must submit an annual report to the state that includes identifying information on waste generation and disposition. At Hanford these reports are compiled centrally, and are adequate provided wastes have been properly identified by generators.

Reports of manifest discrepancies are also required. WHC staff indicated that shipment copies of manifests have always been returned to the generating facility within the prescribed time limit.

3.1.4 Conclusions

Except for storage of failed jumpers, the tank farms and burial grounds appear to meet the generator requirements for wastes identified as regulated. Past problems with container labeling are

being corrected. Additional attention is now being directed to waste segregation and identification, which has been a problem area in the past.

3.2 Interim Status TSD Facility Standards  
(WAC 173-303-400)

3.2.1 Scope of Law

WAC 173-303-400 (Interim Status Facility Standards) outlines the applicable Federal and State requirements for interim status facilities that treat, store, or dispose of dangerous waste. Applicable State regulations include WAC 173-303-280 through -440, -630(3), -630(7), -640(2)(c), and -805. In addition, sections of the Federal Interim Status Facility Standards (40 CFR 265) are incorporated into WAC 173-303-400 by reference (40 CFR 265 Subparts F through R).

3.2.2 Applicability

Several the TF/BG units are designed and operated as treatment, storage, and disposal facilities for mixed waste. As such, the full sweep of TSD regulations are directly applicable to their operations. Since "off-site" wastes are also managed along with those from other plants at Hanford and those generated at TF/BG, most possible requirements are relevant for one operation or another. Specific requirements for specific regulated units are identified in Appendix C, Table C-1.

3.2.3 Assessment Analysis

Due to the large number of units involved and the extensive number of requirements, the assessment is provided here in segments addressing each of the major requirement areas within the regulations.

3.2.3.1 Required Notices (WAC 173-303-290)

WAC 173-303-290 requires any facility receiving dangerous wastes from off-site sources to notify the generators in writing (prior to receiving wastes from those generators) that the facility has the appropriate permits for accepting the wastes. The burial grounds accept mixed waste from offsite, and provided off-site generators with written verification of WHC's permit status in March, 1988.

The burial grounds currently do not have units that can be used to dispose of mixed wastes. Mixed waste placed in storage may become subject to treatment requirements before they can be disposed. Notices to off-site generators under these circumstances probably should not indicate that wastes will be accepted for disposal, but only for storage.

This section also has reporting requirements when wastes are received from a foreign source. Hanford has received some mixed waste from Puerto Rico, but this is not a foreign source as defined in 40 CFR 260.10(a) (referencing 42 U.S.C. 1004(31)).

3.2.3.2 Waste Analysis Plan (WAC 173-303-300)

WAC 173-303-300 requires TSD facilities to develop and follow a written waste analysis plan to assure proper management of dangerous wastes. A copy of the waste analysis plan must be kept at the facility.

The plan must establish procedures for obtaining a "detailed chemical and physical analysis" of all dangerous wastes handled within the facility. The plan must include the analysis parameters for each waste, testing methods, and sampling procedures and frequencies. For facilities that receive wastes from off-site generators, the plan must also describe the waste analyses which generators have agreed to

supply. Procedures for assuring proper waste identification during all aspects of waste management must also be included in the waste analysis plan.

At the tank farms, waste analysis plans are incorporated into unit-specific procedures for waste transfers. These plans were not developed with WAC 173-303 requirements in mind, but do provide for waste characterization adequate to assure proper waste management.

At the burial grounds, there is almost total reliance on generators to properly designate wastes. Generators are assisted and directed in their waste designation efforts by two documents, "Hanford Radioactive Solid Waste Packaging, Storage and Disposal Requirements" (RHO-MA-222, Rev. 3), and "Nonradioactive Dangerous Waste Packaging and Disposal Requirements" (RHO-RE-MA-13). Together these documents specify procedures for waste designation that, if followed, would result in proper designation of wastes.

Because Hanford is considered one facility, WHC and DOE are not precluded from relying on staff in generating units to perform some of the waste analysis functions specified in WAC 173-303-300. However, waste segregation and designation is now being addressed through the SPOA. Moreover, even if the available evidence suggested that generators were always segregating and designating their waste appropriately, WAC 173-303-300 imposes affirmative responsibilities on the burial grounds as a TSD accepting offsite wastes, and requires a plan that meets certain specifications.

Document TO-100-050 (11-12-87) "Receive and Store and/or Bury Radioactive Waste" currently appears to be the only document that could be characterized as a waste analysis plan for the burial grounds. This document was not written with that intention in mind, and a new waste analysis plan is being prepared. TO-100-050 provides for identification of mixed waste based on generator lists of hazardous constituents, and provides for verification that shipment papers match container labels. Under WAC 173-303-300 reliance on generator waste characterization data meets the requirements if the data are

"documented" or obtained by testing, and if the TSD also verifies "by analysis if necessary" that the waste received matches the waste specified in shipping papers.

Actual burial ground re-sampling and analysis of mixed waste packages would be cumbersome at best and may be precluded by radiation safety considerations. The burial ground waste analysis plan should, however, describe concrete steps to assure that generator data are documented or obtained by testing, and that wastes in containers are as represented in shipping papers. Measures that should be considered include on-site generator auditing, review of the basis for waste designations based on generator knowledge rather than testing, and waste package assays and x-rays. Off-site generators might be required to split-sample wastes at some frequency.

A waste analysis plan is also needed for the 224-T TRU storage building.

A proposed waste analysis plan for the burial grounds was included in section C-2 of Hanford's Part B permit application for these units. That proposed plan does not address many potential waste streams entering the burial grounds.

3.2.3.3 Security (WAC 173-303-310)

All "active" waste management areas require signs indicating danger and warning unauthorized personnel to keep out. Active areas include all TSD units that store or treat dangerous wastes, and all disposal areas that have received regulated waste and which have not been closed under an approved closure plan. "Radiation Area" signs, by themselves, probably do not meet this requirement. Most tank farm and burial ground TSD units lack appropriate signs.

In addition, these area must have artificial or natural barriers and a means to control access, or must be protected from unauthorized entry through a 24-hour surveillance system. Hanford's general site security (that is, prevention of unauthorized public

access) coupled with warning signs and regular surveillance of waste management areas by shift workers or the Hanford Patrol might meet this requirement. If surveillance is inadequate, however, fences should be considered. Fencing around some tank farm units, and locks on buildings also meet this requirement.

3.2.3.4 General Inspection Requirements (WAC 173-303-320)

General inspection requirements for TSDs are outlined in WAC 173-303-320 (and go beyond inspection requirements for generator less-than-90-day storage areas). A written inspection schedule for all equipment that relates to the prevention or detection of dangerous waste releases (e.g., monitoring equipment, safety equipment, security equipment, and equipment used to respond to an emergency) must be maintained at the facility. The inspection schedule must identify the types of problems which are to be looked for during inspections, the frequency of inspections for each type of equipment, and any applicable inspection requirement specified under 40 CFR 265 Subparts F through R and WAC 173-303-630 through -670 (i.e., those for containers, tanks, groundwater protection, surface impoundments, land treatment, waste piles, landfills, or incinerators). A written inspection log which conforms to the written inspection schedule must also be maintained at the TSD facility.

Under Section 320 there is considerable flexibility in determining appropriate inspection frequencies, but all areas subject to spills must be inspected daily. Inspection frequencies for some types of TSD's are specified elsewhere in the regulations.

Document number TO-040-500, "Surveillance, Safety, and Housekeeping Inspection of 200-West (Part A) and 200-East (Part B) Tank Farms and Associated Facilities" (2-11-88) is an inspection plan and schedule for some tank farm facilities. This document is supplemented in practice by inspection activities specified in unit-specific procedures and computerized operator "tickler" lists. Taken as a

whole, these materials constitute a generally adequate plan; however, there is no provision for inspecting the condition of sodium containers in 2727-WA. Continued compliance with regulatory requirements could be better assured if a plan or plans were developed with regulatory requirements in mind.

Burial ground inspection procedures have recently been summarized in document number TO-040-005, "Inspect Solid Mixed Waste Storage/Disposal Facilities". These procedures were being implemented on or shortly after March 25, 1988. When implemented, these procedures will meet WAC 173-303-320 requirements for the units addressed, provided all relevant emergency equipment (including operating equipment that may be used in an emergency) is inspected under this procedure or TO-040-500.

An inspection protocol will need to be developed, and incorporated into a revised inspection schedule, for the new groundwater monitoring system under construction at the burial grounds.

Inspection logging was generally adequate. Data sheets appeared to be filled out accurately and consistently with minor exceptions (e.g., omitting entries for time of inspection, or mischaracterizing the general cleanliness of buildings).

3.2.3.5 Personnel Training Requirements (WAC 173-303-330)

This section requires classroom or on-the-job training sufficient to ensure that facility personnel are able to perform their duties, manage wastes properly, and respond effectively to dangerous waste emergencies. A written training plan and training records are also required.

Training programs at Hanford are generally well organized. Training requirements are specified for jobs classifications or specific activities, training courses have been established and are regularly updated, and employee training status is tracked effectively. There are some weaknesses in this training system, however. First,

some staff may require training in the new waste segregation and designation procedures. Second, classroom training is confined to operating procedures that have been formally adopted, and in the mixed waste area these procedures are likely to lag actual improvements in waste management practices. Finally, most documented training courses, including on-the-job training, appear to be fairly general, and do not address specific wastes, specific TSD units, and specific situations in as much detail as might be desirable.

3.2.3.6 Preparedness and Prevention (WAC 173-303-340)

Emergency preparedness at TF and BG facilities is generally adequate. Communications at many units depends on two way radios, so it is important that these be carried when entering those units; however, at some facilities, FM radio transmissions might interfere with fire alarm systems that transmit on FM frequencies.

3.2.3.7 Contingency Plan and Emergency Procedures (WAC 173-303-350)

An up-to-date contingency plan must be maintained at the facility and must include a description of the following: all appropriate emergency actions; the protocol for refusing a waste shipment that cannot be returned to the generator due to Department of Transportation (DOT) restrictions; and the arrangements agreed to by local emergency facilities. The current names, addresses, and phone numbers (both home and office) "of all persons qualified to act as emergency coordinator" under WAC 173-303-360(1), and the order in which they assume responsibility, must also be included in the contingency plan. In addition, the written plan must contain a brief description of each piece of emergency equipment and its location within the facility. Finally, evacuation plans (including the signals used and the primary and alternative routes), where applicable, must be included

in the written contingency plan. Copies of the contingency plan must be submitted to all local police and fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency service.

The contingency plan must be updated whenever significant information becomes obsolete. Specifically, the plan must be amended whenever: applicable regulations or facility permits change; the plan fails in an emergency; the facility design, construction, operation, maintenance, or other circumstances change that would "materially increase" the potential for an emergency; and the lists of emergency coordinators or equipment change.

If the contingency plan is ever implemented, WAC 173-303-360(k) requires the owner or operator to submit a written report within fifteen days of the incident. This report must include: the names, addresses, and telephone numbers of the facility and of the owner and operator; the date, time, and type of incident; the name and quantity of material involved; the extent of injuries, if any; an assessment of actual or potential hazards to human health or the environment, if applicable; and the estimated quantity and disposition of recovered material.

Current contingency plans for TF and BG units require upgrades to meet the requirements. The plan that is currently operable is the "RHO Hazardous Material/Waste Contingency Plan," as revised, along with supplements for some facilities (e.g., RHO Emergency Response Plan, Supplement 11.5, Tank Farm Surveillance and Operations," January 1987 (RHO-MA-111.5). No supplemental plans are in place for burial ground facilities.

The general plan describes potential emergency response actions for various emergency situations. The plan incorporates Memoranda of Understanding with State and local emergency response agencies in an appendix. The plan is clearly written and well organized, and demonstrates a good faith effort to comply with the WAC requirements for Hanford as a whole. But a "generic" contingency plan

such as this cannot comply with certain requirements specific to individual facilities. For example, it is unreasonable to provide descriptions and locations for all emergency equipment or evacuation routes for all units in a generic plan. It is also more difficult to update such a plan.

Because the plan is not tailored to individual facilities, the plan does not address facility-specific regulatory requirements. WAC 173-303-350 specifically requires the contingency plan to include procedures for refusing waste shipments that cannot be returned to the generator due to DOT restrictions. This requirement is applicable to the burial grounds and 224-T, and is not addressed in the overall Hanford contingency plan.

Although the current contingency plan briefly describes evacuation protocols, it does not supply evacuation routes for individual facilities. Considering the fact that the Hanford reservation is 570 square miles in area, separate evacuation plans (and routes), as required in WAC, must be developed for each facility.

Furthermore, WAC requires the contingency plan to provide brief descriptions and locations of all emergency equipment. The current contingency plan stresses the advantage of having emergency equipment available for the entire Hanford reservation, as opposed to having emergency equipment for each facility. Whether or not this argument is valid, the contingency plan must include detailed descriptions and locations of this centralized equipment, and of any other equipment (e.g. fire extinguisher) specific to individual waste management units. WHC staff indicated that various operating equipment is available in emergency situations, but is not set aside exclusively for emergencies.

The plan also does not describe in detail the appropriate responses to dangerous waste releases. Typical release scenarios should be included in the plan, along with descriptions of the proper response in each case.

RHO-MA-111.5 describes emergency procedures for the tank farms and the 242-A Evaporator. This document is very detailed regarding various emergency situations and appropriate responses; however, it was apparently not written to meet the contingency plan requirements. It does not address most of the other requirements, described above.

Hanford has recognized that its emergency plans do not meet regulatory requirements, and is in the process of developing building specific emergency plans.

3.2.3.8 Emergencies (WAC 173-303-360)

This section specifies requirements for emergency coordinator knowledge (we did not assess compliance with this provision), and includes other requirements that are triggered only in an emergency. Because Hanford's emergency plan has never been implemented by TF/BG due to a hazardous waste emergency, these requirements are not presently applicable.

3.2.3.9 Manifest System Requirements for TSD Facilities

When a TSD facility receives dangerous wastes that are accompanied by a manifest, the owner/operator must: sign and date the manifest to verify receipt of shipment; note any significant discrepancies on the manifest; and immediately give the transporter at least one copy and send another to the generator within thirty days. Analogous requirements exist for shipments received by rail or water accompanied by a shipping paper. Hanford convention is to manifest on-site waste shipment, even though manifests for these shipments are not technically required, and to follow these general manifest procedures, even though that would not be mandatory.

If a "significant discrepancy" exists between the actual delivery and the manifest, and it is not resolved within fifteen days,

then the facility owner/operator must submit a letter to Ecology describing the discrepancy and the attempts to reconcile it. A "significant discrepancy" entails incorrect manifest information concerning waste designation or quantity. (A significant discrepancy on the basis of waste quantity is defined as an inconsistency in the number of containers or a 10% or greater discrepancy, by weight, for bulk shipments.) A copy of the manifest in question must accompany the letter. Discrepancies involving manifests for on-site shipments have been quickly resolved or the waste shipments have been returned to the generator, so these formal discrepancy procedures have not been triggered.

As with most other records, correspondence with Ecology involving manifest discrepancies, if applicable, and copies of all manifests must be maintained at the facility for at least three years.

This assessment included a review of completed manifests and interviews with WHC personnel in order to assess the tank farm and burial grounds' status with respect to TSD manifest system requirements. The review was conducted prior to November 23, 1987. The burial grounds receive wastes under manifest for disposal, for storage prior to disposal, and for storage at 224-T prior to shipment to WIPP. (However, acceptance of wastes from offsite has been temporarily suspended until waste management units meet RCRA requirements.)

The manifest system for the tank farms and burial grounds is well organized and efficient. The computer cataloguing system is very effective in tracking waste shipments to the burial grounds, and in cross-referencing these shipments with waste manifest numbers and with eventual waste locations within the burial grounds. Assessment staff tested this system by asking WHC staff to retrieve the original manifest for a random waste shipment listed on the computer printout as received and properly disposed of at the burial grounds. WHC staff supplied the manifest within moments.

The manifests themselves were filled out completely. Of the dozens of manifests reviewed, only one was incomplete in that the date of the transporter's signature was missing. No manifests showing receipt of wastes restricted from land disposal under Federal rules were discovered during the review, but no system was in place to assure that such wastes would be identified by generators. Manifests showing receipt of wastes containing lead were identified.

WHC staff expressed no knowledge of unresolved discrepancies, as defined above, and no discrepancy reports were on file at the facility. Discrepancies resulting from inadequate waste segregation and designation by generators probably would not be detected at the burial grounds, however, because no independent waste analysis is conducted.

3.2.3.10 Facility Recordkeeping (Operating Record)  
(WAC 173-303-380)

TSD facility operating records must include a description of each dangerous waste received or managed on-site, and the methods and dates of its treatment, storage, or disposal; the location and quantity of each dangerous waste within the facility; the records and results of waste analyses and equipment inspections; summary reports of all incidents that required implementing the contingency plan; monitoring, testing, and analytical data, where required; and all required closure and post-closure cost estimates. Waste quantities must be recorded by weight (or by volume and density).

The operating record must identify each dangerous waste by common name and by Dangerous Waste Number(s) from WAC 173-303-080 through -104. If not, it must be identified by the process which generated the waste. The waste's physical form (i.e., liquid, solid, sludge, or gas) must also be identified in the operating record. Finally, the dates and the methods of waste management employed for each dangerous waste received must be recorded within the written

operating record. (The management method must be recorded using the handling codes specified in Table 2, WAC 173-303-380.)

For disposal facilities, the location and quantity of each dangerous waste must be recorded on a map or diagram of each cell or disposal area. (Location and quantity information must be cross-referenced to specific manifest document numbers.) For off-site facilities, copies of notices to generators informing them that the facility has all appropriate permits must also be included in the operating record.

For the burial grounds, the following documents were reviewed in order to assess status with respect to these requirements:

- 1) Computer printouts of waste cataloging system, dated September 1, 1987;
- 2) Computer printout entitled, "Burial Ground & Trench -- First & Last Time Used, From 11/1/80 to 5/17/86";
- 3) "Listing of Regulated Trenches Within the Low-Level Burial Grounds," 10/25/85; and
- 4) "Burial Grounds and Retrievable Storage Drawings" (Appendix D-1, Part B's).

The waste cataloging system, as described in the previous subsection, satisfies many operating record requirements under WAC. The printout included information on the origin of each waste shipment, the disposal trench location and date, the shipment weight, the shipment number (which cross-references the waste shipment to the original manifest number), and the waste type. These printouts, along with burial ground maps indicating the individual trench numbers, satisfy the requirement for recording waste location and quantity information on a map or diagram of each cell or disposal area.

Although the printouts provided information on waste type, those reviewed always listed the waste type as "non-TRU." These printouts did not indicate the waste's common name and number, nor did they list the waste's physical form or waste management handling code, as required under WAC. This information is available through

cross-referencing with the waste manifest or with other records created at the operating level, and is compiled for use in annual reports. Procedures for this cross-referencing should be maintained in the written operating record to demonstrate conformance to dangerous waste regulations.

Records of waste receipt and handling and of inspections are kept as part of normal operating procedures for other tank farm and burial ground facilities. Although these records are typically not grouped into a WAC 173-303 operating record, they appear to contain most required information. Wastes and processes are not recorded using the codes specified in the dangerous waste regulations. Required estimates of closure and post-closure costs are also missing.

3.2.3.11 General TSD Facility Reporting Requirements (WAC 173-303-390)

This section requires a report if dangerous wastes are accepted from off-site without a manifest (this is not done at Hanford), and references reporting requirements detailed elsewhere in WAC 173-303 (i.e, groundwater monitoring reporting requirements, and requirements in the event of fire, explosion, or dangerous waste release).

The 242-A Evaporator has experienced three CERCLA-reportable releases. These releases occurred between August 29 and 31, 1987, and were reported to DOE-RL. In addition, the exhaust stack for the 241-AW tank farm continuously releases a reportable quantity of a CERCLA hazardous substance (ammonia), and WHC has notified DOE-RL of this release. WHC staff indicated that no fire or explosion has occurred that would require reporting.

WAC 173-303-390 also requires an annual report on facility activities during the previous calendar year. These reports are prepared centrally, and the 1986 calendar year report was adequate with

respect to TF and BG activities. Additional wastes and units may need to be reported in 1987.

3.2.3.12 Other General Requirements (WAC 173-303-395)

This section requires TSD facilities to inspect areas where ignitable or reactive waste is stored, and to record the inspection results in the facility's operating record. These inspections must be conducted at least annually, and they must be conducted "in the presence of a professional person who is familiar with the Uniform Fire Code, or in the presence of the local, state, or federal fire marshal." The inspection record must include the date and time of the inspection, the name of the professional or fire marshal, a notation of the observations made, and any remedial action taken.

This requirement is applicable to the sodium storage units if they are dangerous waste, and to portions of the burial grounds that store ignitable wastes. (The burial grounds have suspended acceptance of ignitable wastes until storage facilities can be upgraded to meet regulatory requirements.) Attempts by WHC staff to locate records of these inspections were not successful, although operating staff indicated that the Hanford fire department had conducted inspections in the past.

3.2.3.13 Groundwater Monitoring (40 CFR 265 Subpart F)

40 CFR 265 Subpart F is incorporated into the WAC by reference. This subpart establishes interim status groundwater protection requirements for TSD facilities that dispose of dangerous waste in surface impoundments, land treatment units, or landfills. Hanford is now establishing a monitoring system at the burial grounds.

3.2.3.14 Closure and Post-Closure Care (40 CFR 265 Subpart G)

Requirements for closure and for post-closure care (40 CFR 265 Subpart G) are incorporated into WAC 173-303 by reference. Closure plans must be prepared and maintained for all interim status facilities except those under permit-by-rule. The only closure plan identified for tank farm and burial ground facilities is the plan for the burial ground disposal and retrievable storage trenches included in Hanford's Part B permit application. This plan will probably require modification because it defers final closure to 2085 and does not provide for interim closure of trenches that have been filled. It is unlikely that a plan that does not provide for final cover for almost 100 years after some disposal units have been closed will meet performance standards specified in subpart G.

3.2.4 Conclusions

As evidenced in the preceding subsections, there are a number of areas where action is required to improve the status of TF/BG operations with respect to requirements for TSD facilities. Other areas are questionable, or data are insufficient to determine environmental status. In these areas, it appears that procedures addressed to the issue of concern are often in place, but they are remnants of earlier radioactive waste programs and do not meet specific requirements mandated under WAC 173-303 for the dangerous waste portion of mixed wastes.

3.3 Tanks (40 CFR 265, Subpart J)

3.3.1 Scope of Law

Federal interim status standards for tanks as of July 11, 1986 are incorporated into the state program through WAC-173-303-400.

These federal regulations were revised on July 14, 1986, and requirements equivalent to these revised standards will soon be binding in Washington. Currently applicable standards address general operations, waste analysis, inspections, closure, and ignitable, reactive or incompatible wastes. Soon to be applicable standards will add requirements for design and installation of new tanks, require secondary containment and interstitial leak detection for new tanks, phase in a retrofit requirement for existing tanks, and modify requirements for tank operation, inspection and closure.

3.3.2 Applicability

The double-shell tanks in the AN, AP, AW, AY, AZ, and SY Tank Farms; the tanks in the 244-AR and 244-CR Vaults; the double-contained receiving tanks (244-A, 244-BX, 244-S, 244-TX, 244-U); and the 241-EW-151 tank are all used to store or treat mixed wastes. DOE has submitted a Part A permit application for these tanks.

Sodium stored in the 2727-W tanks is mixed waste if the material is a solid waste. Plans for potential use of this material have changed over time, and WHC/DOE are currently reviewing whether this material is a solid waste. Pending resolution of this question, this assessment assumes that these tanks are dangerous waste tanks.

3.3.3 Assessment Analysis

3.3.3.1 Tank Labeling [WAC-173-303-395(6), 640(2)(c)]

These sections require that dangerous waste tanks be marked to identify the risks associated with the wastes stored in the tanks. The sodium tanks are meet this requirement, but tank farm tanks are not marked. Due to radiation hazards and the nature of tank farm operations, risk labels for fenced tank farm tanks should probably be

attached to the fences for these facilities rather than to the above ground portions of the tanks themselves.

3.3.3.2 Integrity Assessment (40 CFR 265.191, as Revised)

When applicable in Washington, this section of the revised federal tank regulations will require the owner or operator of all tank systems lacking double containment to perform an integrity assessment to determine if the tank systems are leaking or unfit for use. Double-shelled tanks have acceptable secondary containment, but the 244-AR and 244-CR Vault tanks and the 241-EW-151 tank probably do not. Containment vaults for these tanks probably do not meet the interior lining requirements given in 40 CFR 265.193(e)(2)(iv). Sodium storage tanks are not double contained.

3.3.3.3 Design and Installation of New Tank Systems or Components (40 CFR 291.192, as Revised)

These requirements will apply to new tank systems installed after the effective date of these regulation in Washington. The design standards and installation practices used at Hanford for double-shelled wastes tank would be compliant with these requirements.

3.3.3.4 Containment and Detection of Releases (40 CFR 265.193, as Revised)

This section requires secondary containment for tank systems and a means for detecting releases from the primary and secondary containment. These requirements are currently applicable to new tanks in Washington and will be phased in for existing tanks in the future. As discussed above, it is questionable whether some of the tank systems now relied on in the tank farms could meet these requirements.

3.4.3.5 General Operating Requirements, Inspections  
(40 CFR 265.192. and .194 as Revised)

These requirements generally address designs and procedures for preventing leaks. The present tank systems designs and operating procedures meet applicable requirements.

3.3.3.6 Response to Leaks or Spills and Disposition of Leaking  
or Unfit-For-Use Tank Systems (40 CFR 265.196. as Revised)

This new regulatory provision sets out explicit requirements for responding to leaking tanks or tanks which the integrity assessment indicates are unfit for use. Staff at the Tank Farms indicated that there have been no releases detected from double-shelled tanks. Tanks could not be physically inspected to verify that no releases had occurred. Integrity assessments have not been performed. Hanford's spill reporting system appears adequate to assure that releases are reported to Ecology/EPA within twenty-four hours of detection, as required by this section.

This section also requires that waste be removed from leaking tanks to the extent necessary to prevent further release or to allow inspection and repair. Standby tank capacity, and methods for transfer, are available to support this requirement.

3.3.3.7 Closure And Post-Closure Care (40 CFR 265.197)

Currently, tanks with final permit status in Washington must be "clean closed" -- all wastes, residues and contaminated soils must be removed and all system components be decontaminated or removed. These requirements are not currently applicable to tanks closing under interim status (federal requirements are incorporated by reference for interim status tanks, and those regulations provide more flexibility.) However, it is likely that these clean-closure requirements will be applicable to the double-shelled tanks by the time they are closed.

Current plans for closure of the double-shelled tanks, developed under the Defense Waste EIS, are not consistent with this closure standard. The closure plan that is needed for these tanks should address this issue.

3.3.3.8 Special Requirements for Ignitable, Reactive, and Incompatible Wastes (40 CFR 265.198.199)

The environmental status of sodium in tanks in the 2727-W Building is questionable because it is not established that they are solid wastes.

3.3.3.9 Waste Analysis and Trial Tests (40 CFR 265.193. and .200 as Revised)

This section requires analysis and testing to assure that wastes are properly managed. Tank farm operations meet the requirements; wastes are transferred only in batch mode, and only after waste composition has been determined.

3.3.3.10 Storage of Banned Waste (40 CFR 268.50)

These regulations prohibit storage of hazardous wastes restricted from land disposal unless storage is solely for the purpose of accumulating such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal. This storage limitation may already be applicable to some tank wastes, and will be applicable to all of these wastes in the near future. The facility cannot meet requirements for storage of restricted wastes, but may be eligible for a waiver on the grounds of lack of treatment capacity and plans to develop that capacity.

3.3.4 Conclusions

Action is needed so that the double-contained tanks at the tank farms that contain restricted wastes can store that waste until the Hanford Waste Vitrification facility and related facilities are on line. These restricted wastes are being stored pending the development and installation of these treatment facilities, and not strictly for accumulation of sufficient quantities of waste for processing. Other areas where action is needed include tank labeling requirements and preparation of closure plans.

These tank-related issues will become more encompassing in the near future as more wastes are restricted from land disposal, and as requirements for double containment are phased in. Some ancillary tank farm tanks may need to be closed and replaced because it is unlikely that they will meet future requirements for double containment. Current closure plans require upgrades to assure that closure activity will meet requirements.

3.4 Chemical, Physical, and Biological Treatment (40 CFR 265 Subpart Q)

3.4.1 Scope of Law

40 CFR 265 Subpart Q (incorporated into WAC 173-303 via section 173-303-400) sets requirements for interim status facilities performing chemical, physical, or biological treatment of dangerous wastes, other than in tanks, surface impoundments, or land treatment facilities. Waste management is considered treatment if it makes wastes "nondangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage, or reduced in volume."

Subpart Q includes general operating requirements; requirements related to waste analysis and trial tests, inspections, and closure; and special requirements for ignitable, reactive, or incompatible wastes.

3.4.2 Applicability

Subpart Q does not apply to treatment processes that occur in tanks (as at the 242-A Evaporator) but would apply to in-line adjustment of pH at the 204-AR waste unloading station if incoming wastes are dangerous. Incoming wastes have sometimes had a pH of greater than 12.5, and wastes from the 300 Area may be toxic mixtures. Therefore, this assessment assumes that this is a waste treatment facility.

3.4.3 Assessment Analysis

The 204-AR unloading station meets these requirements. Operations are conducted to avoid ruptures and leaks, waste analysis is adequate, and inspections procedures and schedules are appropriate.

3.5 Surface Impoundments (40 CFR 265 Subpart K)

The 216-A-29 Ditch, which receives cooling water from tank farm operations, has been designated as a surface impoundment. The trench is not managed with the objective of complying with interim status standards for surface impoundments. These standards are technically applicable until closure is completed under an approved closure plan.

3.6 Landfills (40 CFR 265, Subpart N)

3.6.1 Scope of Law

RCRA regulations for interim status landfills set requirements for facility design, operation, surveying and record-keeping, and closure and post-closure care. Some of these requirements are incorporated into WAC by reference, while other are administered by EPA. Double liners and leachate collection systems are required for areas that have received dangerous wastes for disposal (unless a waiver is received) since May 8, 1985. The same requirements now apply to areas that receive mixed wastes. Run-on and run-off must be controlled. Special requirements are set out for ignitable, reactive, and incompatible wastes. Placement of bulk liquids or containers with free liquids into landfills is prohibited after May 8, 1985 unless certain showings are made.

3.6.2 Applicability

Regulations in this subpart apply to Low-Level Burial Grounds, TRU Caissons, and Retrievable Storage Units that received non-radioactive dangerous wastes due to errors in waste segregation and designation or that received mixed waste after those wastes became subject to RCRA regulations. Deliberate burial of mixed wastes in these units has been suspended since November 23, 1987, except as needed for radiation protection purposes. Depending upon past waste segregation performance and on the effective date of regulation for mixed wastes, some requirements discussed here may apply only to newly constructed waste disposal units. However, in the past WHC and DOE have assumed that the entire burial grounds are subject to regulation, because all trenches may have received dangerous wastes. Permit applications for the burial grounds reflect this assumption.

3.6.3 Assessment Analysis

3.6.3.1 Notification (40 CFR 265.300)

Part A and Part B permit applications have been submitted for the low-level burial grounds (LLBG) and the retrievable storage units (RSU). Requests for waivers in the Part B application have been denied, so the Part B permit application will need to be revised.

3.6.3.2 Design Requirements (40 CFR 265.301)

Active portions of the LLBG and retrievable storage units lack the double liners and leachate collection systems required by this subsection. A waiver from this requirement was requested but has been denied. WHC and DOE have suspended burial of mixed wastes until trenches that meet these design requirements are constructed, except for remote-handled wastes that must be buried to provide radiation protection.

3.6.3.3 Groundwater Monitoring (40 CFR 265.91 to 265.94)

A groundwater monitoring system is now being installed in accordance with a schedule established by the state.

3.6.3.4 General Operating Requirements (40 CFR 265.302)

Only minimal provisions are made for control of run-on and run-off from precipitation, because precipitation percolates quickly through unlined trench floors and native soil covers. When trenches that meet design requirements are constructed, and when covers are installed over filled trenches additional run-on and run-off control measures will be needed. Current run-on control is limited to diversion of run-on from asphalt pads in the retrievable storage

trenches. This assessment did not determine whether these measures are capable of preventing flow into active areas during the peak discharge from a 25-year 24-hour storm.

3.6.3.5 Surveying and Recordkeeping (40 CFR 265.309)  
and Closure and Post-Closure Care (40 CFR 265.310)

These closure-related requirements are not applicable at this time.

3.6.3.6 Ignitable or Reactive Wastes (40 CFR 265.312)  
and Incompatible Wastes (40 CFR 265.313)

The burial grounds are not currently equipped to store ignitable wastes in accordance with these requirements, and cannot dispose of such wastes until new trenches are constructed. Therefore, the burial grounds have suspended acceptance of ignitable and reactive wastes until new storage facilities are in place.

3.6.3.7 Bulk and Containerized Waste (40 CFR 265.314)  
and Lab Packs (40 CFR 265.316)

Receipt of liquids in lab packs is acknowledged. BG staff also believe that some generators may have shipped containerized liquids that were improperly packaged and manifested in the past. This section prohibits disposal of any bulk or containerized liquids including non-dangerous liquids. Implementation of the SPOA and development of a new waste analysis plan should reduce problems in this area.

3.6.3.8 Special Requirements (40 CFR 265.315)

Burial boxes for remote-handled wastes are often less than 90% full; this is a procedural compliance problem; these containers are not likely to collapse and cause subsidence in a trench.

3.6.4 Conclusions

Past practices at the burial grounds would not meet requirements for management of mixed wastes today. As of March 25, 1988 plans were being developed for managing mixed waste in an appropriate manner in the future.

3.7 Use and Management of Containers  
(40 CFR 265 Subpart I)

WHC/DOE has notified Ecology of underground storage tanks (UST) at Hanford. This notification included the single- and double-shelled waste storage tanks at the Tank Farms. The double-shelled tanks are now regulated under Subtitle C of RCRA and notification under UST regulations is not applicable. No notification was provided for two active underground diesel fuel tanks, at 241-A-701 and 244-AR. These two tanks are now being reported to Ecology. No tanks were identified which were installed after May 1985 and which would be subject to requirements under 40 CFR 280.2.

In addition to the above requirements, a rulemaking is in progress that will establish leak testing and groundwater protection requirements in the future. Equipment retrofits and changes in management procedures will be needed before the diesel fuel tanks identified can meet the requirements in these proposed rules.

3.8 Underground Storage Tanks (40 CFR 280)

3.8.1 Scope of Law

40 CFR 265 Subpart I (incorporated into the WAC through WAC 173-303-400, and supplemented therein) sets requirements for interim status treatment, storage, and disposal facilities that handle dangerous wastes in containers. The requirements of Subpart I and the State supplements to those requirements are very basic, and are similar in most respects to requirements imposed in WAC 173-303-200 (and sections referenced therein) on generators who store waste on site for less than 90 days. Subpart I addresses the condition of containers, compatibility of wastes and containers, management and inspection of containers, and ignitable, corrosive, and reactive wastes. In addition, 173-303-400 includes by reference WAC's general facility standards for TSDs (addressed elsewhere in this report), a special State labeling requirement [WAC 173-303-630 (3)], and in some cases a special State secondary containment requirement [WAC 173-303-630 (7)].

3.8.2 Applicability

40 CFR 265 Subpart I is not applicable to satellite accumulation areas and less-than-90-day storage pads. The requirements apply only to permitted or interim status storage facilities that store waste in containers for longer than 90 days. These regulations are currently applicable to the 224-T Building, which is used to store containerized TRU, and the 2727-WA Building, if the containerized sodium in that building is a solid waste. The retrievable storage units at the Burial Grounds that are being used to hold mixed waste until new pads are constructed should comply with these regulations, as should the new storage facilities under construction.

3.8.3 Assessment Analysis

Action is required to improve the status of the 224-T and 2727-WA Buildings with respect to TSD container storage standards. Containers in both facilities are so arranged as to preclude inspection of container condition. In addition, incompatible wastes are stored at 224-T without separating berms. There are no "No Smoking" signs in the 2727-WA Building where reactive sodium is stored.

4.0 CLEAN WATER ACT AND SAFE DRINKING WATER ACT

4.1 National Pollution Discharge Elimination System (NPDES)

NPDES Permit requirements of the Clean Water Act, as implemented in Washington under WAC 173-220, regulate discharges of pollutants to navigable waters. These requirements do not apply to TF/BG, because the operation does not discharge to navigable waters.

4.2 State Waste Discharge Permit Program (WAC 173-216)

WAC 173-216 regulates discharges of waste materials into ground and surface waters of the State. These state regulations differ from the NPDES regulations in that they regulate waste discharges rather than discharges of pollutants, and apply to grounds and surface waters of the State rather than to navigable waters. These regulations require permits for all such discharges (except for those permitted under the NPDES) and establish conditions necessary for permits. These conditions include applications of all known, available and reasonable methods of prevention, control and treatment of waste materials; protection of beneficial uses of groundwaters; and prevention and control of pollutant discharges from runoff, spillage, leaks, and waste disposal. The applicability of these regulations to Hanford operations has yet to be established by WHC/DOE, and at WHC's direction this assessment does not address status with respect to WAC 173-216. If these requirements are applicable, discharges of cooling waters and condensates to cribs and ditches might be regulated. It is uncertain whether discharge of these radioactive streams without treatment would be acceptable under this program, which requires that all known, available, and reasonable methods of prevention, control, and treatment for pollutants be provided.

4.3 Spill Prevention, Control and Countermeasures  
(40 CFR 109-114)

No SPCC plan is required for the tank farms and burial grounds under the NPDES program. However, a requirement for an SPCC plan is a standard element of WAC 173-216 permits and would likely be required if these regulations are applicable. The tank farms and burial grounds do not have a formal SPCC plan designated as such, but have some procedures in place for spill prevention and response.

5.0 SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA, 42 U.S.C. Section 300(f) et seq.) addresses issues related to groundwater protection and public water supply quality. Responsibility for administering regulations under the SDWA in the State of Washington are shared by the State Board of Health and the Department of Ecology. The Board of Health is responsible for public water supplies and on-site wastewater disposal; these areas were not within the scope of this assessment. The Department of Ecology administers the Underground Injection Control (UIC) program under WAC 173-218.

The UIC program protects groundwaters by regulating procedures and practices for injecting fluids through wells. The State of Washington is authorized to administer the UIC program for all classes of wells:

- Class I -- industrial or municipal wells injecting hazardous wastes beneath the lowermost stratum within one quarter mile of an underground source of drinking water;
- Class II -- injection wells associated with oil and gas storage in production;
- Class III -- solution mining wells and geothermal wells;
- Class IV -- wells injecting radioactive or hazardous wastes; and
- Class V -- all other injection wells.

Washington has more restrictive regulations than the federal program in that the State prohibits placement of Class IV wells over a usable aquifer, while the federal program allows such wells within one quarter mile of a usable aquifer.

The applicability of WAC 173-218 to discharges of non-dangerous radioactive wastes to some facilities at Hanford has not been established because it is unclear whether certain cribs and French drains meet the regulatory definition of UIC wells. WHC has determined that the cribs receiving tank farm and burial ground effluents are not injection wells, so WAC 173-218 does not apply.

6.0 TOXIC SUBSTANCES CONTROL ACT

6.1 Scope of Law

The Toxic Substances Control Act (TSCA) mandates regulation of polychlorinated biphenyls (PCBs), among other chemical substances. Under TSCA's authority, the EPA promulgated regulations governing the handling, labeling, recordkeeping, storage, and disposal of PCBs and PCB Items; these regulations are found at 40 CFR 761 et seq. Requirements vary depending on the type of equipment or waste containing PCBs, the concentrations of PCBs present, and intended disposition. Land disposal of wastes subject to TSCA and containing PCBs in concentration of 50 ppm or greater is prohibited, except in designated landfills that meet specified requirements.

In general, equipment or wastes containing PCBs at concentrations below 50 parts per million (ppm) are excluded from regulation under TSCA. The State of Washington regulates PCB wastes that are generated from salvaging, rebuilding, or discarding of transformers or capacitors in concentrations of 1 ppm to 50 ppm under WAC 173-303, but PCB wastes are excluded from regulation under WAC if the wastes are already regulated under TSCA (WAC 173-303-071(3)(k)). Moreover, Washington State regulations exclude PCB wastes stored in compliance with TSCA requirements (40 CFR 761.65) and properly disposed of within one year.

6.2 Applicability

TSCA contains (at Section 3(2)(B)(iv)) an exclusion for source, special nuclear and byproduct materials similar to that found in RCRA. However, Hanford's radioactive PCB wastes are "mixed waste" in the same manner as RCRA wastes that contain both radionuclides and other hazardous constituents, and are subject to TSCA.

The TF/BG has four in-service transformers containing less than 500 ppm PCBs, as discussed in the following section. Therefore, many of the TSCA regulations do not apply. (The majority of the TSCA regulations for in-service transformers pertain to those transformers that contain PCB concentrations of 500 ppm or greater.) The TSCA regulations that do apply include 40 CFR 761.30(a)(2)(i), which states that transformers containing PCBs in concentrations of greater than 50 but less than 500 ppm may be serviced only with dielectric fluid containing less than 500 ppm PCB. Recordkeeping requirements also apply. Storage and disposal requirements will apply to these transformers after they are removed from service and disposed. Also, if there were a PCB spill, the cleanup of the spill and disposal of the resultant waste would be regulated by TSCA (for PCB concentrations of 50 ppm or greater), or by WAC 173-303 (for PCB concentrations greater than 1 but less than 50 ppm). (WAC would not regulate this waste if it were stored and disposed in accordance with TSCA requirements.)

6.3 Assessment

The responsibility for most PCB-containing electrical equipment in service at Hanford rests with a central PCB management unit. Typically, an individual is identified at each plant who coordinates handling, maintenance, and disposal of PCBs and PCB Items. That person normally maintains in-plant PCB records. PCB-containing items are used at the TF/BG in transformers. The following table summarizes transformer locations.

Table 6-1. TF/BG TRANSFORMERS

<u>Transformer Identification</u>	<u>Location</u>	<u>PCB Concentration</u>
C-5562P	Outside 242-A Building	160 ppm
C-5662P	West of Instrument Building	120 ppm
C-5712P	South of Instrument Building	1 ppm
C-5859P	NW Corner of Instrument Bldg.	<1 ppm

In addition to the transformers, burial grounds operations have been involved in the storage and disposal of PCB wastes. Prior to 1982, waste oils that might contain PCBs were not tested, so that some PCB wastes may have been land disposed. Land disposal of wastes containing PCBs in concentrations of 50 ppm or greater and subject to TSCA has been prohibited (except under conditions that are not met at Hanford) since 1979 (40 CFR 761.60). However, TSCA contains (at Section 3(2)(B)(iv)) an exclusion for source, special nuclear and byproduct materials similar to that found in RCRA, so land disposal of these radioactive PCB wastes would have been viewed by DOE, and possibly by EPA, as outside the scope of TSCA at the time disposal occurred.

Reinterpretation of the RCRA "byproduct" exclusion has resulted in RCRA regulation of Hanford mixed wastes. A similar reinterpretation is appropriate under TSCA, and Hanford has in fact attempted to manage radioactive PCB wastes in compliance with TSCA since 1982.

Under TSCA PCB wastes that were improperly disposed after 1978 must be exhumed and disposed of in conformance with TSCA regulations. It is unclear whether this requirement would apply to wastes that were (or were believed to be) exempt from TSCA when land disposed, but which would be characterized as subject to TSCA today.

Beginning in 1982, waste oils were tested and PCB contaminated oils were stored in the retrievable storage trenches (but were not buried) until the 212-P facility was established for radioactive PCBs. The PCB wastes now stored in that facility have been stored for periods of more than one year. Storage of these wastes for longer than one year is inconsistent with TSCA regulations.

Radioactive PCBs must currently be stored because no incinerator that can burn these wastes exists, and because plutonium contaminated PCBs must be retained by DOE until they can be destroyed in a secure manner. A new facility is under construction at the burial grounds to store additional quantities of radioactive PCBs that are

being held at generator facilities or that may be generated in the future.

#### 6.4 Conclusions

WAC 173-303 does not apply to the TF/BG transformers while they are in service, so the status of the transformers in relation to these regulations is given as Not Regulated. The TSCA requirements regarding servicing (maintenance) practices and recordkeeping were not reviewed during this assessment, since they are performed by a central organization. The other TSCA regulations, such as labeling, inspection, and use conditions do not apply to transformers with PCB concentrations of less than 500 ppm.

The status of the radioactive PCB-contaminated oils that are stored in the 212-P facility is given as Action Required, since they are stored beyond the one-year limit given in the TSCA regulations. Radioactive PCBs must currently be stored because no incinerator that can burn these wastes exists, and because plutonium contaminated PCBs must be retained by DOE until they can be destroyed in a secure manner. A new radioactive PCB storage facility is under construction at the burial grounds, to store additional quantities of radioactive PCBs that are being held at generator facilities or that may be generated in the future.

7.0 COMPREHENSIVE ENVIRONMENTAL RESPONSE,  
COMPENSATION. AND LIABILITY ACT (CERCLA)

7.1 Scope of Law

CERCLA includes requirements for reporting past releases of hazardous substances, and reporting accidental and continuous releases of hazardous substances as they occur. Requirements to report are based on reportable quantities of specific substances.

7.2 Applicability

CERCLA reporting requirements are applicable to spills and other releases of hazardous substances at the tank farms and burial grounds, including continuous releases. Past releases of materials and inactive waste sites at the tank farms and burial grounds are being evaluated under the general CERCLA implementation program at Hanford and were not considered in this assessment. An assessment of potential CERCLA sites has been made, and a report was submitted to EPA. The current assessment, therefore, was limited to ongoing releases at active sites.

7.3 Assessment Analysis

At Hanford, DOE has reserved responsibility for reporting releases of hazardous substances to responsible local and national authorities. Individual facilities and the contractors responsible for those facilities report releases to DOE, with their determination of whether the release is reportable to outside agencies.

We did not assess DOE's compliance with spill and leak reporting requirements. However, we did review records of accidental releases to see whether the facility was maintaining records and had

properly determined whether reportable quantities of hazardous substances had been released.

Releases of reportable and regulated substances have been reported to DOE monthly since November 1985. These records were reviewed to assess the adequacy of the reporting system and to identify CERCLA-reportable releases which had occurred at the tank farms and burial grounds. The present reporting system involves reporting all spills and non-routine releases. These spills and releases are compared to reportable limits to determine regulatory requirements. This system appears to be capable of correctly identifying and reporting releases associated with spills and unplanned incidents. A reportable continuous release of ammonia from the 241-AW tank vents has also been identified and reported.

The release reports reviewed identified three releases from the tank farms from March 1986 to the present, two of which were reportable under CERCLA. The two reportable releases involved discharges of ammonium hydroxide from the 242-A Evaporator during August 1987. These releases were associated with normal operation of the Evaporator.

#### 7.4 Conclusions

DOE has reserved responsibility for CERCLA reporting and has delegated to WHC the development of SARA Title III programs. The TF/BG procedures and performance should be adequate in this context after the planned waste system upgrades are completed and the SARA Title III site-wide program has begun. Additional efforts should focus on identifying whether actual or planned routine operations have the potential to result in reportable releases. Westinghouse Hanford Company may wish to consider arrangements that would allow verification that releases had been reported to appropriate authorities by DOE when required.

8.0 CLEAN AIR ACT (CAA)

8.1 New Source Performance Standards (NSPS)

New Source Performance Standards apply to certain large, new sources of air pollution which are listed in 40 CFR 60, such as new coal-fired power plants and cement plants. This section is not applicable to the tank farms and burial grounds because they are not sources for which performance standards have been promulgated.

8.2 National Emission Standards for Hazardous Air Pollutants (NESHAP)

8.2.1 Scope of Law

National Emission Standards for Hazardous Air Pollutants (NESHAPS) are technology-based standards for industries that emit asbestos, beryllium, mercury, vinyl chloride, radionuclides, and other particularly hazardous materials. The standards apply to both new and existing sources or activities of the specific industries covered by the NESHAP rules. The rules are in 40 CFR 61.

8.2.2 Applicability

Emissions of hazardous air pollutants at Hanford are expected to potentially include asbestos from demolition activities and radionuclides from process operations involving radionuclides. The latter activity can be expected to occur at the tank farms and burial grounds.

8.2.3 Assessment Analysis

Since radionuclides are controlled at DOE facilities to extremely low levels, the radionuclide emissions at the DOE Hanford Site, and at the tank farms and burial grounds in particular, are well below the NESHAP limitation of a dose equivalent of 25 millirem per year to the whole body and 75 millirem per year to the critical organ of any member of the public. (Modelled offsite doses for Hanford are typically less than 1 millirem per year) Continuing surveillance at Hanford is designed to assure substantive compliance with the radionuclide standards. Technologies in use at the tank farms and burial grounds satisfy State requirements for use of best available radiation control technology (BARCT).

While ventilation exhaust gases are routinely discharged from stacks and vents at the tank farms and burial grounds, they are continuously monitored for emissions of radionuclides and alarms are installed to alert personnel to upset conditions. This assessment was not designed to assess this area in detail since adherence to radionuclide standards is an established operational activity.

As changes in tank farm and burial ground operations lead to potential changes in radionuclide emissions, WHC should review procedural requirements for analysis and permitting of new or substantially modified sources of hazardous air pollutants.

8.2.4 Conclusions

Extensive use of HEPA filters keeps radionuclide emissions within NESHAPS limits. Detailed audits with respect to asbestos compliance were not within the scope of this assessment.

8.3 Prevention of Significant Deterioration (PSD)

8.3.1 Scope of Law

Prevention of Significant Deterioration is an air pollution control program which applies to permitting large, new sources of pollution. It generally requires the use of Best Available Control Technology (BACT) and detailed analyses of environmental impacts prior to construction and operation.

8.3.2 Applicability

At Hanford, the start-up of the PUREX and UO<sub>3</sub> operations in 1980 required a PSD permit (EPA Permit PSD-X80-14) for the emission of nitrogen dioxide. The permits do not pertain to the tank farms and burial grounds.

8.3.3 Assessment Analysis

The PSD provisions do not apply to the tank farms and burial grounds.

8.4 BFWWCAPCA

8.4.1 Scope of Law

The Benton-Franklin, Walla Walla Counties Air Pollution Control Authority (BFWWCAPCA) is charged with responsibilities for conducting a regional program of air pollution prevention and control. The rules of the Agency are contained in the General Regulation (80-7) which provides the framework for carrying out the above responsibilities through establishment of the standards for maximum

permissible emissions, for implementation of registration, for notification requirements, and for provisions for air monitoring and reporting.

8.4.2 Applicability

The BFWWCAPCA General Regulation is applicable to specific activities and facilities at the tank farms and burial grounds which have the potential to emit atmospheric pollutants. The Agency also administers the state-wide regulations of the Washington State Department of Ecology. Applicability of the State and local regulations to Hanford may be inferred from Section 118 of the federal Clean Air Act.

8.4.3 Assessment Analysis

Of the numerous stacks and vents at the tank farms and burial grounds, most are equipped with high efficiency HEPA filters. Few involve air pollutants regulated under BFWWCAPCA. Available monitoring data suggest no emissions problems.

8.4.4 Conclusions

Tank farms and burial grounds operations meet the requirements of the local air pollution control agency.

Appendix A WASTE STREAM IDENTIFICATION FORMS

**Appendix B REGULATORY ANALYSIS FLOWSHEETS**

Appendix C REGULATORY COMPLIANCE STATUS

**Appendix D COMPLETED REGULATORY ANALYSIS CHECKLISTS**



APPENDIX C  
ENVIRONMENTAL STATUS SUMMARY OF  
TANK FARMS AND BURIAL GROUNDS  
AS OF  
MARCH 25, 1988

APPENDIX C

ENVIRONMENTAL STATUS SUMMARY

INTRODUCTION

A status summary of applicable federal and State statutes for waste streams, waste management units, underground storage tanks, and in-service toxic substances at Tank Farms and Burial Grounds is included in Appendix C. Next to each element is listed the relevant report section, applicable regulations, the environmental status with respect to the regulations, which checklists were employed plus comments and proposed actions. The environmental status was listed as one of these five:

- C no compliance problems identified;
- Q questionable, not clear if regulations apply to item or if item is regulated;
- NR not regulated;
- NSD not sufficient data on item to determine if and which regulation(s) apply and/or if item meets requirements; or
- AR action required.

The table of contents from Washington State Department of Ecology, Dangerous Waste Regulations, Chapter 173-303 is included for convenience. This page provides titles to the WAC numbers found in Table C-1. The abbreviations used in Table C-1 for federal, state, and county laws and regulations are described below.

- RCRA -- Resource Conservation and Recovery Act
- TSDI -- TSD facilities with interim status
- UST -- Underground Storage Tanks
- GHW -- Generators of Hazardous Waste
- UMC -- Use and Management Containers (265 Subpart I)
- Tanks -- Tanks (265 Subpart J)
- SI -- Surface Impoundments (265 Subpart K)

- Land -- Landfills (265 Subpart N, Supplemented with 173-303-665)
- CPBT -- Chemical, Physical, and Biological Treatment (265 Subpart Q)
- CWA -- Clean Water Act
- NPDES -- NPDES Permit Discharges
- SPCC -- Spill Prevention, Control, and Countermeasures
- TSCA -- Toxic Substances Control Act
- CERCLA -- Comprehensive Environmental Resource, Compensation, and Liability Act
- CAA -- Clean Air Act
- NSPS -- New Source Performance Standards
- NESHAP -- National Emission Standards for Hazardous Air Pollutants
- PSD -- Prevention of Significant Deterioration
- WAC Tanks -- WAC 173-303-640 Tanks -- State Addendum Dangerous Waste Regulations
- Cnty Air -- Benton-Franklin-Walla Walla Counties Air Pollution Control Authority General Regulation 80-7

# Chapter 173-303 WAC

## DANGEROUS WASTE REGULATIONS

### WAC

173-303-010	Purpose.	173-303-420	Siting standards.
173-303-016	Identifying solid waste.	173-303-430	Performance standards.
173-303-017	Recycling processes involving solid waste.	173-303-440	Buffer monitoring zones.
173-303-020	Applicability.	173-303-500	Recycling requirements for state-only dangerous waste.
173-303-030	Abbreviations.	173-303-505	Special requirements for recyclable materials used in a manner constituting disposal.
173-303-040	Definitions.	173-303-510	Special requirements for dangerous wastes burned for energy recovery.
173-303-045	References to EPA's hazardous waste and permit regulations.	173-303-515	Special requirements for used oil burned for energy recovery.
173-303-050	Department of ecology cleanup authority.	173-303-520	Special requirements for reclaiming spent lead acid battery wastes.
173-303-060	Notification and identification numbers.	173-303-525	Special requirements for recyclable material utilized for precious metal recovery.
173-303-070	Designation of dangerous waste.	173-303-550	Special requirements for facilities managing special waste.
173-303-071	Excluded categories of waste.	173-303-560	Minimum standards for facilities managing special waste.
173-303-072	Procedures and bases for exempting and excluding wastes.	173-303-575	(Reserved.)
173-303-075	Certification of designation.	173-303-600	Final facility standards.
173-303-080	Dangerous waste lists.	173-303-610	Closure and postclosure.
173-303-081	Discarded chemical products.	173-303-620	Financial requirements.
173-303-082	Dangerous waste sources.	173-303-630	Use and management of containers.
173-303-083	Infectious dangerous wastes.	173-303-640	Tanks.
173-303-084	Dangerous waste mixtures.	173-303-645	Ground water protection.
173-303-090	Dangerous waste characteristics.	173-303-650	Surface impoundments.
173-303-100	Dangerous waste criteria.	173-303-655	Land treatment.
173-303-101	Toxic dangerous wastes.	173-303-660	Waste piles.
173-303-102	Persistent dangerous wastes.	173-303-665	Landfills.
173-303-103	Carcinogenic dangerous wastes.	173-303-670	Incinerators.
173-303-104	Generic dangerous waste numbers.	173-303-700	Requirements for the Washington state extremely hazardous waste management facility at Hanford.
173-303-110	Sampling and testing methods.	173-303-800	Permit requirements for dangerous waste management facilities.
173-303-120	Recycled, reclaimed, and recovered wastes.	173-303-801	Types of dangerous waste management facility permits.
173-303-121	(Reserved.)	173-303-802	Permits by rule.
173-303-130	Containment and control of infectious wastes.	173-303-804	Emergency permits.
173-303-140	Disposal of extremely hazardous waste.	173-303-805	Interim status permits.
173-303-141	Treatment, storage, or disposal of dangerous waste.	173-303-806	Final facility permits.
173-303-145	Spills and discharges into the environment.	173-303-807	Trial burns for dangerous waste incinerator final facility permits.
173-303-150	Division, dilution, and accumulation.	173-303-808	Demonstrations for dangerous waste land treatment final facility permits.
173-303-160	Containers.	173-303-809	Research, development and demonstration permits.
173-303-161	Overpacked containers (labpacks).	173-303-810	General permit conditions.
173-303-170	Requirements for generators of dangerous waste.	173-303-815	(Reserved.)
173-303-180	Manifest.	173-303-820	(Reserved.)
173-303-190	Preparing dangerous waste for transport.	173-303-825	(Reserved.)
173-303-200	Accumulating dangerous waste on-site.	173-303-830	Permit changes.
173-303-201	Special accumulation standards.	173-303-840	Procedures for decision making.
173-303-210	Generator recordkeeping.	173-303-845	Appeal of decision.
173-303-220	Generator reporting.	173-303-900	Public involvement and participation.
173-303-230	Special conditions.	173-303-910	Petitions.
173-303-240	Requirements for transporters of dangerous waste.	173-303-950	Violations and enforcement.
173-303-250	Dangerous waste acceptance, transport, and delivery.	173-303-960	Special powers and authorities of the department.
173-303-260	Transporter recordkeeping.	173-303-9901	Flow chart for designating dangerous wastes.
173-303-270	Discharges during transport.	173-303-9902	Narrative for designating dangerous wastes.
173-303-280	General requirements for dangerous waste management facilities.	173-303-9903	Discarded chemical products list.
173-303-290	Required notices.	173-303-9904	Dangerous waste sources list.
173-303-300	General waste analysis.	173-303-9905	Dangerous waste constituents list.
173-303-310	Security.	173-303-9906	Toxic dangerous waste mixtures graph.
173-303-320	General inspection.	173-303-9907	Persistent dangerous waste mixtures graph.
173-303-330	Personnel training.		
173-303-340	Preparedness and prevention.		
173-303-350	Contingency plan and emergency procedures.		
173-303-360	Emergencies.		
173-303-370	Manifest system.		
173-303-380	Facility recordkeeping.		
173-303-390	Facility reporting.		
173-303-395	Other general requirements.		
173-303-400	Interim status facility standards.		

Table C-1

TF/EG Environmental Summary for Waste Streams  
Waste Management Units, Underground Storage Tanks and In-Service Toxic Substances

Item	Report Section	Applicable Regulations	Envir. Status	Checklist	Comments and Proposed Action
I. Waste Generation and Accumulation	2.5				
Nondangerous Solid and Containerized Liquid Waste					Waste stream ID forms were provided but indicated that these wastes are not dangerous.
<ul style="list-style-type: none"> <li>■ Nondangerous Boxed Low-Level Waste (C-4)</li> <li>■ AW Tank Farm Pump Lube Oil (C-7)</li> <li>■ Nondangerous Failed Equipment (C-5)</li> <li>■ Nondangerous HEPA Filters (C-2)</li> <li>■ Asbestos Gaskets (A-1 through A-9)</li> </ul>					
Potential RMW	2.1	WAC 173-303-070 to 120	AR	RCRA GHW	Insufficient data are available to determine whether these wastes are dangerous wastes. If these wastes are dangerous, the requirements discussed below for mixed wastes apply. Because management of these wastes is similar compliance conclusions would also be similar to those for mixed wastes.
<ul style="list-style-type: none"> <li>■ HEPA filters (AW, AP, An, SY, IPs; 244-S, 244-TX DCRT) (HF 1 through 6)</li> </ul>					HEPA filters in the first group may be like AW farm filters; a leach test of AW filters suggested the presence of NaNO <sub>2</sub> .
<ul style="list-style-type: none"> <li>■ HEPA filters (bldgs. breathers, SS tanks)(HF-7)</li> </ul>					HEPA filters in the second group are much less likely to be dangerous wastes due to NaNO <sub>2</sub> , but no test data were available. Some filters may also be dangerous wastes due to contamination by organics.
<ul style="list-style-type: none"> <li>■ Waste Lube Oil 242-A Evaporator (C-6)</li> </ul>					Waste lube oil is listed as potentially dangerous because an operator indicated that solvents were added to this drum. New segregation procedures should and this practice.
<ul style="list-style-type: none"> <li>■ Zeolite fines</li> </ul>					Zeolite fines are probably not dangerous, based on tests of other ion exchange fines at Hanford. However, no data on the evaporator fines was available.
Containerized Dangerous Waste (non-TRU)	2.1 3.2	WAC 173-303-060	C	RCRA GHW	Hanford has a RCRA ID number.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
■ Mixed Waste Managed as Non-RCRA Waste (Includes C-3)		070 to 120	AR		In the past, RMW was not suggested or characterized, segregation requirements were instituted after EHW became regulated and further improvements in waste segregation procedures are being implemented under the SPOA. However, some RMW may still slip through as LLW.
■ Dangerous and Mixed Identified as RCRA Waste		070 to 120	C		Dangerous and mixed wastes are now being properly identified. Light bulbs have been properly characterized since November 1987. Containerized solvents, corrosives and other wastes have also been identified.
■ TX Tank Farm Storage Area <90 Day Drum Storage Area		140	AR		Nearly compliant. EHW (principally lead and mercury) was land disposed (buried in retrievable storage trenches) until at least October, 1987 which was after State regulation of RMW became effective. Burial of contact handled RMW identified as such has ended, and new waste segregation procedures now being implemented should help prevent unintentional burial of contact-handled EHW misidentified as LLW. Non-contact EHW is still being buried (in trenches that do not meet RCRA requirements) under an informal verbal agreement with Ecology. Under current circumstances, remote-handled EHW must be buried to provide radiation protection, so the State's ban on such disposal is probably preempted under the Atomic Energy Act. This verbal agreement with Ecology should be documented in writing.
		150	C		Waste is not divided, diluted or accumulated for the purpose of evading regulation.
		160	C		Empty containers are properly managed. Empty "Fabrifilm" drums are EHW when wet, but nondangerous after volatiles evaporate; established procedures provide for shipment of dry empties to the Central Landfill.
	3.2.3.3	180	NR	RCRA GEW	Disposal is on-site, so no manifest is required. However, Hanford convention is to manifest all shipments of dangerous wastes and this procedure should be considered for the tank farms as well.
	3.2.3.2	200(1)(a)	AR	RCRA GEW	There are no knowing exceedances of the 90 day generator storage limit for containerized mixed waste generated at the tank farms. However, low-level wastes are stored for greater than 90 days, and waste segregation is still imperfect.
		200(1)(b)			(References other requirements)

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		200(1)(c)	AR		Accumulation dates are marked where wastes have been segregated and properly characterized. However, waste segregation is still imperfect.
		200(1)(d)	AR		Hazard labels are used where wastes have been segregated and properly characterized. However, waste segregation is still imperfect.
		200(1)(e)			(References other requirements)
3.2.3.4		210	C		Generator records are adequate, apart from possible errors due to imperfect waste segregation.
3.2.3.5		220	C		RMW, first report due for 1987.
3.2.3.5		330	AR	RCRA TSDI	Training courses are largely confined to formal procedures, but procedures for waste segregation are still being developed. Errors in waste segregation in the past indicate inadequate training.
3.3.3.6		340	C	RCRA TSDI	Adequate communications are dependent on radios at some locations; these should be available when handling wastes.
3.3.3.7		350	AR	RCRA TSDI	Existing emergency plans lack detail concerning waste generation and less than 90 day storage areas. See Section II of this table for further discussion.
3.3.3.8		360(1)	NSD	RCRA TSDI	We did not verify the knowledge base of designated emergency coordinators. See Section II of this table for further discussion.
		360(2)	NR	RCRA TSD	Requirements trigger only if emergency plan is implemented.
3.2.3.3		630(2)	C	RCRA GHW	Containers in good condition at TX Farm storage area, March 1988. No generator <90 day storage areas were previously identified.
		630(3)	C		Labels in place for known DW and RMW TX Farm, March 1988. Containers with wastes awaiting characterization were marked with sample dates. Established procedures assure that wastes and containers are compatible.
		630(5)	C		No open containers or mishandling observed at TX Farm. No other <90 day storage areas were identified.
		630(6)	NSD		Inspection procedures for TX Tank Farm container storage area were not verified, because this area was identified at the end of the field work for this assessment.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		630(8)	NSD		Flammable and reactive wastes are stored at the TX Farm area. Compliance with referenced fire code requirements was not verified, because this area was identified at the end of the field work for this assessment.
		630(9)	C		These wastes are not incompatible.
<b>Bulky Mixed Waste</b>	3.2	WAC 173-303-060	C	RCRA GEW	
• Contaminated Failed Equipment (Jumpers, etc) (L-1 through L-9)	2.5	070 to 120	AR		Most failed jumpers are flex hose and not DW, but as some lead jumpers include lead and are RMW stored for disposal, but have not been characterized as such.
		140	AR		Nearly compliant. See comments for containerized waste, above.
	3.2.3.1	180	C	RCRA GEW	Unclear whether bulky RMW has been shipped since RMW became regulated. Shipments are on-site and no manifest is required, however Hanford convention is to manifest on-site shipments if wastes are dangerous, and this procedure should be considered for Tank Farm wastes.
	3.2.3.2	190	C	RCRA GEW	Shipments would be on-site, so requirements do not apply. However, Hanford convention is to meet these standards for all shipments of RMW, and this procedure should be considered for the tank farms as well.
	3.2.3.3.	200	AR	RCRA GEW	Storage is not in a container or tank, and exceeds 90 days, so this cannot be generator storage. Reduced storage period may be precluded by ALARA considerations. See review of waste pile TSDs below.
	3.2.3.4	210	C	RCRA GEW	See TSD discussion for other recordkeeping requirements.
	3.2.3.5	220	C	RCRA GEW	RMW, first report due will be for 1987.
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II. TSD Storage and Treatment in Tanks		280	C	RCRA TSDI	Notification filed, had ID #.
		300	C		All waste transfers to or within the tank farms are in batch mode, follow written procedures, and involve wastes of known characteristics. However, the written waste analysis plan required by this section is composed of parts of many procedures.
<b>Double Shell Tanks</b>					
• AW (Purex decladding)					
• AP					
• AN					
• SY					
• AZ (boiling)					
• AY (boiling)					
• 244-AR Vault					
	3.3.3.3	310	AR	RCRA TSDI	Most units lack "Danger - Unauthorized Personnel Keep Out" signs.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
■ 244-CR Vault	3.3.3.4	320	C	RCRA TSDI	Inspection procedures were apparently developed independently of RCRA, but are sufficient to meet regulatory requirements.
Other Tank Farm Tanks					
■ 244-A DCRT	3.3.3.5	330	C	RCRA TSDI	TSD operator training is adequate.
■ 244-BX DCRT					
■ 244-S DCRT	3.3.3.6	340	C	RCRA TSDI	Tank units have adequate preparedness.
■ 244-TX DCRT					
■ 244-U DCRT					
■ 241-EW-151 Tank	3.3.3.7	350	AR	RCRA TSDI	Existing plans lack required detail on emergency equipment, and emergency actions for specific waste management units. Arrangements with offsite police, fire, hospitals, etc should also be noted in the body of the applicable emergency plan.  A site-wide effort to develop new emergency plans is underway and should correct plan deficiencies; however, draft guidance documents do not yet assure compliance with all plan requirements at all waste management units.
	3.3.3.8	360(1)	NSD	RCRA TSDI	At some units, emergency response coordinators are very senior individuals. We did not verify that these coordinators have the thorough familiarity with facility operations and emergency plan procedures required under this section.
		360(2)	Q	RCRA TSDI	Review, revision and reporting requirements are triggered when an emergency occurs. Conditions for a dangerous waste emergency set out in Hanford's plan have never been met; however, parts of the emergency response system at Hanford have been triggered by operators during lesser incidents. If these lesser incidents were emergencies, 360(2) were not met. If the incidents were not emergencies, 360(2) is compliant.
	3.3.3.9	370	C	RCRA TSDI	Wastes are not received from off-site, so TSD manifest requirements are not applicable.
	3.3.3.10	380	AR	RCRA TSDI	Records do not include a closure and post closure cost estimate (none exist), and do not code information on wastes and waste management activities properly.
	3.3.3.11	390	C	RCRA TSDI	No report for these RMW facilities was due in 1986. The 1987 report must include all RCRA regulated TSD units.
	3.4	395(1)	C	RCRA TSDI	Tank Farm wastes are not ignitable, reactive or incompatible.
		395(2)	—		See discussion of other laws.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		395(4)	NR		No manifest wastes are received and unloaded; however, the 204 AR unloading area would meet this containment requirement.
		805(6)	C		Units are operated within Part A permit parameters.
		805(7)	C		There have been no changes in wastes, capacity or processes that would require a revised Part A.
		395(6)	AR	RCRA TSDI	Corrosive hazard not identified on tanks or fences surrounding tank farms.
		640(2)(c)	AR	RCRA TANK	
	3.4	40 CFR	---		
		265.112	AR	RCRA TSDI	No written closure plan exists.
		265.113	AR	RCRA TSDI	Triggers only upon closure.
		265.114	AR	RCRA TSDI	Triggers only upon closure.
		265.115	AR	RCRA TSDI	Triggers only upon closure.
	3.4.3.2	265.192 (7/1/86)	C	RCRA TANK	Tanks are covered. Operations meet regulatory requirements. Overflow protection is not yet required for these batch-fed tanks.
	3.4.3.3	265.194 (7/1/86)	C	RCRA TANK	Inspection frequencies and procedures are adequate, but a separate plan and schedule that consolidates relevant portions of existing procedures and ticklers should be assembled.
		265.197 (7/1/86)	NR		Applies only at closure.
		265.198 (7/1/86)	NR		Tanked wastes are not ignitable or reactive.
		265.199 (7/1/86)	NR		Tanked wastes are not incompatible.
	3.4.3.10	268.50	AR		Based on data in the defense waste EIS and on analyses performed to support grout facility development, some (liquid) tank farm tanks may contain liquid wastes with a sufficiently high level of chromium (VI) (>500mg/l) to be banned from land disposal under section 3004(d)(2)(B) of RCRA. Storage of this waste is prohibited under section 3004(j) of RCRA unless storage is solely to accumulate enough waste for treatment, recovery, or disposal. This condition for storage cannot presently be met at Hanford; however, treatment and disposal of the wastes is planned in the near future. A waiver of the ban on disposal may be available due to a lack of treatment capacity and good faith efforts to provide for treatment in the future. Waiver of the disposal ban would allow disposal without treatment, or continued storage.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
<p>■ 2727-W NOTE: WEC and DOE are reviewing the status of this material to determine whether it is subject to RCRA regulation, in view of recently developed plans to convert the materials to sodium hydroxide at INEL.</p> <p>Sodium Tanks</p>					
	2.6	WAC-173-303-280	C		Benford has a RCRA ID #.
	3.3.3.2	300	NR		No wastes are received, so no waste analysis plan is required.
	3.3.3.3	310	C		Tanks are in a locked building, with adequate signs.
	3.3.3.4	320	C		Inspection practices meet these general requirements. But see 40 CFR 265.184 below.
	3.3.3.5	330	C		Little training is needed to operate this long term storage facility. On the job training has been adequate for day to day tasks, and trained personnel are involved in any unusual activity or emergencies.
	3.3.3.6	340	C		Preparedness is adequate. However, adequate communications depends on use of two way radios, which may interfere with the fire alarm system.
	3.3.3.7	350	Q		If this material is regulated applicable emergency plan documents lack sufficient detail on emergency equipment and building-specific emergency response. Plans do not document arrangements with local authorities. A site-wide effort is underway to rewrite emergency plans to assure compliance with regulatory requirements.
	3.3.3.8	360(1)	Q		In the absence of an adequate emergency plan (WAC 173-303-350) compliance with this subsection is not possible. Emergency coordinators must be "thoroughly familiar" with the required plan, and the facility. However, this material may not be subject to regulation.
		360(2)	C		Requirements are triggered only if an emergency occurs.
	3.3.3.9	370	NR		No wastes are received from off-site, so TSD manifest requirements do not apply.
	3.3.3.10	380	Q		If this material is regulated under RCRA, the operating record should clearly state the amount of waste in each tank. Estimates of closure and post closure costs are needed. State waste code and activity code numbers should be used in maintaining the RCRA operating record.
	3.3.3.11	390	NR		Mixed waste; no report required in 1986.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.4.3.1	395(1)	Q		If this material is regulated under RCRA, no smoking signs must be posted. This and other steps taken to prevent reaction of the sodium must be documented in the RCRA operating record.
		395(2)			(References other requirements.)
		395(4)	NR		No liquid dangerous wastes are loaded or unloaded.
	3.4.3.1	395(6) 640(2)(c)	Q		Building door sign system is adequate, & but one hazard identification sign was incomplete.
		805(5)(c)	Q		If this material is regulated under RCRA an updated Part A is required.
		805(6)	Q		If this material is regulated under RCRA this activity is outside the scope of the Hanford RCRA permit.
		805(8)	Q		If this material is regulated under RCRA this unpermitted waste storage renders Hanford's RCRA permit revocable.
	3.4	40 CFR --- 265.112	Q	RCRA TSDI	If this material is subject to regulation under RCRA, a written closure plan is needed.
		265.113	NR	RCRA TSDI	Applies only upon closure.
		265.114	NR	RCRA TSDI	Applies only upon closure.
		265.115	NR	RCRA TSDI	Applies only upon closure.
	3.4.3.3	265.192 (7/1/86)	C	RCRA TANK	General operating practices are adequate.
	3.4.3.4	265.193 (7/1/86)	C		Wastes are adequately characterized for proper management.
	3.4.3.5	265.194 (7/1/86)	Q		If this material is subject to regulation under RCRA, this facility is "active" so long as it is storing wastes. The nitrogen pressure indicator lights should be checked and results recorded daily. The interior of the building should be inspected for signs of leaks weekly. A written plan should reflect these frequencies.
		265.197 (7/1/86)	NR		Requirements apply only upon closure.
		265.198 (7/1/86)	C		Buffer zone and other requirements for storage of reactive wastes specified in this old regulation are easily met.
		265.199 (7/1/86)	NR		Waste stored are not incompatible.
	3.4.3.10	268.50 (7/1/86)	NR		Sodium is not yet a restricted waste, so storage periods are not yet limited under this provision.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
FUTURE REQUIREMENTS FOR DOUBLE-SHELLED TANKS AND DCRTs					
EXPLANATORY NOTE:					
To maintain authorization for its RCRA program, the state must modify its program by July 1, 1988 to reflect federal requirements enacted by July 1, 1987. Significantly different TSD tank regulations were promulgated by EPA on July 14, 1986. New state requirements must be substantially equivalent to these federal rules, but may not be identical.					
All TSD Tanks	3.4.3.2	265.191 (7/14/86)	NR		Integrity assessments and certifications will be needed soon after state regulatory revisions, for existing tanks that do not have adequate secondary containment (see 265.193 below). DCRTs and the 241-EW-151 tanks may not have adequate secondary containment, but can probably pass an integrity assessment.
	3.4.3.3	265.192 (7/14/86)	NR		New tank systems and components will face detailed design and installation specifications. Double shelled tanks, and current piping concepts, probably already meet these standards.
	3.4.3.4	265.193 (7/14/86)	NR		New tanks will face detailed secondary containment and interstitial leak monitoring requirements. Existing tanks will need to be retrofit to these standards (or closed) on a phased basis. For tanks that are already 13 years old, retrofit or closure will be required in two years.
		265.194 (7/14/86)	NR		New regulations will make requirements for spill and overflow prevention equipment more explicit. Some Tank Farm tanks lack automatic cut-off or bypass equipment that will be required.
		265.195 (7/14/86)	NR		Required frequencies for some inspections will increase from weekly to daily.
		265.196 (7/14/86)	NR		Revised regulations will explicitly require prompt and appropriate responses to spills and leaks. This is implicit in current RCRA requirements. Removal or cleanup of waste is required if a leak occurs, and single contained systems cannot be returned to service without retrofitting if a leak occurs.
	3.4.3.6	265.197 (7/14/86)	NR		A closure plan will be required. Closure requirements are more stringent.
	3.4.3.8	265.198 & 265.199 (7/14/86)	NR		Tank farm wastes are not ignitable, reactive or incompatible.
		265.200 (7/14/86)	NR		Requirements for waste analysis and trial tests are made more explicit.
	III. TSD Storage In Containers	3.8	280	C	RCRA TSDI

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
• 2727-WA Bldg (Sodium Drums)	NOTE: WEC and DOE are reviewing the status of this material to determine whether it is still subject to RCRA regulation, in view of recently developed plans to convert the material to sodium hydroxide at INEL.				
	3.3.3.2	300	C		Wastes are adequately characterized for proper management.
	3.3.3.3	310	C		Physical security is adequate. Warning signs are equivalent to the "Danger, Unauthorized Personnel Keep Out" signs suggested in regulations.
	3.3.3.4	320	C		Inspection program is consistent with these general requirements, but see 40 CFR 265.174 below.
	3.3.3.5	330	Q		Action required if this material is still a waste subject to RCRA. Staff responsible for facility inspections and logging of inspection results are trained in established procedures, but procedures are deficient. Moreover, some errors in logging were identified.
	3.3.3.6	340	C		Preparedness is adequate.
	3.3.3.7	350	Q		Action required if this material is still a waste subject to RCRA. Applicable emergency plans are not sufficiently detailed concerning emergency equipment, and specific response procedures for particular facilities. Arrangements with local authorities are not documented in the plans. A site-wide effort to develop emergency plans that meet regulatory requirements is underway.
	3.3.3.8	360(1)	Q		In the absence of an adequate emergency plan (WAC 173-303-350) compliance with this section is not possible. The emergency coordinator must be "thoroughly familiar" with the response plan, and the facility. However, this material may no longer be subject to RCRA.
		360(2)	C		Requirements trigger only if an emergency occurs.
	3.3.3.9	370	NR		No wastes are accepted from offsite, so TSD manifest requirements do not apply.
	3.3.3.10	380	Q		Action required if this material is still a waste subject to RCRA. Records must code wastes and activities using codes specified in regulations. The record must also include closure and post closure cost estimates.
	3.3.3.11	390	C		Mixed wastes, no report required in 1986.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.4	396(1)	Q		If this material is still a waste subject to RCRA, no smoking signs are needed. Annual fire inspection not documented in the operating record.
		395(2)			References other requirements.)
		395(4)	NR		No liquid wastes are unloaded.
	3.4	395(6)	C		Containers are adequately labelled.
		805	C		A Part A revision has been submitted.
	3.4	40 CFR ---			
		265.112	Q	RCRA TSDI	No written closure plan exists.
		265.113	NR		Requirements trigger only at closure.
		265.114	NR		Requirements trigger only at closure.
		265.115	NR		Requirements trigger only at closure.
		265.171	NSD		Visible containers are in acceptable condition, but not all containers could be visually inspected due to container storage arrangements.
		265.172	C		Wastes are compatible with containers.
		265.173	C		Containers were closed, and are handled properly.
		265.174	Q		Weekly inspections for leaks and deterioration are required. Current inspection protocols do not call for a check of container conditions. Lack of aisle space makes inspection of many container infeasible.
		265.176	C		Buffer zone from property line is adequate.
		265.177	NR		Incompatible wastes are not stored.
		268.50	NR		Stored waste is not yet restricted from land disposal, so this restriction on storage periods does not yet apply.
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• 224-T Building (TRU Storage)	3.8	280	C	RCRA TSDI	Hanford has a RCRA ID #.
	3.3.3.2	300	C		Waste is adequately characterized for proper management.
	3.3.3.3	310	AR		Physical security is adequate and unauthorized access precluded. However, no warning sign equivalent to the "Danger, Unauthorized Personnel Keep Out" signs suggested in regulations is posted.
	3.3.3.4	320	C		Inspection program is consistent with these general requirements, but see 40 CFR 265.174 below.
	3.3.3.5	330	C		Adequate formal and on the job training.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.3.3.6	340	C		Preparedness is adequate.
	3.3.3.7	350	AR		Applicable emergency plans are not sufficiently detailed concerning emergency equipment, and specific response procedures for particular facilities. A site-wide effort to develop emergency plans that meet regulatory requirements is underway.
	3.3.3.8	360(1)	AR		In the absence of an adequate emergency plan (MAC 173-303-350) compliance with this section is not possible. The emergency coordinator must be "thoroughly familiar" with the response plan, and the facility.
		360(2)	C		Requirements trigger only if an emergency occurs.
	3.3.3.9	370	AR		In the past, mixed wastes were accepted from offsite without manifests. Mixed wastes are not currently being accepted. New manifest procedures should meet regulatory requirements. requirements do not apply.
	3.3.3.10	380	AR		Records must code wastes and activities using codes specified in regulations. The record must also include closure and post closure cost estimates. A manifest recordkeeping systems is needed.
	3.3.3.11	390	C		Mixed wastes, no report required in 1986.
	3.4	395(1)	NC		No smoking signs are needed.
		395(2)			(References other requirements.)
		395(4)	NR		No liquid wastes are unloaded.
	3.4	395(6)	AR		Mixed waste containers accepted in the past are not adequately labelled. Procedures are in place to assure proper labelling of containers accepted in the future.
		805(5)(c)			Part A amendment has been submitted.
		805(8)	AR		Remaining RCRA deficiencies render Hanford's RCRA permit revocable.
	3.4	40 CFR ---			
		265.112	AR	RCRA TSDI	No written closure plan exists.
		265.113	NR		Requirements trigger at closure.
		265.114	NR		Requirements trigger at closure.
		265.115	NR		Requirements trigger at closure.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		265.171	NSD		Visible containers are in excellent condition, some containers could not be visually inspected due to container storage arrangements, but container materials and storage conditions should assure that all containers are in acceptable condition.
		265.172	C		Wastes are compatible with containers.
		265.173	C		Containers were closed, and are handled properly.
		265.174	AR		Weekly inspections for leaks and deterioration are required. Current inspection protocols do not call for a check of container conditions. Lack of aisle space makes inspection of many containers infeasible.
		265.176	C		Buffer zone to property line is adequate.
		265.177	AR		Incompatible wastes are not separated by berms or other devices. Regulatory agency agreement that TRU packaging procedures constitute substantive compliance with this requirement should be sought.
		268.50	C		Stored mixed wastes are not yet restricted from land disposal, so this storage period limitation does not yet apply.

IV. Waste Treatment

■ 242-A Evaporator	2.4	WAC 173-303-280	C	RCRA TSD	Hanford has a RCRA ID #.
■ 204-AR Waste Unloading and Treatment		290	C		Hanford's Part A includes these waste treatment activities.
	3.3.3.2	300	C		Waste are adequately characterized for proper management. Written procedures specify pre-start analysis or data requirements.
	3.3.3.3	310	C		Security is adequate at both facilities.
	3.3.3.4	320	NSD		Inspection procedures, plans and frequencies at both facilities are generally adequate. We did not confirm that all areas subject to spills are inspected daily.
	3.3.3.5	330	C		Training programs are in place. Operator training was adequate.
	3.3.3.6	340	C		Preparedness was adequate at both facilities.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.3.3.7	350	AR		Applicable emergency plan documents are not sufficiently detailed concerning emergency equipment or response measures at these specific facilities. A site-wide effort to develop plans that will meet regulatory requirements is underway.
	3.3.3.8	360(1)	AR		In the absence of an adequate emergency plan (WAC 173-303-350) compliance with this provision is not possible. Emergency coordinators must be "thoroughly familiar" with the emergency plan, and the facility.
		360(2)	C		Requirements trigger only if the emergency plan is implemented.
	3.3.3.9	370	NR		No manifested wastes from off-site sources are accepted at these facilities, so TSD manifest system requirements are not applicable.
	3.3.3.10	380	AR		Records coded using WAC 173-303 codes must be kept for both facilities. Closure and post closure cost estimates are needed in the operating records.
	3.3.3.11	390	C		Mixed Wastes. No report was due in 1986.
	3.4	395(1)	NR		Tank Farm wastes are not ignitable, reactive or incompatible; this section does not apply.
		395(2)			(References other requirements.)
		395(4)	NR		Wastes received at these facilities are not manifested, so requirements are not applicable. However, the 204-AR unloading area conforms to the specifications of this section.
		805(5)	C		Part A amendments have been submitted.
		805(6)	C		Activities are within the scope of the permit.
		805(7)	NR		No changes in activity that would trigger this provisions have been implemented.
		40 CFR			
		265.401	C		General operating procedures are adequate.
		265.402	C		Waste analysis is adequate for proper waste management.
		265.403	C		Inspection procedures and frequencies are adequate.
		265.404	NR		Requirements apply only at closure.
		265.405	NR		Wastes are not ignitable or reactive.
		265.406	NR		Wastes are not incompatible.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		265.17(b) & 265.13			(Requirements are essentially equivalent to others addressed above.)
		40 CFR 302.6	C	CERCLA	A release of 65 ppm ammonia hydroxide (which was contained within the facility and recycled) was reported as required.
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V. Low Level Burial Grounds	2.3	280	C	RCRA TSD	Hanford has a RCRA ID #.
<ul style="list-style-type: none"> <li>■ 218-W-3AE</li> <li>■ 218-W-5</li> <li>■ 218-W-4C</li> <li>■ 217-W-3A</li> <li>■ 218-E-10 (industrial)</li> <li>■ 218-E-12B (active)</li> </ul>	3.3.3.1	290	AR		Offsite generators recently were notified of Hanford's RCRA permit status.
<ul style="list-style-type: none"> <li>■ TRU Caissons</li> </ul>	3.3.3.2	300	AR		<p>The burial grounds rely on generators to accurately characterize their wastes. This could satisfy waste analysis plan requirements for onsite wastes (if the SPOA improves), but is not adequate for offsite wastes.</p> <p>Designing an adequate waste analysis plan for wastes where sampling and inspection are made difficult by radiation risks is not simple, and specification of plan details is beyond the scope of this assessment. Some desirable plan characteristics are clear, however:</p> <ul style="list-style-type: none"> <li>■ The plan should formally address the specific requirements in WAC 173-303-300 and 40 CFR 265.92;</li> <li>■ The plan should focus on distinguishing low level wastes from mixed wastes, and on identifying extremely hazardous wastes and wastes restricted from land disposal;</li> <li>■ The plan should provide a substantial formal role for burial grounds management in supervising and verifying generator waste segregation, packaging and designation practices; and</li> <li>■ The plan should provide for use of independent verification measures where these are feasible, including use of waste assays, container X-rays, and where possible waste sampling.</li> </ul> <p>A new waste analysis plan is being prepared. Recent site wide efforts to improve and formalize waste segregation practices will help to assure that this plan is adequate.</p>

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.3.3.3	310	AR	RCRA TSD	<p>All portions of the burial grounds that are subject to RCRA are "active," as none have been closed under an approved closure plan. All of these areas require "Danger - Unauthorized Personnel Keep Out" signs which are legible at a distance of 25 feet from all approaches. In addition surveillance or barriers are required; the surveillance provided by the Hanford Patrol or shift workers may be adequate.</p> <p>Note that it may be possible to establish that large portions of the burial grounds are not subject to this requirement, because they did not receive dangerous waste that was not mixed waste after 1980, or mixed waste after such wastes became subject to RCRA. Facility boundaries used for establishing ground water monitoring wells do not control physical security requirements.</p>
	3.3.3.4	320	NSD		<p>If procedures in document # TO-040-005 Rev A-0 have been fully implemented, burial grounds are in compliance with these general inspection requirements. Inability to inspect containers that are "in storage" but backfilled could result in non-compliance with 40 CFR 265.174 inspection requirements. In addition, if there are any "areas subject to spills" inspections are required daily rather weekly.</p>
	3.3.3.5	330	AR		<p>Training programs are properly structured and conducted, but reflect deficiencies in some procedures (e.g., for waste analysis).</p>
	3.3.3.6	340	C		<p>Preparedness is adequate.</p>
	3.3.3.7	350	AR		<p>No provisions for refusing unacceptable waste shipments that cannot be returned to the generator, as required by subsection (3)(b). Evacuation routes are not specified in sufficient detail. Insufficient information on emergency equipment, and on specific response measures at particular facilities.</p> <p>A site-wide effort to update building emergency plans to meet regulatory requirements is underway; this effort should be expanded if necessary to address burial ground facilities that are not "buildings."</p>
	3.3.3.8	360(1)	AR		<p>Without an adequate emergency plan, compliance with this section is not possible. Emergency coordinators must be "thoroughly familiar" with that plan and with the facilities.</p>
		360(2)	C		<p>Requirements trigger only if the emergency plan is implemented.</p>

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.3.3.9	370	C		Manifest systems are appropriate; problems arise only if wastes are improperly designated.
	3.3.3.10	380	AR		Records are inadequate due to the absence of waste analysis results, as noted above. In addition, the primary coding systems used are based on codes other than those specified in this section, and cross referencing procedures to access manifest and other information required under RCRA are not specified in the operating record. (This is probably not a compliance issue, however.)
	3.3.3.11	390	C		Reporting has been adequate.
	3.4	395(1)	NR		Wastes received are not ignitable or reactive.
		395(2)			(References other requirements.)
		805(5)	AR		A Part A modification is needed for TRU caissons that are storing mixed waste.
		805(6)	AR		Storage of mixed wastes in TRU caissons is outside the scope of the existing Part A. Other problems noted when this assessment began have been addressed under a mixed waste strategy developed by WEC, DOE and Ecology. The strategy provides for above ground storage of contact-handled mixed waste that cannot be legally land disposed until new disposal units are constructed, and continued (retrievable) burial of non-contact waste. The temporary storage of RMW in the retrievable storage trenches is outside the scope of existing Part A's, because these are disposal facilities. Burial of non-contact waste would also be improper, but is completed by radiation safety concerns so RCRA must give way.
		805(8)	AR		Some interim status requirements are not at the burial grounds, rendering Hanford's RCRA interim status revocable.
	3.3	400(3) (c)(ii)	AR		Lead and mercury, both EBW, have been land disposed in the burial grounds in the past. Burial of known, contact handled RMW ended prior to November 23, 1987, but burial of RMW mischaracterized as LLW probably continues. The SFOA should reduce or prevent such problems in the future. Some highly radioactive lead waste may still be buried, with the tacit consent of Ecology, and is probably permissible due to radiation safety concerns.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
		40 CFR --- 268.30 to .32	NSD		Due to waste segregation problems, dangerous wastes mischaracterized as mixed wastes and that include spent solvents restricted from land disposal under RCRA section 3004 may have been disposed in the "retrievable storage" trenches in the past. The SPOA should reduce or prevent such problems in the future.
3.4	265.90		C	RCRA TSD	A compliance schedule for ground water monitoring has been established; Hanford is in conformance with this schedule.
	265.91		C		System design has been accepted by Ecology.
	265.92		NR		Requirements do not trigger until the system has been completed.
	265.93		NSD		Compliance schedule provisions regarding development of an assessment program were not reviewed.
	265.94		NR		Requirements do not trigger until analysis results are being generated.
	265.112		Q	RCRA TSD	Burial ground closure plans defer any final closure until 2085, and do not provide for a partial closure. This is unlikely to satisfy the closure performance standard.
	265.113		Q		The closure plan has not been violated, but does not provide for partial closure.
	265.114 - 120		NR		Requirement trigger only upon closure.
3.6.3.2	265.301		AR	RCRA LAND	Wastes have been disposed of in new disposal units without RCRA liners and leachate collection systems. This was and is in appropriate for DW mischaracterized as LLW, and was inappropriate for RW after it became subject to RCRA. A new mixed waste management plan has halted burial of properly characterized mixed waste until adequate disposal trenches are constructed, except for noncontact wastes that must be buried for radiation protection.
3.6.3.4	265.302		Q	RCRA LAND	Minimal active run-on and no run-off control measures are in place. Compliant only if no run-on or run-off would result from a 25 year, 24 hour storm.
3.6.3.5	265.308		C		Cell and waste mapping are adequate.
	265.310		NR		Requirements are triggered at closure.
3.6.3.6	265.312		NR		Wastes are not ignitable or reactive.
	265.313		NR		Wastes are not incompatible.

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.6.3.7	265.314 & 265.316	Q		Compliance problems with containerized liquids originate with generators who may not properly package liquids; however this compliance requirement applies to the burial grounds, however.
	3.6.3.8	265.315	AR		Remote containers handled burial boxes (and perhaps others) that are less than 90% full, which can't be crushed, and LHW cardboard containers that may contain RW and which can be crushed, are buried.
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VI. Underground Storage Tanks	2.11 3.7	40 CFR --- 280.2	C	RCRA UST	These tanks are not new.
• 701-A Building Diesel Tank (T-1)		280.3	AR	RCRA UST	Notification was not provided in 1988 as required; this problem is being corrected.
• 244-AR Vault Diesel Tank (T-2)					
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VII. PCBs					
• AW transformer (120 ppm TS-1)	5.1	40 CFR 761.30	NSD	TSCA	In service. Not inspected. If not leaking, compliant. Other TSCA requirements apply at time of disposal.
• AN transformer (1 ppm TS-2)			NSD		In service. Not inspected. If not leaking, compliant. WAC 173-303 requirements apply at time of disposal.
• AP Transformer (<1 ppm TS-3)			NSD		In service. Not inspected. If not leaking, compliant.
• 242-A transformer (160 ppm TS-4)			NSD		In service. Not inspected. If not leaking, compliant. Other TSCA requirements apply at time of disposal.
• 212-P radioactive Storage Facility		40 CFR 761.65	AR	TSCA	Radioactive waste PCB storage for PCB disposal. Storage periods have exceeded one year, because no final disposal alternative is currently available for radioactive and plutonium contaminated PCBs. Storage complies with TSCA requirements in all other respects.
• Burial Grounds		40 CFR 761.60	NC	TSCA	Oral reports by Burial Grounds management and staff indicated that PCBs may have been "disposed", buried in the retrievable storage trenches as late as 1985. This practice was viewed as storage at the time. The burial grounds were not certified for land disposal of PCBs under 40 CFR 761.75, and do not meet the requirements for such certification.
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VIII. Liquid Effluents Discharged to the Environment	2.6				

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
	3.2	WAC 173-303-145	C	RCRA TSD	Past off-normal discharges that could be dangerous wastes were reported. No response action has been required. Streams of potential concern include 242-A Process Steam Condensate, 244-AR Vault Cooling Water (and misc), and 242-A Process Condensate.
	3.6.3.7	40 CFR 265.314(b)	C	RCRA LAND	Discharge of liquids to cribs classified as RCRA landfills have been discontinued.
		40 CFR 302.6	C	CERCLA	CERCLA reportable quantities of ammonium hydroxide (> 1000 lbs/24 hrs) have been discharged with the 242-A process condensate to the 216-A-37 crib. These discharges have been reported.
		WAC 173-216	Q	NPDES	A state permit may be required for discharges to ground water, unless WEC enjoys federal immunity as co-operator of Hanford, or unless the ground waters beneath Hanford are not waters of the state. It is unclear whether a state permit would allow discharge of untreated condensates and cooling waters.
IX. Submarine	2.9	WAC 173-303 & 40 CFR 265	Q	RCRA TSDI	<p>Submarine cores contain lead, which the state has indicated is a solid waste. Submarine cores are therefore dangerous wastes and may be extremely hazardous wastes. WEC and DOE have not yet decided whether to characterize this trench as a landfill or as a storage facility, and no Part A revision has been submitted.</p> <p>If the trench is a storage facility, compliance issues are likely to be minor, and similar to issues discussed for the burial grounds above. If the trench is a disposal unit, the principal compliance issues involve burial of extremely hazardous wastes (WAC 173-303-140), minimum technology standards under RCRA, and permit application deadlines.</p>

#### X. Gaseous Effluents

##### Tank Primary Exhausts

- 296-A-17 Stack (V-23: 241-AZ & AY tanks, 151-AZ and 154-AZ catch tanks; box)
- 296-A-40 (V-20: AP tanks)
- 296-A-29 (V-21: AN tanks)
- 296-A-27 (V-22: AW tanks)
- 296-P-16 (V-14: 241-C-104, 105, and 106 tanks)
- 296-P-17 (V-13: A-105 tank)
- 296-P-23 (V-12: SY tanks)
- 296-A-25 (V-24: 244-A catch tank and lift station)
- 296-S-15 (V-15: SX tanks sludge cooling exhaust)
- 296-A-12 (V-10: 244-AR vault vessel vent)
- 296-U-11 Stack (V-18: 244-U Saltwell)

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
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- 296-B-28 Stack (V-16: 244-BX Saltwell)
- 296-S-22 Stack (V-17: 244-S Saltwell)
- 296-T-18 Stack (V-19: 244-TX Saltwell)

**Tank Annulus**

- 296-A-13 (V-1: 244-AR vault canyon, cells)
- 296-C-5 (V-2: 244-CR vault cells and process)
- 296-A-18 (V-3: 101-AY annulus)
- 296-A-20 (V-4: 241-AZ annulus)
- 296-A-28 (V-5: 241-AW annulus)
- 296-A-30 (V-6: 241-AN annulus)
- 296-A-41 (V-7: 241-AP annulus)
- 296-A-19 (V-8: 102-AY annulus)

**242-A Evaporator**

- Vents M-24 (V-28); V-1200-M5 (V-29); V-1201-M9 (V-30)
- 296-A-22 vessel vent (V-26)
- 296-A-21 Building exhaust (V-25)
- 296-A-26, 204-AR unloading room (V-27)
- 296-A-42, Control room exhaust (V-9)

**Other**

- 296-T-17 (V-11: West area evaporator exhaust)

**Tank Breather Filters**

- 241A (F-1)
- 241C (F-2)
- 241AX (F-3)
- 241BX (F-4)
- 241B (F-5)
- 241BY (F-6)
- 241S (F-7)
- 241SX (F-8)
- 241TX (F-9)
- 241TY (F-10)
- 241T (F-11)
- 241U (F-12)

<u>Item</u>	<u>Report Section</u>	<u>Applicable Regulations</u>	<u>Envir. Status</u>	<u>Checklist</u>	<u>Comments and Proposed Action</u>
BFWWCAPCA General Regulation 80-7 400-040 to 400-150					
X. Gaseous Effluents (See 7.4, pg. 35)			C		Compliant in all respects.
BFWWCAPCA General Regulation 425-020-1					
			NR		Tank Farms/Burial Grounds do no open burning.
	WAC 173-480-0		---		Dose modeling was outside scope of assessment.
		-060	C		No new sources of radionuclides were noted.
		-080	NSD		We did not review regulatory correspondence.
	40 CFR 61				
		-.92		NESHAPS	Dose modeling was outside scope of assessment.
		-.93			Dose modeling was outside scope of assessment.
		-.94	C		Required reports are submitted.
	40 CFR 302.6		C	CERCLA	Ammonia has been released from the 241-AW tank vents, and 242-A Evaporator vessel vent exhaust stack, and presumably from other vents as well. CERCLA reportable quantities exceeding 100 pounds of ammonia in 24 hours have been released, and have been reported.
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XI. Pesticides and TF/BG Herbicides	1.1		NR		No pesticides or herbicides are mixed in areas. Herbicides are used but not by TF/BG staff, so such use is outside the scope of this assessment.