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7.0 CLOSURE ACTIVITIES

This chapter describes the activities necessary to close the 303-K Storage Facility. Included is 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 outdoor storage areas and the north half of the 303-K Storage Facility currently are in use as a greater-than-90-day storage unit. After the closure plan is approved and before any other closure activities are conducted, all waste stored at the 303-K Storage Facility will be transferred to the Central Waste Complex for interim storage and future treatment or disposal.

7.2 FACILITY SAMPLING

The following waste sampling and analysis plan has been prepared to evaluate contamination levels, if any, within the north half of the building, the outside storage areas, and near-surface soils associated with the 303-K Storage Facility. The south half of the building was not used for dangerous waste-related activities and is not included in this closure plan. The north and south halves of the building are separated completely by a cinder block wall. The other walls also are constructed of cinder block, and the building has a concrete floor and ceiling. This plan is based primarily on the history of the processes associated with the 303-K Storage Facility (Chapter 3.0).

A flowchart for sampling activities is provided in Figure 7-1. The 303-K Storage Facility is regulated by WAC 173-303, but located within a CERCLA operable unit. Because the 303-K Storage 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 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, the concrete floor, and the outside storage areas contain dangerous waste constituents as defined by WAC 173-303

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- Identify and quantify the specific dangerous waste constituents (if any) present using methods outlined in SW-846 (EPA 1986). If any other methods are used, the method will be referenced and submitted to Ecology

- Determine whether near surface soils (no deeper than 3 feet) underlying the 303-K Storage Facility are contaminated above action levels as a result of operations at the 303-K Storage Facility

- Evaluate sample analyses data to determine initial actions and closure status.

7.2.1.2 Analytical Parameters. Analytical parameters and methods are based on knowledge of the operations and contents at the 303-K Storage Facility. A plan was developed to determine the presence of potentially dangerous constituents from chemicals used and waste stored at the 303-K Storage Facility.

A list of the potential contaminants used and stored at the 303-K Storage 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 soil samples from the 303-K Storage Facility will be analyzed for the constituents listed in Table 7-1. These results will be compared to the action levels, which are the sitewide 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.

7.2.1.3 Sampling Activities. Once the building area and the outside storage areas have been decontaminated (Section 7.4), sampling activities will be conducted in the 303-K Storage Facility as follows:

- Core the concrete floor and the concrete and asphalt pads and collect soil samples to a maximum depth of 3 feet in areas with pathways (cracks, expansion joints, etc.) to the soil

- Collect concrete core samples from the floor, walls, and ceiling

- Collect core samples from outside storage pads

- Collect soil samples up to a depth of 3 feet in the outside gravel storage area.

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

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Areas to be randomly sampled will be divided into 1-square meter grids, and 5 percent of the gridded locations will be sampled. A sample will be taken at the center of each randomly selected 1-square meter location. In addition to the random samples, some authoritative samples will be obtained from areas of higher potential contamination (e.g., the floor trench and the soil beneath potential pathways in the floor or pads).

7.2.1.4.1 Floor and Outside Storage Pads. Samples will be taken at gridded locations on the concrete floor and outside on the concrete and asphalt storage pads (Figures 7-2 and 7-3). In addition to the random samples, two authoritative samples will be obtained in the drainage trench near the drain (Figure 7-4). Concrete and asphalt samples will be obtained by coring.

A coring device will be used to obtain a concrete or asphalt core sample. The coring device will employ a 2-inch-diamond bit and use distilled water as a cutting lubricant to minimize dust generation. As little water as necessary will be used to obtain the samples. The core samples will be 1 to 2 inches long. Any waste generated by the sampling process will be handled in the same manner as the coring conducted to sample the soil beneath the concrete (Section 7.2.1.4.3).

Soil samples from the gravel pad will be obtained as described in Section 7.2.1.4.3.

7.2.1.4.2 Concrete Walls and Ceiling. The interior concrete walls and ceiling will be core sampled. The interior walls and ceiling will be divided into 1-square meter grids and 5 percent of the squares will be sampled (Figures 7-5 through 7-7). The samples will be obtained and analyzed in the same manner as described for the floor and pads (Section 7.2.1.4.1).

7.2.1.4.3 Soils. Coring of concrete and asphalt will be conducted as a means of accessing the soil beneath. This will be done at locations where potential pathways to the soil exist.

A coring device will cut the core from each selected location. The coring device will employ a 6- to 12-inch outside-diameter (OD) diamond bit that uses a minimum amount of distilled water as a cutting lubricant to minimize dust generation. No organic-based lubricant will be used. Appropriate measures will be taken to control dust during this operation, including the use of temporary site enclosures and air filtration.

An industrial-size shop vacuum will be used to remove excess water from around the core. This will be done to minimize surface contamination flowing into the underlying soil. The waste water from within the shop vacuum will be emptied into a new 17-H open-headed 55-gallon drum and will be stored at the 303-K Facility until designated according to procedures. The coring device will be decontaminated between samples in accordance with procedures outlined in EII 5.4, "Field Cleaning and/or Decontamination of Equipment" or in EII 5.5, "1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment" (WHC 1988). All decontamination fluids will be containerized with the waste water.

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Concentrations of inorganic constituents added to the soil by sorption from an effluent containing even drinking water levels of these constituents are greatest in the upper few millimeters, and decrease with increased thickness of the soil column. Because of the well-known process of sorption (Pendias and Pendias 1984; Routson et al. 1979; Conway 1982; Freeze and Cherry 1979), any contamination remaining in the soil would be the result of equilibrium reactions and/or irreversible sorption. In either case, residual contamination mostly would be concentrated in the uppermost part of the soil column, with rapidly decreasing concentrations downward. Therefore, the uppermost part of the soil column is most likely to contain contamination if present.

Any contamination of the soil by organic solvents associated with the 303-K Storage Facility is likely to be small and, if present, dominate in the uppermost part of the soil column. The only pathway for the organic contaminates to the soil would have involved the transport of a small fraction of any spill (no spills were reported) to the soil through cracks in the concrete floor. Because of the relatively small amount of potential contamination, the general lack of evaporation under the concrete floor, and the tendency for such small amounts to be retained in the soil, any potential organic contamination from this source is most likely to be present in the upper part of the soil column.

Because the potential contamination from the 303-K Storage Facility would remain in the upper part of the soil column, a maximum sampling depth of 3 feet would be adequate. During soil sampling, samples will be obtained from the surface, at 1 foot, 2 feet, and 3 feet. The sample will consist of soil 1 inch above and 1 inch below the sampling point. For example, the sample at the 2 foot mark would include the section of dirt that was 1 foot, 11 inches to 2 feet, 1 inch below the surface.

Soil samples from the gravel area and beneath the storage pads will be considered worst-case contamination. If no contamination is detected in the near surface soil samples, the 303-K Storage Facility will be considered to have contributed no contamination to the subsurface below 3 feet.

The soil samples will be analyzed for the contaminants listed in Table 7-1.

A precleaned, 4-inch OD hand-operated soil auger will be placed at each sampling location and soil will be removed to a total depth of 3 feet. If access to the sampling location is restricted, a small shovel or trowel could be used. Samples from the hole will be placed immediately in a laboratory-prepared sample container to minimize loss of volatiles and will be stored on ice in a cooler at 4 °C ±2 °C. The soil auger, as well as all sampling equipment, will be decontaminated in accordance with procedures outlined in EII 5.4, "Field Cleaning and/or Decontamination of Equipment" (WHC 1988). The equipment will be cleaned before use at each sample location.

Excess soil that is removed from each hole will be containerized in a 17-H open-headed 55-gallon container until results of the soil analyses are received. The container will be stored at the 303-K Storage Facility until

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designated according to onsite procedures. Each hole in the floor or pad will be sealed with concrete or asphalt after sampling is completed.

7.2.1.5 Sampling Locations. Areas to be sampled have been divided into eight sections, consisting of the four walls, the floor, the ceiling, outside storage pads, and the gravel area. Sampling locations have been selected randomly except where authoritative sampling is warranted in areas of potential contamination. Each of the eight sections has been gridded to facilitate the selection and identification of random sample locations. A minimum of 5 percent of the gridded area for each section will be sampled. The use of random-sampling strategy will ensure that data obtained will be representative of the population from which the samples were taken. Areas of potential contamination were selected for authoritative sampling because of the higher potential for contamination. The randomly selected sampling locations are included in Appendix B. The number and location of each type of sample is presented in Table 7-2. Each section is discussed in the following sections with respect to sample locations.

7.2.1.5.1 Building Walls. The sampling locations for the north wall are shown in Figure 7-5. There are 24 1-square meter grids. Two locations will be sampled.

The sampling locations for the south (inside) wall are shown in Figure 7-5. There are 24 1-square meter grids. Two locations will be sampled.

The sampling locations for the east wall are shown in Figure 7-6. Only the northern portion of the building was used for storage of mixed waste. There are 24 1-square meter grids. Two locations will be sampled.

The sampling locations for the west wall are shown in Figure 7-6. There are 24 1-square meter grids. Two locations will be sampled.

7.2.1.5.2 Ceiling. The ceiling will be gridded and sampled because of the possibility of contamination caused by the billet fires. The sampling locations are shown in Figure 7-7. There are approximately 64 1-square meter grids. Three locations will be sampled.

7.2.1.5.3 Outside Storage Areas. The sampling locations for the outside storage areas are shown in Figure 7-3. The two concrete-covered areas contain approximately 67 1-square meter grids. A total of five locations will be core sampled. In addition, areas where potential pathways are visible will be sampled by collecting a soil sample under the pad (Figure 7-4). These samples will be analyzed for contaminants listed in Table 7-1.

The asphalt portion of the outside storage area also will be gridded for core samples (Figure 7-3). The asphalt-covered areas contain approximately 254 1-square meter grids and 13 locations were selected for sampling. These samples will be analyzed for contaminants listed in Table 7-1.

The sampling locations for the graveled portion of the outside storage area are shown in Figure 7-3. This portion of the area has been divided into

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approximately 91 1-square meter grids, and five locations were selected for sampling. A hand auger will be used to sample the soils to a depth of 3 feet. Samples will be taken from the surface at 1 foot, 2 feet, and 3 feet. The samples will be analyzed for the contaminants listed in Table 7-1.

The soil beneath the storage pads and building floor will be authoritatively sampled in areas of potential pathways (cracks, expansion joints). The potential pathways will be documented in a scale drawing before sampling. This will ensure that all potential pathways, with the exception of hairline cracks (cracks that do not penetrate beyond the surface), are sampled. The sampling location on each potential pathway will be selected to ensure that the most likely point of soil contamination will be sampled. The sample location indicators (most likely to allow for infiltration of contaminants) are the widest portions of the potential pathway, the portions of the pathway with the lowest elevation, and any areas on the pathway that are stained. At least 5 percent of the length of each potential pathway will be sampled (once every 20 feet). Each separate potential pathway will be sampled at least once. Soil samples will be taken through the core hole in the pad or floor. Samples will be taken from the surface at 1 foot, 2 feet, and 3 feet.

7.2.1.5.4 Floor. Core sampling locations for the trench are shown in Figure 7-4 and the core sampling locations for the concrete floor are shown in Figure 7-2. According to historical records, only the northern portion of the building was used to store dangerous or mixed waste. Three sampling locations within the approximately 64 1-square meter floor grids will be core sampled. The soil beneath cracks in the building floor will be sampled as described in Section 7.2.1.5.3.

7.2.1.6 Data Quality. To ensure quality data, all sampling will be conducted in conformance with onsite procedures (WHC 1988). All laboratory analyses will be performed in accordance with standard EPA methods described in the most recent edition of SW-846 (EPA 1986). The analytical laboratory will submit all analytical and quality assurance/quality control (QA/QC) procedures to the O&E for approval before samples are analyzed. The EPA guidelines for reporting accuracy, precision, practical quantification limit method detection limits, and limits of quantification specified in the analytical methods will be met.

Quality control of sampling will be ensured by using field duplicates, equipment blanks, trip blanks, and field blanks. Each of these sample types is discussed in Section 7.2.8. Quality control of records and documentation will be accomplished by following procedures outlined in EII 1.6, "QA Records Processing" (WHC 1989).

Sampling records to be kept on file include field notes, daily memoranda, records of meetings, and activities concerning the sampling program, and chain-of-custody records. In addition, QC will be implemented through the recording of field memoranda and field notes. The types of records and documentation required for all samples are described in Section 7.2.8.

Appendix F contains the quality assurance project plan (QAPjP) for sampling and analysis at the 303-K Storage Facility.

7.2.2 Modifications to the Waste Sampling and Analysis Plan

The optimal aspects of sample design are sometimes not achievable because of unanticipated or changing conditions. Factors adversely influencing sampling efforts can include equipment malfunction or breakdown, improper equipment, physical barriers to coring equipment, and overly optimistic evaluation of other physical conditions at sites with no previous history of dangerous waste characterization. When changes to the planned activity are necessary, the changes will be recorded in the field logbook along with circumstances requiring the action. The field logbook will be reviewed and signed by the project manager daily, as described in EII 1.5, "Field Logbooks" (WHC 1988). This procedure will provide an accurate record of changes and approvals, while allowing sampling to proceed safely while maintaining efficient manpower and equipment usage. When deviations from an EII are required, procedures outlined in EII 1.4, "Instruction Change Authorization" (WHC 1988) will be followed. In addition, any changes to the closure plan will be in accordance with WAC 173-303.

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7.2.3 Data Evaluation Process

Analytical results from the 303-K Storage Facility sampling will be compiled, evaluated, and summarized in the following manner:

- Conduct the statistical evaluation of the analytical data as described in Section 7.2.4
- Prepare summary statistics for constituents as described in Section 7.2.4
- Test the significance of the location and/or depth effects of analytical results
- Compare the sample results to the action levels.

7.2.4 Statistical Treatment of Data

All data collected will be analyzed and tabulated for evaluation using the methods described in SW-846 (EPA 1986). Other guidance documents and statistical references may be used where applicable [e.g., Barth and Mason 1984 and *Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities, Interim Final Guidance* (EPA 1989c)]. Laboratory data will be provided to Ecology upon completion of sampling and analysis. Data for individual constituents will be summarized and will include the following information:

- Number of less than detection limit values
- Total number of values

- Mean values
- Standard deviation
- Accuracy
- Coefficient of variation
- Method detection limit values
- LOQ values
- Representative method precision
- Median value
- Minimum value
- Maximum value.

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 minimized, samples were preserved properly, and that the chain of custody of the samples was not broken.

Analytical data received from any sampling performed at the 303-K Storage 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, number of samples, and specific methods used for collection if different from those provided in this waste sampling and analysis plan. Data received from the laboratory will be reviewed, analyzed, and summarized statistically. The results will be used to provide further closure evaluations.

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7.2.7 Sampling Equipment, Containers, and Preservation

This section describes the equipment, containers, and preservation methods used for sample collection at the 303-K Facility.

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

- Concrete
- Soils
- Asphalt.

The following are examples of the types of sampling equipment that might be used during the various phases of the investigation.

Concrete/asphalt	Soils/gravel
• Concrete/asphalt coring device	• Auger • Split spoon • Trowel • Scoop • Shovel

An auger and split spoon will be used to collect soil and gravel samples if site conditions permit. Otherwise, a trowel, scoop, or shovel will be used. The sampling equipment will be constructed of stainless steel or 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
- Security tape, flagging
- Gloves of material suitable for anticipated hazards
- Field radio
- Rags
- Appropriate drawings and maps
- Tags
- Plastic sheeting
- Water containers

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- Extra glass and plastic bottles (in case of breakage or contamination)
- Industrial-size shop vacuum
- Teflon* sheets
- Concrete.

7.2.7.2 Sample Containers and Preservation. Sample containers will be chosen based on their compatibility with the samples, resistance to leaking or breakage, ability to seal tightly, and capacity to hold the required volume for an optimum sample. Containers for collecting and sorting samples will be made of high-density plastic or glass appropriate for the constituents to be analyzed. The containers will have tight, screw-type lids with Teflon cap liners for glass bottles.

All samples will be packaged according to EII 5.11, "Sample Packaging and Shipping" (WHC 1988), placed in an ice chest, and cooled to 4 °C ±2 °C immediately after collection. Soil and sediment sample containers will be those specified in EII 5.2, "Soil and Sediment Sampling" (WHC 1988). Because the samples will be collected from radiation zones, the samples must be checked by a radiation protection technologist before being removed from the site, according to onsite operating procedures and the site-specific health and safety plan (HASP) to be developed. For samples collected from radiation zones, a dose assessment will be conducted for use in developing an as low as reasonably achievable (ALARA) plan for sampling activities. The assessment will be conducted in a manner that will not compromise the validity of the sample. All deviations from SW-846 protocols (EPA 1986), including sample size, will be documented with a justification for the deviation.

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7.2.8 Sampling Quality Control

The required QC procedures will be followed to adequately control sampling activities. The various QC procedures are described in the following sections.

7.2.8.1 Field Quality Control. Field QC will be accomplished by various sampling duplicates and blanks, as described in the following paragraphs. The QC samples will be taken as listed in Table 7-3.

Field duplicate samples will be taken for concrete cores and underlying soils. Duplicate samples are two separate samples collected from the same sampling point and placed into separate containers. The duplicates will indicate the repeatability of the analytical data.

Equipment blanks will serve as a check on sampling device cleanliness. An equipment blank will consist of distilled water that is transported to the site, opened in the field, and poured over or through the sample collection device, collected in a sample container, and returned to the laboratory for analysis. These samples will be collected daily.

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*Teflon is a trademark of E. I. duPont de Nemours and Company, Incorporated.

Trip blanks will identify any possible contamination originating from container preparation methods, shipment, handling, storage, or site conditions. Trip blanks will consist of pure deionized, distilled water in a clean sample container, which will accompany each batch of containers shipped to the field. Trip blanks will be returned unopened to the laboratory for analysis.

Field blanks will consist of pure deionized, distilled water that is transferred to a sample container at the site and preserved with the reagent specified for the analyses of interest. Field blanks will check for possible contamination originating with the reagent or the sampling environment and will be collected daily.

7.2.8.2 Field Logbook. The personnel conducting sampling will maintain an official logbook during the effort, as outlined in EII 1.5, "Field Logbooks" (WHC 1988). The book will be bound and will have consecutively numbered pages. All information pertinent to the sampling must be recorded in the logbook in a legible fashion. If changes are necessary, changes will be indicated by a single line drawn through the affected text. The individual responsible for the change will initial and date the entry. Each day's activities or separate sampling episodes must be signed. The logbook will be protected, stored in a safe file or other repository, and retained as a permanent record.

The following types of information will be included in the logbook:

- Site map, sketch, drawing, or other definitive site description
- Locations of all sampling points, including reference points and scale
- Sample method
- Sampling location
- Date and time of collection
- Collector's name
- Number, type, and volume of samples taken
- Identification number for each sample
- Field observations (weather conditions, temperature, wind, wetness, and appearance of sample)
- Laboratory of destination
- Field measurements, including the results of the radiation survey
- Signature of recording personnel.

The following items could be included in the logbook:

- Name and address of field contact
- Producer of waste
- Type of process
- Type of waste
- Type and/or purpose of sampling
- Sample transportation method
- Photographs of site for field conditions and site location verification.

7.2.8.3 Sample Labels. Labels will be securely attached to each sample to prevent misidentification. Labels can be adhesive labels or tags and will be affixed to the proper sample containers before or at the time of collection. All information will be completed at the time of collection. Indelible pencil or ink must be used. Each label will contain at least the following information:

- Site contractor
- Collector's name
- Date and time collected
- Sample number.

7.2.8.4 Sample Seals. Sample seals will be used to prevent and/or detect tampering with samples between the time of collection and the beginning of analysis. Seals will be applied to the sample containers before the containers leave the sample location. The seals will be attached so the seal must be broken to open the container.

7.2.8.5 Chain-of-Custody Records. To ensure the integrity of the samples from collection through analysis to final disposition, documentation will be necessary to trace sample possession and handling. This documentation generally takes the form of a record providing a history of all the people having custody of the sample, including the following situations when a sample is:

- In a person's physical possession
- In view of a person
- Secured by an individual to prevent tampering
- Placed in an area restricted to authorized personnel only.

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A chain-of-custody record will be completed and must accompany all samples from collection to analysis. Multiple copies will be required, and at least one copy must be maintained by the sampling supervisor. The following information will be included:

- Contractor
- Sample numbers
- Date and time collected
- Sample type
- Number of containers
- Collector's signature
- Signature of person receiving possession
- Inclusive dates of possession
- Condition of samples upon receipt.

Procedures outlined in EII 5.1, "Chain of Custody" (WHC 1988) will be followed.

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 should include 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 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 (1) inspect the condition of the sample and the sample seal, (2) verify the information on the sample label and seal against that on the chain-of-custody record, (3) assign a laboratory number, (4) log in the sample in the laboratory logbook, (5) store the sample in a secured sample storage room or cabinet, which is adequate for the preservation requirements of the sample, and (6) 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/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 303-K Storage 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 HASP. In addition, the 303-K Storage Facility-specific HASP will be prepared before sampling and added to the closure plan at that time. This plan (titled a hazardous waste operation permit) 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 that there is 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, it will be cleaned as thoroughly as practical in accordance with EII 5.4, "Field Cleaning and/or Decontamination of Equipment" (WHC 1993). Decontamination wash water will be placed in 55-gallon containers and solidified with a clay mixture for disposal as solid low-level radioactive or mixed waste. Whenever possible, equipment will be cleaned in the laboratory according to procedures specified in EII 5.5, "1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment" (WHC 1988).

7.2.8.9.3 Sampling Container Decontamination Procedures. Containers will be purchased precleaned from the factory and maintained under strict chain of custody to preserve the integrity of the samples from collection through disposal. Sample containers will be disposed of after analysis.

7.2.9 Analytical Procedures

Analyses of all constituents except uranium will be performed by the laboratory in accordance with EPA requirements in SW-846 (EPA 1986). 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 may 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 concrete inorganic analysis methodology involves a two-part

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process. The initial part is hot acid digestion (SW-846 Method 3050), with total metals analysis using inductively coupled plasma (ICP-AES) atomic emissions spectroscopy (SW-846 Method 6010, EPA 1986). This part indicates which metals are present in the concrete 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 toxic characteristic leachating procedure (40 CFR 261, Appendix II) followed by total metals analysis using ICP-AES (SW-846 Method 6010). This part determines if any of the metals present can 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 part.

7.2.9.2 Concrete and Asphalt Organic Analysis Methodology. There is not an established analytical method for volatile organics analysis (VOA) of concrete or asphalt samples. The most promising method is that for soils and sediments as given in SW-846 Method 8260A (EPA 1986). However, this method is undocumented for concrete or asphalt analysis. The problems and uncertainties associated with using Method 8260A for concrete and asphalt VOA can be overcome with a modified procedure for collecting the VOA contamination from a sample of concrete or asphalt. The collection methodology desorbs the organic constituents from the concrete or asphalt into high purity water using agitation provided by an ultrasonic bath. The water is then analyzed for volatile organics by gas chromatography/mass spectroscopy (GC/MS) using a modified procedure based on SW-846 Method 8260A (EPA 1986).

7.2.10 Laboratory Quality Control

The contractor laboratory will ensure the integrity and validity of test results through implementation of an internal QC program. The program will meet the QC criteria of SW-846 (EPA 1986). A system of reviewing and analyzing the results of these samples will be maintained to detect problems caused by contamination, inadequate calibrations, miscalculations, improper procedures, or other factors. Standard methods will be used whenever possible. Alternative methods that are developed or adapted will be tested and completely documented per the requirements of SW-846 (EPA, 1986). All methods and method changes will be approved by an onsite contracts representative.

The QC procedures for dangerous waste analyses will include [as appropriate to each analysis and as specified in Section 1.2 of SW-846 (EPA 1986)] evaluation of blanks, duplicates random matrix spikes (for 10 percent of the samples), internal standards, surrogates, and standard calibration curves. Spikes will be added in amounts depending upon the amount of analyte present in the sample. The QC procedures specific to individual methods will be detailed in the laboratory's documented analytical procedures and QC data included with each batch of samples analyzed. Appendix F contains the QAPP.

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7.2.11 Site Safety

This section discusses the site-specific health and safety plan, contamination control and waste handling, personnel training, and standard safety procedures.

7.2.11.1 Health and Safety Plan. A HASP is required for all dangerous waste sampling sites. HASP is intended to specify information pertinent to field assignments and to be a guide in unusual situations or emergencies. A site-specific version of the general RCRA/CERCLA investigation health and safety manual will be developed for use in sampling at the 303-K Facility. The site-specific HASP will be prepared in accordance with EII 2.1, "Preparation of Site-specific Health and Safety Plans" (WHC 1988).

7.2.11.2 Contamination Control. Because sampling is to be undertaken within a radiological control area, standard onsite radiation work procedures will be followed. In addition, the following activities will be performed.

- Modification to personnel decontamination procedures--All modifications to decontamination procedures will be approved by the field team leader (cognizant engineer) and the site safety officer. Modifications will be recorded in the appropriate logbooks.

- Disposal procedures--Excess sample material will be containerized in a 17-H open-headed 55-gallon container. Rinse waters also will be containerized. Disposal procedures of unknown or suspect waste materials will be performed in accordance with EII 4.2, "Interim Control of Unknown, Suspected Hazardous and Mixed, and Radioactive Waste" (WHC 1988).

  Waste materials are designated as unknown waste when:
  - Criteria for suspected hazardous waste are not met
  - Field readings are suspect.

  Waste material will be designated as suspected hazardous waste based on process knowledge of material that is known to have been discharged to the area under investigation, provided the following:
  - Direct instrumentation reading of organic vapor is in excess of 10 parts per million above background levels
  - pH is less than 3 or greater than 12.

  Articles such as protective clothing that have been soiled with potentially contaminated materials will be temporarily placed in containers.

  In accordance with WAC 173-303-200(2) and EII 4.2 (WHC 1993), the 55-gallon containers will be stored in satellite accumulation areas. When waste is generated, the major risk(s) will be marked on the containers. Sampling and analysis will be conducted as needed to complete waste designation. When a container is full it will be marked with the accumulation data (drum fill date). Then the container will either be moved to a less-than-90-day accumulation area

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or shipped directly to a different RCRA permitted treatment/storage/disposal facility within 72 hours of filling the drum. If a less-than-90-day accumulation area, the waste will be moved to a different RCRA permitted treatment/storage/disposal facility within 90 days of the accumulation date. If hazardous contamination is not found, materials will be laundered or disposed of according to onsite procedures that are written in accordance to WAC 173-303, DOE orders, and 40 CFR 261.

7.2.11.3 Personnel Training. All personnel involved with the closure activities at the 303-K Storage Facility will receive a minimum level of dangerous waste training as follows.

- Managers and supervisors are responsible for supervising, coordinating, and directing the closure activities and personnel.

- Metal operators and decommissioning and decontamination workers are responsible for packaging and handling dangerous waste (both nonradioactive and radioactive material).

- Samplers are responsible for obtaining the samples.

- Health physics technicians are responsible for surveying for radiological contamination.

- Crafts personnel are responsible for specialized work. The various crafts include carpenters, electricians, ironworkers/riggers, heavy equipment operators, crane operators, millwrights, pipefitters, and painters.

Table 7-4 contains a matrix that relates job categories to the individual training course. Appendix E contains brief descriptions of the training courses, including descriptions of the target audience, instructional technique, evaluation method, length of course, and frequency of retraining.

7.2.11.4 Standard Safety Procedures. The following safety procedures will apply each time personnel make a site entry for sampling purposes.

- No personnel will be at the site without a designated 'buddy'.

- One of the people entering the site will be designated to be in charge.

- Personal protective equipment will be worn as specified. Approved deviations will be entered in the field logbook and signed by the field team leader (cognizant engineer) and the site safety officer.

- Field work will be planned before the site is entered.

- Equipment needed for work will be inventoried and inspected before the site visit to ensure that all equipment is present and in operable condition.

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7.3 REMOVAL OF CONTAMINATED MATERIAL AND WASTE RESIDUES

Waste remaining in the building and in the outside storage areas at the commencement of closure activities will be removed. General housekeeping cleanup procedures will be followed to remove any remaining waste residues.

7.4 DECONTAMINATION AND DISPOSAL OF BUILDING AND CONCRETE PAD

The building's interior will be decontaminated using some combination of the following techniques:

- Damp wipe downs
- Vacuum-assisted mechanical removal
- Sandblasting
- High-pressure steam and suction.

It is anticipated that a majority of the decontamination work can be accomplished using damp wipe downs and vacuuming. However, the actual method of decontamination will be specified in a decommissioning work plan, which will address each area of concern (sandblasting or scabbling might be necessary for some floor areas, while this method might be inappropriate and unnecessary for wall areas). Decontamination waste will be tested for the constituents in Table 7-1 to determine the appropriate method of disposal.

A 'decommissioning work plan' is a generic term for the implementation procedure used to provide specific field direction to workers actually performing the decontamination and demolition. The general decontamination information is included in Sections 7.3, 7.4, and 7.5. The actual decommissioning work plan will specify sufficient detail for field implementation of the items addressed in these sections. The decommissioning work plan will be included as an appendix in the closure plan. This will take place just before the work begins.

Sampling (as described in Section 7.2) will be conducted following the cleaning process to determine the effectiveness of the cleaning procedure and the appropriate remedial options.

The analytical results of the concrete and asphalt core samples will be evaluated to determine if the building and storage pads can be used for less-than-90-day storage. If portions of the building and storage pads do not meet the action levels presented in this closure plan, those portions will be removed and disposed of based on the following criteria.

- If the material is a dangerous waste (only), the material will be transported and disposed of offsite at a permitted treatment, storage, and/or disposal (TSD) facility.

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- If the material is mixed waste, the material will be transferred to the Central Waste Complex for interim storage and future treatment or disposal. Requirements for solid mixed waste packaging, storage, and disposal (WHC 1991) will be followed when preparing waste for storage and/or disposal.

- If the material is not dangerous but is low-level radioactive waste, the material will be disposed of onsite in the 200 Area.

With the exception of an imminent health threat, all soil remediation will take place under the CERCLA remedial action process for the 300-FF-3 operable unit.

7.5 OTHER ACTIVITIES REQUIRED FOR CLOSURE

An interim cover might be placed over the building location if the building and outside storage pads are removed and if WAC 173-303 contaminants are left in place, pending remediation of the 300-FF-3 operable unit. The cover material will depend on the results of the soil samples but could consist of packed clay, asphalt, concrete, a synthetic liner, fixative spray, or a combination of these materials. Reclamation might be justified to control dust, erosion, surface water run-off, and to promote postclosure usage. Site restoration might include backfilling disturbed soil areas with noncontaminated native soil, compaction, and grading (Chapter 8.0, Section 8.2).

Depending on the surface area, method, material, and location of areas to be decontaminated, a greenhouse might be necessary to control the spread of low-level radiological and dangerous contaminants. This greenhouse will provide a negative air pressure (via HEPA filter-equipped exhauster), airlock entry and exits, and other attributes similar to an asbestos work enclosure described by EPA in *Asbestos Waste Management Guidance* (EPA 1985).

All equipment used during closure activities will be decontaminated or disposed of according to the following:

- EII 4.2, "Interim Control of Unknown, Suspected Hazardous and Mixed, Radioactive Waste" (WHC 1988)

- EII 5.4, "Field Cleaning and/or Decontamination Equipment"

- EII 5.5, "1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment" (WHC 1988).

7.6 SCHEDULE OF CLOSURE

Closure of the 303-K Storage Facility will begin on notification by Ecology of closure plan approval. Closure will proceed according to the schedule presented in Figure 7-8.

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7.7 AMENDMENT OF PLAN

The closure plan for the 303-K Storage Facility will be amended whenever changes in operating plans or design affect the closure plan, whenever there is a change in the expected year of closure, or if, when conducting closure activities, unexpected events require a modification to the closure plan. The closure plan will be modified in accordance with WAC 173-303-610(3). This plan may be amended any time before certification of final closure of the 303-K Storage Facility.

If an amendment to the approved closure plan is required, the DOE-RL will submit a written request to Ecology to authorize a change in the approved plan. The written request will include a copy of the closure plan amendment for approval.

7.8 CERTIFICATION OF CLOSURE

Within 60 days of closure of the 303-K Storage Facility, the DOE-RL will submit to Ecology a certification of closure. The certification will be signed by both DOE-RL and an independent professional engineer. The certification will state that the 303-K Storage Facility has been closed in accordance with the approved closure plan. The certification will be submitted by registered mail or an equivalent delivery service. Documentation supporting the independent professional engineer's closure certification will be retained and furnished to Ecology upon request.

The DOE-RL and the independent professional engineer will certify with a document similar to Figure 7-9.

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8.0 POSTCLOSURE

This chapter discusses what will occur if the clean-closure requirements cannot be met.

8.1 NOTICE-IN-DEED

This closure plan is proposing clean closure of the 303-K Storage Facility. However, if clean closure cannot be obtained, the following action will be taken in accordance with WAC 173-303-610 (1)(b). Within 60 days of the certification of closure, the DOE-RL will sign, notarize, and file for recording the notice indicated below. The notice will be sent to the Auditor of Benton County, P.O. Box 470, Prosser, Washington, with instructions to record this notice in the deed book.

TO WHOM IT MAY CONCERN

The United States Department of Energy, Richland Operations Office, an operations office of the United States Department of Energy, which is a department of the United States government, the undersigned, whose local address is the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby gives the following notice as required by 40 CFR 265.120 and WAC 173-303-610(10) (whichever is applicable).

(a) The United States of America is, and since April 1943, has been in possession in fee simple of the following described lands: (legal description of 303-K Storage Facility site).

(b) The United States Department of Energy, Richland Operations Office, by operation of the 303-K Storage Facility, has disposed of hazardous and/or dangerous waste under the terms of regulations promulgated by the United States Environmental Protection Agency and Washington State Department of Ecology (whichever is applicable) at the above described land.

(c) The future use of the above described land is restricted under terms of 40 CFR 264.117(c) and WAC 173-303-610(7)(d) (whichever is applicable).

(d) Any and all future purchasers of this land should inform themselves of the requirements of the regulations and ascertain the amount and nature of waste disposed of on the above described property.

(e) The United States Department of Energy, Richland Operations Office has filed a survey plat with the Benton County Planning Department and with the United States Environmental Protection Agency,

Region 10, and the Washington State Department of Ecology (whichever are applicable) showing the location and dimensions of the 303-K Storage Facility site and a record of the type, location, and quantity of waste treated.

8.2 POSTCLOSURE CARE

Postclosure care generally is required when a TSD unit cannot attain a clean closure. At the 303-K Storage Facility, underlying soils and groundwater might have been contaminated by waste generated during past-practice operations in the 300 Area. Under the Tri-Party Agreement (Ecology et al. 1992), a procedure to coordinate the TSD unit closure or permitting activity with the past-practice investigation and remediation activity is necessary to prevent overlap and duplication of work, thereby economically and efficiently addressing the contamination.

With the exception of an imminent health threat, all soil remediation will take place under the CERCLA remedial action process. If the soil within the 303-K Storage Facility boundary is found to be contaminated (chemical concentrations above local background threshold and health-based standards) from operations conducted (chemicals used or waste stored) in the 303-K Storage Facility, the 303-K Storage Facility will not be considered closed until the remediation under CERCLA is complete. During the time between closure of the building, floor, and pads and any soil remediation under CERCLA, steps will be taken to isolate any contamination.

Any data obtained from sampling and analyses during closure activities will be part of the record and included in the closure plan. These data will be taken into account and used during the CERCLA evaluation of the 300-FF-3 operable unit, as well as data collected specifically for the CERCLA evaluation.

Temporary covers will be installed, if necessary, to prevent migration of any contamination. The temporary covers would be less permeable than the surrounding soil and could be composed of constituents such as asphalt, clay, concrete, synthetic liner, or a fixative spray. The existing floor and pads might be used as covers if these were found to be uncontaminated or were decontaminated. The exact nature of any covers would be determined at the time the need was identified, and this information would be added to the closure plan. In addition, access to the areas of contamination would be controlled, if necessary, to protect personnel or prevent the migration of contamination.

During the period between closure of the building and soil remediation under CERCLA, the closure area would be inspected at a minimum of once a week. This inspection would be combined with inspections presently conducted. The inspections would determine the need for maintenance of any temporary covers or other physical barriers. Any required maintenance would be performed by trained personnel.

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PART A

The Part A, Form 1, "Dangerous Waste Permit General Information" was submitted to the Washington State Department of Ecology in May 1988. The Part A, Form 1, consists of three pages.

The original Part A, Form 3, Revision 0, "Dangerous Waste Permit Application" was submitted to Ecology in August 1987. Revision 0 included the treatment design capacity, facility description, dangerous waste codes, and dangerous waste description. Revision 1 of the Part A, Form 3, was prepared to include Westinghouse Hanford Company as co-operator of the 303-K Storage Facility. Revision 2 of the Part A, Form 3, was prepared to add dangerous waste code D002 and related estimated annual quantity of dangerous waste for the addition of copper-flurozirconate crystals. Revision 3 of the Part A, Form 3, was prepared to add 23 dangerous waste codes and their related estimated annual quantity of dangerous waste.

Revision 4 of the Part A, Form 3, was prepared to add waste codes D029, D035, D037, D039, D040, F002, F005, and WC02. These new waste codes are from the analysis of current waste, the analysis of a previously unknown waste, and from regulatory changes that added new waste codes.

The Part A, Form 3 (Revision 4), included in this closure plan consists of 9 pages, 1 figure, and 1 photograph.

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ORM 3

DANGEROUS WASTE PERMIT APPLICATION

1. EPA/STATE I.D. NUMBER: W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED *(mo., day, & yr.)*	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

☐ 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

MO.	DAY	YR.
0 1		7 2

FOR EXISTING FACILITIES, PROVIDE THE DATE *(mo., day, & yr.)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

☐ 2. NEW FACILITY *(Complete item below)*

MO.	DAY	YR.

FOR NEW FACILITIES, PROVIDE THE DATE, *(mo., day, & yr)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION *(place an "X" below and complete Section I above)*

☒ 1. FACILITY HAS AN INTERIM STATUS PERMIT

☐ 2. FACILITY HAS A FINAL PERMIT

III. PROCESSES - CODES AND CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the *(Section III-C)*.

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc)	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D80	GALLONS OR LITERS
LANDFILL	D81	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D82	*ACRES OR HECTARES*
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	UNIT OF MEASURE CODE
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING SECTION III *(shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons.* The facility also has an incinerator that can burn up to 20 gallons per hour.

LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE *(from list above)*	B. PROCESS DESIGN CAPACITY 1. AMOUNT *(specify)*	B. 2. UNIT OF MEASURE *(enter code)*	FOR OFFICIAL USE ONLY
X-1	*S 0 2*	*600*	*G*		*5*				
X-2	*T 0 3*	*20*	*E*		*6*				
	S 0 1	11,000	G		*7*				
2					*8*				
3					*9*				
4					*10*				

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ntinued from the front.

PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

S01

The 303-K Storage Facility is used for the storage of mixed waste in Department of Transportation-specification containers. Both liquid and solid waste is stored in the 303-K Storage Facility. The liquid waste is stored on a 610 square foot (57 square meter) pad within the building. The building provides secondary containment for the contents of the containers. The solid waste is stored outside the building on a 4,590 square foot (426 square meter) asphalt, concrete, and gravel pad. The storage area is surrounded by a chain link fence. Approximately 200 55-gallon (208-liter) containers (or more smaller-sized containers) can be stored at the 303-K Storage Facility.

IV. DESCRIPTION OF DANGEROUS WASTES

A. DANGEROUS WASTE NUMBER - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2			T 0 3 D 8 0	*included with above*

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Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

I. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	F001	15,000	P	S01	Storage - Container (See IV.E.1)
2	WC01				
3	WP01				
4	WT01				
5	D001				
6	F003				
7	WT02				
8	F002				
9	F005				
10	WC02				
11	D002				
12	D006				
13	D029				
14	D035				
15	D039				
16	D040				included with above
17	WT02	40,000	P	S01	Storage - Container (See IV.E.2)
18	D007				included with above
19	WT01	40,000	P	S01	Storage - Container (See IV.E.2)
20	D001				
21	D005				
22	D006				included with above
23	D002	1,700	P	S01	Storage - Container (See IV.E.3)
24	D001	5,100	P	S01	Storage - Container (See IV.E.4)
25	D008	5,500	P	S01	Storage - Container (See IV.E.5)
26					

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Continued from page 2.
NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

D. NUMBER *(entered from page 1)*

W	A	7	8	9	0	0	0	8	9	6	7

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

LINE NO.	A. DANGEROUS WASTE NO. *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
1	WT02	300,000	P	S01	Storage - Container (See IV.E.6)
2	D001				
3	D004				
4	D005				
5	D006				
6	D007				
7	D009				
8	D011				included with above
9	D002	1,500	P	S01	Storage - Container (See IV.E.7)
10	D007				included with above
11	D002	60	P	S01	Storage - Container (See IV.E.8)
12	D004				
13	D007				
14	D011				included with above
15	WP02	200	P	S01	Storage - Container (See IV.E.9)
16	D037	44	P	S01	Storage - Container (See IV.E.10)
17					
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DESCRIPTION OF DANGEROUS WASTES (continued)

USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

SEE FOLLOWING PAGE

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V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail)*.

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground-level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail)*.

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

[x] A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
John D. Wagoner, Manager U.S. Department of Energy Richland Operations Office	John D. Wagoner	12/16/93

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME *(print or type)*	SIGNATURE	DATE SIGNED
SEE ATTACHMENT		

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Section IV.E. Description of Dangerous Wastes

The 303-K Storage Facility is used for the storage of mixed waste in U.S. Department of Transportation-specification containers. This waste consists of the following:

1. Approximately 15,000 pounds (6,800 kilograms) per year of spent solvents [This includes spent degreasing solvents (F001, WC01, WP01, and WT01) that were occasionally mixed with ethyl acetate (D001, F003, and WT02). This also includes spent halogenated and nonhalogenated solvents (F002 and F005) as well as waste with low concentrations of carcinogenic solvents (WC02). Waste solvents are corrosive (D002) and containe cadmium (D006), 1,1-dichloroethylene (D029), methyl ethyl ketone (D035), tetrachloroethylene (D039), and trichloroethylene (D040)].

2. Approximately 80,000 pounds (36,300 kilograms) per year of heat treat salts contaminated with naturally occurring radioactive potassium-40 [The heat treat salts were generated from both beta bath [40,000 pounds (18,200 kilograms) per year] and quench bath [40,000 pounds (18,000 kilograms) per year]. The beta bath salts consist of potassium chloride and sodium chloride (WT02) and chromium (D007). The quench bath salts consist of potassium nitrate, sodium nitrate, sodium nitrite, potassium chloride, and sodium chloride. The quench bath salts are toxic extremely hazardous waste (WT01) and are ignitable (D001) because of the presence of oxidizers (solid nitrates and nitrites). The quench bath salts also contain barium (D005) and cadmium (D006).

3. Approximately 1,700 pounds (770 kilograms) of corrosive (D002) copper fluorozirconate acid crystals from the bottom of the waste acid tanks in the 334-A Building

4. Approximately 5,100 pounds (2,300 kilograms) per year of Zircaloy-2 and beryllium/Zircaloy-2 chips and fines before and after concreting the waste in the 304 Building (This material is designated ignitable (D001) because of its pyrophoric properties.)

5. Approximately 5,500 pounds (2,500 kilograms) per year of metallic lead (D008)

6. Approximately 300,000 pounds (136,100 kilograms) per year of centrifuge and filter press sludge designated as a toxic dangerous waste (WT02) by the mixture rule and ignitable (D001) because of the presence of solid nitrates [The waste may also contain the following ions introduced into the 300 Area Waste Acid Treatment System: arsenic (D004), barium (D005), cadmium (D006), chromium (D007), mercury (D009), and silver (D011)].

7. Approximately 1,500 pounds (680 kilograms) per year of corrosive (D002) waste acid absorbed by sedimentary opal clay [This waste also contains chromium (D007)].

8. Approximately 60 pounds (27 kilograms) per year of waste acids contaminated with oil [The waste acids are designated as corrosive (D002) and contain arsenic (D004), chromium (D007), and silver (D011)].

9. Approximately 200 pounds (91 kilograms) per year of waste hydraulic oil containing halogenated hydrocarbons (WP02)

10. Approximately 44 pounds (20 kilograms) of a mixed waste that contains pentachlorophenol (D037)

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X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John D. Wagoner

Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

12/16/93
Date

Thomas M. Anderson

Co-operator
Thomas M. Anderson, President
Westinghouse Hanford Company

12/1/93
Date

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303-K Storage Facility

8704479-10CN
(PHOTO TAKEN 1987)

46°22'14"
119°16'42"

89050353-12CN
(PHOTO TAKEN 1989)

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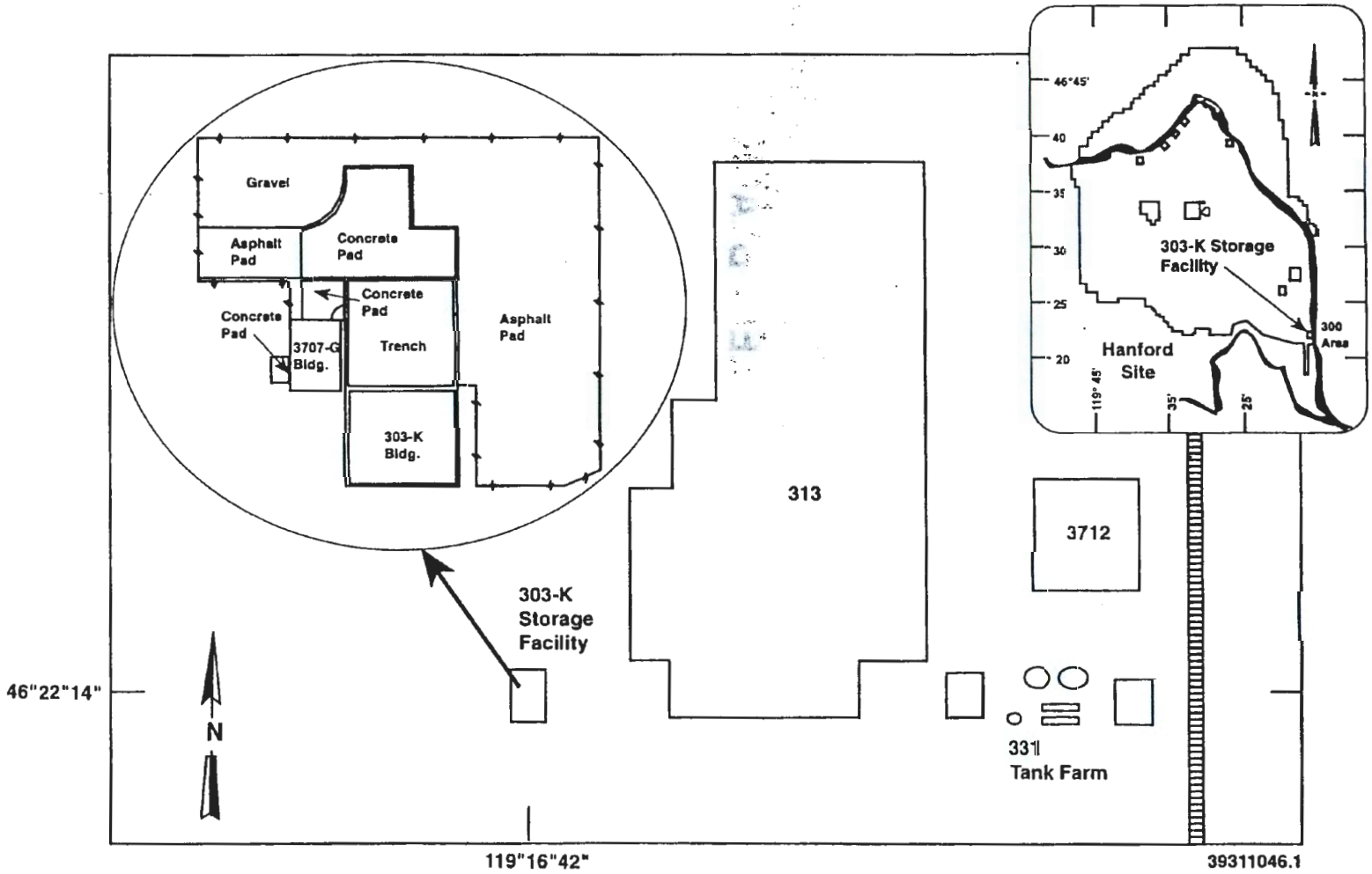
303-K Storage Facility



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