ADDENDUM B

WASTE ANALYSIS PLAN

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ADDENDUM B

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ADDENDUM B

WASTE ANALYSIS PLAN

Executive Summary

The 325 Hazardous Waste Treatment Units (325 HWTUs) collect, consolidate, and prepare dangerous waste for shipment. Waste is primarily received from onsite generators and offsite Pacific Northwest National Laboratory (PNNL) facilities. The purpose of this Waste Analysis Plan (WAP) is to describe the procedures for PNNL, as operator of the 325 HWTUs, to confirm its knowledge about dangerous waste before managing it at the 325 HWTUs, as required in WAC 173-303-300. The purpose of waste analysis at permitted facilities is to assure that waste can be managed properly.

Waste analysis at permitted facilities consists of obtaining and reviewing a detailed chemical, physical, and/or biological analysis of a waste prior to storage. This detailed analysis can consist of knowledge of the wastes as defined in WAC 173-303-040, typically provided by the generator, data obtained by direct testing, or a combination of both. When the analysis relies upon knowledge provided by the generator, that knowledge must be documented and confirmed. The waste analysis performed by the PNNL waste management staff is used to determine the acceptability of the waste for storage at the 325 HWTUs.

This WAP describes the process for inspection and, if necessary, analysis of waste received at the 325 HWTUs to confirm that the waste matches the identity of the waste on the accompanying shipping documentation. The WAP also contains a description of the sampling methodologies, analytical techniques, and processes that are undertaken for confirmatory sampling and analysis of dangerous waste managed in the 325 HWTUs. Finally, the WAP describes the records that are maintained in order to meet requirements specified in the Hanford Facility Dangerous Waste Permit.

Definitions

Term	Definition
Analysis	Obtaining and reviewing information provided by the waste generator and/or provided by other means to confirm the information provided concerning a waste stream.
Compatible	As applied to suitability of containers, tanks or sampling equipment, *compatible* means the waste will not react with or otherwise damage the container, tank, or sampling equipment so that the ability of the equipment to contain the waste is not impaired. For determination of compatibility for storage, refer to definition of *incompatible waste*.
Database	The PNNL waste management database (the Integrated Waste Management System) containing profile, confirmation, storage, and shipment information on each container of waste.
Fingerprint Analysis	Testing of significant parameters expected from a waste (as documented in its approved profile) performed after physical transfer of the waste to the 325 HWTUs. Fingerprint analysis is intended to verify that the waste transferred to the 325 HWTUs matches the profile provided. Fingerprinting is usually performed by visual examination of the waste and/or use of readily available testing methods such as test kits.
Incompatible Waste	Materials/wastes unsuitable for placement in a particular device or facility because it may corrode or decay the containment materials, or is unsuitable for mixing with another waste or material because the mixture might produce heat or pressure, fire or explosion, violent reaction, toxic dusts, fumes, mists, or gases, or flammable fumes or gases. Refer to Table B.1.
Inspection	Viewing of the contents of the container, container markings and labeling, number of containers, and/or the container itself as a means of confirming the identity of the waste.
Knowledge	Sufficient information about a waste to substitute reliably for direct testing of the waste. To be sufficient and reliable, the *knowledge* used must provide information necessary to manage the waste in accordance with the requirements of this chapter. [WAC 173-303-040] Note: *Knowledge* may be used by itself or in combination with testing to designate as waste pursuant to WAC 173-303-070(3)(c), or to obtain a detailed chemical, physical, and/or biological analysis of a waste as required in WAC 173-303-300(2).
Profile	A *detailed physical, chemical, and/or biological analysis of a dangerous waste* provided by the waste generator in order to allow the 325 HWTUs staff to perform waste analysis. The Chemical Disposal/Recycle Request (CDRR) and/or Radioactive Waste Disposal Request (RWDR) at PNNL currently serve as the waste profile. A sample CDRR is shown in Table B.3.
Testing	Performance of a procedure that yields a quantitative or qualitative evaluation of the type and/or quantity of materials present. Sometimes referred to as *analysis* or *laboratory analysis*, but for purposes of this procedure, the term *testing* is used to distinguish it from waste analysis (refer to definition of *analysis* above).
Verification	Determination that the waste in question is that waste described on the approved profile. Verification may include inspection and/or fingerprint analysis.
Waste Stream	Wastes that are physically or chemically different from each other; wastes that are generated from different types of processes; or wastes that are of the same type, but generated at different points in the process or at different process locations.

B WASTE ANALYSIS PLAN

B.1 Unit Description

The 325 HWTUs are two dangerous waste treatment and storage units owned and operated by USDOE and co-operated by PNNL. The 325 HWTUs are used for the collection, consolidation, packaging, storage, treatment, and preparation for transport and disposal of dangerous waste, universal waste, and recyclables, including mixed waste. It is an integral part of the PNNL waste management system.

B.1.1 Description of Unit Processes and Activities

The 325 HWTUs are two units within the 325 Building, located in the 300 Area of the Hanford Facility (refer to Addendum A for location). These dangerous waste management units are referred to as the Shielded Analytical Laboratory (SAL), and the Hazardous Waste Treatment Unit (HWTU).

The 325 Building includes the following: (1) a central portion (completed in 1953) that consists of three floors (basement, ground, and second) containing general-purpose laboratories, provided with special ventilation and work enclosures; (2) a south (front) wing containing office space, locker rooms, and a lunch room; and (3) east and west wings containing shielded enclosures with remote manipulators. The Shielded Analytical Laboratory (SAL) is located in Rooms 32, 200, 201, 202, and 203. The HWTU is located in Rooms 520, 524, and 528.

The 325 HWTUs store and treat dangerous and/or mixed waste generated by PNNL, other Hanford Facility locations, or offsite facilities, when transferred and accepted pursuant to the provisions in this Waste Analysis Plan and this Permit. Storage in containers and bench- or small-scale treatment of dangerous waste occur in both the HWTU and the SAL. At the SAL, dangerous waste liquid is stored in a tank in Room 32. As described in further detail in Addendum C, permit conditions applicable to container management in both dangerous waste management units are established in accordance with WAC 173-303-630. Similarly, permit conditions applicable to the SAL tank have been established in accordance with WAC 173-303-640.

The fire water-collection tank, which serves rooms 520 and 528 of the HWTU, is located beneath Room 520 in the basement of the 325 Building. The rectangular tank measures 1.65 meters by 2.25 meters by 1.92 meters, and has a 22,710-liter capacity. The sides and floor of the tank are constructed of epoxy-coated carbon-steel plate. The steel sides and floor provide support for the chemical-resistant polypropylene liner. The tank is secured to the concrete floor of the 325 Building with 1.3-centimeter bolts at 1.82-meter intervals.

B.1.1.1 How Waste is Accepted, Moved, Processed, and Managed

PNNL's waste management organization maintains a waste management database to support the identification and tracking of waste from profiling through final disposition, and maintain the information required by permit conditions established in accordance with WAC 173-303-380. This section contains information on waste acceptance and analysis. Waste movement, processing, and management are discussed in Addendum C.

B.1.1.1.1 Narrative Process Descriptions

Wastes to be managed at the 325 HWTUs are generated by PNNL's research laboratory and support activities, usually in small quantities. These wastes are managed in accordance with generator requirements prior to being submitted for transfer to the 325 HWTUs during the accumulation period.

B.1.1.1.2 Narrative Waste Characterization

Waste streams accepted for storage at the 325 HWTUs can be categorized as follows:

B.1.1.1.2.1 Listed Waste from Specific and Nonspecific Sources

Certain wastes from specific and nonspecific sources identified in WAC 173-303-9904 (designated with 'F' waste codes) are accepted at the 325 HWTUs for storage and subsequent shipment. Addendum A

identifies the dangerous waste numbers and estimated annual management quantities for each. These estimated annual management quantities are the maximum allowable amounts for storage or treatment in the 325 HWTUs.

Spent solvents may be halogenated or non-halogenated. Spent degreasing solvents (F001) as well as spent halogenated solvents (F002) are generated primarily in research activities, with a few generated by maintenance activities. Spent non-halogenated solvents (F003, F004, and F005) are also primarily generated by research activities, with a few generated by maintenance activities. WPCB state source waste (PCB electrical equipment waste) has been generated in limited amounts in the past and could be stored at the 325 HWTUs if future generating activities occur.

B.1.1.1.2.2 Discarded Commercial Chemical Products

Discarded commercial chemical products are those described in WAC 173-303-081. Addendum A identifies all of the discarded commercial chemical products listed in WAC 173-303-9903, as research activities have the potential to generate any of these wastes. Estimated annual management quantities are given based on prior experience.

These wastes ('P' and 'U' waste codes) are typically received at the 325 HWTUs in the manufacturer's original container. These containers are usually four liters or less in volume, and are glass or polyethylene jars or bottles, or metal cans. Such wastes may be discarded at the end of a project, as part of a lab cleanout, or after the passage of an expiration date, that renders the chemical non-useable due to quality assurance requirements of Laboratory projects.

B.1.1.1.2.3 Characteristic Waste

Some wastes from research activities and maintenance, although not listed pursuant to WAC 173-303-081 or -082, exhibit one or more characteristics of dangerous waste described in WAC 173-303-090. Although wastes exhibiting any of these characteristics are routinely managed at the 325 HWTUs, the most prevalent waste types are ignitable wastes (D001), corrosive wastes (D002), solid corrosives (WSC2), and wastes containing chromium (D007) and/or lead (D008). All characteristic waste codes and estimated annual management quantities are given in Addendum A.

B.1.1.1.2.4 Criteria Waste (Toxic and/or Persistent)

Waste from research or maintenance activities that is not a listed waste and does not exhibit a characteristic of dangerous waste may designate as state dangerous waste criteria wastes, pursuant to WAC 173-303-100. Wastes exhibiting the criteria of toxicity (WT02) are PNNL's most prevalent waste type. All criteria waste codes and their estimated annual management quantities are given in Addendum A.

B.1.1.1.3 Waste Acceptance Process

B.1.1.1.3.1 Waste Submittal

The waste analysis process for the 325 HWTUs begins when the generating unit completes and transmits a profile to the waste management organization for the waste stream. This profile is currently submitted electronically into the waste management database by field-deployed waste management staff. The profile provides the *detailed physical, chemical, and/or biological analysis* of each waste to be submitted. Information required includes a physical description of the waste, accounting for 100% of the contents, and identity and concentration of the hazardous constituents known or reasonably expected to be in the waste; location and container information; identity of the waste generator; and the hazards of the waste. Profile information includes process knowledge and any available testing data on the waste.

Profile information must meet the following four distinct information needs for management of dangerous waste at the 325 HWTUs.

- Verify that wastes are properly designated in accordance with WAC 173-303 and whether those wastes are DW or EHW;

- Identify or verify the applicable treatment standards under WAC 173-303-140 and whether the waste complies with applicable treatment standards under WAC 173-303-140;
- Identify and verify specific characteristics of waste in solid, liquid, or solution form;
- Determine how to safely handle, transport, analyze, store, and dispose of the waste.

B.1.1.1.3.2 Evaluation and Acceptance

After a profile is submitted, waste management staff first performs a consistency check of profile information. For instance, profile data is checked to confirm that percentages of waste constituents listed add to 100%, physical state is consistent with chemical description, and that chemicals are compatible with container type. The purpose of this check is to determine if any process knowledge provided constitutes *knowledge* for purposes of the Dangerous Waste Regulations, i.e. is adequate to substitute for testing information in order to quantify constituents and characteristics, and enable proper management of the waste in accordance with the Dangerous Waste Regulations. Any information discrepancies are noted and resolved with the profile submitter. Discrepancies that cannot be resolved result in rejection of the waste profile.

Once the consistency check is complete, waste designation information is verified. Any constituent regulated under other regulations is also checked (e.g. PCBs, asbestos) and Department of Transportation (DOT) hazard class and packing group information is determined based on the hazard description given in DOT regulations. Applicable land-disposal restriction (LDR) treatment standards are identified and underlying hazardous constituents (UHC) are identified, as appropriate. The verified waste codes, other identification, LDR treatment standard and UHC information, and DOT hazard class and packing group information associated with the waste are confirmed for correct entry in the waste management database.

Once designation verification is complete, the waste management staff determines if a waste is unacceptable for storage (e.g. waste code not listed in Addendum A), and storage capacity limits are checked. If the waste is confirmed to meet the storage type and quantity limitations of Addenda A, B, and C, it meets the waste acceptance criteria, and is acceptable for storage. The approved waste is assigned a unique identification number, cell location, and hazard classification. The profile is noted as *approved*.

B.1.1.1.3.3 Confirmation of Knowledge

To confirm the sufficiency and reliability of the knowledge provided by generators, waste management activities (e.g. satellite accumulation areas) are co-managed by field-deployed waste management staff. Staff assist in obtaining the data and other information utilized to prepare the profile, and review the quality and sufficiency of the information provided in order to confirm that it is adequate for safely managing the waste. Other methods for confirmation noted in WAC 173-303-300(2)(a) may be used instead of or in conjunction with onsite visits and data review in special situations.

Instances where the 325 HWTUs may require testing to corroborate knowledge include, but are not limited to, the following:

- when waste management personnel have reason to suspect a change in the waste based on inconsistencies in the profile or in packaging or labeling of the waste;
- when the information submitted previously by a generator does not match the characteristics of the waste that was submitted;
- when a receiving TSD facility rejects the waste because waste verification at that facility reveals an inconsistency with the waste profile provided by the 325 HWTUs.

Testing is not required when the inconsistency deals with a listing based on process usage (e.g. F001 designation based on use as a solvent).

If a waste stream is profiled and multiple shipments of the same waste stream are accepted using the same approved profile, it must be reevaluated when the generator and/or the 325 HWTUs personnel have reason to believe the process generating the waste, or the characteristic or the chemical constituents of the

waste stream, have changed, or there is a manifest discrepancy (for wastes received from off-site), shipping paper discrepancy (receipt of wastes from on-site dangerous waste management units) or failure of the waste verification process. Even if no such instances occur, the waste stream will be re-profiled and re-evaluated at least annually.

B.1.2 Identification and Classification of Waste

The 325 HWTUs dangerous waste management units are used for container and tank storage and treatment of dangerous waste. As a result:

- Bulk solids (non-containerized) are not accepted for storage.
- Dangerous waste containing source, special nuclear, or byproduct material under the *Atomic Energy Act* (i.e. mixed waste) is accepted only when it is either already containerized or it is to be managed in the permitted tank in Room 32 of the SAL.

Refer to Addendum C, Sections C.1.10, C.1.11, and C.2.1.5 for precautions taken in the storage of various types of wastes (e.g. ignitable, reactive, or incompatible wastes).

A wide range of waste container sizes/volumes is typically used to manage wastes at the 325 HWTUs due to the variety of research and maintenance activities supported (Refer to Addendum C for a description of secondary containment and container types and sizes managed). Containers are not accepted if the receiving location in the unit (e.g. storage cabinet) would not have adequate secondary containment capacity per WAC 173-303-630(7). No shipment of bulk liquid greater than the operational capacity of the storage tank (1,218 liters) will be accepted.

Containerized wastes managed include labpacks conforming to the standards of WAC 173-303-161, and hazardous debris and contaminated soil as described in 40 CFR 268.45 and .49, incorporated by reference into WAC 173-303-140, and incorporated by this reference into this Permit.

Along with waste received for storage and treatment, the 325 HWTUs also generate dangerous waste as a by-product of waste handling and treatment activities. Typically, these wastes include personal protective equipment, rags, and other spent materials that designate as hazardous waste when discarded. Such wastes are accumulated at the 325 HWTUs in satellite or 90-day accumulation areas (as appropriate), put into containers, and a profile is submitted for formal acceptance into the unit.

B.1.2.1 Dangerous Waste Numbers, Quantities, and Design Capacity

Refer to Addendum A for the waste numbers, quantities, types of treatment performed, and design capacity for the 325 HWTUs.

B.2 Waste Confirmation

B.2.1 Pre-Shipment Review

Once a waste profile has been approved per the process in Section B.1.1.1.3, the waste is scheduled for pickup by waste management staff. At pickup, waste management organization staff visit the generator storage area and make a final inspection of the waste containers to determine whether the profile and contents label information match completely, and whether the containers are adequate for transport to and storage at the 325 HWTUs. The purpose of visual inspection is to confirm that the waste matches the description in the profile. As a quality assurance/quality control measure, only trained and experienced personnel conduct visual inspection of wastes to verify that the waste being picked up matches the description provided by the waste generator and evaluated during the waste verification/waste acceptance process.

If the waste is a discarded commercial chemical product, the contents of the container are inspected to verify that they match the description of the product. For other waste, e.g., spent solvents, waste descriptions are compared with the products in use at the generating unit to determine if the profile description is accurate. If, after visual inspection of the waste, any doubt remains as to the identity of the

waste, the waste is not picked up. The generator is required to resubmit the profile with accurate information.

After the waste is inspected at the generating unit and its profile is found to match the container labeling and visual inspection, the waste is picked up for transport to the 325 HWTUs. Any appropriate DOT labeling is applied. In addition, each waste container is labeled with a physical description of the waste, the identity and concentration of the regulated hazardous constituents in the waste, and major risk(s). This information helps the waste handlers verify safe handling, storage, retrieval, and transportation of dangerous waste.

Most of the waste stored at the 325 HWTUs is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. All transportation of dangerous waste to the 325 HWTUs will be according to the requirements of Permit Condition II.N. Additional requirements for waste generated outside the 300 Area include proper manifesting (if appropriate) to the 325 HWTUs and utilizing proper packaging for transport over public roadways. Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to the 325 HWTUs on roads accessible to the public, it is generated under the same administrative controls as wastes that are generated *onsite* (i.e., in the 300 Area). Therefore, no distinction is necessary between *on-site* and *off-site* for PNNL waste with respect to the waste analysis requirements of this WAP.

B.2.2 Receipt Verification

The waste acceptance procedure for receipt of waste from both on- and off-site is based on the following requirements. These verification procedures are summarized in Table B.2.

B.2.2.1 Physical Verification Process

B.2.2.1.1 Inspection of Shipping Papers/Documentation

B.2.2.1.1.1 Document Verification

The necessary documentation (e.g. manifest or onsite shipping paper) for the entire shipment is verified (i.e., signatures are dated, all waste containers included in the shipment are accounted for and correctly indicated on the shipment documentation, there is consistency throughout the different shipment documentation, and the documentation matches the labels on the containers).

B.2.2.1.1.1.1 Response to Significant Discrepancies

The primary concern during acceptance of containers for storage is improper packaging or manifest discrepancies. Containers with such discrepancies are not accepted at the 325 HWTUs until the discrepancy has been resolved. Depending on the nature of the condition, such discrepancies can be resolved using one or more of the following alternatives.

- Incorrect or incomplete entries on the uniform hazardous waste manifest or on-site shipping documentation can be corrected or completed with concurrence of the onsite generator or offsite generator. Corrections are made by drawing a single line through the incorrect entry and entering the correct information. Corrected entries are initialed and dated by the individual making the correction.
- The waste packages can be held and the onsite generator or offsite waste generator requested to provide verbal or written instructions for use in correcting the condition before the waste is accepted.
- Waste packages can be returned as unacceptable.
- If a noncompliant dangerous waste package is received from an offsite waste generator, the waste package is non-returnable because of condition, packaging, etc., and if an agreement cannot be reached by the involved parties to resolve the noncompliant condition, then the issue will be referred to USDOE for resolution. Ecology will be notified in writing if a discrepancy is not resolved within 15 days after receiving a noncompliant shipment. Pending resolution, such waste

packages, although not accepted, might be placed in the 325 HWTUs. The package(s) will be segregated from other waste, and an entry made into the 325 HWTUs logbook describing the actions that were taken to store the packages in a safe manner until a resolution has been reached.

B.2.2.1.1.1.2 Activation of Contingency Plan for Damaged Shipment

If waste shipments arrive at the 325 HWTUs in a condition that presents a hazard to public health or the environment, the Building Emergency Procedure will be implemented as described in Addendum J, Contingency Plan.

B.2.2.1.1.2 Inspection of Waste Containers

The condition of waste containers will be checked to verify that the containers are in good condition (i.e., free of holes and punctures). Shielded, classified, and remote-handled mixed waste is not physically inspected except for examination of the external container.

B.2.2.1.1.3 Inspection of Container Labeling

Shipment documentation will be used to verify that the containers are labeled with the appropriate Hazardous/Dangerous Waste labeling and associated markings according to the contents of the waste container.

B.2.2.1.1.4 Acceptance of Waste Containers

The 325 HWTUs personnel sign the shipment documents and retain a copy. Any discrepancies and their resolution are recorded in the waste management database and the Hanford Facility Operating Record, 325 HWTUs File.

B.2.2.2 Chemical Verification Process

The purpose of chemical verification is to verify that the waste received matches that described in the waste profile. Onsite and offsite waste received at the 325 HWTUs will receive chemical verification at the unit according to the following process.

B.2.2.2.1 Exceptions to Chemical Verification

- Laboratory reagents and commercial products such as paint, lubricants, solvent, or cleaning products are not subject to analytical verification when received in their original containers.
- Heterogeneous wastes (such as discarded machinery, shop rags, labpacks, and debris) that do not yield a representative sample are only subject to the physical screening process.
- Asbestos wastes.
- Spill cleanup wastes resulting from a spill or release of known materials.
- Wastes previously receiving chemical verification at the accumulation area (e.g. North Richland) in accordance with the requirements of this Section B.2.2.2.
- Any mixed waste with a dose rate exceeding 20 millirem/hour at contact.
- Any transuranic waste (waste containing more than 100 nanocuries/gram of transuranic isotopes).
- Any shielded, classified, or remote-handled waste.
- Waste designated for listing criteria based on process information (e.g. F001 waste identified as a used solvent).

B.2.2.2.2 Number of Verifications

Five percent of waste containers received from PNNL generating locations will receive chemical verification each month. The number of containers to be verified in any month is based on five percent of the number of containers received at the 325 HWTUs during the previous three months, divided by three, exclusive of those exempt from verification as described in Section B.2.2.2.1 above. Fractional numbers are rounded upwards. For example, if 40 qualifying containers are received in June, 50 containers in July, and 60 containers in August, an average of 50 per month, 3 containers (50 x 5% = 2.5, rounded to 3)

would be sampled and analytically verified. Note that during the first three months of operation under this WAP, the *previous three months* are the three calendar months preceding the effective date of this Permit.

Ten percent of the number of containers on any shipment from offsite (except PNNL generating locations) will receive chemical verification. If a shipment contains waste from more than one generator, ten percent of containers from each generator will receive chemical verification.

B.2.2.2.3 Selection Process

Randomly selected containers from onsite will receive chemical verification until the required number of verifications necessary for that month is accomplished. A variety of non-PNNL generating locations and waste types, if any, will be analyzed to the extent practicable. However, the number of containers selected from any given shipment will be based on the number of containers scheduled for pickup during the current month as well as the number of containers in the individual shipment that are subject to chemical verification.

B.2.2.2.4 Sampling

Waste containers selected for verification are sampled using the methods in WAC 173-303-110(2) for representative samples, or utilizing a similar method suitable to the container. For instance, to sample a one-liter bottle of homogeneous liquid, glass tubing, or a pipet would be utilized to obtain a representative sample instead of a COLIWASA. Generally, these samples are analyzed immediately, so preservation techniques are not utilized. If the samples must be stored, they will be preserved in accordance with the requirements of the analytical technique being used (Table B.2).

B.2.2.2.5 Testing Methods

The methods utilized for chemical verification at the 325 HWTUs are selected based on the appropriateness for the waste being verified. Tests performed are selected from the following:

- **Water Miscibility/Separable Organics.** Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits. These tests are not performed on materials known to be organic peroxides, ethers, and/or water reactive.
- **Oxidizers**. Performed utilizing oxidizer Hazcat© test kits per the instructions given in those kits. These tests are not performed on materials known to be organic peroxides, ethers, and/or water reactive.
- **pH** – SW-846 Method 9040, 9041, or 9045 (by pH meter or pH paper). This test will not be performed on organic liquids.
- **Cyanides** - Performed utilizing cyanide Hazcat© test kits per the instructions given in those kits.
- **Sulfides** - Performed utilizing sulfide Hazcat© test kits per the instructions given in those kits.
- **Flashpoint** - Performed utilizing flashpoint tester, e.g. Setaflash tester. Not performed on materials described as aqueous, or any solids.
- **Halogenated/Volatile Organics** - Examination with a photoionizer or flame ionizer to determine if the waste contains volatile organic compounds. Clor-D-Tect© kits may be used to detect organic halogens.

B.2.2.2.6 Quality Assurance/Quality Control for Analytical Verification

Each testing process is subject to QA/QC requirements as follows. The data quality objectives for these analyses are given in Section B.4.5.

- **Water Miscibility/Separable Organics** - Performed utilizing water solubility Hazcat© test kits per the instructions given in those kits using test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

- **Oxidizers** - Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.
- **pH** - Calibration of pH meters and pH paper is performed as required by the appropriate method being used (SW-846 method 9040, 9041, or 9045).
- **Cyanides** - Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.
- **Sulfides** - Performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.
- **Flashpoint** - The flashpoint measurement instrument is calibrated daily (when in use) using material of a known flash point and according to manufacturer's instructions.
- **Halogenated/Volatile Organics**. The photoionizer is calibrated daily (when in use) to a standard gas mixture in accordance with manufacturer's instructions. Data interpretations are performed utilizing observed data (meter readings) with adjustment as necessary based on the relative responsiveness of the waste compared to the standard mixture utilized for calibration. These adjustments are given in photoionizer manufacturer's literature. Clor-D-Tect© tests are performed according to manufacturer's instructions utilizing test kits that are not older than the expiration date specified on the kit. Data interpretations are performed utilizing the manufacturer's instructions for the test kit.

B.2.3 Waste Acceptance

Once waste items have been confirmed by physical and necessary chemical verification, as described above, the waste is considered *accepted* and placed in the designated location in the unit determined prior to pickup. Containers of dangerous waste are managed according to the requirements of Addendum C.

B.3 Selecting Waste Analysis Parameters

Physical and chemical screening parameters are chosen from those in Sections B.3.1 and B.3.2, respectively, as described in Section B.2.2.1 and B.2.2.2 of this WAP. Parameters for confirmation of designation and compliance with LDR requirements are given in Section B.3.3. Parameters, methods, and rationale for physical and chemical screening parameters and the pre-shipment review (Section B.2.1) are summarized in Table B.2.

B.3.1 Physical Screening Parameters

B.3.1.1Visual Inspection, Rationale

Waste containers (and contents visible through the container or through an easily and safely opened lid) will be examined to confirm that waste matches the physical description given in the waste profile documentation. Labeling examination also identifies waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria. For instance, an organic destined for incineration might contain acids that the intended facility does not have permit authorization to treat by DEACT.

B.3.1.2 Visual Inspection, Method

Waste containers will be inspected by trained, experienced personnel to verify that it matches the description in the profile. If the waste is a discarded product, the contents of the container will be inspected to verify that they match the description of the product. For other waste, e.g., spent solvents, waste descriptions will be compared with the products in use at the generating unit. This information will be compared to the description of the waste in the profile. If, after visual inspection of the waste and inquiry of the generating unit personnel, any doubt remains as to the identity of the waste, the waste is not picked up and is required to be re-profiled by the generator.

B.3.1.3 Visual Inspection, Failure Criteria

Waste does not correlate with the description of the waste (e.g. color, layering, and consistency).

B.3.2 Chemical Screening Parameters

B.3.2.1 Water Miscibility

Rationale: Water miscibility/separable organics testing is chosen to confirm that waste matches that described on waste acceptance documentation, identify separable organics, and/or identify waste prohibited by downstream TSD unit acceptance criteria. Not performed on organic peroxides, ether, or water-reactive wastes.

Method: Performed using water solubility Hazcat© test kits per the instructions given in those kits.

Failure Criteria: Test results do not confirm the presence or absence of constituents of interest.

B.3.2.2 Oxidizer

Rationale: The oxidizer test is performed to confirm that waste matches that described on waste acceptance documentation, and verify waste requires oxidizer management pursuant to WAC 173-303-395(1)(b) at the 325 HWTUs. Not performed on organic peroxides, ether, or water-reactive compounds.

Method: HazCat© Oxidizer Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of constituents of interest.

B.3.2.3pH

Rationale: Used to confirm that waste matches that described on waste acceptance documentation and to verify compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes. (Not used for solids or organic liquids).

Method: pH Screen SW-846 Method 9040C or 9045 (pH meter) or 9041A (pH paper).

Failure Criteria: Test result does not match the pH given in the profile within a 4.0 pH unit tolerance, or the observed pH results in a designation change (e.g. profiled as non-corrosive, but exhibits a pH $\leq$2.0 or $\geq$12.5).

B.3.2.4 Cyanides

Rationale: Confirm that waste matches that described on waste acceptance documentation; verify waste requires compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes.

Method: HazCat© Cyanide Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of cyanide.

B.3.2.5 Sulfides

Rationale: Confirm that waste matches that described on waste acceptance documentation; verify waste requires compliance with WAC 173-303-395(1)(b) concerning separation of incompatible wastes.

Method: HazCat© Sulfide Screen Test Kit

Failure Criteria: Test results do not confirm the presence or absence of sulfide.

B.3.2.6 Flashpoint

Rationale: Confirm that waste matches that described on waste acceptance documentation

Method: Flashpoint measurement instrument.

Failure Criteria: Test results do not confirm the flash point of the waste within a 5% tolerance or result in a change in designation with respect to the characteristic of ignitability.

B.3.2.7 Halogenated/Volatile Organic Compounds

Rationale: Confirm that waste matches that described on waste acceptance documentation.

Method: Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©

Failure Criteria: Test results do not confirm the presence or absence of organics (photoionizer or flame ionizer testing) or of halogenated organics (Clor-D-Tect Kits).

If a waste is determined to have failed any of the tests performed above, the discrepancy resolution process described in Section B.2.2.1.1.1.1 of this WAP is utilized to resolve the discrepancy. If the discrepancy cannot be easily resolved, the waste is returned to the generator and must be re-profiled prior to consideration for acceptance.

B.3.3 Other Analysis Parameters

The 325 HWTUs do not have any process vents that manage hazardous waste with organic concentrations of at least 10 parts per million by weight. Nor do they have pumps or compressors used more than 300 hours per year that come into contact with hazardous waste with an organic concentration of at least 10 percent by weight. As a result, no special waste analysis requirements for volatile organics are required by WAC 173-303-690 or -691.

A variety of small volume chemical wastes is generated by PNNL's research laboratory activities. These containers typically range in size from 10 ml to 5 gallons. The wastes are brought to the 325 HWTUs and segregated by compatibility for storage (refer to *incompatible waste* in the definitions section of this WAP) in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30-to 55-gallon drum. All containers having a design capacity greater than 0.1 m^3 to less than or equal to 0.46 m^3 will be equipped with a cover and will comply with all applicable DOT regulations on packaging hazardous waste for transport under 49 CFR 178.

DOT approved intermediate bulk packaging may be used for some solid (non-dangerous) wastes. These containers range in size from 0.1 cu yard (27 cu ft) to 1.6 cu yard (43 cu ft) and are approved for solid waste only. With these limitations in place, no special waste analysis requirements for volatile organics are required by WAC 173-303-692 (Subpart CC requirements).

B.4 Selecting Sampling Procedures

B.4.1 Sampling Strategies

Samples are collected for chemical screening as required by Section B.2.2.2 of this WAP. Sample collection methods conform to the representative sample methods referenced in WAC 173-303-110(2).

B.4.2 Sampling Methods

In all instances, sampling methods will conform to the representative sample method referenced in WAC 173-303-110(2), i.e., ASTM standards for solids and SW-846 for liquids. Some adaptation of the method may be necessary for small containers being sampled for chemical screening, as discussed in Section B.2.2.2.4. Exceptions to the methods may also be used if permissible pursuant to WAC 173-303-110, NRC/EPA *Clarification of RCRA Hazardous Waste Testing Requirements for Low-Level Radioactive Mixed Waste – Final Guidance* (62 Federal Register 62080, November 20, 1997), Data Quality Objectives, and/or an alternative approved by Ecology pursuant to the permit modification process. The specific sampling methods and equipment used varies with the chemical and physical nature of the waste material and the sampling circumstances.

B.4.3 Selecting Sampling Equipment

Representative samples of liquid waste from containers (vertical *core sections*) are typically obtained using a composite liquid waste sampler (COLIWASA) or tubing, as appropriate. The sampler is long enough to reach the bottom of the container in order to provide a representative sample of all phases of the containerized liquid waste. If a liquid waste has more than one phase, each phase will be separated for individual testing, depending on the waste management pathways of the phases.

Other waste types that might require sampling are sludges, powders, and granules. In general, nonviscous sludges are sampled using a COLIWASA. Highly viscous sludges and cohesive solids are sampled using a trier. Dry powders and granules are sampled using a thief.

Samplers are constructed of material compatible with the waste. In general, aqueous liquids are sampled using polyethylene samplers, organic liquids using glass samplers, and solids using polyethylene samplers. Disposable samplers are used whenever possible to eliminate the potential for cross-contamination. If non-disposable sampling equipment is used, it is decontaminated between samples as necessary to ensure subsequent samples are representative of the wastes being sampled.

B.4.4 Sample Preservation

All sample containers, preservation techniques, and hold times follow SW-846 protocol. Many samples are immediately analyzed at the 325 HWTUs or in nearby laboratories in the 325 Building and are not preserved.

B.4.5 Establishing Quality Assurance and Quality Control for Sampling

PNNL will maintain a quality-assurance program that provides management controls for conducting activities in a planned and controlled manner and enabling the verification of those activities.

The QA/QC objective of the 325 HWTUs is to control and characterize errors associated with collected data and to illustrate that waste testing has been performed according to specification in this waste analysis plan.

The data-quality objectives (DQO) for the waste sampling and data analyses are as follows:

- Determine if waste samples are representative of the contents of the containers at the time the samples were taken.
- Determine if waste accepted for storage meets the 325 HWTUs waste-acceptance criteria (Addendum B).
- Determine if waste to be accepted match the corresponding waste description in the approved waste profile.

B.5 Laboratory Selection and Quality Assurance/Quality Control

B.5.1 Evaluation of Laboratories

Laboratory selection is limited. Preference will be given to any PNNL facility or other laboratories on the Hanford Facility that exhibit demonstrated experience and capabilities in four major areas:

- Comprehensive written QA/QC program based on DOE-RL requirements specifically for that laboratory
- Audited for effective implementation of QA/QC program
- Participate in performance-evaluation samples to demonstrate analytical proficiency
- Demonstrated ability to produce analytical data meeting the data quality requirements of this WAP.

All laboratories (onsite or offsite) are required to have the following QA/QC documentation:

- Daily analytical data generated in the contracted analytical laboratories are controlled by the implementation of an analytical laboratory QA plan.
- Before commencement of the contract for analytical work, the laboratory will have its QA plan available for review. At a minimum, the QA plan will document the following:
- Sample custody and management practices
- Requirements for sample preparation and analytical procedures
- Instrument maintenance and calibration requirements

- Internal QA/QC measures, including the use of method blanks
- Required sample preservation protocols
- Analysis capabilities.

B.5.2 Quality Assurance/Quality Control Objectives

The objective of the QA/QC program is to control and characterize any errors associated with the collected data and to confirm that the data collected is adequate for its intended purpose. Quality-assurance activities, such as the use of standard methods for locating and collecting samples, are intended to limit the introduction of error. Quality-control activities, such as the collection of duplicate samples and the inclusion of blanks in sample sets, are intended to provide the information required to characterize any errors in the data. Other QC activities, such as planning the QC program and auditing ongoing and completed activities, verify that the specified methods are followed and that the QA information needed for characterizing error is obtained. To illustrate that waste testing has been performed according to requirements of this waste analysis plan, activities include:

- Field inspections performed and documented by waste management staff at the generating location. The inspections primarily are visual examinations but might include measurements of materials and equipment used, techniques employed, and the final products. The purpose of these inspections is to confirm the sufficiency and reliability of the knowledge used for the waste profile.
- Field-testing performed onsite by the 325 HWTUs staff (or designee) according to specified procedures or protocol identified by the manufacturer's instructions supplied in the field test kits.
- Laboratory analyses performed by onsite or offsite laboratories on samples of waste. The purpose of the laboratory analyses is to determine constituents or characteristics present and the concentration or level.

The 325 HWTUs will assess analytical data used for decision making according to the following quality standards, as appropriate for the data considered:

- Precision: Agreement between the collected samples/duplicates for the same parameters, at the same location, subjected to the same preparation and analytical techniques. Analytical precision also includes agreement among individual test portions taken from the same sample.
- Accuracy: Agreement between the observed data and the result of QA samples (e.g. certified standards, in-house standards, and performance evaluation samples).
- Representativeness: The degree to which the data accurately represent the waste stream. Criteria evaluated include number and adequacy of sampling locations, use of appropriate sampling and analytical methods, and documentation of environmental conditions at time of sampling.
- Completeness: Amount of data obtained versus amount requested.
- Comparability: Ability to compare one data set to another. Usually addressed by evaluating proper use of standard methods prescribed in this WAP.

These practices verify that all data and the decisions based on that data are technically sound, statistically valid, and properly documented.

The primary purpose of waste testing is to confirm the waste is acceptable for treatment or storage at the 325 HWTUs in compliance with the requirements of this WAP. Waste testing also is performed to verify the safe management of waste being stored and control of the acceptance of waste for storage. The specific objectives of the waste-sampling and analysis program at the 325 HWTUs are as follows:

- Identify the presence of waste that is incompatible with waste currently stored.
- Provide a detailed chemical and physical analysis of the waste before the waste is accepted at the 325 HWTUs to ensure proper management and disposal.
- Provide an analysis that is accurate and up-to-date.

- Ensure safe management of waste undergoing storage at the 325 HWTUs.
- Demonstrate compliance with applicable LDR treatment standards for waste treated at the 325 HWTUs.
- Identify and reject waste that does not meet the 325 HWTUs acceptance requirements (e.g., incomplete information).

B.5.3 Laboratory Quality Assurance/Quality Control

All analytical work performed by independent laboratories is defined and controlled by a Statement of Work which is prepared in accordance with administrative procedures and requirements of this WAP. The daily quality of analytical data generated in the analytical laboratories will be controlled by the implementation of an analytical laboratory QA plan. At a minimum, the plan will document the following:

- sample custody and management practices
- requirements for sample preparation and analytical procedures
- instrument maintenance and calibration requirements
- internal QA/QC measures, including the use of method blanks
- required sample preservation protocols following receipt of samples at the laboratory
- analysis capabilities

The types of internal quality-control checks are as follows and are used as specified in the analytical laboratory's program as described in Section B.5.1:

- Method Blanks–Method blanks usually consist of laboratory reagent-grade water treated in the same manner as the sample (i.e., digested, extracted, distilled) that is analyzed and reported as a standard sample.
- Method Blank Spike–A method blank spike is a sample of laboratory reagent-grade water fortified (spiked) with the analytes of interest, which is prepared and analyzed with the associated sample batch.
- Laboratory Control Sample–A QC sample introduced into a process to monitor the performance of the system.
- Matrix Spikes–An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis.
- Laboratory Duplicate Samples–Duplicate samples are obtained by splitting a field sample into two separate aliquots and performing two separate analyses on the aliquots. The analyses of laboratory duplicates monitor the precision of the analytical method for the sample matrix; however, the analyses might be affected by nonhomogeneity of the sample, in particular, by nonaqueous samples. Duplicates are performed only in association with selected protocols. Duplicates are performed only in association with selected protocols. Laboratory duplicates are performed on 5 percent of the samples (1 in 20) or one per batch of samples. If the precision value exceeds the control limit, then the sample set must be reanalyzed for the parameter in question.
- Known QC Check Sample–This is a reference QC sample as denoted by SW-846 of known concentration, obtained from the EPA, the National Institute of Standards and Technology, or an EPA-approved commercial source. This QC sample is taken to check the accuracy of an analytical procedure. The QC sample is particularly applicable when a minor revision or adjustment has been made to an analytical procedure or instrument. The results of a QC-check standard analysis are compared with the true values, and the percent recovery of the check sample is calculated.
- PNNL Analytical Chemistry Laboratory QA/QC

PNNL's analytical chemistry laboratory may need to be used to analyze samples of potentially radioactive dangerous waste. It has a rigorous QA plan that verifies that data produced are defensible, scientifically valid, and of known precision and accuracy, and meets the requirements of its clients.

B.5.4 Data Assessment

Analytical data will be communicated clearly and documented to verify that laboratory data-quality objectives are achieved.

- The acquired data need to be scientifically sound, of known quality, and thoroughly documented. The DQOs for the data assessment are in Section B.5.2.

B.6 Selecting Waste Re-Evaluation Frequencies

B.6.1 Periodic Re-Evaluation

Periodic re-evaluation is an evaluation of a waste stream that provides verification that the results from the initial verification are still valid. Periodic re-evaluation of a waste stream also checks for changes in the waste stream. Most waste stream containers are individually profiled, and hence subject to both physical and chemical analysis as described in Section B.2.2.1 and B.2.2.2 of this WAP, each time they are received at the 325 HWTUs. Any waste stream received by the 325 HWTUs not re-profiled each time containers of that waste stream are submitted (i.e. *standing profiles*) will be re-evaluated at least annually.

B.6.2 Re-Evaluation for Cause

Re-evaluation of a waste stream under a *standing profile* will also be required if any of the following occur:

- The 325 HWTUs personnel have reason to suspect a change in the waste, based on inconsistencies in packaging, labeling, or visual inspection of the waste.
- The information submitted previously does not match the characteristics of the waste submitted as identified through fingerprint testing.
- The process generating the waste changes.

B.7 Special Waste Analysis Procedural Requirements

B.7.1 Procedures for Receiving Onsite and Offsite Waste

Most of the waste stored at the 325 HWTUs is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. Additional requirements for waste generated off the Hanford Site include proper manifesting (if required) to the 325 HWTUs and proper packaging for transport over public roadways. Offsite waste will be subject to more stringent chemical verification (Section B.2.2.2.2). Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to the 325 HWTUs on roads accessible to the public, it is under the same administrative controls as wastes that are generated onsite (i.e., in the 300 Area).

The procedures for receiving waste at the 325 HWTUs are in Section B.2.

B.7.2 Provisions for Complying with Land Disposal Restriction Requirements

The *Dangerous Waste Regulations* prohibit the land disposal of certain types of wastes. Most of the waste types stored at the 325 HWTUs fall within the purview of these LDRs. Occasionally, treatment takes place that is intended to meet the applicable LDRs for a stored waste. Information presented below describes how generators and the 325 HWTUs personnel characterize, document, and certify waste subject to LDR requirements.

B.7.2.1Waste Treatment

Permitted waste treatment occurs at the 325 HWTUs. Waste received may or may not meet the applicable LDR treatment standards determined during the acceptance process (Section B.2). Waste received for storage that does not meet the applicable LDR treatment standards at the *point of generation* will receive treatment at the 325 HWTUs, and/or by offsite facilities.

Shipments of waste shall not be accepted from any non-PNNL generator without required LDR certification accompanying each shipment. For waste received from non-PNNL generators, the 325 HWTUs shall receive the information required by WAC 173-303-140 regarding LDR wastes. The generator must sign the LDR certification.

The types and quantities of waste treated at the 325 HWTUs are described in Addendum A. When these treatments are performed to meet applicable LDR treatment standards, the requirements of this section apply.

Since treatments conducted at the 325 HWTUs are generally conducted as small bench-scale operations (except for in-tank treatments), trace contaminants in wastes are usually not a threat to the safety or conduct of these treatments. However, before accepting waste for treatment via thermal treatment (T11-T18) or biological treatment (T67-T77) technologies given in WAC 173-303-380(2)(d), 325 HWTUs staff will review, and amend if necessary, this WAP to include any additional data needs expected to be triggered by those technologies and the need to demonstrate compliance with applicable LDR treatment standards.

B.7.2.2 Sampling and Analytical Methods

Testing of treated waste will be performed as provided in 40 CFR 268.7(b) according to the treatment standards of 40 CFR 268.40, incorporated by reference into WAC 173-303-140, and incorporated into this Permit by this reference. Sampling methods for treated wastes will be chosen from the methods given in Section B.4 appropriate to the treated waste. Analytical methods used to confirm that the specified treatment standard(s) of 40 CFR 268.40 (incorporated by reference into WAC 173-303-140, and incorporated into this Permit by this reference) and any applicable state-specific LDRs will be selected from the methods specified in WAC 173-303-110(3) as appropriate for the treated waste being analyzed.

Since most wastes are submitted as individual waste streams, sampling and analysis of treated waste will be performed on each batch as specified in 40 CFR 268.40(b), incorporated by reference into WAC 173-303-140, and incorporated by this reference into this Permit.

B.7.2.3 Land Disposal Restriction Certification of Treatment

Permitted waste treatment occurs at the 325 HWTUs. Certification of treatment related to waste treated at the 325 HWTUs will be managed in accordance with the recordkeeping process described in Section B.8.

B.8 Recordkeeping

Records associated with the waste-analysis plan and waste-verification program will be maintained by the waste-management organization and must be placed in the Hanford Facility Operating Record, 325 HWTUs File. A copy of the profile for each waste stream accepted at the 325 HWTUs will be placed in the Hanford Facility Operating Record, 325 HWTUs File. Organizational units associated with generator activities maintain their sampling and analysis records. The waste analysis plan will be revised through the permit modification process whenever regulation changes affect the waste analysis plan.

The 325 HWTUs have and will continue to receive and store restricted or prohibited waste. Because the 325 HWTUs personnel verify designations and characterization, including LDR determinations, qualified staff for PNNL-generated waste will prepare all notifications and certifications according to requirements of 40 CFR 268, which are incorporated by reference into WAC 173-303-140, and incorporated by this reference into this Permit. The 325 HWTUs staff collects information from generators via the waste profile to assure that applicable LDR treatment standards have been properly identified, as well as any information documenting compliance with applicable LDR treatment standards. The notifications and certifications are submitted to onsite and offsite TSD units during the waste-shipment process. Additionally, any necessary LDR treatment variance requests are prepared by PNNL qualified staff for U.S. DOE submittal to Ecology for approval.

The 325 HWTUs staff require applicable LDR information/notifications from non-PNNL generators.

Where a restricted or prohibited waste does not meet the applicable treatment standards set forth in 40 CFR 268, Subpart D, the 325 HWTUs provide to the onsite dangerous waste management unit or offsite TSD facility a written notice that includes the information required by 40 CFR 268.7.

In instances where the 325 HWTUs staff determine that a restricted waste is being managed that can be land-disposed without further treatment, the 325 HWTUs staff submit a written notice and certification to the onsite dangerous waste management unit or offsite TSD facility where the waste is being shipped, stating that the waste meets applicable treatment standards set forth in 40 CFR 268, Subpart D, which are incorporated by reference into WAC 173-303-140, and includes the information required by 40 CFR 268.7. These standards are incorporated by this reference into this Permit.

The certification accompanying any of the notices previously described is signed by an authorized representative of the generator and states the following:

> I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in *40 CFR 268*, Subpart D and all applicable prohibitions set forth in *40 CFR 268*.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Certifications and notifications of treatment are prepared and submitted in accordance with the applicable requirements of 40 CFR 268.7(b), which are incorporated by reference into WAC 173-303-140, and incorporated by this reference into the Permit.

Copies of all notices and certifications described are placed in the Hanford Facility Operating Record, 325 HWTUs File and retained for at least 5 years from the date that the waste was last sent to an onsite dangerous waste management unit or offsite TSD facility. After that time, the notices and certifications are sent to Records Storage.

B.9 References

U.S. Environmental Protection Agency. 1994. *Waste Analysis At Facilities That Generate, Treat, Store, And Dispose of Hazardous Waste: A Guidance Manual*. OSWER 9938.4-03, Washington, DC.

Washington Administrative Code. 2005. *Dangerous Waste Regulations*. WAC 173-303, Olympia, WA.

Washington Department of Ecology. 2009. *Hanford Facility Resource Conservation and Recovery Act Permit*, Revision 9, as amended.

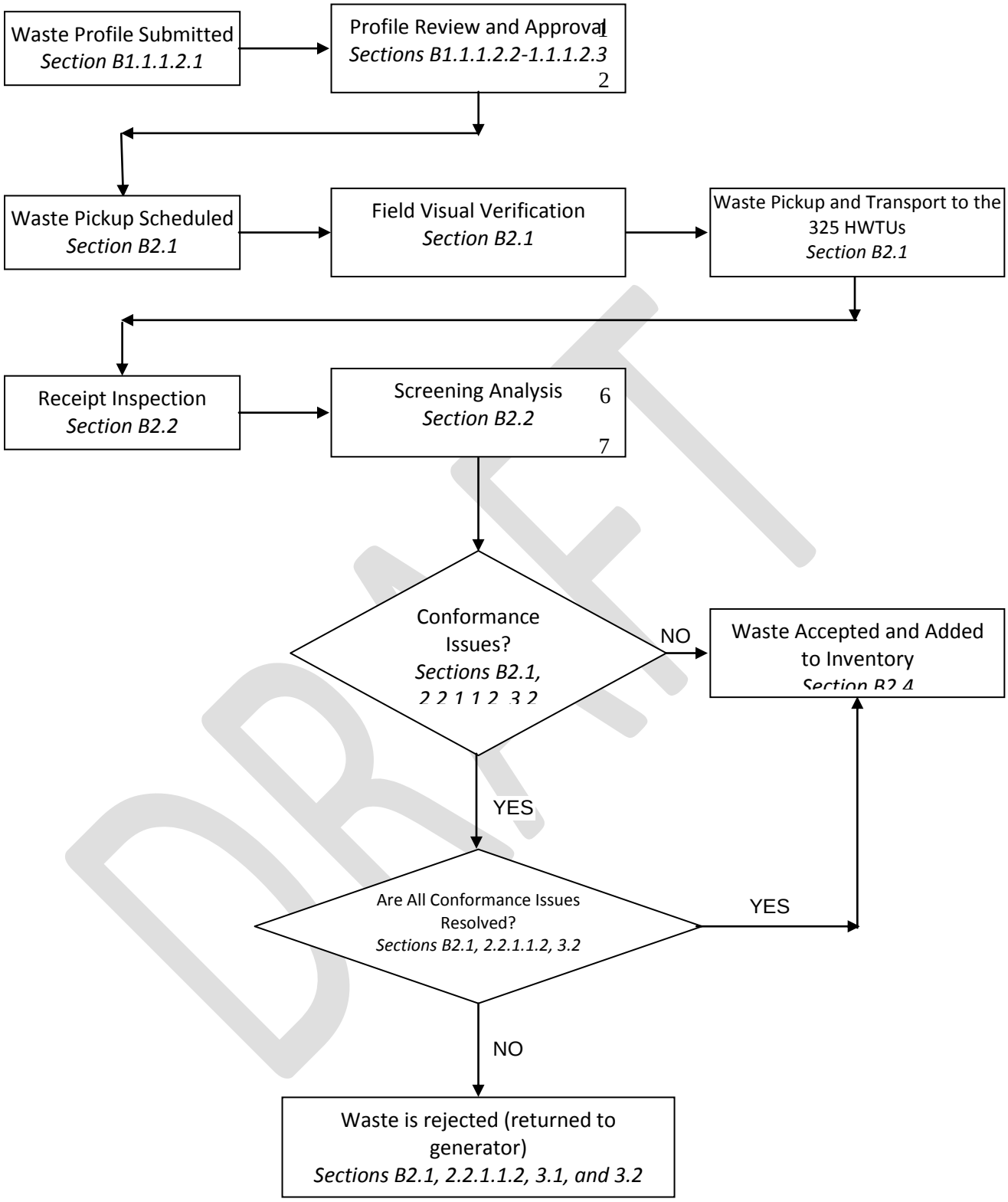

Figure B.1. Waste Confirmation and Acceptance Process for the 325 HWTUs

Table B.1. Waste Compatibility Chart

Class or Division1		Notes	1.1 1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3 Gas Zone A	2.3 Gas Zone B	3	4.1	4.2	4.3	5.1	5.2	6.1 Liquids PGI Zone A	7	8 Liquids Only
Explosives	1.1 1.2	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.3		*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Explosives	1.4		*	*	*	*	*	O		O	O	O		O				O		O
Very insensitive explosives	1.5	A	*	*	*	*	*	X	X	X	X	X	X	X	X	X	X	X	X	X
Extremely insensitive explosives	1.6		*	*	*	*	*													
Flammable gases	2.1		X	X	O	X				X	O							O	O	
Non-toxic, non-flammable gases	2.2		X			X														
Poisonous gas Zone A	2.3		X	X	O	X		X				X	X	X	X	X	X			X
Poisonous gas Zone B	2.3		X	X	O	X		O				O	O	O	O	O	O			O
Flammable liquids	3		X	X	O	X				X	O					O		X		
Flammable solids	4.1		X			X				X	O							X		O
Spontaneously combustible materials	4.2		X	X	O	X				X	O							X		X
Dangerous when wet materials	4.3		X	X		X				X	O							X		O
Oxidizers	5.1	A	X	X		X				X	O	O						X		O
Organic peroxides	5.2		X	X						X	O							X		O
Poisonous liquids PG I Zone A	6.1		X	X	O	X		O				X	X	X	X	X	X			X
Radioactive materials	7		X			X		O												
Corrosive liquids	8		X	X	O	X				X	O		O	X	O	O	O	X		

Key

Notation	Description
(blank)	No incompatibility restrictions apply; materials may be stored together. Also true for any hazard class not shown (e.g. state-only dangerous waste)
X	Materials may not be stored together in the same cell; separate secondary containment is required.
O	Materials may not be stored together in the same secondary containment, but may be stored in the same cell if necessary, provided individual secondary containment devices are provided.
*	Explosives compatibility is described in 49 CFR 174.81(f) (refer to Table given there)
A	Notwithstanding the 'X' in the table, ammonium nitrate fertilizer may be stored with Division 1.1 or 1.5 materials if necessary.

Source: 49 CFR 174.81

1 For definition of these hazard classes, refer to 49 CFR 173.2.

Table B.2. Summary of Test Parameters, Rationales, and Methods

Parameter[a]	Method[b]	Rationale for Selection
Physical Screening		
Visual inspection	Field method–observe phases, presence of solids in waste	Confirm that waste matches that described on waste acceptance documentation; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Chemical Screening		
Water miscibility/separable organics (c)	Water solubility Hazcat© test kits	Confirm that waste matches that described on waste acceptance documentation; identify separable organics; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Oxidizer	Oxidizer Screen Hazcat© test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b).
pH	pH screen SW-846 Method 9040, 9041, or 9045	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b).
Cyanides	Cyanide screen Hazcat© test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b).
Sulfides	Sulfide screen Hazcat© test kits	Confirm that waste matches that described on waste acceptance documentation; verify compliance with WAC 173-303-395(1)(b).
Flashpoint	Flashpoint measurement instrument	Confirm that waste matches that described on waste acceptance documentation.
Halogenated/Volatile Organic Compounds	Photoionizer or Flame Ionizer, or Clor-D-Tect Kits©	Confirm that waste matches that described on waste acceptance documentation.
Pre-Shipment Review		
Mercury (total)	Generator knowledge or SW-846 Method 7470/7471	Identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Toxicity characteristic organic compounds (d)	Generator knowledge or SW-846 Methods 1311 and 8260 (volatile organic compounds) and 8270 (semivolatile organic compounds)	Identify waste not identified in Addendum A, Part A Form.
Polycyclic aromatic hydrocarbons	Generator knowledge or SW-846 Method 8270 or 8100	Identify waste not identified in Addendum A, Part A Form, (for waste with >1% solids and for which WP03 could apply).

(a) Addition parameters can be used on current waste acceptance criteria of the downstream TSD unit. Operation limits transfer/shipments are based on current waste acceptance criteria.
(b) Procedures based on EPA SW-846, unless otherwise noted. When regulations require a specific method, the method shall be followed.
(c) These tests will not be performed on materials known to be organic peroxides, ether, and/or water reactive compounds.
(d) This test is only performed on waste to be stored in tank TK-1 in addition to any other appropriate chemical screening.

Table B.3. Sample Chemical Disposal/Recycle Request

Field Chemical Disposal/Recycle Request

Print

Delete

Generator: _____ PR #: _____ WP#: _____

Location of Waste (Area/Bldg/Rm) _____ Location Details: _____

Contract: _____ Type of Area: ☐ 90-Day ☐ SAA Accumulation Date: _____ ☐ Sewer Approval: ☐ Annual ☐ One-time

Type of Waste: ☑ Non-Radioactive ☐ Recycle ☐ Non-RCRA PCE PCB OOS Date: _____ includes: ☐ BSL1 ☐ BSL2

☐ Radioactive ☐ Redistribute Bio Work Permit #: _____

Discharge Rate: _____

Generator ID (Container No.)	Container Type	Container size	Container Status	Waste Description	Physical State	Material Status	Waste Weight	Waste Volume	pH	Chemical Constituents	Wt% or ppm

Generator's Signature: _____ PR#: _____ Date: _____

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