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		Title: ENVIRONMENTAL COMPLIANCE	
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INSTRUCTIONS

1. Remove and/or insert indicated sections into manual as shown below.
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Section Numbers and Titles	Remove			Insert		
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15.0, High-Level Waste	--	--	--	i - 13	0	6/30/95

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IMPLEMENTATION NOTICE
WHC-CM-7-5, *Environmental Compliance*
Release No. 69, Effective June 30, 1995

12.0, Rev. 2, "Preservation of Cultural and Natural Resources"

Summary of Changes:

Changed initials ECS to NFM (Near Field Monitoring) to reflect changes of organization and responsibilities. Also changes are made that reflect NMR responsibilities and deletions are made to eliminate responsibilities that now belong to PNL.

Removed the PNL form for requesting cultural and biological reviews. The PNL form is being used and is referenced in the document but the form itself does not belong in the document.

Removed the extensive migratory bird species list. This list useful only to persons doing a biological resources review.

Directions are added on how to obtain an historical resources review for work in buildings and facilities. The WHC principal historian can assist with this review and it is not necessary to contact PNL for historical reviews.

Impacts:

No impacts to users of this manual is expected although the user should be aware that PNL now has sole authority to determine what plant and animal species may be present on an activity and the Hanford Site in general.

15.0, Rev. 0, "High-Level Waste"

Summary of Changes:

This section was originally Section 14. With the addition of Pollution Prevention (currently 14.0), High-Level Waste was moved to Section 15. The organizational names have changed to show current names. No other major changes were made to the section.

Impact of Changes:

There is no impact seen. The changes made were necessary organizational names. No company review is required.

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Preservation of Cultural and Natural Resources**12.1 Purpose**

The purpose of this section is to describe and delineate the requirements for the preservation of historical and cultural resources and for the protection of plant and wildlife species on the Hanford Site that have been given special status designations (endangered, threatened, state and federal candidate). Critical habitats identified for these species are also to be protected.

12.2 Scope

The provisions of this section apply to alterations of land or structures (including maintenance and repair) and to modifications of habitat that may adversely affect endangered, threatened, state and federal candidate plant or wildlife species.

12.3 Historical and Archaeological Preservation

Requirements and guidelines are provided for the preservation of historical sites, cultural resources, and archaeological data on the Hanford Site. Federal, state, local statutes and directives, and their pursuant regulations govern the renovation, excavation, demolition, or other alterations in connection with WHC activities.

Provisions apply to the renovation, routine repair and maintenance, and demolition, excavations, surface soil stabilization, or other alterations of lands on the Hanford Site.

12.3.1 Responsibilities**1. Facility managers/landlords shall:**

- a. Obtain an excavation permit prior to any excavation project.
- b. Obtain appropriate cultural resource review (CRR) prior to initiating any surface-disturbing activities onsite or prior to excessing land.
- c. Obtain an historical resources clearance (HRC) prior to renovating/repairing/demolishing facilities.

2. Project managers/engineers and/or cognizant engineers shall:

Submit a request for a CRR, accompanied by a map identifying the area in question, to the manager of Hanford Cultural Resources Laboratory (HCRL), Pacific Northwest Laboratories (PNL) prior to any potential surface-disturbing activities onsite or excessing land.

3. Near-Field Monitoring (NFM) shall evaluate and approve excavation permits prior to excavation to ensure CRR completion and compliance.

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4. Cultural and historic resources are managed by the Environmental Assurance and Policy Division of the U.S. Department of Energy, Richland Field Office (RL) which discharges that responsibility through all site contractors, including WHC, PNL, and BHI.
 - a. Contractors must receive HRCs prior to making major renovations, repairs or modifications to or demolishing facilities onsite. The Westinghouse Principal Historian has a form that can be used for getting a building or structure permanently cleared for historical resource purposes. Additional information on HRCs can be found on the HLAN under Hanford Information in the file: "NEPA site-wide Categorical Exclusions on the Hanford Site."
 - b. Contractors must obtain clearance letters (in lieu of approval of excavation permit) prior to initiation of any excavation project, excessing land or renovating and/or repairing facilities, or demolishing facilities onsite.

12.3.2 Requirements

1. HRCs shall be conducted prior to any site demolishing or remodeling and in accordance with item 4 above.

BASIS: 36 CFR 800, 36 CFR 63, 16 USC 470 et. seq., 16 USC 461-467, and 42 USC 4321.
2. CRRs shall be conducted prior to projects which will cause ground disturbance in previously undisturbed areas, except within and 150 meters outside of tank farm areas. Tank farm activities shall be monitored for cultural resources when deemed necessary.

BASIS: 36 CFR 800, 36 CFR 65, 16 USC 470aa-470aa-11, and 42 USC 1996.
3. For routine repair, maintenance, and facilities upgrades where ground disturbance is anticipated, requests for an excavation permit shall be made as soon as the scale and location of the project are known. Allow at least 30 days for completion of the review.

BASIS: WHC best management practice to ensure compliance with 36 CFR 800 and 16 USC 470 et seq.
4. To obtain a CRR, the initiator should contact the HCRL and provide a completed Request for Cultural and Ecological Resources Review form. The form is available as a Macro GEF271.

BASIS: WHC best management practice to ensure compliance with 36 CFR 800.3, Subpart B, "The Section 106 Process."
5. To obtain a HRC, the initiator should contact the WHC Historian.

BASIS: WHC best management practice to ensure compliance with 36 CFR 800.3, Subpart B, "The Section 106 Process."

6. For new construction or earth disturbance, CRRs shall be requested in the site-selection phase of planning so that impacts on cultural resources can be considered in the evaluation of alternative sites. The request should be made no later than the conceptual design review stage to avoid potential impact to construction schedules.

BASIS: WHC best management practice to ensure compliance with 36 CFR 800, 43 CFR 7, 16 USC 470aa-470aa-11, and 42 USC 1996.

7. Two types of activities shall be exempt from resource reviews:
 - a. Excavations within and 150 meters outside of existing tank farm areas will not require CRRs. However, tank removals and major modifications to permanent structures in these areas will require individual HRCs.
 - b. Emergency repair work that is necessary to safeguard public/worker health and safety will not require CRRs or HRCs. Emergencies include but are not limited to, breaks in waste containment facilities and leaks in lines carrying emergency water or dangerous substances.

12.4 Plant and Wildlife Species on the Hanford Site

Requirements and guidelines are provided for the protection of plants and animals that have been given special status designations (endangered, threatened, state and federal candidate) by the federal or state government agencies (i.e., U.S. Fish and Wildlife Services, Washington State Department of Wildlife). Critical habitats identified for these species are also protected. The provisions apply to modifications of habitat that may adversely affect special status plants and animals, including but not limited to removal/remedial actions, corrective actions, decontamination and decommissioning (D & D) activities, and construction project activities.

The provisions of this section also apply to the taking, possession, transportation, sale, purchase barter, exportation, and importation of the special status plants and animals (whether living or dead) (50 CFR 17, Endangered and Threatened Wildlife and Plants).

Provisions of this section also apply to facility-specific environmental monitoring of wildlife and the introduction of exotic species of plants (e.g., study purposes, stabilization activities) to the Hanford Site.

12.4.1 Responsibilities

12.4.1.1 Operations/project managers shall

1. Review project plans, work plans, etc., and consult with NFM before initiating activities to ensure there will be no significant disruption or loss of special status wildlife and habitat resources.
2. Prior to excavation, when required, obtain an ecological review from PNL environmental Services by submitting a Request for Cultural and Ecological Resources Review form (Macro GEF271). In general, ecological reviews are not required for

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work done in or on buildings, in landscaped areas and lawns, and on parking lots and graveled/sprayed areas. However, some abandoned buildings may house bat species of concern and will require ecological reviews.

3. Contact NFM for approval to introduce any plant or animal species onsite. This includes organisms introduced for the purposes of soil stabilization/revegetation, landscaping, or pest control. Additional documentation may be required under the National Environmental Policy Act (NEPA). (See Section 4.0 of this manual).
4. Notify ECS early in the planning stages of activities (e.g., site selection) that may potentially affect special status plant and animal species or critical habitat. Threatened and Endangered (T&E) surveys may reveal the presence of T&E species of priority habitat which could affect site selection or the timing of activities.

12.4.1.2 Employees of WHC shall

Notify NFM, Pest Control or Hanford Patrol of any animal such as deer, elk, coyotes, and raptors (i.e., eagles, owls, hawks), found hurt or dead on the Hanford Site.

12.4.1.3 Near-field monitoring (NFM) shall

1. Ensure ecological reviews which are done to evaluate the impact of construction projects on special status plant and animal species are completed and requirements are implemented, prior to approving excavation permits.
2. Coordinate monitoring activities at WHC facilities and associated waste sites for special status plant and animal species.
3. Serve as the point of contact for special status plant and animal species survey activities.
4. Evaluate and approve excavation permits to ensure environmental documentation is in place and requirements are implemented. For more specific instructions on excavation permits, see WHC-CM-8-7, *Site Support Services*, Section 503.1, *Performing Excavation Activities*.
5. Interface with other contractors and DOE regarding the Bald Eagle Site Management Plan (DOE/RL-94-150) for the Hanford Site to protect valuable eagle habitat and encourage propagation of the species. This assessment plan is required for those activities that involve lands within or near a bald eagle nest or communal night roost.
6. Interface with other contractors and DOE regarding the ecological review for Threatened and Endangered Wildlife Species Related To CERCLA Activities (WHC-EP-0513). This assessment is required for those characterization activities that may potentially affect special status plant and animal species.

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7. Report in writing, the wildlife collection, including contamination analyses, to designated state or federal agencies (i.e, U.S. Fish and Wildlife Service) for proper notification.
8. Obtain the appropriate salvage permits for WHC.

12.4.1.4 Environmental Field Services Animal Control Operations (ACO) shall

1. Maintain a Nuisance Wildlife Control (NWC) Permit as provided by the Washington State Department of Wildlife.
2. Provide an annual report to the Washington State Department of Wildlife according to the criteria of the NWC Permit to include all Hanford Site wildlife species controlled by ACO.
3. Provide WHC NFM with a copy of the annual ACO NWC report.

12.4.2 Requirements

1. Monitoring (nondestructive monitoring) for contamination as specified in Section 5.4 of this manual shall be conducted for special status plant and animal species.

BASIS: DOE 5400.1, General Environmental Protection Requirements.

2. Ensure the potential impacts of any major construction project or removal/remedial action activities on special status plant and animal species have been assessed and requirements implemented.

BASIS: 16 USC 1531, Section 4(a)(A).

3. Ensure surveys of special status plant and animal species in support of the NEPA documentation process are conducted and requirements implemented.

BASIS: 50 CFR 402.6, and coordination with other environmental reviews.

4. Ensure ecological review is done if special status plant and animal species may be present in the area affected by any major construction project or removal/remedial action activities on the Hanford Site are conducted and requirements implemented.

BASIS: 16 USC 1531, Endangered Species Act (ESA), Section 7(c) and 50 CFR 17, "Endangered and Threatened Wildlife and Plants."

5. No exotic plant or animal species shall be introduced, including those introduced for the purposes of soil stabilization or revegetation, pest control, or landscaping, without prior review and approval of NFM.

BASIS: Executive Order 11987, WAC 232-12-017, and WHC best management practice.

6. When special status plant and animal species and/or their habitat may be destroyed or disrupted by WHC activities (remedial/removal action, corrective action, construction project, etc.), WHC shall consult with the Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) before engaging in such activities.

BASIS: 50 CFR 402.6; 16 USC 1531, Section 7(a)(2); and 16 USC 661.

7. Take all reasonable measures to conserve and preserve existing plant and animal habitat, notwithstanding that there are no federal-listed plant species (there are Federal Candidate species) and that currently none of the state-listed plant species are legally afforded special protection.

BASIS: WHC best management practice.

8. Obtain appropriate federal and/or state permits or approvals authorizing such activity when taking (or otherwise reducing to possession of) any animal, or part thereof, living or dead.

BASIS: WAC 232-12-275, WAC 232-12-064, WAC 232-12-276, WAC 232-12-287, and 50 CFR 17.21, Subpart C, "Endangered Wildlife."

9. On routine basis, conduct environmental monitoring of all environmental media (air, biota, etc.) around facility perimeters.

BASIS: DOE 5400.5 and DOE/EH-0173T.

10. Obtain an agreement with the Washington State Department of Wildlife for controlling nuisance or problem wildlife.

BASIS: WAC 232-12-086, "Requirements for Agreements to Control Nuisance or Problem Wildlife."

11. Report annually (in accordance with approved agreements) all Hanford Site wildlife species controlled to the Washington State Department of Wildlife.

BASIS: WAC 232-12-086 and WAC 232-12-197.

12.5 Designated Reviewing Organizations

Organizations listed below are responsible for this process. If you have any questions about this procedure, please contact the process owner.

Designated Reviewing Organizations

CMPOC

Environmental Services

PSO/ES

12.6 References

NOTE: For additional references, see Appendix B of this manual.

50 CFR 17, *Endangered and Threatened Wildlife and Plants*, Subpart B.

DOE/RL-94-150, *Bald Eagle Site Management Plan for the Hanford Site*.

WHC-CM-4-1, *Emergency Plan*.

WHC-CM-8-7, *Site Support Services*.

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Table 12-1. Bases/Driver.

Regulatory Drivers		Other Drivers	WHC-CM-7-5 Implementing Subsection	Comments
Federal	State/Local			
36 CFR 800 36 CFR 63, 16 USC 461-470aa 42 USC 1996 and 4321 43 CFR 7	N/A	N/A	12.3.2	Preservation of historically significant resources
50 CFR 17	N/A	DOE/RL-91-150	12.4.1.1	Bald Eagle Site Management Plan
16 USC 1531 50 CFR 17 50 CFR 402.6	WAC-232-12	DOE 5484.1	12.4.2	Protection of threatened and endangered plants and animals
N/A	WAC 232-12-017	E0 11987	12.4.2	Keeping exotic plants and animals offsite
50 CFR 17, Sub. C	WAC 232-12-064, 086, 274, 276, 287	DOE 5400.5 DOE/EH 0173T	12.4.2	Taking of wildlife
N/A	WAC-12-086, 197	N/A	N/A	Report on wildlife control efforts

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High-Level Waste**15.1 Purpose**

The purpose of this section is to define the waste management requirements for DOE high-level waste (HLW).

15.2 Scope

The provisions of this section apply to all WHC elements and all WHC contractors and subcontractors performing work that involves management of waste containing HLW and/or HLW contaminated facilities. HLW containing, or considered to be, a hazardous/dangerous waste component is also subject to the applicable requirements of Section 7.0 of this manual.

15.3 Responsibilities

1. Facility Managers of HLW facilities and systems shall:
 - a. Perform the facility functions stated in this section associated with any treatment, storage, and disposal of received waste.
 - b. Assure that facility generators use correct designations, waste packaging information, and shipping instructions for the handling of HLW and high-level mixed waste.
 - c. Coordinate waste disposal with contracted offsite disposal facilities.
 - d. Ensure that all tanks, sumps, and associated piping and pumping systems within their jurisdiction are in compliance with the applicable requirements of this section.
 - e. Obtain appropriate samples and analyses of generated waste in order to obtain proper designations, and approve analytical requests for all unknown wastes.
 - f. Conduct inspections; maintain required records and reports; track deficiencies, document corrective actions on inspection records and develop inspection schedules, waste analysis plans, contingency plans, and emergency procedures; ensure personnel are trained; operate unit closure plans as required by this section.
 - g. Promptly report to Environmental Reports and the Hanford Fire Department all spills or releases from a tank system containing a radioactive material, in accordance with Section 5.3 of this manual.
 - h. Ensure that groundwater monitoring activities are conducted in accordance with this section and that appropriate information is available in the TSD unit operating record.

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- i. Obtain the data and calculations necessary to demonstrate compliance with this section and maintain the associated documentation.
2. Geosciences shall be responsible for conducting groundwater monitoring.
3. Pollution Prevention Program shall develop, coordinate, and implement a program to minimize the generation of HLW and associated wastes to the extent economically practical and in compliance with subsection 14.6.9.
4. RCRA Field Services shall:
 - a. Provide guidance on waste designation issues, as requested.
 - b. Conduct assessments to ensure compliance with Section 7 of the ECM.
5. Hanford Analytical Services Management (HASM) shall:
 - a. Provide guidance regarding the number of samples and types of analyses required.
 - b. Provide guidance regarding sample type and quantity.
 - c. Review sample and analysis plans received from the waste owners for consistency with requests for laboratory services and capabilities.
 - d. Provide data validation and verification.
 - e. Coordinate laboratory support for HLW samples.
6. Each employee is responsible for promptly notifying management of events and conditions that could have adverse environmental implications, including releases specified in ECM Section 5.

15.4 Requirements**15.4.1 Design requirements for new facilities**

1. Design objectives for new facilities will assure protection of the public and operating personnel from hazards associated with high-level waste from normal operations, accident conditions, and the effects of natural phenomena.

BASIS: DOE 5820.2A, paragraph I.3.a.(1)(a).

2. Designs for new storage and treatment facilities shall meet the requirements of DOE 6430.1, DOE Orders as required by WHC-CM-1, "Environment, Safety, and Health Policy," and shall incorporate features to facilitate retrieval capability. Unless demonstrated to the contrary, all high-level waste shall be considered to be mixed waste

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and the facility design requirements of 40 CFR 265 and WAC 173-303-640, as identified in Section 7.12 of the ECM, are applicable. The specifics of new tank design are designated in Section 7.12.2.1.1.c.

BASIS: DOE 5820.2A, paragraphs I.1., I.3.a.(1), and MP 5.6.

15.4.2 Design review for existing facilities

Requirements for the preparation of safety analysis reports for high-level waste operations include the review of existing operational facilities based on current technical criteria. When hazards are identified that should be eliminated, controlled, or mitigated, appropriate upgrading, actions in accordance with paragraph 15.4.1 above, shall be identified and implemented according to the requirements of WHC-CM-4-46, Chapter I, Section 3.

BASIS: DOE 5820.2A, paragraph I.3.a.(2)

15.4.3 Characterizing waste

1. Unless demonstrated to the contrary, all high-level waste shall be considered to be radioactive mixed waste and subject to the requirements of the Atomic Energy Act, as amended, and the Resource Conservation and Recovery Act (RCRA).

BASIS: DOE 5820.2A, paragraph I.1.

2. Liquid and solidified high-level waste shall be characterized, consistent with ALARA and other applicable radiation protection requirements, to determine the hazardous components according to Section 7.6 of the ECM, their compatibilities, and its radiological components. Characterization shall reflect knowledge of waste generating processes and/or sampling and analysis.

BASIS: DOE 5820.2A, paragraphs I.3.b.(1)(a), RL 5820.2A, paragraphs I.3.b.(1)(a), and the ECM, Section 7.7.7.1.

3. Waste characteristics and compatibility information shall be documented in a safety analysis report (see DOE 5481.1B) and be used as a basis for designing new facilities.

BASIS: DOE 5820.2A, paragraphs I.3.b.(1)(b).

15.4.4 Storage and transfer operations

1. All new HLW handling, transfer and storage facilities and equipment shall be doubly contained and all underground tanks used for the storage of newly-generated HLW shall be doubly contained. Where high-level waste has a total radioactivity concentration below 0.05 Ci/gal, existing singly contained tank and transfer systems may be used routinely. At higher concentrations single containment may be used temporarily with RL approval if appropriate design and administrative controls are in place to mitigate adverse effects from a pipeline failure (e.g., pressure-checks prior to use and visual

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checks during use); and for Mixed HLW as authorized by the Washington State Department of Ecology (Ecology).

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(a),(b), and RL 5820.2A, paragraph I.3.b.(2).

2. Leaking waste storage systems shall not be used to receive HLW, but will be repaired or closed as required by paragraph 7.12.2.1.1.i. However, where HLW has been demonstrated not to be mixed waste (see Subsection 15.4.3.1 above) a leaking waste storage system may be used if secondary containment is maintained (e.g., liquid level maintained below leak point) and it can be shown with the support of formal documentation that temporary operation can be performed without releasing radioactive liquid to the environment.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(c) and the Basis given in ECM 7.12.2.1.1.i.

3. Single contained storage and transfer operations shall be conducted within the limits defined in the Safety Analysis Reports according to DOE 5481.1B.

BASIS: DOE 5820.2A, paragraph I.3.c.(2)(b).

4. Secondary containment of storage and transfer systems shall be equipped with transfer capability to retrieve the leaked liquid. Secondary containment systems for solidified high-level waste shall provide for physical isolation of the waste from the environment. When the HLW tank contains hazardous/dangerous materials, the tank shall also comply with ECM Section 7.12 for secondary containment.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(d)

5. To the extent practical, waste in the double-shelled tanks (DSTs) shall be segregated by HLW, TRU waste, and LLW types and HLW shall be segregated by type (sludge, salt, high activity, and low activity) to make accessibility for future processing easier.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(e) and RL 5820.2A, paragraph I.3.b.(2)(c).

6. Ventilation systems shall be provided where the possibility exists for generating flammable or explosive mixtures of gases. The systems shall be filtered, where required, to maintain radionuclide releases within the off-site requirements specified in DOE 5400.5 and 40 CFR 61 and, for single contained systems, on-site dose commitment requirements of DOE 5480.1B and the HSRCM, *Hanford Site Radiological Control Manual*.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(f) and I.3.c.(2)(e).

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7. Where cathodic corrosion protection systems are used, they shall be protected by engineered features against abnormal conditions such as stray currents or system failure. The cathodic protection systems shall be calibrated annually, and all sources of impressed current shall be inspected and/or tested at least every other month.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(g) and WAC 173-303-640(3)(g).

8. Engineered controls shall be incorporated to provide liquid volume inventory data and to prevent spills, leaks, and overflows from tanks or containment systems. (Where HLW is accompanied by hazardous/regulated substances, use the containment, detection, and operations controls specified in Section 7.12.2.1.1.e. and f.) The high-level waste shall be stored at pressures lower than those of ancillary systems (e.g., cooling water).

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(h), I.3.c.(2)(c), and 40 CFR Part 265.192-4.

9. Current and proposed changes in operations shall be evaluated for criticality safety considerations and controls as required by WHC-CM-4-29, Section 4, paragraph 4.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(i) and RL 5820.2A paragraph I.3.b.(2)(d).

10. Each facility shall utilize remote maintenance features and other appropriate techniques to maintain personnel radiation exposure as low as reasonably achievable.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(j) and I.3.c.(2)(g).

11. Upon loss and subsequent recovery of normal electrical power, high-level waste transfer equipment shall not have the capability to restart without active operator action.

BASIS: DOE 5820.2A, paragraph I.3.b.(2)(k).

15.4.5 Monitoring, Surveillance, and Leak Detection

1. All liquid high-level mixed waste tanks, sumps, and associated piping and pumping systems shall comply, as a minimum, with the requirements of ECM Section 7.12.2.1.1.e, "Containment and detection of releases."

BASIS: Federal Code of Regulation 40 CFR 265.193(a)-(f) and WAC 173-303-640(4).

2. HLW tank system monitoring and surveillance capability shall exist to provide liquid volume, waste inventory data, temperatures and identification of failed containment. For double contained systems, monitoring and leak detection capability shall be engineered and operated to rapidly indicate the status of primary containment integrity, temperatures and pressures, radioactivity in ventilation exhaust, and liquid effluent

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streams. Liquid levels (alarmed), sludge volume, tank chemistry, condensate, and cooling water should be monitored from a central location with a frequency based on process changes and needs. Generated flammable and explosive mixtures of gases shall be monitored.

BASIS: DOE 5820.2A, paragraphs I.3.b.(3)(a)-(b) and I.3.c.(3)(a) and RL 5820.2A, paragraphs I.3.c.(3).

3. A schedule and procedure shall be developed and documented for monitoring, surveillance, and calibration checks, the frequency of which shall be based on equipment deterioration rates and malfunction durations before unacceptable environmental or human health consequences result.

BASIS: DOE 5820.2A, paragraph I.3.b.(4)(e).

4. A method for periodically assessing waste storage tank integrity (e.g., coupons, photographic inspections, leak detectors, liquid level devices (and inspections by periscope in double containments)) shall be established and documented and, for mixed waste tanks, the assessments obtained and filed according to Section 7.12.2.1.1.b-c in this manual.

BASIS: DOE 5820.2A, paragraphs I.3.b.(3)(c) and I.3.c.(3)(b). This item also reflects the requirements specified in 40 CFR 265.191, 40 CFR 265.192(a) and (g), and 40 CFR 265.193(i), with the exception that the date for completing the initial assessment has been modified to comply with WAC 173-303-400(3)(c)(viii).

5. A system of ground water or vadose zone monitoring wells shall be installed around clusters of HLW tanks where and as required by the Resource Conservation and Recovery Act or Tri-Party Agreement. Groundwater monitoring shall be carried out as required by Section 5.4.2 in this manual.

BASIS: DOE 5820.2A, paragraph I.3.b.(3)(f).

6. Electrical monitoring and leak detection devices essential to safe operations shall be provided with backup power, as appropriate, to ensure operability under emergency conditions.

BASIS: DOE 5820.2A, paragraph I.3.b.(3)(d).

15.4.6 Spill Contingencies and Actions

The following contingencies and actions address HLW in singly contained (#s 1-2) and doubly contained (#s 2-7) tanks and their associated systems separately. The contingency requirements of Section 7 of this manual shall also be followed for mixed waste.

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1. A contingency action plan shall be maintained for singly contained tanks to respond to spills or leaks and other credible emergencies as defined in the SAR. Appropriate equipment shall be maintained readily available to provide removal of pumpable liquids. A plan of action shall be maintained to remove pumpable liquids from non-interim stabilized tanks when they are identified as assumed leakers.

BASIS: DOE 5820.2A, paragraphs I.3.c.(4)(a) and (c) and RL 5820.2A, paragraphs I.3.c.(4).

2. Upon detection of released radioactive materials as defined by Section 5.3.2.2 of this manual, the appropriate actions of Section 5 shall be initiated. Steps shall be taken to prevent further migration of the release to soil or surface water. Major contamination in the soil shall be removed or stabilized unless compliance with this requirement would cause greater harm to human health or the environment.

BASIS: DOE 5820.2A, paragraphs I.3.b.(4)(b) and I.3.c.(4)(b).

3. Spare capacity with adequate heat dissipation capability shall be maintained to receive the largest volume of liquid contained in any one tank. Interconnected tank farms with adequate transfer capabilities, in operational condition, and spare capacity may be considered as a single tank farm for purposes of this requirement.

BASIS: DOE 5820.2A, paragraph I.3.b.(4)(d) and citation of Section 11 of WHC-SD-GN-DGS-30011.

4. Each high-level waste facility shall have response procedures for credible emergencies, as addressed by the "Nonreactor Facility Safety Analysis Manual" and as identified by WHC-CM-4-46, 9.0, "Safety Classification of Structures, Systems, and Components."

BASIS: DOE 5820.2A, paragraph I.3.b.(4)(f) and WHC-CM-4-46, Chapter 3, paragraph 4.3.2.

5. If a release is due to a system failure, but the system is not damaged, the system may be returned to service as soon as action to correct the condition is completed; otherwise the system shall be removed from service until conditions can be evaluated fully.

BASIS: DOE 5820.2A, paragraphs I.3.b.(4)(a) and (c).

15.4.7 Training

Worker safety training must comply with the following:

1. General and Specific training requirements of DOE 5480.20, "Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reacto Nuclear Facilities," Chapter I, Section 7 and Chapter IV, Section 5.

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2. The radiological training for applicable workers of as specified in Hanford Site Radiological Control Manual.
3. Performance Based training (exclusive of accreditation) of DOE 5480.18A, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities."

BASIS: DOE 5820.2A, paragraphs I.3.b.(5)(b).

4. Requirements of WHC-CM-7-5, Section 7.10.2(11) where tanks are involved that may contain hazardous/dangerous materials.

BASIS: WAC-173-303-330.

15.4.8 Quality Assurance

All HLW operations shall be conducted in accordance with applicable requirements of WHC-CM-4-2, *Quality Assurance Manual*.

15.4.9 Waste Minimization

The generation of radioactive wastes at WHC will be minimized to the maximum extent economically practicable and consistent with the safe operation of all facilities. While volume or toxicity reduction activities at treatment or storage facilities do not qualify as waste minimization by WHC, they do qualify and are required by DOE 5820.2A.

Treatment technologies to reduce waste (e.g., evaporation) can not be strictly applied to radionuclides, including HLW, as, once produced, radionuclides are reduced only by their inherent decay. Waste reduction treatment can only reduce the substances accompanying the HLW which may be either hazardous/dangerous or non-hazardous/non-dangerous.

1. Each WHC facility that generates, treats, or stores HLW shall prepare a facility-specific waste minimization plan to identify waste minimization opportunities, set minimization goals, implement minimization opportunities, and report successes and failures. Documented certification stating that a waste minimization plan is in place must be completed annually and inserted into the facility operating record.

BASIS: WHC-EP-0496, *Westinghouse Hanford Company Waste Minimization and Pollution Prevention Awareness Program Plan*, July, 1991, paragraphs IV. A. and V., and WHC-CM-1-3, *Management Requirements and Procedures*, 5.44, "Waste Minimization Program."

2. Process waste assessments will be conducted as part of an ongoing program to identify, screen, and analyze options to reduce waste generation. Processes will be reviewed and documented to determine whether significant reduction of waste at the source can be achieved by improvements in process efficiency.

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BASIS: WHC-EP-0496, paragraphs VII, VIII.B and RL 5820.2A, paragraphs I.3.b.(7).

3. Potential waste that cannot be eliminated or minimized will be evaluated for recycle (i.e., used, reused, or reclaimed). All HLW waste that is nevertheless generated or has been previously generated will be treated to reduce its volume, toxicity, or mobility before storage or disposal. Generators must minimize the hazardous/dangerous waste where it is potentially mixed with the HLW.

BASIS: WHC-EP-0496, paragraph VIII.F. and WHC-7-5, Section 7.8.2.1.6.

15.4.10 Waste Treatment

The following requirements pertain to HLW associated with non-hazardous/non-dangerous substances. Where dangerous waste is also mixed with the HLW, the following shall only be implemented with the application of the requirements stated in Section 7.12.2.1(1)(f) of this manual.

1. The chemistry of liquid high-level waste shall be adjusted to control corrosion within design limits for the storage system.
2. Treatment reagents shall not be placed in a tank system without proven effective mitigative action if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, or otherwise fail.
3. Waste generation and waste management systems that significantly change the chemical and physical forms of the waste shall be technically assessed to assure compatibility and retrievability.

BASIS: DOE 5820.2A, paragraph I.3.b.(7).

4. Programs shall be developed to treat double-shelled tank wastes such as Neutralized Current Acid Waste (NCAW), complexant concentrate (CC), Neutralized Cladding Removal Waste (NCRW) and Plutonium Finishing Plant (PFP) waste to provide appropriate feed to the treatment processes required for final disposal.

BASIS: RL 5820.2A, paragraph I.3.b.(7)(c).

15.4.11 Disposal

1. New and Readily Retrievable HLW

New and readily retrievable existing HLW shall be processed to a final immobilized form which meets the acceptance criteria for permanent disposal in a deep geologic repository.

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BASIS: Nuclear Waste Policy Act of 1982 as amended in 1987 in accord with Public Law 100-203, 40 CFR 191, 10 CFR 60, and DOE 5820.2A, paragraph I.3.d.0

- a. Waste acceptance specifications and criteria based upon the requirements outlined in 10 CFR 60.113, 10 CFR 60.131(b)(7), 10 CFR 60.135, 10 CFR 71.87, and 40 CFR 191 shall be developed for high-level waste forms for approval by RW-20 and DP-12 prior to startup of facilities that generate the disposal waste form.
- NRC Code 10 CFR 60.113 requires a 300 to 1000 year package containment, to be determined by the NRC.
 - NRC Code 10 CFR 60.131(b)(7) requires criticality prevention under normal and accident conditions, except by specified extraordinary coincidence, and limits on multiplication factors.
 - NRC Code 10 CFR 60.135 requires package design, content, and form such that the identified physical, chemical and nuclear properties and their interaction with the environment do not result in the compromise of the waste package, the facility, or the geologic setting.
 - NRC Code 10 CFR 71.87 requires that the package and content is proper for shipment.
 - For the EPA Code 40 CFR 191 dose limits to the public from management and storage of HLW refer to Section 7.4.3. of the ECM (based on DOE 5400.5 [II.1.c]).

BASIS: DOE 5820.2A, paragraph I.3.d.(1)(a).

- b. Interim storage for solidified high-level waste awaiting transport to the designated geologic repository shall comply with applicable requirements in paragraph 15.4.4.

BASIS: DOE 5820.2A, paragraph I.3.d.(1)(b).

- c. Hanford's DST and its strontium and cesium encapsulated wastes shall be managed for disposal as indicated in the DOE/EIS-0113, "Final Environmental Impact Statement: Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes," December 1987 and as in the Preferred Alternative in the associated "Record of Decision."

BASIS: RL 5820.2A, paragraph I.3.d.(1) and "Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington; Record of Decision (ROD)," April 14, 1988.

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2. Other Waste.

- a. High-level waste that is not readily retrievable shall be monitored periodically in situ and the safety of such waste shall be reevaluated as necessary to determine the need for corrective measures. Evaluations will be performed (and needed improvements made) as follows:

- Waste constituents will be characterized.
- Barrier performance will be demonstrated by instrumented field tests and modeling.
- The methods to improve the stability of the waste form where needed (and destruction or stabilization alternative for hazardous constituents) will be evaluated.
- Methods for retrieving, processing, and disposing of the waste will be evaluated.

BASIS: DOE 5820.2A, paragraph I.3.d.(2) and the "Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington; Record of Decision (ROD)," April 14, 1988.

- b. A plan shall be prepared and updated at least biennially to evaluate Hanford's options for permanent disposal of singly contained tank waste. Final alternatives for disposal will be analyzed in a draft supplement to DOE/EIS-0113 for public review and comment before the final disposal decision(s) are made. The decision will be reflected in an ROD to the EIS.

BASIS: RL 5820.2A, paragraph I.3.d.(2) and the "Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington; Record of Decision (ROD)," April 14, 1988.

15.5 Designated Reviewing Organizations

Organizations listed below are responsible for this process. If you have any questions about this procedure, please contact the process owner.

Designated Reviewing Organizations

CMPOC

Tank Waste Remediation System

TWR

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Note: For additional references see Appendix B of this manual

10 CFR 60, "Disposal of High Level Radioactive Waste in Geologic Respositories."

40 CFR 61, "National Emissions Standards for Hazardous Air Pollutants. "

40 CFR 191, "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes."

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities."

DOE 5400.5, "Radiation Protection of the Public and the Environment."

DOE 5480.1B, "Environment, Safety and Health Program for Department of Energy Operations."

DOE 5480.18A, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities."

DOE 5480.20, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities."

DOE 5481.1B, "Safety Analysis and Review System."

DOE 5820.2A, "Radioactive Waste Management."

DOE 6430.1, "General Design Criteria."

RL 5820.2A, "Radioactive Waste Management."

WAC 173-303, "Dangerous Waste Regulations."

WHC-SD-GN-DGS-30011, *Radiological Design Guide*.

WHC-CM-4-29, *Nuclear Criticality Safety Manual*.

WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*.

HSRCM-1, *Hanford Site Radiological Control Manual*.

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Table 15.1 Regulatory Bases/Drivers

REGULATORY DRIVERS		OTHER DRIVERS	WHC-CM-7-5 IMPLEMENTING SUBSECTION	COMMENTS
Federal	State/Local			
DOE 5820.2A DOE 6430.1 40 CFR 265	WAC 173-303-640	N/A	15.4.1	Design requirements for new facilities
DOE 5820.2A	N/A	WHC-CM-4-46	15.4.2	Design review for existing facilities
DOE 5820.2A RL 5820.2A	N/A	N/A	15.4.3	Characterizing waste
DOE 5820.2A, RL 5820.2A, DOE 5481.1B, DOE 5400.5, 40 CFR 61, DOE 5480.1B, 40 CFR 265.192	WAC 173-303-640	Hanford Site Radiological Control Manual, WHC-CM-4-29	15.4.4	Storage and transfer operations
40 CFR 265.193, DOE 5820.2A, RL 5820.2A, 40 CFR 265.191, 40 CFR 265.192	WAC 173-303-640, WAC 173-303-400	N/A	15.4.5	Monitoring, surveillance, and leak detection
DOE 5820.2A RL 5820.2A	N/A	WHC-CM-4-9 WHC-CM-4-46	15.4.6	Spill contingencies and actions
DOE 5480.20, DOE 5480.18A	WAC 173-303-300	N/A	15.4.7	Training
N/A	N/A	WHC-CM-4-2	15.4.8	Quality Assurance
DOE 5820.2A	N/A	WHC-EP-0496 WHC-CM-1-3 MRP 5.44	15.4.9	Waste minimization
DOE 5820.2A RL 5820.2A	N/A	N/A	15.4.10	Waste treatment
40 CFR 191, 10 CFR 71, 10 CFR 60, DOE 5400.5, RL 5820.2A, DOE 5820.2A	N/A	Public Law 100-203	15.4.11	Disposal