7.0 CLOSURE ACTIVITIES

Chapter 7.0 describes the activities necessary to close the 304 Facility. This includes a sampling and analysis plan and a schedule for completing the closure activities once the closure plan is approved. The overall strategy, on which the sampling and analysis plan is based, is described in Chapter 6.0.

7.1 REMOVAL OF DANGEROUS WASTE INVENTORY

The 304 Facility and outside storage pad are empty. All treated and stored waste was removed previously.

7.2 FACILITY SAMPLING

The following sampling and analysis plan evaluates contamination levels, if any, within the building, on the outside storage pad, and in the near-surface soils associated with the 304 Facility. This plan is based primarily on a history of the processes associated with the 304 Facility (Chapter 3.0).

A flowchart for sampling activities is provided in Figure 7-1. The 304 Facility is a WAC 173-303 regulated unit, but is located within a CERCLA operable unit. Because the 304 Facility is located in a CERCLA operable unit (300-FF-3), any soil remediation will be accomplished under the CERCLA remedial action process.

7.2.1 Sampling Design

This section discusses the details and design of the sampling program. Subjects being addressed include sampling objectives, sampling parameters, sampling activities, sampling procedures, and data quality.

7.2.1.1 **Objectives.** The objectives of the waste sampling and analysis plan are as follows:

- Determine whether building surfaces, girders, concrete floor, and outside storage pad contain dangerous waste constituents as defined by WAC 173-303
- Identify and quantify the specific dangerous waste constituents (if any) that are present using methods outlined in SW-846 (EPA 1986a). If any other methods are used, these methods will be referenced and submitted to Ecology
- Determine whether near-surface soils (no deeper than 3 feet) underlying the 304 Facility are contaminated above action levels as a result of operations
- Evaluate sample analysis data to determine closure.

7.2.1.2 Analytical Parameters. Analytical parameters and methods to be used in testing for potential contamination are based on knowledge of the operations and contents of the 304 Facility. The plan determines the presence of potentially dangerous constituents from chemicals used and waste treated and stored at the 304 Facility.

A list of the potential contaminants used, treated, and stored at the 304 Facility, the initial action levels, and the analytical method for each constituent, are provided in Table 7-1.

As discussed in Chapter 6.0, the samples from the 304 Facility will be analyzed for the constituents listed in Table 7-1. These results will be compared to the action levels, which are the site-wide background threshold concentrations and health-based standards for soil. The initial action levels for samples of concrete and asphalt are LOQ for inorganic and organic constituents. The initial action level for wipe samples (building walls and girders) also is LOQ (Section 7.2.1.4.1).

7.2.1.3 Sampling Activities. Sampling of the 304 Facility will be conducted following decontamination of the building and the outside storage pad. Sampling activities have been divided into the following steps:

1. Core concrete and asphalt, and collect soil samples up to a depth of 3 feet in areas with potential pathways to the soil (e.g., cracks, expansion joints)

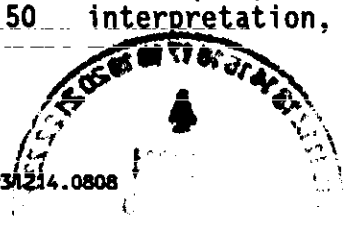
2. Wipe sample the building walls (interior) and one steel girder

3. Collect concrete core samples from the floor and trench

4. Collect concrete and asphalt core samples from the outside storage pad.

7.2.1.4 Sampling Procedures. Sampling procedures for determining whether chemical waste has contaminated the building, the concrete floor and outside storage pad, and the associated soils are described in this section. Sampling procedures will be conducted in conformance with environmental investigation instructions (EII) in *Environmental Investigations and Site Characterization Manual*, (WHC 1988) and pertinent EPA guidelines where these exist.

7.2.1.4.1 Metal Walls and Girders. The concretion process that occurred at the 304 Facility might have contaminated the surfaces of the metal walls and girders. Presently, there is no protocol for wipe sampling fixed metal surfaces that is appropriate for quantifying inorganic or organic surface contamination. The procedure for cleanup verification of polychlorinated biphenyl (PCB) contamination by wipe sampling is described in the *Industrial Hygiene Manual* (DOL 1977) and *Verfication of PCB Spill Cleanup by Sampling and Analysis* (EPA 1985a). These documents describe general wipe sampling techniques, but provides no specific guidance on analytical methods, data interpretation, or sampling surfaces contaminated by other chemicals.



The data will be interpreted by qualified scientists and statisticians. Data evaluation will be based on statistical criteria and professional judgment as appropriate.

7.2.5 Assessment of Data Reliability

Data reliability will be assessed by evaluating the sample handling and analysis QC. Sample handling QC will be evaluated by reviewing field documentation and results of QA samples to establish that sampling error was minimized. The review will be conducted to verify that decontaminated equipment was used, cross-contamination was prevented, samples were preserved properly, and the chain of custody of the samples was not broken.

Analytical data received from any sampling performed at the 304 Facility will be scrutinized against the QC report provided by the contractor laboratory to assess the reliability of the results. Both organic and inorganic chemical analytical results will be checked as follows:

- Inorganic chemical analysis laboratory assessment
  - Holding times are acceptable
  - Contractor's detection limits are below those required by the EPA
  - Laboratory blanks and replicates are within established QC limits
  - Sample spike recoveries are within QC limits.

- Organic chemical analysis laboratory assessment
  - Holding times are acceptable
  - Instrument detection limits, blank recoveries, surrogate recoveries, and spike recoveries are within EPA-established QC limits.

7.2.6 Reporting

After completion of the sampling effort, verification documents will be provided for actual sample locations, numbers of samples, and specific methods used for collection if different from those provided in this closure plan. Data received from the laboratory will be reviewed, analyzed, and summarized statistically. The results will be used to provide further closure evaluations.

7.2.7 Sampling Equipment, Containers, and Preservation

This section describes the equipment, containers, and preservation methods used for sample collection at the 304 Facility.

7.2.7.1 Sampling Equipment. Sampling equipment used will be appropriate to the spectrum of media that might be encountered. The media to be sampled potentially consist of the following:

- Metal surfaces
- Concrete
- Soils
- Asphalt.

The following types of sampling equipment could be used during the various phases of the investigation.

Metal surfaces	Concrete and asphalt	Soils
Filter paper	Concrete and asphalt coring device	Auger Split spoon Trowel Scoop Shovel.

An auger and split spoon will be used to collect soil samples if site conditions permit. Otherwise, a trowel, scoop, or shovel will be used to collect soil samples. The sampling equipment will be constructed of stainless steel or will have liners constructed of inert materials.

Additional equipment and supplies will be procured as required to perform the necessary sampling. Equipment could include, but not be limited to, the following items:

- Bore or wire brushes
- Stainless-steel mixing bowls
- Sized, heavy-duty plastic bags
- Stainless-steel spatulas, scoops, and spoons
- Adhesive tape
- 100-foot steel tape, 12-foot steel tape
- Compass
- Indelible marking pens or pencils
- Hammer/sledgehammer
- Ice chests and ice

7.2.8.6 Sample Analysis Request. The sample analysis request form is designed to accompany the samples to the laboratory and to designate the analyses to be performed on each sample. This form also provides a check to ensure that all samples have been received and that correlation between sample analysis and sample number is finalized and complete. This form includes the following information:

- Contractor
- Company contact
- Collector
- Sample number
- Sample type
- Analysis requested
- Data and time collected
- Laboratory sample custodian.

Procedures outlined in EII 5.1, "Chain of Custody," and EII 5.2, "Soil and Sediment Sampling" (WHC 1988) will be followed.

7.2.8.7 Laboratory Receipt and Logging of Sample. In the laboratory, a sample custodian will be assigned to receive the samples. Upon receipt of a sample, the custodian will inspect the condition of the sample and the sample seal, verify the information on the sample label and seal against that on the chain-of-custody record, assign a laboratory number, log the sample in the laboratory logbook, store the sample in a secured sample storage room or cabinet, and report missing or damaged samples immediately. The results of the radiation survey data will be provided to the laboratory performing analyses of those samples exhibiting activity greater than 200 counts per minute.

7.2.8.8 Sample Disposition. At the certified completion of all analyses, the samples will be returned to the collector. In no case will the samples be retained longer than 3 years, unless specifically designated by the cognizant engineer.

7.2.8.9 Decontamination. This section discusses personnel, equipment and sample containers decontamination procedures.

7.2.8.9.1 Personnel Decontamination Procedures. A decontamination area will be established near the 304 Facility and upwind of sampling activity. If it is not possible to provide a decontamination area upwind and the wind is a problem, sampling will not occur that day. Procedures for personnel decontamination will be provided in a sitewide HASP. In addition, the 304 Facility-specific HASP will be prepared before sampling and added to the

closure plan. This plan is titled hazardous waste operation permit and will be prepared in accordance with EII 2.1, "Preparation of Site-specific Health and Safety Plans" (WHC 1988).

7.2.8.9.2 **Equipment Decontamination.** Extreme care is necessary in field sampling to ensure no cross-contamination of samples by sampling equipment. To prevent this source of contamination, freshly cleaned or disposable sampling tools will be used. When equipment must be reused in the field, the equipment will be cleaned as thoroughly as practical in accordance with EII 5.5, "Field Cleaning and/or Decontamination of Equipment" (WHC 1988). Decontamination wash water will be placed in 55-gallon containers and solidified with a clay mixture for disposal as a low-level radioactive or solid mixed waste. Whenever possible, equipment will be cleaned in the laboratory according to procedures specified in EII 5.5 (WHC 1988).

7.2.8.9.3 **Sampling Container Decontamination Procedures.** Containers will be purchased precleaned from the factory and are maintained under strict chain of custody to preserve the integrity of the samples from collection through disposal. After analysis, sample containers will be disposed of appropriately.

7.2.9 Analytical Procedures

Analyses of all constituents, with the possible exception of uranium, will be performed by the laboratory in accordance with SW-846 (EPA 1986a). The EPA-specified detection limits are goals; the actual detection limits will be presented in the analytical certification reports. One of two methods will be used for uranium analysis (Table 7-1). The SCINTREX** UA-3 laser method might be better suited to detect uranium than the EPA method that detects only gross alpha and beta.

7.2.9.1 **Concrete and Asphalt Inorganic Analysis Methodology.** Ecology guidelines for sampling inorganics in concrete and asphalt will be followed. The preferred inorganic analysis methodology involves a two-part process. The initial part is hot acid digestion (SW-846 Method 3050) with total metals analysis using inductively coupled plasma atomic emissions spectroscopy (ICP-AES) (SW-846 Method 6010). This part indicates which metals are present in the matrix in sufficient quantities to present a potential threat to the environment. The second part, which is performed on a second test portion of sample material, is the TCLP (40 CFR 261 Appendix II), followed by total metals analysis using ICP (SW-846 Method 6010, EPA 1986a). This part determines if any of the metals present could leach out of the concrete matrix and pose a threat to human health and the environment.

Both parts will be conducted with a full analysis for all constituents of concern. This will ensure that all potential inorganic contamination constituents are included and identified rather than only for those that show high concentrations in the initial step.

**Trademarks are identified in the glossary.