Section I
Closure Plan and Financial Assurance

Section I — Closure Plan and Financial Assurance

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Section I – Closure Plan and Financial Assurance WAC 173-303-610(3); -620; -806(4)(a)(xiii) & (xv) & (xvii)

1. Introduction

1.1. This section has been prepared for the Permitted Unit located at the Bonneville Power Administration Ross Complex in Vancouver, Washington. The closure plan was developed in accordance with the Washington Department of Ecology (Ecology) document titled Guidance for Clean Closure of Dangerous Waste Facilities, Publication #94-111, Revised May 2005.

1.2. This Closure Plan applies only to those portions of the Hazardous Material Building Z-1255 (HMB) that manage Resource, Conservation, and Recovery Act (RCRA) or Washington Department of Ecology regulated waste. This permit application does not apply to areas of the HMB that manage waste regulated by the Toxic Substances Control Act (TSCA). Section 5 (Closure Plan/Financial Assurance for Closure) and Section 11 (Liability Requirements) will be included as conditions in the permit issued for the Ross Complex.

1.3. The anticipated closure date of the HMB is more than 10 years in the future. BPA recognizes that performance and decontamination standards at that time may be significantly different from those existing today.

2. HMB Description

2.1. The HMB was designed and built for the sole purpose of handling and consolidating dangerous/hazardous wastes and PCBs. The RCRA and TSCA waste storage areas in the building are operated for the purpose of storage only, pending shipment to off-site recycling or disposal facilities. No waste treatment occurs at the HMB.

2.2. The HMB was designed to receive and remove wastes at the truck loading and unloading area. The loading/unloading area, which is covered and surfaced with sealed concrete, was designed and built with a secondary containment system to capture any liquid material should an unplanned release occur in this area. The area surrounding the loading/ unloading area is paved with asphalt. Wastes are loaded/unloaded under the covered area and inside the secondary containment system.

2.3. The Permitted Unit consists of four areas that manage or store dangerous waste:

- Covered Loading and Unloading Area
- Shipping and Receiving Area (Room 103)
- Waste Storage Area (Rooms 100 and 102)
- Bulking Room (Room 104)

2.4. These areas are described in more detail in Section 5.2.2, Maximum Extent of Operations.

2.5. Post-closure care and monitoring are not anticipated because dangerous waste and dangerous waste residues will be removed or decontaminated during closure operations. This Closure Plan contains the information necessary to implement a routine clean closure of the HMB at the end of its operating life or at any time during its active life.

2.6. The following steps will be used to close the Permitted Unit:

- Notification of Ecology by letter at least 45 days before final closure activities will begin
- Removal of waste inventory
- Review of operating records for historical spills
- Notification of Ecology of the upcoming inspection of the floor areas for cracks and gaps
- Visual inspection of the floor of the areas detailed above for stains, cracks, and gaps
- Visual inspection of the secondary containment sumps for stains, cracks, and gaps
- Decontamination of the Permitted Unit and related equipment
- Core/chip sampling of concrete surfaces
- Collection of soil samples beneath slab in areas listed in the Sampling and Analysis Plan (SAP)
- Disposal of contaminated materials, such as media generated during cleanup

2.7. Decontamination of the HMB during closure will comply with the debris standard closure requirements described in Ecology's Guidance for Clean Closure of Dangerous Waste Facilities (1994, revised 2005).

3. Amendments to Closure Plan [-610(3)(b)]

3.1. BPA will revise and submit an amended copy of the Closure Plan to Ecology under the following conditions:

- Changes are made in operating practices or the HMB design that affect the Closure Plan; or
- Unexpected events occur during closure that affect the Closure Plan.

3.2. If revisions are necessary, BPA will send the request for permit modification and amended Closure Plan within the following time frames:

- At least 60 days before a proposed change in the HMB design or operation is expected to occur;
- Within 60 days of an unexpected change in the HMB design or operation; or
- Within 30 days of an unexpected event that occurs during the closure period; and
- At least 60 days before planned closure activities, BPA will submit a revised Sampling and Analysis Plan (Attachment I-1).

4. Notification of Final Closure [-610(3)(c)]

4.1. BPA will notify Ecology by letter at least 45 days before final closure activities are expected to begin.

5. Closure Plan/Financial Assurance for Closure[-610(3)(a);-620(1)(a)]

5.1. Closure Performance Standard [-610(2)]

5.1.1. This section identifies the steps necessary to completely or partially close the Permitted Unit at any point during its active life and specifies the cleanup standards that will be achieved. This section describes the closure performance standards to be met during routine closure of the HMB. BPA intends to clean-close the HMB to minimize the need for further maintenance and post-closure care. WAC 173-303-610(2)(a) requires that closure be performed in a manner that accomplishes the following:

- Minimizes the need for further maintenance;
- Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere; and
- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the dangerous waste activity.

5.1.2. These goals will be accomplished by removing the dangerous waste from the HMB and removing or decontaminating the surfaces areas, equipment, and structures or other materials containing or contaminated with dangerous waste or waste residues.

5.1.3. Per 173-303-610(2)(b)(i) and (ii), for concrete and soil, the goal of the closure will be to achieve the Model Toxics Control Act (MTCA) regulations (WAC 173-340-700) for a residential cleanup scenario. Constituents detected during the closure process will be compared to substance cleanup levels calculated using Ecology's Method B – Standard Method to establish a reasonable maximum exposure scenario. The cleanup level for individual hazardous substances will be established using the risk equations specified in WAC 173-340-720 through 750, excluding WAC 173-340-745. A residential cleanup level will be calculated for each hazardous substance that is detected during the closure process. Where multiple hazardous substances are involved, Method B cleanup levels for individual substances will be modified in accordance with the procedures in WAC 173-340-708. If appropriate, MTCA Method A cleanup levels may be used. To be appropriate, the site must meet WAC 173-340-700(5)(a).

5.1.4. The following performance standards will be implemented.

5.1.4.1. Clean debris surface means that the surface, when viewed without magnification, will be free of all visible contaminated soil and dangerous waste, with the exception that visual staining from soils and waste consisting of light shadows, slight streaks, or minor discolorations, and soil

and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits will be limited to no more than 5 percent of each square inch of surface area. This approach is consistent with Ecology's clean-closure guidance for routine closure of aboveground structures. High-pressure steam and water sprays will be applied using sufficient temperature, pressure, residence time, agitation, surfactants, and detergents to remove hazardous contaminants from debris surfaces or to remove contaminated debris surface layers.

5.1.4.2. After high-pressure steam washing, the Permitted Unit's floor will be chip sampled to confirm the building has met the clean-closure performance standard.

5.1.4.3. High-pressure washing and confirmation chip sampling are the preferred methods to protect the integrity of the expensive epoxy coating installed on the concrete floor. Furthermore, the epoxy coating and diamond plate metal floors in the loading/unloading area provide an impervious surface so that the concrete will not absorb any spilled materials. In addition, all seeps, drips, and spills will be mitigated at the time they are encountered during operation to remove residual contamination from the flooring.

5.1.4.4. Since all the dangerous waste activities will occur within the confines of the HMB, the doors are curbed, and secondary containment will restrict contaminant migration, BPA does not intend to sample groundwater or air for comparison to closure performance standards. At the time of closure, BPA will review the operating record to document that all spills were mitigated and that cracks and chips were sealed as provided in Table F-2. This information will be evaluated in order to identify concrete chip samples and underlying soil sample locations.

5.1.4.5. BPA will use a combination of area-wide sampling and focused (biased) sampling to verify that decontamination of the aboveground structures was successful. A grid sampling system will be used, and the spacing will be tailored based on the size of each room or area to be sampled. Concrete chip samples will be collected following decontamination. One random chip surface sample (>1/4-inch in depth) will be collected from each individual cell within the grid system.

5.1.4.6. The analytical program will be designed around the types of wastes stored or handled in each room or area. Over time, the storage areas may change; therefore, 60 days before closure BPA will assess each storage area to determine which analytic methods should be performed.

5.1.4.7. BPA will make a determination of "clean" subsequent to verifying that the sampling results indicate no residual contamination exists above the established or calculated MTCA cleanup levels. Figure I-1 depicts the planned clean-closure performance process.

5.2. Closure Activities [610(3)(a)(i) – (ix)]

5.2.1. Scope of Closure

5.2.1.1. The scope of this Closure Plan is final closure of the HMB. No partial closure is expected. Final closure of the HMB will consist of activities undertaken to satisfy the requirements of WAC 173-303-610. The activities for final closure are described below.

5.2.1.2. All dangerous waste inventory in the HMB will be removed and transported to a permitted RCRA Treatment, Storage, and Disposal Facility (TSDF). Transport of the waste to a commercial TSDF for treatment or disposal will be consistent with current BPA operating procedures. For the purposes of cost estimating, current disposal costs have been used.

5.2.1.3. The HMB will be decontaminated. Plastic, concrete, and metal surfaces will be decontaminated by high-pressure water washing. Sampling of concrete will confirm if residual contamination remains at the site.

5.2.1.4. After high-pressure washing, if the concrete surfaces contain residual contamination above clean-closure levels specified in Section 5.2.4, then BPA will perform focused decontamination using an alternative treatment standard for hazardous debris as specified in 40 CFR 268.45, Table 1. Before additional decontamination is carried out, the horizontal and vertical extent of the residual contamination will be determined through chip/core sampling, whichever is appropriate.

5.2.1.5. Soil sampling will be conducted, as follows:

- At locations where constituents were detected in concrete chip samples above the cleanup level
- Random locations at a minimum of every 3,000 square feet, or within each secondary containment “unit” or room within the Permitted Unit
- The midpoint or lowest point of each containment sump
- The midpoint or lowest point of each trench
- Any location where documented floor damage (such as significant cracks as defined in Section F, Procedures to Prevent Hazards) exists or was repaired, or
- Any area where a significant spill resulted in deterioration of the floor coating and repair, or stains.

5.2.1.6. When closure activities begin, the storage areas and associated equipment will be decontaminated. The pressure water rinsate or other decontamination medium generated from the final decontamination will be collected, characterized, and disposed of in accordance with applicable solid or dangerous waste regulations. Characterization will be completed within

90 days and will be used to evaluate disposal options. For cost-estimating purposes, it was assumed that the decontamination medium would be disposed of at a RCRA-permitted TSDF.

5.2.2. Maximum Extent of Operations

5.2.2.1. Description and Background

5.2.2.1.1. The HMB was constructed in 1993 for the sole purpose of storing and consolidating hazardous substances and wastes.

5.2.2.1.2. On occasion, the area surrounding the Covered Loading and Unloading Area was used to load or unload waste in containers because the truck transporting the dangerous/hazardous waste did not fit under the covered storage area. No spills of dangerous waste have occurred during loading/unloading outside of the covered area. This area will be closed independent of this Part B permit application. This area is not considered part of the maximum extent of operations for the purposes of this closure plan.

5.2.2.1.3. Waste categories include organic and inorganic wastes that are RCRA-listed and dangerous wastes (primarily from non-specific sources) or exhibit certain hazardous characteristics. The four areas of dangerous waste activities are described below. General categories of waste handled and stored at the HMB include chlorinated and non-chlorinated solvents; paint/solvent mixtures; lubricating, motor, hydraulic, turbine, compressor, and low-level PCB-containing oils; alcohols; pentachlorophenol and other phenolics; herbicides; pesticides; inorganic acids; antifreeze; kerosene; jet fuel; gasoline; and contaminated soils.

5.2.2.2. Covered Loading and Unloading Area

5.2.2.2.1. The Covered Loading and Unloading Area is used for loading and unloading of transport vehicles. Regulated wastes are not stored in this area, except for short periods during loading and unloading of transport vehicles. Incoming waste containers are immediately moved into the Shipping and Receiving Area.

5.2.2.2.2. The Loading and Unloading Area floor is constructed of concrete and surrounded with a secondary containment sump. The floor is sloped to prevent runoff and run-on.

5.2.2.3. Shipping and Receiving Area (Room 103)

5.2.2.3.1. The Shipping and Receiving Area is used for initial in-processing[1] of regulated wastes once the containers are unloaded from the transport vehicles, and for pre-transport processing of outgoing waste shipments. For incoming wastes, BPA Material Handlers confirm and process shipping and manifest papers, weigh each container, apply unique tracking labels to each container, and transfer the containers to the appropriate room in the Dangerous Waste Storage Area. Similarly, when waste is shipped, the area functions as a staging location during movement of containerized wastes from the storage area to transport vehicles.

5.2.2.3.2. The Shipping and Receiving Area is located immediately inside the Loading and Unloading Area and immediately adjacent to the Dangerous Waste Storage Area. The area has a welded-seam aluminum check-plate floor covering over the reinforced concrete building floor, and a chemical-resistant coated, reinforced concrete containment trench that runs along the exterior perimeter of the room. The floor is gently sloped to the north to provide positive drainage toward the containment trenches should a release or minor spill occur. HMB personnel may temporarily stage incoming or outgoing shipments in the Shipping and Receiving Area (up to 32, 55-gallon containers or 1,760 gallons)

5.2.2.4. Waste Storage Area (Rooms 100 and 102)

5.2.2.4.1. The Permitted Unit is located in the southeast section of the HMB and is used for storage of containerized regulated wastes. The area is divided into separate storage areas:

- Room 100 – Ignitable/flammable waste
- Room 102A – Corrosives (pH ≤ 2, acid waste)
- Room 102B – Corrosives (pH ≥ 12.5, bases/caustic waste)
- Room 102C – Pending Analysis Results
- Room 102D – State-Only Dangerous Waste and RCRA TCLP Waste

[1] The term "processed" used here means administratively processed—that is, completion of paper work, weighing, labeling, and physically placing the container or waste into the compatible Dangerous Waste Storage Area.

5.2.2.4.2. The total capacity of the Permitted Unit waste storage area is 31,240 gallons of regulated waste (approximately 568, 55-gallon containers).

5.2.2.5. Bulking Room (Room 104)

5.2.2.5.1. The Bulking Room is used for consolidating and repackaging wastes that are contained in partially filled containers into fewer drums, or when a number of small containers can be conveniently packaged into a single, larger container (for example, lab packs). Only wastes with the same waste codes or wastes that are compatible with one another are repackaged together. BPA Material Handlers use a mechanical drum manipulator to facilitate handling containers during consolidation and repackaging activities. The drum manipulator's rated capacity is 1,200 pounds, and it is mounted on overhead rails. The room also includes a drum crusher/compactor that is used to compact waste solids and to crush empty drums.

5.2.2.5.2. Though containers of regulated waste are not stored in the Bulking Room, up to eight, 55-gallon containers (440 gallons) could be staged during waste consolidation and bulking operations.

5.2.3. Removing Dangerous Wastes

5.2.3.1. No additional dangerous wastes will be accepted at the HMB after formal notification to proceed with closure is given. Upon initiation of final closure, the inventory at the HMB will be transported off the site for disposal at a permitted TSDF consistent with current HMB operating procedures. All wastes to be transported off the site will be packaged and labeled in accordance with applicable U.S. Department of Transportation (DOT) regulations (49 CFR 172). A dangerous waste manifest will accompany each shipment of dangerous waste, as described in BPA's Identified Waste Stream (IWS) Handbook, that is consistent with WAC 173-303-610.

5.2.4. Decontaminating Structures, Equipment, and Soil

5.2.4.1. Description

5.2.4.1.1. The following subsections describe the decontamination and removal procedures to be used during closure of the HMB. In general, closure of the facility will consist of decontamination of the floors, secondary containment structures, and other interior surfaces described in Section 5.2.2, Maximum Extent of Operations. The specific closure activities are described below. At this time, it is assumed that all work will be performed by qualified BPA personnel or contractors.

5.2.4.2. Decontamination Procedures

5.2.4.2.1. As an expansion to Figure I-1, the decontamination procedures are listed below.

5.2.4.2.2. Notify Ecology of closure and specify when the inspection of floor will occur so an Ecology representative can be present, if desired by the agency.

5.2.4.2.3. Clear the storage areas of portable equipment, pallets, containers, etc.

5.2.4.2.4. Visually inspect the floor or walls and identify all cracks or other openings through which waste, debris, or decontamination media (such as wash water) could be released to the environment through the slab. Also identify the presence of any stained areas and document the location and size of any cracks or other openings and stained areas in the field records for the day of the inspection. If cracks or other openings are found, seal the cracks with an epoxy or equivalent sealer before decontaminating the walls around the unit. Review operating records and document any spills or floor repairs where waste could have penetrated underlying soils.

5.2.4.2.5. Inspect the secondary containment sumps and identify all cracks or other openings through which waste, debris, or decontamination media (such as wash water) could be released to the floor. Also identify the presence of any stained areas and document the location and size of any cracks or other openings and stained areas in the field records for the day of the inspection. If cracks or other opening are present, they will be sealed consistent with current operating procedures and HMB design and construction specifications.

5.2.4.2.6. Revise the Sampling and Analysis Plan (Attachment I-1) to reflect results of the inspections. The plan will also contain a grid of planned sampling locations and the sample QA/QC that will be performed. If no cracks or other openings in the floor, walls, or secondary containment sumps or stained areas on the floors, walls, or containment sumps are found, then soil sampling will be limited to beneath sumps and trenches and to areas of historical spills and historical significant cracks or stains.

5.2.4.2.7. Proceed with pressure washing at the discretion of Ecology.

5.2.4.2.8. Encapsulate the work area by closing doors or by hanging cloth drapes or heavy-duty plastic, and secure loose ends as appropriate so that emissions from decontamination are minimized.

5.2.4.2.9. Surround doors to rooms not requiring decontamination with absorbent or temporary berms so that runoff does not enter these rooms.

5.2.4.2.10. Decontaminate concrete, metal, and plastic surfaces of the Permitted Unit using commercial steam cleaning or high-pressure washing equipment. Monitor containment sump in the Shipping and Receiving Area at the weir to verify that wash water does not breach the weir and enter the containment sumps of the PCB storage room.

5.2.4.2.11. Collect the rinsate in secondary containment structures. Pump out the secondary containment structures during decontamination as often as required during closure activities so that overtopping does not occur. Collect the rinsate water using a vacuum or portable pump and place into 55-gallon drums. Rinsate water will be managed as described in Section 6, Disposal of Residues, Rinsates, or Debris.

5.2.4.2.12. Reinspect the handling and storage areas for stains. Document the location of the stain.

5.2.4.2.13. Using a grid system, perform area-wide sampling in all rooms/areas listed in Section 2.3. Then perform biased concrete chip sampling per Section 6.3, Sampling to Determine Decontamination of Structures and Soil. All sampling and analysis will be performed in accordance with the Sampling and Analysis Plan (Attachment I-1).

5.2.4.2.14. If contamination remains above the Closure Performance Standard outlined in Section 5.1, based on results of sampling, perform additional focused sampling and analysis to delineate the vertical and horizontal extent of the contamination. BPA will submit this data to Ecology for review. Areas with no contamination detected above the method reporting limit or above the Closure Performance Standard will be considered decontaminated and "clean."

5.2.4.2.15. Based on the results of the delineation(s), consult Ecology regarding selection of the appropriate BDAT specified in 40 CFR 268.45, Table 1, to remove a contamination to the depth required to meet the Closure Performance Standard. An appropriate method will be determined in the field by operators and will be based on field conditions. Operators will wear appropriate activity-specific protective equipment. All decontamination media will be collected and managed according to applicable laws and regulations.

5.2.4.2.16. Collect soil sample beneath the concrete slab as identified in the Sampling and Analysis Plan (Attachment I-1).

5.2.4.2.17. Obtain notice of Clean Closure from Ecology.

5.2.4.3. List of Equipment and Structures

5.2.4.3.1. The equipment and structures that will be decontaminated as part of the closure activities include the following:

- Secondary containment, grates, sumps, or other portable secondary containment devices
- Floors and walls (including aluminum check plate)
- Lockers or other portable equipment present in the storage rooms
- Non-disposable equipment and tools used for handling waste or containers, such as the forklifts and the drum manipulator

6. Disposal of Residues, Rinsates, or Debris [610(5)]

6.1. Decontamination of Cleanup Materials and Equipment

6.1.1. Decontamination Waste

6.1.1.1. High-pressure wash water and rinsate or other decontamination media and debris from decontamination of concrete, plastic, and metal surfaces in the HMB will be collected in 55-gallon drums and properly designated. If rinsate water, residues, or debris are designated as dangerous, they will be properly managed and disposed of at a facility permitted to accept such waste. Dangerous debris will be placed in proper containers, labeled, accumulated; and transported; will comply with land disposal restriction treatment standards; and will be disposed of at an appropriate waste disposal facility.

6.1.1.2. Disposal may require approval from the local publicly owned treatment works for a batch discharge permit of non-hazardous wash water. While awaiting characterization, the drums will be stored in the central accumulation area at the Ross Complex.

6.1.1.3. All media will be stored in a DOT-approved 55-gallon drum and managed as dangerous waste until they can be characterized. After characterization, each medium will either be transported to an approved TSDF within 90 days or appropriately disposed of. While awaiting characterization, the drum will be stored in a central accumulation area at the Ross Complex.

6.1.2. Nondisposable Equipment

6.1.2.1. All nondisposable equipment, such as compressors and high-pressure washers, will be decontaminated at a temporary decontamination pad

constructed for closure activities. Wash water from decontamination of cleanup equipment will be contained at the decontamination pad, placed in drums, and disposed of properly. Equipment that cannot be suitably decontaminated (for example, personal protective gear) will be packaged and disposed of with the disposable equipment.

6.1.3. Disposable Equipment

6.1.3.1. Decontamination supplies, such as disposable personal protective equipment, brooms, brushes, plastic sheeting, and rags, will be stored in DOT-approved 55-gallon drums and handled as dangerous waste until they are characterized. Depending upon the characterization, disposable equipment will be transported to an off-site TSDF or appropriately disposed of at a facility permitted to accept the waste.

6.2. Sampling and Analysis to Identify Extent of Decontamination/ Removal and to Verify Achievement of Closure Standard

6.2.1. Sampling to Determine Extent of Contamination

6.2.1.1. Refer to Section 5.2.4.2, Decontamination Procedures, and Figure I-1.

6.3. Sampling to Confirm Decontamination of Structures and Soils

6.3.1. Determining Acceptable Decontamination

6.3.1.1. As discussed in Ecology's Guidance for Clean Closure of Dangerous Waste Facilities (revised May 2005), "Ecology will consider such materials [e.g., metal, plastic, concrete] decontaminated if they have been treated using an appropriate extraction or destruction technology...as specified...in 40 CFR 268.45 and incorporated by reference in WAC 173-303-140(2)(a)." High-pressure washing treatment technologies specified in 40 CFR 268.45 for hazardous debris will be used to achieve the closure performance standards on all plastic and metal portable equipment and the aluminum check-plate flooring. The high-pressure washing must remove all visible contaminant and dangerous waste except for residual staining from waste. Therefore, no intrusive sampling is needed or will be conducted on portable plastic or metal equipment or on the aluminum check-plate floor.

6.3.1.2. BPA will employ an alternate performance standard on concrete, and therefore will perform chip surface sampling to confirm decontamination procedures have met the performance standards.

6.3.1.3. The Sampling and Analysis Plan (Attachment I-1) describes methods for performing concrete core/chip samples and soil sampling.

6.3.2. Other Activities

6.3.2.1. Closure Certification [-610(6)]

6.3.2.1.1. Certification of closure is required to complete final closure of the HMB. This section outlines the process to obtain closure certification. Within 60 days of completion of final closure of the HMB, a certificate of completion of final closure will be submitted to Ecology. The closure certification will confirm that closure activities were conducted in accordance with the approved Closure Plan. The closure certification will be signed by a BPA representative and an Independent Qualified Registered Professional Engineer (IQRPE) registered in the State of Washington. The closure certification document will contain the following information:

- Copies of the inspection reports prepared by HMB Material Handlers during historical site inspections
- Documentation indicating the final disposition of the closed unit
- Copies of completed dangerous waste manifest documents
- A statement of certification prepared and signed by the IQRPE and the appropriate BPA representative stating that the requirements of the Closure Plan were met.

6.3.2.1.2. Closure activities will be observed or reviewed by the IQRPE to determine whether they have been conducted in accordance with this Closure Plan. IQRPE certification activities will include the following:

- Review the approved Closure Plan
- Observe waste removal and decontamination activities at regular intervals during closure activities to confirm that the work is being done as specified in the Closure Plan (per the Inspection Schedule to be developed at the beginning of closure)
- Observe packaging and labeling of wastes resulting from closure activities
- Review shipping manifests

6.3.2.1.3. The IQRPE will visually evaluate the decontaminated areas upon completion of activities performed during the closure certification process.

6.3.2.1.4. A BPA representative and the IQRPE will witness major closure activities to verify that the activities are being conducted in accordance with this Closure Plan. A detailed inspection schedule will be developed at the beginning of the closure

period and documented in the closure logbook. At the completion of the closure, the IQRPE will review the logbook and other closure records, including waste manifests, to see that activities have been properly completed.

6.4. Maximum Waste Inventory [-610(3)(a)(iii)]

6.4.1. The maximum storage capacity of the HMB is 31,240 gallons (568, 55-gallon drums). Table I-2 presents the maximum inventory of wastes stored in the HMB. A complete discussion and characterization of wastes managed at the HMB is located in Section C, Waste Analysis.

6.5. Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment, and Miscellaneous Units

6.5.1. Not applicable. No regulated waste piles, surface impoundments, incinerators, land treatment, or miscellaneous units exist at the HMB or Ross Complex.

6.6. Closure of Landfill Units

6.6.1. Not applicable. No regulated landfills exist at the HMB or Ross Complex.

6.7. Schedule for Closure [-610(3)(a)(vii)]; -610(4)]

6.7.1. BPA anticipates completing final closure activities within 180 days of receiving the final volume of wastes at the HMB.

6.7.2. Table I-3 presents the schedule of closure activities and their estimated time frames within the requisite 180-day period. Cumulative time is intentionally projected to be less than the 180-day total to allow for a contingency. Within 60 days of completion of closure, BPA will submit to Ecology a certification that the HMB has been closed in accordance with the approved Closure Plan.

6.8. Extension for Closure Time [-610(4)(a)]

6.8.1. If closure cannot be accomplished within 180 days, BPA will submit a request for a schedule extension from Ecology in accordance with WAC 173-303-610(4) and 40 CFR 264.113(c)(2) at least 30 days before the expiration of the 180-day closure period.

6.8.2. If unforeseen events occur during closure, BPA will submit a written request to Ecology for a permit modification and will include a copy of the amended Closure Plan. This request will be sent for approval no later than 30 days after unexpected events that affect the Closure Plan.

7. Closure Cost Estimate [-620(3)]

7.1. A cost estimate has been prepared for the closure activities described. Table I-4 presents an estimated cost to close the Permitted Unit.

7.2. Cost estimates will be adjusted for inflation annually and maintained at the facility.

8. Financial Assurance Mechanism for Closure [-620(1)(c)]

8.1. BPA is a federally owned and operated agency. Federal agencies are not required to submit proof of Financial Assurance Mechanism for Closure.

9. Notice in Deed of Already Closed Disposal Units [-610(10)]

9.1. RCRA-permitted units and units used for storage of dangerous waste that have been clean-closed will not require a Notice in Deed of Already Closed Disposal Units.

10. Post-closure Plan [-610(8)]

10.1. The HMB will be clean-closed; therefore, a Post-closure Plan is not required. If contamination is discovered that cannot be removed to a level below the debris treatment standards, Ecology will be notified and a modification of this Closure Plan that describes closure alternatives will be submitted.

11. Liability Requirements [-620(8)

11.1. Not applicable. BPA is a federal agency and is not required to meet the Liability Requirements.

11.2. Coverage for Sudden Accidental Occurrences

11.2.1. Not applicable. BPA is a federal agency and is not required to submit proof of coverage for Sudden Accidental Occurrences.

11.3. Coverage for Non-Sudden Accidental Occurrences

11.3.1. Not applicable. BPA is federal agency and is not required to submit proof of coverage for Non-Sudden Accidental Occurrences.

11.4. Request for Variance

11.4.1. Not applicable. BPA is not requesting a variance from required liability coverage.

Tables – Section I

Table I-1
Closure Performance Standards

Materials	Closure Standard	Technology
Impervious Surfaces [a]	BDAT 40 CFR 268.45 Table 1, Alternate Treatment Standards for Hazardous Debris (A.1.e)	High-pressure steam and water sprays.
Concrete Surfaces	Model Toxic Control Act (MTCA), WAC 173-340 Unrestricted Land Use (Residential) Scenario	BPA is proposing an alternative closure standard. High-pressure steam and water sprays, chip/core sample and analysis to verify closure standard met.[b]
Soil	MTCA WAC 173-340-740 Unrestricted Land Use (Residential) Scenario	

[a] Impervious surfaces will be decontaminated to a “clean debris surface.”
[b] If steam cleaning is not effective in meeting MTCA levels, then the top 0.6 centimeter will be removed, and the area will be checked for stains.

Table I-2
Total Volume of Waste by Type
HMB RCRA-Permitted Unit Area

Room No.	Room Name/Waste Type	Maximum Waste Volume (gallons)	Waste Types
100	Ignitable/Flammable	15,400	Organic solvents, hydrocarbon-based products, contaminated soil
101	Electrician's Shop	n/a	No dangerous waste storage. Shop is included as part of the Permitted Unit due to a hydraulic connection with the secondary containment in the adjacent Shipping/Receiving Room 103.
102A	Acid Corrosive ≤ pH 2	1,320	Batteries, and contamination-based chemicals
102B	Caustic Corrosive pH ≥ 12.5	1,760	Common anion/cation-based chemicals
102C	Pending Analysis	1,760	Potentially all waste types
102D	State-Only or TCLP	11,000	All waste types
103	Shipping/Receiving Room	1,760[a]	All waste types
104	Bulking Room	440[a]	Potentially all waste types
Loading/ Unloading	Loading/Unloading	5,100[b]	All waste types
Total		31,240	

[a] Storage does not occur in these areas. They are used for staging waste only.
[b] This is the quantity of one flatbed truck, 60, 85-gallon drums. This number is not included in the maximum storage capacity of the HMB because storage does not occur in the loading/ unloading area.

Table I-3
HMB Closure Schedule

Activity	Number of Days per Activity	Completion Date (days from start of closure)
Notify Ecology that inspection of floor areas will occur in preparation of closure activities		90 days before start of closure
Inspect HMB for cracks and visible signs of contamination		70 days before start of closure
Revise Sampling and Analysis Plan, as necessary		60 days before start of closure
Notify Ecology of closure	--	45 days before start of closure
Final receipt of waste at the HMB	--	On or before start of closure
Remove/dispose of dangerous waste stored at HMB	--	Within 90 days of start of closure
Pressure wash	1 – 5	96
Re-inspect floors and perform the necessary verification sampling	1 – 5	101
If necessary, perform focused decontamination of surfaces to debris standard (e.g., grit blasting)	1 – 10	111
Characterize closure-derived wastes	1 – 20	131
Dispose of all closure-derived wastes	<49	180
Prepare and submit certification document	60	240

Table I-4
Cost Estimate for Closure of HMB

Task	Subtask	Quantity	Unit	Unit Price	Cost
Planning	Amend Closure Plan/SAP	100	Hours	$ 200	$20,000
Inventory removal	Load, transport, and dispose of containerized waste [a]	600[b]	Drums	$ 800	$480,000
	Inspect and seal cracks	40	Hours	$ 200	$8,000
Decontamination of interior walls, floors, containment system	Labor—pressure washing	100	Hours	$ 100	$10,000
	Equipment and materials	1	Lump sum	$ 3,000	$3,000
	Collect wastewater in drums	8	Hours	$ 100	$800
	Dispose of wastewater	8	Hours	$ 100	$800
Soil Sampling	Labor—sample collection	80	Hours	$ 200	$16,000
	Sample/analysis	60	Lump sum	$ 1,500	$90,000
Concrete Sampling	Sample/Analysis	80	Lump sum	$ 1,500	$120,000
Potential cost to decontaminate floor in stained areas	Labor—grit blasting/other	50	Hours	$ 100	$5,000
	Equipment and materials	1	Lump sum	$ 3,500	$3,500
	Characterize waste	2	Hours	$ 100	$200
	Sample analysis	2	Sample	$ 1,500	$3,000
	Load, transport, and dispose of grit/other [a]	6	Drums	$ 500	$3,000
Decontamination of equipment and drums	Labor—decontamination	4	Hours	$ 100	$400
Wastewater disposal	Approximately 2,000 gallons	2,000	Lump sum	$ 50	$100,000
	Load, transport, and dispose of expendable equipment [a]	1	Drum	$ 3,000	$3,000
Closure certification and closure report	Labor—IQRPE	100	Hours	$ 200	$20,000
					$886,700

[a] Transportation and disposal costs will depend on waste characterization; a typical rate is presented here.

[b] Maximum inventory in stock. Typical inventory kept in stock is 125 containers.

Figures – Section I

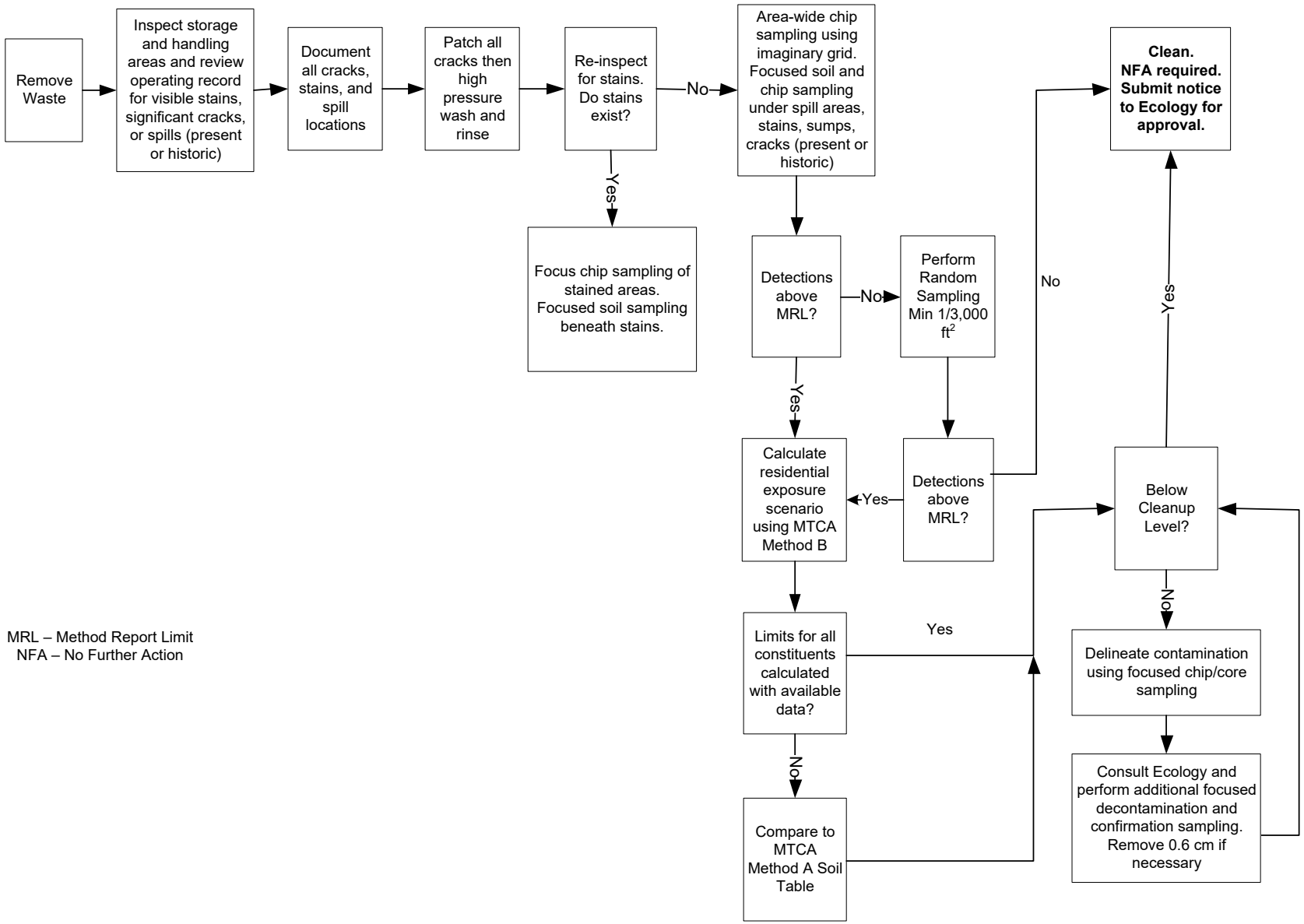
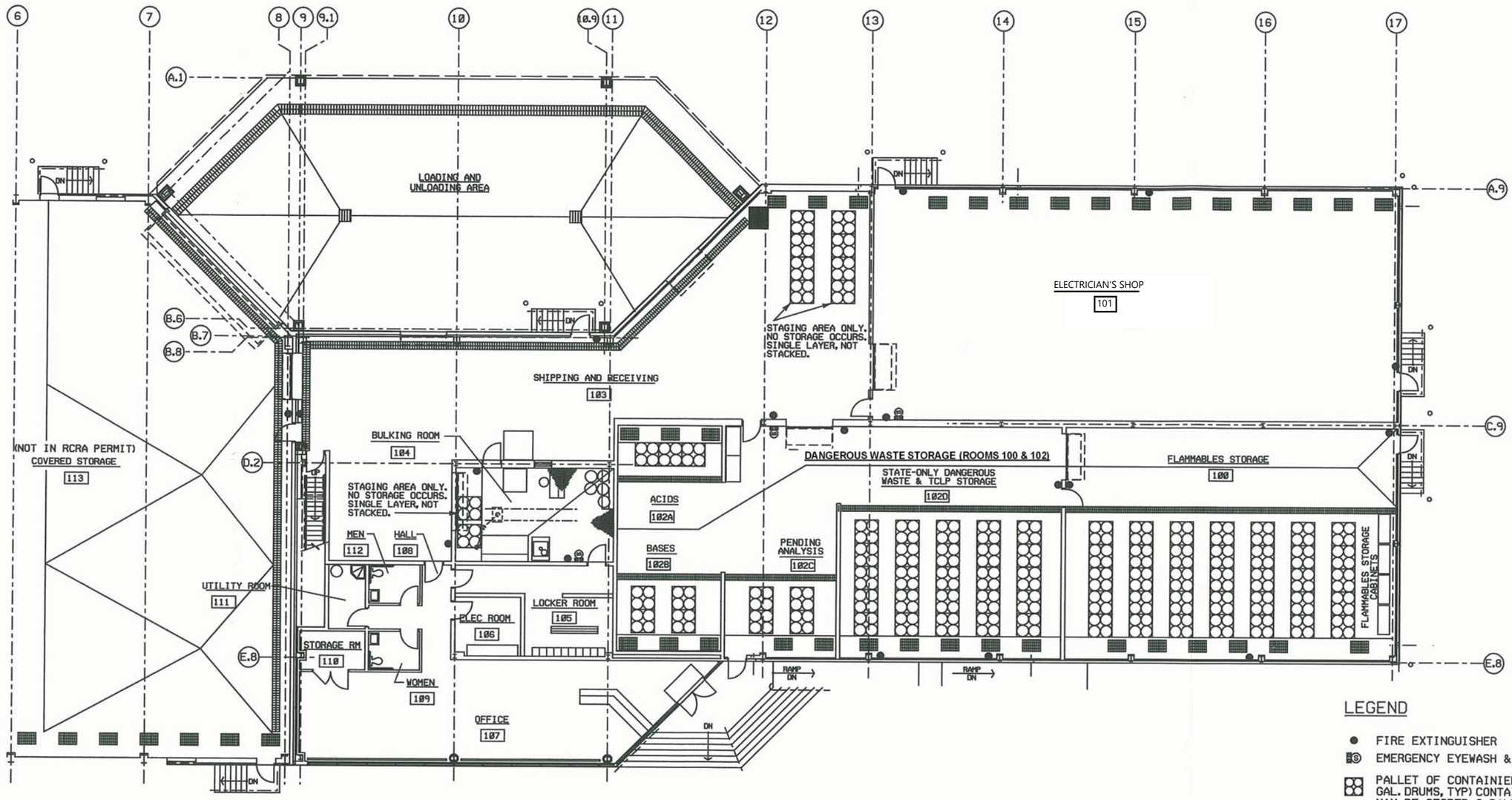


Figure I – 1
Clean Closure Performance Standard Logic Diagram



FLOOR PLAN

LEGEND

- FIRE EXTINGUISHER
- EMERGENCY EYEWASH & SHOWER
- PALLET OF CONTAINIERS (55-GAL. DRUMS, TYP) CONTAINERS MAY BE STORED 2 PALLETS HIGH EXCEPT AS NOTED
- SECONDARY CONTAINMENT SUMP
- SECONDARY CONTAINMENT TRENCH
- ALUMINUM CHECK PLATE

NOTE:

DRUM SIZES, NUMBERS, AND LOCATIONS MAY NOT BE EXACT. THIS FIGURE IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY ON TYPICAL DRUM STAGING AND STORAGE LOCATIONS AROUND THE PERMITTED UNIT.

SCALE 1" = 10'-0" 0 5 10 20 30 FT

NO.	PL-6	COMPUTER REVISION ONLY	BY	DATE	APPROVED

Drawn BE BOSCO
Envap
Chkd
Appr
Date

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

Figure I-2
Permitted Unit Container Storage Plan
Ross Part B Permit Renewal

SERIAL	SOURCE	SIZE	SHEET	REVISION
FIG I-2	KEP	B		0

Official Use Only

DATE

Attachments – Section I

Attachment I-1
Sampling and Analysis Plan

1. Introduction

This Sampling and Analysis Plan (SAP) describes the methodologies for collecting environmental samples from the structural portion of the Bonneville Power Administration Permitted Unit within the Hazardous Materials Building (HMB) regulated by Resource Conservation and Recovery Act (RCRA) and State of Washington Dangerous Waste regulations. This plan describes sampling that will be done to close the facility under closure requirements of the Part B Operating Permit and was developed in consultation with the Washington Department of Ecology's *Guidance on Sampling and Data Analysis Methods* (January 1994, updated in 1995, Publication #94-49).

The Facility is a single building divided into four main areas:

- Area A – Drain and Flush
- Area B – Covered Storage Area
- Area C – PCB Storage Area
- Part B Permitted Unit

This SAP describes sample collection and analysis associated with only the Part B Permitted Unit waste handling and storage areas.

Sample collection methodologies are described for the structural portions of the

Facility and soil beneath the slab only, and not for groundwater. For the purposes of this SAP, structural portions are defined as the floor, walls, and secondary containment structures in the Part B Permitted Unit waste handling and storage areas.

This plan currently does not include a figure identifying concrete and soil sampling locations. The final plan will include a figure of these locations, including the rationale used to determine them and a grid system that will be used for area-wide sampling.

2. Schedule

The written results of a review of this sampling plan and the operating record will be submitted to Ecology at least 60 days before performing closure activities.

3. Sample Collection Protocol

Chip sampling and soil sampling[1] will be performed for the sample collection portion of this sampling and analysis plan. Samples will be collected using dedicated, disposable equipment to the maximum extent

[1] All samples will be "grab" samples unless noted. No composite sampling was anticipated at the time of the permit renewal application. If composite samples are planned, it will be specified in the revised sampling plan submitted prior to closure activities as specified in the Schedule.

possible and placed in sampling containers that are provided and prepared by an analytical laboratory. A thorough visual inspection will be performed of all the equipment and structures listed above, after decontamination procedures have been performed.

3.1 Chip Sample Locations

Chip samples will be collected from the rooms/areas as noted in Table SAP-1 below. The table also indicates the number of samples to be collected from each room.

The structural portions of the building that may be sampled include the following:

- Floors
- Walls
- Secondary containment structures

3.1.1 Floors

Area-wide sampling will be performed using an imaginary grid. The floor area of each room will be divided into appropriate sections for random sample collection. One sample will be collected from each section of the grid. The grid systems for each room are listed in Table SAP-1.

TABLE SAP-1
Concrete Chip Sample Locations and Number to Be Collected from Floors

Room	Number of Sections	Number of Samples
Room 100 – Ignitable/Flammable Storage Room	6	6
Room 101 – Electrician's Shop	10	10
Room 102A – Acid Corrosive pH<2	2	2
Room 102B B – Caustic Corrosive pH >12.5	2	2
Room 102C – Pending Analysis	2	2
Room 102D – State-only and Toxic Waste	4	4
Room 103 – Shipping/Receiving Room	5	5
Room 104 – Bulking Room	2	2
Loading/Unloading Area	4	4

If stains remain after high-pressure washing, then focused (biased) chip samples will be collected from areas of visible staining. The actual sample location within the stain will be collected from the areas showing the most severe staining, to present a "worst-case" sample.

3.1.2 Walls

Since waste will not be stored on walls, samples will not be collected from walls unless there is an area that shows visible staining or contamination. Inspection will focus on the bottoms of the walls to confirm if staining exists.

3.1.3 Secondary Containment Sumps and Trenches

Secondary containment sumps and trenches will be sampled in a similar manner as the floor systems. Sumps and trenches are linear and each sump and trench will be divided into sections. A random concrete chip sample will be collected from each section and analyzed as described in Table SAP-2.

TABLE SAP-2
Concrete Chip Sample Locations and Number to Be Collected From Secondary Containment Sumps and Trenches

Room	Number of Sections/Samples for Sump	Number of Sections/Samples for Trenches
Room 100 – Ignitable/Flammable Storage Room	4	4
Room 101 – Electrician's Shop	6	6
Room 102A – Acid Corrosive pH<2	2	2
Room 102B B – Caustic Corrosive pH >12.5	2	2
Room 102C – Pending Analysis	2	2
Room 102D – State-only and Toxic Waste	2	2
Room 103 – Shipping/Receiving Room	5	5
Room 104 – Bulking Room	1	1
Loading/Unloading Area	4	2

3.2 Soil Sample Locations

If concrete chip samples (biased or area-wide) detect constituents above the cleanup level, focused soil samples will be collected to further delineate contamination or confirm the absence of hazardous waste constituents.

At a minimum, soil samples will be collected beneath each secondary containment trench and sump and at one random location for each separate secondary containment unit, or for every 3,000 square feet. A sampling plan detailing the locations of soil sampling will be developed at the time of closure and may be influenced by the results of documented spills, inspections, or concrete chip sampling.

Soil samples will be collected by coring through the concrete slab to expose underlying soil, and obtaining a sample of structural gravel and soil for analysis. Minimum sample locations are provided in Table SAP-3. Sample locations may be revised as a result of operating changes or releases. All revisions will be presented in SAP submitted 60 days prior to closure.

TABLE SAP-3
Minimum Soil Sample Locations

Room	Number of Samples Beneath Secondary Containment Trenches and Sump	Number of Random Samples 1/3,000 ft^2 = 1/Room
Room 100 – Ignitable/Flammable Storage Room	2	1
Room 101 – Electrician's Shop	4	1
Room 102A – Acid Corrosive pH<2	2	1
Room 102B – B Caustic Corrosive pH >12.5	2	1
Room 102C – Pending Analysis	2	1
Room 102D – State-only and Toxic Waste	2	1
Room 103 – Shipping/Receiving Room	2	1
Room 104 – Bulking Room	1	1
Loading/Unloading Area	3	1

4. Sample Analysis

Table SAP-3 presents the planned sampling program. The dedicated storage rooms may change. The ultimate design of the sample analysis program will be made before closure. The analytical program to be implemented during closure will be based on the type of waste stored in each area/room.

Soil samples will be analyzed as specified in Table SAP-4.

5. Field Staff

Key project staff involved in the field sample collection activities include the following: the field team leader, the site safety coordinator, and the field team members.

All staff involved in the field sample collection activities will have successfully completed the 40-hour HAZWOPER training course (OSHA 1910.120 and EPA 165.5). Staff who have not completed the HAZWOPER training will not be allowed to participate in the field sampling activities.

BPA staff, or contracted personnel will perform sample collection. BPA Ross Complex maintenance personnel, or contracted personnel will perform floor repair activities, if needed, and decontamination activities.

6. Sample Collection Procedures

Core samples will be collected using a decontaminated electric drive motor coring machine with a 2-inch bit. Both area-wide, focused, and soil sampling will be collected using the core sampling techniques. Concrete core samples will be submitted whole for crushing by the laboratory. Concrete core sampling will be performed immediately after completion of decontamination and inspection procedures.

TABLE SAP-4
Sampling and Analysis Program

	Sample Analysis							
Room	**VOC**	**SVOC**	**Total Metals (RCRA 23)**	**pH**	**Reactivity (Sulfite)**	**Common Anions**	**Pesticides**	**TPH EPA 418.1**
Room 100 – Ignitable/Flammable Storage Room	X	X	X					X
Room 101 – Electrician's Shop	X	X	X	X	X		X	X
Room 102A – Acid Corrosive pH<2			X	X		X		
Room 102B – B Caustic Corrosive pH >12.5			X	X		X		
Room 102C – Pending Analysis	X	X	X	X	X		X	X
Room 102D – State only and Toxic Waste			X				X	
Room 103 – Shipping/Receiving Room	X	X	X	X	X		X	X
Room 104 – Bulking Room	X	X	X	X	X		X	X
Loading/Unloading Area	X	X	X	X	X		X	X

Chip sampling will be performed as follows:

- Don appropriate personal protective equipment (PPE).
- Use a grid sampling system for chip sampling and collect one random chip surface sample (measuring ¼ inch in depth) from each individual cell within the grid system. The random location will be determined using Ecology's *Guidance on Sampling and Data Analysis Methods* (January 1994, updated in 1995, Publication #94-49).
- Collect samples using a percussion hammer.
- Place sample material in laboratory-supplied sample containers.
- Label each container with a unique, descriptive, alphanumeric code, as described below.
- Record the sample code in the field logbook and on the chain-of-custody form, as detailed below.
- Decontaminate percussion hammer, as detailed below.
- Place sample containers in metal or plastic coolers and package with inert material (e.g., vermiculite) to reduce potential for breaking during transport to the laboratory. Fill coolers with a sufficient quantity of double Ziploc-bagged crushed ice to keep the samples cooled to 4°C.
- Repair chip location with epoxy coating or other appropriate methods.

The core samples will be collected as follows:

- Don the appropriate PPE, as described below.
- Identify sample locations, as described above in the Sample Protocol section.
- Advance a decontaminated concrete coring bit through the 10-inch concrete slab.
- Place the sample material in laboratory-supplied containers. Label each container with a unique, descriptive, alphanumeric code, as described below.
- Record sample code in the field logbook and on the chain-of-custody form, as detailed below.
- Decontaminate concrete corer, as detailed below.
- Place sample containers in metal or plastic coolers and package with inert material (e.g., vermiculite) to reduce potential for breaking during transport to the laboratory. Fill coolers with a sufficient quantity of double Ziploc-bagged crushed ice to keep the samples cooled to 4°C.
- Repair hole by placing portland cement or equivalent materials, as specified by the HMB design specification, in the hole created by collection of the concrete core sample. Treat the patch with chemical resistant epoxy coating equivalent to the building design specifications.

Soil sample will be collected following the same procedure with the addition of using a 6-inch bit and obtaining soil before the hole is patched.

7. Quality Assurance and Quality Control Sample Collection

Quality assurance (QA) samples will be collected in the field, in the form of a control sample, to ensure that the samples collected provide sufficient and accurate analytical data. If at all possible, one control sample will

be collected for laboratory analysis from each room or area being sampled from. The sample will be collected from a location in the room or an area farthest from any waste management activities and least likely to have been contaminated from documented spills or releases in the room or area. If the entire room or area has likely been contaminated, no QA sample will be collected. At a minimum, one concrete core or chip control sample will be collected at the Facility.

Quality control (QC) samples prepared in the field will provide a measure of internal consistency of samples, cross-contamination sources, decontamination efficiency, and other potential sources of error.

The following types of QC samples will be collected:

- Duplicate samples
- Equipment blanks
- Trip blanks

Duplicate samples will be collected on a 5 percent basis and will be obtained by splitting a sample into two discrete samples at the time of original sample collection. Duplicate samples will be collected to verify that the field sampling team members are consistently applying sampling protocol.

Sample equipment blanks will be collected once per day on each day that samples are collected. The sample equipment blanks will be analyzed for the same contaminants analyzed for in the wipe or chip samples. Equipment blanks will be collected to verify that the equipment is being properly decontaminated after each use.

The analytical laboratory will provide trip blanks for use during the field sample collection activities. Trip blanks will travel with the collected samples to ensure that the transportation and delivery process is not affecting the analytical results.

8. Sample Nomenclature

All the samples collected during the field sampling activities will be assigned a unique, descriptive, alphanumeric code. The specific nomenclature for each of the samples will vary slightly from one sample to another, as described below.

All samples will be assigned a code with the following general form: X-YYY-ZZZZZZ. This code will be recorded three times: on the sample container label, in the field logbook, and on the chain-of-custody form.

For bulk chip samples, the following specific scheme will be used:

- First, the X will be replaced with a C, since it is a bulk chip sample, and followed by a dash. Soil sampled will be identified by an “S.”
- Second, the YYY will be replaced by a three-digit sample number, with the first sample of any kind for each new day starting or restarting at 001, and followed by a dash (such as 008 for the eighth sample of any kind collected that day).
- Third, the ZZZZZZ will be replaced by a six-digit number representing the date (such as 121425 for December 14, 2025).

For example, the eighth chip sample on December 14, 2025 would be C-008-121425.

In addition, if a sample is a duplicate, it will include a "D" suffix as the last part of the sample identification code and immediately preceded by a dash, as follows:

- C-008-121425-D, for a duplicate sample of the chip sample example above.

Finally, if a sample is an equipment blank or rinse blank, it will be coded similar to the following examples:

- EB-001-080925 (which represents the first equipment blank on August 9, 2025).
- TB-001-032725 (which represents the first trip blank on March 27, 2025).

9. Documentation

9.1 Field Logbooks

All sampling activities and sampling events will be recorded in a permanently bound logbook or equivalent standardized form. Further, each page or form will be consecutively numbered. Finally, all entries will be made in indelible ink, and all corrections will consist of line-out, initialed deletions.

At a minimum, entries in a logbook will include information related to each time interval of sampling and additional information for each discrete or composite sample collected.

For each time interval of sampling (e.g., once per day at a minimum, or whenever documented sampling conditions change) the following will be recorded:

- Time of arrival and departure from the site
- Identification of sampling team members and responsibilities (e.g., Site Safety Coordinator, field team leader), including subcontractors
- Equipment present and equipment used
- Equipment calibration records
- Health and safety monitoring records
- Reagent or supply preparation procedures for any reagents or supplies that become an integral part of the sample
- Field measurements (e.g., ambient and cooler temperature)
- Sampling methodology
- Decontamination procedures

For each sample collected the following will be recorded:

- Date and time of collection
- Sample identification code
- Description of sampling point location (including a sketch or drawing, as necessary)
- Measurements of location, including height, interval, or other quantitative information
- Sample type taken (e.g., grab, blank, duplicate)

- Sample preservation (or notation if no sample preservation is used)
- Field observations (e.g., peculiarities in collecting the sample, staining, cracks or corrosion in concrete)

Field sampling situations vary significantly; therefore, no general rules can specify the extent of information that should be entered in the logbook. However, the field logbooks must contain sufficient information so that the sampling activity can be reconstructed without relying on the memory of sampling team members, and replicated as necessary and appropriate.

9.2 Photographs

As appropriate for documentation purposes, sample collection information, such as sampling locations, sampling procedures, and significant findings or observations, will be photographed. Each photograph will be logged in the field logbook, including the following:

- Date and time
- Photograph number
- Location
- Description of photograph (including reason for documenting with a photograph)

9.3 Chain-of-Custody Procedures

To ensure the integrity of analytical data resulting from the sampling and analysis activities, sample possession must be traceable throughout the collection, preparation, shipping, and analysis. Chain-of-custody procedures document sample possession.

Samples will remain in the custody of a field sampling team member, or equivalent, from the time of sample collection until the samples are transferred to the analytical laboratory per standard professional chain-of-custody protocol.

Collected samples will be traceable from the time of sample collection until receipt of samples at the analytical laboratory through completion of a chain-of-custody form delivered to the field sampling team by the analytical laboratory before the sample collection effort begins.

Samples collected for laboratory analysis will be stored in a cooler until the time of relinquishment. A completed chain-of-custody form will accompany all samples, at a rate of one per cooler. Coolers will be sealed with fiber tape and will have signed and dated custody seals affixed to the cooler in such a way that the cooler cannot be opened without breaking the custody seals. The method of shipment, courier, or any other appropriate information should be recorded in the Remarks/Comments section of the chain-of-custody form.

Samples will not be considered relinquished until the field sampling team member, or equivalent, signs, dates, and notes the time of relinquishment on the chain-of-custody and the receiving analytical laboratory signs, dates, and notes the time of acceptance on the chain-of-custody.

If it becomes necessary to ship samples to an analytical laboratory, the samples will be shipped by overnight courier. Freight bills and/or bills of lading will be retained as part of the permanent documentation for the project.

10. Equipment Use and Decontamination

10.1 Disposable Equipment

To the maximum extent possible, single-use disposable equipment will be used to minimize the need for decontamination during sample collection. Decontamination most likely will be necessary only to clean the chipper and core bit used during sampling. It is anticipated that all other equipment involved in sampling will be single-use, disposable equipment.

The following procedures will be used for the core bit or percussion hammer chipper, or any other equipment that needs to be decontaminated during sample collection activities:

- Wash in a solution of alconox and distilled/deionized (DI) water
- Rinse with DI water
- Methanol or hexane spray
- Rinse with DI water
- Wipe dry with clean, disposable paper

10.2 Personal Protective Equipment (PPE)

It is anticipated that all work can be conducted in modified Level D PPE. Since major, intrusive work is not planned as part of the sample collection activities, the likelihood of encountering a scenario wherein Level C or greater protection becomes necessary is negligible.

Modified Level D PPE includes the following:

- Long-sleeve shirt
- Long pants
- Steel-toed boots
- Hard hat, if required by the Facility in certain areas
- Safety glasses, or equivalent
- Nitrile inner and outer gloves

The nitrile inner and outer gloves should be replaced frequently, and at a minimum after collection of each sample.

11. Sample Container, Volume, Holding Time Requirements, and Detection Limits

The field team leader will coordinate with the analytical laboratory before commencement of field sample collection activities to ensure that the appropriate sample containers are supplied to the field team by the laboratory.

The laboratory will supply the sample containers to the field team to ensure that a sufficient volume of sample is supplied to the laboratory, and in an appropriate container, to protect the integrity of the analytical results.

The core/chip samples will be placed in the appropriate container immediately upon initial collection. At the end of each sample collection day, all of the samples, securely and properly stored in a cooler as described above, will be transported to the analytical laboratory. By transporting the samples to the analytical laboratory at the end of each sampling day, concerns related to the holding time requirements will be irrelevant and the holding time requirements will be met.

Table SAP-5 lists the sample analysis name, method, container, preservative, minimum sample quantity, and maximum holding times. This table will be reviewed before closure to ensure its contents are true and accurate. Sample detection/reporting limits will be consistent with the *Test Methods for Evaluating Solid Waste, Physical Chemical Methods,* Third Edition, U.S. EPA, SW-846 and any revisions or amendments thereto.

TABLE SAP-5
Requirements for Container Types, Preservation Techniques, Sample Volumes, and Holding Times*

Name	Analytical Method	Container[a]	Preservation[b,c]	Minimum Sample Volume[d] or Weight[e]	Maximum Holding Time
Common anions	SW 9056A	P, G	None required	50 mL	28 days for Br^-, F^-, Cl^-, and SO_4^{-2}; 48 hours for NO_3^-, NO_2^- and PO_4^{-3}
Hydrogen ion (pH) (W, S)	SW 9040C SW 9045D	P, G	None required	N/A	Analyze immediately
Sulfides	SW 9030B	P	4°C, ZnAc and NaOH	500 mL	7 days
Chromium (VI)	SW 7196A	P, G, T	4°C	500 mL or 8 ounces	24 hours (water and soil)[f]
Mercury	SW7470A SW7471B	P, G, T	HNO_3 to pH < 2, 4°C	500 mL or 8 ounces	28 days (water and soil)
Metals (except chromium [VI] and mercury)	SW 6010D SW 6020B and SW 846 AA methods	P, G, T	HNO_3 to pH < 2, 4°C	500 mL or 8 ounces	180 days (water and soil)
Total petroleum hydrocarbons (TPH)	SW 8015D (modified) and TPH 418.1	G, Teflon-lined septum, T	4°C, HCl to pH < 2	2 x 40 mL or 4 ounces	14 days (water and soil); 7 days if unpreserved by acid

TABLE SAP-5
Requirements for Container Types, Preservation Techniques, Sample Volumes, and Holding Times*

Name	Analytical Method	Container[a]	Preservation[b,c]	Minimum Sample Volume[d] or Weight[e]	Maximum Holding Time
Organochlorine pesticides and PCBs	SW 8080A, SW 8081B, SW 8082A	G, Teflon-lined cap, T	4°C, pH 5–9	1 liter or 8 ounces	7 days until extraction and 40 days after extraction (water); 14 days until extraction and 40 days after extraction (soil)
Organophosphorus pesticides/ Compounds	SW 8140 SW 8141A	G, Teflon-lined cap, T	4°C, pH 5–9	1 liter or 8 ounces	7 days until extraction and 40 days after extraction (water); 14 days until extraction and 40 days after extraction (soil)
Semivolatile organic compounds (SVOCs)	SW 8270D, SW 8270E	G, Teflon-lined cap, T	4°C, 0.008% $Na_2S_2O_3$	1 liter or 8 ounces	7 days until extraction and 40 days after extraction (water); 14 days until extraction and 40 days after extraction (soil)
Volatile organic compounds (VOCs)	SW8260B, SW8260D	G, Teflon-lined septum, T	4°C, 0.008% $Na_2S_2O_3$ (HCl to pH < 2 for volatile aromatics by SW 8260)[b]	2 x 40 mL or 4 ounces	14 days (water and soil); 7 days if unpreserved by acid

[a] P = polyethylene(P); G = glass; T = brass sleeves in the sample barrel, sometimes called California brass.
[b] No pH adjustment for soil.
[c] Preservation with 0.008 percent $Na_2S_2O_3$ is only required when residual chlorine is present.
[e] For soil and sediments.
[f] The maximum recommended holding time for completion of extraction into water is 48 hours. The extract will be analyzed within 24 hours of completion of extraction.
*The contents of this table will be reviewed and revised as necessary before closure activities.

12. Management of Investigation Derived Waste

It is unlikely that any investigation derived waste (IDW), besides decontamination water, will be generated during bulk sample collection activities. However, to the extent that IDW is generated, it will be stored in the appropriate waste containers (55-gallon DOT-approved drum) at the Facility. IDW samples will be

characterized in accordance with BPA's *Identified Waste Stream Handbook* procedures. After the waste is characterized, it will be properly labeled and disposed of at a facility permitted to accept the waste.