RCRA Interim Status Closure Plan
1500 Airport Way South Facility

Prepared for

Northwest EnviroService, Inc.
Seattle, Washington

EPA ID No: WAD 058367152

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1.0 Introduction

This interim status closure plan has been prepared to describe the activities that have been or will be undertaken to close the Resource Conservation and Recovery Act (RCRA) interim status hazardous waste management units at the Northwest EnviroService, Inc. (NWES) treatment and storage facility. The NWES is located at 1500 Airport Way South in Seattle, Washington (Figure 1). The site occupies about 1 acre and is bordered by South Atlantic Street to the north, South Holgate Street to the south, Interstate I-5 to the east, and Airport Way South to the west.

This plan was initially prepared and submitted to Washington State Department of Ecology (Ecology) in December of 1994. Since that time this plan has gone through several revisions based on comments from Ecology and the United States Environmental Protection Agency Region 10 (EPA). Most recently, NWES met with Ecology and EPA on July 15, 2004 regarding RCRA closure of the facility. During the meeting, it was agreed upon that the 1998 Closure Plan, the most recent submittal prior to this document, would be revised to reflect current facility conditions and the fact that portions of the facility were not closed as a RCRA landfill as proposed in the 1998 Closure Plan. Specific modifications from the 1998 Closure Plan are listed below:

- Sections and specific statements related to the closure of the facility as a landfill have been deleted. The RCRA Facility Investigation (RFI) showed no constituents in soil above MTCA Method C levels and most were below MTCA Method B levels. As a result, Ecology and EPA have agreed that closure as a landfill is not required. Post-closure care requirements are no longer applicable as discussed in 40 CFR 265.197 and WAC 173-303-640(8).
- Used sandblast grit has been added as a potentially contaminated waste and to be sampled for proper disposal.
- In addition to the verification samples already discussed in the 1998 Closure Plan, two verification samples comprised of final rinsate water from Areas 8 and 9 are to be collected to demonstrate that the required level of decontamination has been achieved.
- The washwater was to be analyzed for the full suite analysis required by the King County Department of Metropolitan Services (Metro) discharge permit after it has been batch treated in the onsite wastewater treatment plant.

Further revision to this closure plan was made in 2016 to document deviations from the 2004 revision to the closure plan and to document the use of alternate requirements for closing the below ground portion of the facility. The 2004 revision was originally included as Appendix A to the January 2016 Closure Report.

The southern, Western Blower Property, portion of the facility did not have a dangerous waste management unit. Nonetheless, the facility submitted a partial closure plan for that portion of the facility to remove the Western Blower portion of the property from RCRA interim status in preparation for its sale. The Western Blower closure plan and related

sample results were accepted as the remedy for corrective action for releases from solid waste management units for that portion of the facility. Ecology determined that no further action under RCRA corrective action was required for the Western Blower Property subject to several conditions, including an environmental restrictive covenant. The following paragraph summarizes key environmental results that demonstrate that this determination is protective.

There were soil results for several constituents above Model Toxics Control Act Method A or B unrestricted use cleanup levels in the area used to load/unload containerized dangerous waste. The soil results are below MTCA Method A or C industrial use cleanup levels. The two monitoring wells located on the Western Blower Property were sampled and analyzed for Appendix IX constituents. Manganese was the only constituent detected above the MTCA Method B unrestricted use cleanup level for groundwater. Initially, both wells were above the older criterion but only one result (3,400 µg/L) is above the current criterion (2,240 µg/L). The EPA did not require further investigation of the southern portion of the NWES Facility during the RCRA Facility Investigation.

The northern portion of the property is subject to dangerous waste closure levels for removal and decontamination set forth at WAC 173-303-610(2)(b). WAC 173-303-400 (3)(c)(vi)(B) also refers to WAC 173-303-610(2)(b) for interim status facilities. The RFI showed soil contamination above MTCA unrestricted use cleanup levels across the majority of the northern portion of the facility. The same contaminants were found at solid waste management units, dangerous waste management units and areas where there were no SWMUs or RCRA regulated units (areas of concern). Reflective of anticipated land use at the facility, closure performance standards for closing dangerous waste management units within the northern portion of the facility have been set using MTCA Method C industrial standards. Because it is technically impracticable to distinguish the source of contamination at any particular point within the northern portion of the facility, the same closure performance standards are used as corrective action cleanup standards for releases from solid waste management units and cleanup of areas of concern.

The Administrative Order on Consent under RCRA Section 3008(h), U.S. EPA Docket Number 1093-02-09-3008(h) was used as the basis for alternate requirements to close the below ground portion of dangerous waste management units at this interim status facility. Corrective action complete with controls has been achieved and the EPA order was terminated effective November 30, 2015. The EPA established, and the facility achieved, soil cleanup levels protective of continued industrial land use.

Shallow groundwater beneath the northern portion of the facility is also contaminated. Contaminants including but not limited to total arsenic, total vanadium, and benzo(a)pyrene in soil and total arsenic, benzene, vinyl chloride, and total petroleum hydrocarbons (TPH) in groundwater exceed the Model Toxics Control Act Method B Cleanup Level (MTCA Method A for TPH) established under WAC 173-340-705. The EPA did not establish groundwater cleanup levels for the contaminated shallow aquifer because there is insufficient shallow groundwater beneath the NWES Facility to be used as a drinking water source and the contaminated shallow groundwater is not likely to impact surface water (shallow perched aquifer). The thickness of the shallow contaminated groundwater unit is inadequate to install a potable well that meets the requirements set

forth in W AC-173-160. The lower aquifer is not contaminated. The EPA approved suspension of groundwater monitoring at the facility on November 25, 2013.

Environmental restrictive covenants requiring continued industrial land use and banning use of shallow contaminated groundwater without prior written approval from Ecology have been recorded with King County for all facility parcels. The remainder of this revision to the closure plan for the northern portion of the NWES facility addresses EPA and Ecology requirements to close the above-ground portion of the facility.

1.1 RCRA Interim Status Units Closure

The NWES facility (facility) is arranged into 12 management and operational areas as shown in Figure 2. Of these 12 areas, seven areas contain RCRA regulated tanks and/or containers, two areas are used for container load/unload and staging, and three areas do not contain RCRA-regulated units and will not have closure activities performed within them. Finally, the aisleway that runs the length of the facility and connects each operational area will also be cleaned according to the applicable sections of this closure plan.

This closure plan addresses the closure of the above ground portions of the interim status units at the Airport Way facility. A separate RCRA Facility Investigation (RFI) has been completed to provide characterization data for purposes of evaluating closure and corrective action requirements for the subsurface areas of the facility.

In addition, two of the areas, Areas 11 and 12, have been previously closed under the requirements of a separate closure plan (RCRA Interim Status Closure Plan, Western Blower Property) and are not covered in this closure plan.

The 10 management and operational areas and associated RCRA interim status units that are the subject of this closure plan are described below:

- **Area 1 - North Yard**. The regulated units in the North Yard include three tanks (EB, WB, and the battery/characteristic waste shredder). These tanks will be closed along with the surrounding surface area used for staging waste containers and stabilized solids. The location and general layout of Area 1 are shown in Figure 3.
- **Area 2 - Oil/Water Separator Tank Area**. The regulated units in Area 2 include the centrifuge and five tanks (C-1, C-2, 60-C, 60-E, and 60-D). The location and general layout of Area 2 are shown in Figure 4.
- **Area 3 - Oil Processing**. This area does not contain any RCRA interim status units.
- **Area 4 - Wastewater Treatment.** This area does not contain any RCRA interim status units.
- **Area 5 - Batch Wastewater Treatment Area.** The regulated units in Area 5 include 9 tanks (PE-1, CP-13, CP-67, CP-68, CP-69, CP-70, CP-71, CP-72, and CP-74) and the red filter press. These units will be closed along with the batch tank container and the small-container processing area located northwest of Tank CP-67. The location and layout of Area 5 are shown in Figure 5.

- **Area 6 - Bulk Corrosive Storage Area.** The regulated units in Area 6 include three tanks (CS-42, CS-61, and AH-120). The location and layout of Area 6 are shown in Figure 6.
- **Area 7 – Bulk Corrosive Acid Storage Area (future).** The Bulk Corrosive Acid Storage Area (future) was never built as indicated in the 1994 RCRA Permit Application. The area was not used for dangerous waste management operations and does not contain any RCRA interim status units.
- **Area 8 - Container Storage Area.** The Container Storage Area (for 55- and 85-gallon-capacity steel drums) includes the covered and exterior storage area, which is located along the east boundary of the facility (see Figure 7).
- **Area 9 - Container Staging Area.** This area is used for staging and repacking drummed wastes and is shown in Figure 8. It also contains the battery processing area.
- **Area 10 - South Tank Farm.** The regulated units in Area 10 include eight tanks (S-1, S-2, S-3, S-4, S-5, S-6, S-7, and S-8). The location and layout of Area 10 are shown in Figure 9.

1.2 CACO Units Closure

This closure plan also describes the activities to be undertaken to close two additional tanks and two sumps located at the facility. NWES has included these units within this closure plan per the Consent Agreement and Consent Order (CACO) Compliance Order Tasks, Items D and E [RCRA Docket No. 1092-08-07-3008(a)]. The units have been alleged to be hazardous waste management units (HWMUs). The inclusion of these four units in this closure plan neither admits, nor denies these allegations; nevertheless, the units will undergo closure pursuant to the RCRA requirements of 40 CFR Part 265, Subpart G, J, and K, incorporated by reference at WAC 173-303-400(3). The specific units to be closed under this Closure Plan are shown in Figure 10, and include:

- Oil water separator (OWS) tank (also referred to as the "Fruehauf Pit"), located within Area 2 (to be closed as a tank system);
- Primary sedimentation tank (PST) (also referred to as the "Large Pit"), located within Area 3 (to be closed as a tank system);
- Sump No. 2 (D-2), located west of the Area 8 container storage area (to be closed as a tank system);
- Sump No. 4 (C-1) located within Area 10 (to be closed as a tank system).

1.3 General Closure Schedule and Activities

The NWES facility began RCRA interim status closure activities in 1995. The facility property has been converted to non-hazardous waste operations. Most equipment and structures will remain on the property. Closure activities began within 45 days of the last receipt of hazardous waste in accordance with WAC 173-303-400 and 40 CFR 265.113.

NWES intends to clean close regulated units in Areas 1, 2, 5, 6, 8, 9 and 10; and debris standard close parts of Areas 5, 6, and 10. For units undergoing clean closure, no hazardous

wastes or constituents will remain in or about the regulated units at completion. This interim status closure plan contains information necessary to undertake clean closure and debris standard closure, including methods that will be used to:

- Remove waste inventory
- Decontaminate regulated units and related equipment
- Dispose of contaminated materials
- Perform the necessary sampling to certify completion of the closure process

The closure performance standards and decontamination activities described in this closure plan are intended to apply only to wastes subject to the requirements of WAC 173-303 and 40 CFR 265. Closure activities for Toxic Substances Control Act (TSCA) wastes subject to 40 CFR 761 are described in a separate closure plan which was submitted in March 1995 to U.S. Environmental Protection Agency (EPA) Region 10 TSCA branch representatives. The TSCA closure activities have been completed and accepted by EPA.

Closure activities will be monitored by an independent registered professional engineer (PE) to certify that, in his or her professional judgment, closure was accomplished in accordance with the specifications or standards presented in the approved closure plan. The independent PE's certification will be submitted to all applicable regulatory agencies as part of the NWES certification of closure, in accordance with WAC 173-303-400 and 40 CFR 265.115. Documentation supporting the engineer's certification will be maintained at the NWES facility until property owner (Owner) has been released from its financial assurance requirements for closure.

Minor deviations from the closure procedures necessary to accommodate proper closure shall be described in a narrative form with the closure certification statements, and describe the rationale for implementing minor changes as part of this narrative report.

1.4 Amendment of the Closure Plan

If changes become necessary, this closure plan will be amended according to the requirements of WAC 173-303-400 and 40 CFR 265.112. NWES must submit a request for an amended closure plan under the following conditions:

- Changes that will affect the closure plan are made in operating plans, the regulated units, or facility design.
- The expected year of closure is changed.
- Unexpected events that affect the closure plan occur during closure.

Copies of this closure plan and any amendments to it will be maintained at the NWES offices at 7343 East Marginal Way South, Seattle, Washington, until closure is completed and the Owner is released from its financial assurance obligations.

2.0 General Facility Description

The NWES facility provided treatment of industrial, commercial, and residential wastes for the Pacific Northwest, Alaska, and the Western United States. The NWES facility's EPA and Ecology Identification Number is WAD 058367152. Three major categories of wastes were treated at the NWES facility:

- Wastewater
- Used oil and oily wastes
- Hazardous wastes (including corrosives, solvents, caustics, stabilized solids with metals and organic constituents from wastewater sludges and paint and related wastes, antifreeze, and other wastes including pesticides).

The entire facility is paved with concrete or asphalt. A network of sumps provides secondary containment to all NWES interim status units. These sumps drain to the facility's wastewater treatment system. These sumps are designed to prevent releases to the environment and have secondary containment features that meet the requirements of WAC 173-303-640-(4)(b) through (f).

The facility is fenced and staffed over two shifts, which extend from 6 a.m. to 2 a.m. During the 4 hours that the facility is not staffed, it is monitored by a security guard.

The property occupied by NWES facility is owned by the following parties:

- Samis Land Company
- Western Tank Properties
- Western Blower

3.0 Maximum Waste Inventory

The hazardous waste management units to be closed and the CACO units to be closed are listed by area in Table 1. Table 1 also summarizes the unit dimensions, maximum storage capacity, and type of material handled.

The maximum waste inventory is based on the total capacity of tanks and container storage and treatment areas onsite. The capacities of the sumps and tanks that are not subject to RCRA regulation are not included in the maximum waste inventory.

4.0 Closure Performance Standards

4.1 General Performance Standards

Clean Closure and Debris Standards Closure

Clean closure of the dangerous waste tanks and debris standard closure of the concrete secondary containment areas is designed to:

- Eliminate, minimize, or control, to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous waste constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or atmosphere
- Minimize the need for further maintenance and post-closure care
- Return the land to the appearance and use of surrounding land areas to the degree possible, given the nature of facility operations and considering plans for future land use at the time of closure

In general, these goals will be accomplished by removing dangerous waste containers and dangerous waste residues from tanks and by removing or decontaminating tanks, containers and bases containing or contaminated with dangerous wastes or dangerous waste residues from the NWES facility.

4.2 Specific Performance Standards

Clean Closure Standards

Upon completion of the clean closure, there will be no hazardous waste residues remaining in the units. Closure includes:

- Conducting decontamination of tanks until the "clean debris surface" standards in 40 CFR 268 have been met following Ecology's *Guidance for Clean Closure of Dangerous Waste Facilities* (Ecology, 2001)
- Comparing analytical results from the concrete and rinsate samples to the approved cleanup levels. The levels of dangerous wastes or dangerous waste constituents or residues will not exceed health-based Method B soil and groundwater cleanup limits as established by the Model Toxics Control Act Cleanup Regulations (MTCA) (WAC 173-340) and as adopted by the Dangerous Waste Regulations (WAC 173-303-610(3)). If health-based limits do not exist or there is insufficient toxicity data to calculate a health-based limit, the background level or the PQL (whichever is greater) will be used as the constituent-specific performance standard. In either case after comparison is made to the numerical standard, the significance of any exceedances will be reviewed based on chemical type.

The concrete secondary containment units in Areas 5, 6, and 10 will undergo debris standard closure per Ecology's guidance. Specifically, each of the areas will be decontaminated following the hazardous debris standard contained in Ecology's August 1994 clean closure guidance. Table 2 presents secondary containment area design information as additional documentation that these secondary containment areas were constructed prior to the tank placements and that the units have been well maintained. This information documents that the potential for releases from the units has been minimized and that clean closure to the hazardous debris standard is appropriate.

A further constituent release measure of protection is that the facility encompassing these three areas after closure will continue to operate as an oil processing facility, regulated by Ecology under WAC 173-303-515 and, eventually, under the 40 CFR 279, Standards for the Management of Used Oil, and corresponding Ecology regulations, when finalized. There will also be a groundwater monitoring network installed for post closure care of the facility. This network will have the ability to detect releases from the facility.

5.0 Description of Closure Activities

5.1 General Sequence and Schedule

The facility will undergo RCRA interim status closure beginning in 1995. Final closure of the regulated units will constitute acceptance by Ecology of the closure operations conducted at the seven regulated unit areas and the two container staging areas.

The closure schedule for the NWES facility is presented in Figure 11. The closure will be completed within 180 days if the plan is approved within 90 days of receipt by Ecology and the conditions necessary for the installation of the cover system are presented. Closure activities are divided into eight major steps:

1. Remove existing inventory, including drums and small containers stored and staged in Areas 1, 2, 5, 8, 9, and 10, and the contents of the tanks in Areas 1, 2, 3, 5, 6, and 10, except those in Areas 1 and 5 that are to be used in the closure.

2. Decontaminate bulk tanks emptied in Step 1 and remove equipment. (Equipment removal may involve shipping equipment to a scrap dealer or an appropriate disposal site, selling it for industrial purposes, or storing it in another location onsite.) Equipment for which the future facility owner/operator has negotiated to be left onsite will remain.

3. Decontaminate all surfaces, containment structures, and sumps in the above-listed areas.

4. Sample cleaned areas to verify the performance standard, as described in this closure plan and the sampling and analysis plan (SAP) which is included as Attachment A. Repeat Step 3 if necessary.

5. Empty batch wastewater treatment tanks in Area 5 and decontaminate the tanks. Remove the tanks and clean the surfaces, containment structures, and sumps. Sample the area as described in this closure plan and the SAP (Attachment A).

6. Close stabilization tanks in Area 1 and clean the surfaces. Sample the area as described in this closure plan and the SAP (Attachment A). Ship offsite or sell for industrial use to an approved TSD or solid waste facility any additional inventory of wastes accumulated as a result of closure activities.

The sequencing developed for this closure plan will permit use of the NWES wastewater treatment equipment to facilitate disposal of rinsates and decontamination residues by discharging them to King County Department of Metropolitan Services (Metro) as long as these effluents comply with the NWES wastewater discharge permit (Permit No. 7124). Solid residues will be stabilized in the waste stabilization tanks (Area 1) for offsite disposal to an approved treatment, storage, or disposal facility (TSDF) and then the tanks will be decontaminated and closed.

5.2 Waste Inventory Removal Procedures

Container Wastes

The inventory removal procedures for containers will apply to Areas 8 and 9 and certain portions of Areas 1, 2, 5, and 10. Within 90 days after receiving the final volume of dangerous waste at the NWES facility, container wastes will be removed and transported to an authorized offsite TSDF. Problem waste streams will be detailed on a case-by-case basis. Inspections of all regulated units, including the container storage areas, will continue until the PE certification of facility closure has been accepted by Ecology. The method of transportation and the TSDF will be the same or similar to those used during the normal operation of the facility. Containers will be packaged, labeled, and manifested for shipment according to the same in-plant procedures used during the normal facility operation.

Prior to shipment, all containers will be inspected for leakage. If any containers are found to be leaking, the waste will be transferred to non-leaking containers. Any equipment or clothing that comes into contact with the waste will be decontaminated or disposed of at an authorized TSDF.

Tank Wastes

The inventory removal procedures for tank contents apply to Areas 1, 2, 3, 5, 6, and 10. Within 110 days after the final volume of dangerous waste is received at the NWES facility, tank contents will be treated, removed, transported, and disposed of to one of the following facilities, as appropriate:

- An authorized TSDF for hazardous residues
- An approved Washington State Minimum Functional Standards (MFS) solid waste landfill
- Metro's publicly owned treatment works (POTW) under the requirements of the NWES wastewater discharge permit No. 7124 for wastewater

Similarly, decontamination residues will be appropriately disposed of based on their waste characteristics and corresponding disposal requirements appropriate for the nature and quality of the waste stream. As described above, tanks in Areas 1 and 5 will be used to treat the residues generated during closure and will be closed within 110 days of their last receipt of waste.

5.3 General Decontamination Procedures

Concrete Surfaces, Pavement, Ramps, and Ancillary Equipment

The concrete surfaces, roadways, ramps, and ancillary equipment located in Areas 1, 2, 5, 8, and 9, that could potentially be affected by hazardous constituents but were not listed as a specific closure unit, will undergo debris standard closure as specified in 40 CFR 268.45. The surfaces will be decontaminated using high pressure steam and water sprays. All rinsate will be collected and tested prior to discharge to Metro. Procedures will be undertaken to verify that the decontamination is complete per Ecology' *Guidance for Clean Closure of*

Dangerous Waste Facilities (Revised June 2001). These procedures are described in the SAP (Attachment A).

Concrete Secondary Containment Structures

Concrete secondary containment structures in Areas 5, 6, and 10 will undergo debris standard closure. In addition, decontamination of concrete surfaces, berms, sumps, and any other equipment or structures potentially affected by hazardous constituents will be implemented. Special attention is directed to any surfaces that were in direct contact with dangerous wastes or their residues. NWES will decontaminate concrete surfaces according to the standards as specified in 40 CFR 268.45. The surface will be sand blasted so that a fresh surface is visually evident. All residue will be collected, drummed, and tested prior to transfer into a sanitary landfill or a TSDF, whichever is appropriate, based on residue characterization sample results.

Procedures will be undertaken to verify that the decontamination is complete per Ecology's *Guidance for Clean Closure of Dangerous Waste Facilities* (Ecology, 2001). These procedures are described in the SAP (Attachment A).

Tanks

After the tanks have been emptied they will be decontaminated. NWES will decontaminate the tanks following the treatment standard prescribed for debris and specified in 40 CFR 268.45. Tanks, pumps, and piping will be triple-rinsed using high-pressure steam or water sprays with detergents. All decontamination solutions will be tested prior to discharge into the NWES wastewater treatment system or a TSDF, whichever is appropriate.

There are three types of tanks at the NWES facility: carbon steel, stainless steel, and polyethylene. Each tank surface will be decontaminated in a manner that is appropriate for the material and tank contents. Once tank surfaces have been treated using one of the technologies in 40 CFR 268.45 and no longer exhibit a characteristic of hazardous waste they will not need to be managed in a RCRA Subtitle C facility. Tank decontamination procedures are summarized in Table 3. Tanks intended for reuse either onsite or offsite will be similarly decontaminated. However, the future owner/tenant will be given the opportunity to review the analytical results and request additional tests. NWES will consider implementing these requests accordingly. Depending on market conditions, the cleaned tanks will be sold either as scrap metal or sold for exclusive industrial use.

CACO Areas

The four areas will be closed as follows: the PST will be fitted with two smaller double-wall tanks and the remaining area filled in and capped; the Oil Water Separator (OWS) tank will be decontaminated (it is metal lined); and Sumps #2 (D-2) and #4 (C-1) will be fitted with metal liners.

Sequence of Decontamination Activities

The sequence for decontamination of equipment and structures, including tanks and concrete surfaces, is as follows:

1. Before the start of closure activities for a given area, all surfaces will be visually inspected for cracks that have not been previously sealed and other openings through which possible previous spills or closure cleaning solutions and rinsates could reach underlying soils. Tanks will be inspected for leaks and drippages, both current and historical. Documentation of any cracks, openings, or leaks observed during closure will be maintained with other closure records. During the visual inspection, any stains that might suggest the presence of contaminants will also be noted. If cracks or openings are encountered, they will be sealed with a sealant that is resistant to water and the cleaning solutions that will be used during decontamination.

   Exception: cracks in concrete secondary containment areas to be sandblasted will not be sealed prior to sandblasting as sandblasting would remove any sealant. Instead, crack sealant will be applied later and as needed as part of the facility's regular crack-sealing program.

2. Following the visual inspection, equipment used to operate and close each area will be identified. Types of equipment that are periodically or routinely used by NWES for waste transport and handling and equipment expected to be used during the closure process are listed in Table 4.

   Any equipment that had been used for dangerous waste handling but is not required for closure (such as forklifts, hand trucks, and shovels) will be decontaminated with hot water using a high-pressure hose, steam cleaning, and detergent solutions. This equipment will be decontaminated in Area 5. Wastewaters and rinsates will be discharged to the onsite wastewater treatment system and tested before final discharge to the POTW.

3. Each surface area that shows visual signs of past spillage will undergo a preliminary cleaning at least 1 foot in all directions beyond visual evidence of the visually contaminated area. A heavy-duty cleaning solution will be applied to the surface area with a stiff broom, scrub brush, or similar tool. Washwaters and rinsates generated during this process will be discharged into the onsite wastewater treatment system and tested before final discharge to the POTW.

4. The concrete floors, lower wall portions, ramps, and loading dock will be washed and then decontaminated by steam cleaning. These areas will be washed twice with a detergent cleaning solution of trisodium phosphate (TSP) and then steam rinsed with plain water. Washwaters and rinsate will be discharged to the onsite wastewater treatment system and tested before final discharge to the POTW.

   Prior to any steam cleaning of open surfaces, plastic sheeting or other moisture barrier will be placed around the outside perimeter of the work area to contain possible overspray. The plastic sheeting or other barrier will be disposed of as solid waste following decontamination.

5. Containment sumps will be decontaminated following decontamination of adjacent surfaces. The containment sumps will be decontaminated by steam cleaning with a detergent cleaning solution of TSP. Washwaters and rinsate will be discharged to the onsite wastewater treatment system and tested before final discharge to the POTW.

6. Equipment used in sampling during closure activities will also be decontaminated according to the procedures outlined in the closure plan and the SAP. Portable equipment decontamination will be performed in Area 5.

If closure performance standards cannot be met using steam cleaning and pressure washing, extraction technologies provided in 40 CFR 268.45 will be used to remove the outer most layer (0.6 cm) of the concrete surface in question. A shot blasting or spalling process is one approach that will be considered. A chemical extraction process will be used on non-concrete tank surfaces.

If abrasion or chemical methods are also unsuccessful in meeting the performance standards, concrete, metal, and polyethylene surfaces from the facility will be removed and disposed of properly. The concrete surfaces will be broken into manageable-sized pieces using an impact hammer, pug mill, or other equipment. Metal and polyethylene will be cut and dismantled as necessary. Steel reinforcing rods imbedded in the concrete will be cut as necessary. The rubble and associated soils will be removed using a backhoe or other excavation equipment. This debris will be loaded and hauled to an approved offsite TSDF following proper manifesting and transportation labeling requirements. Trucks will be lined and covered prior to leaving the site to prevent release of materials en route. Any necessary notification of or approvals from local health jurisdictions will be made or obtained prior to transport.

Decontamination Solutions

During the decontamination of structures and equipment associated with the NWES facility, a combination of cleaning solutions and decontamination techniques that have the capability of removing a variety of possible waste constituents will be used. Selection of an appropriate solution will be based on the item to be decontaminated, the past use and spill history of the area to be decontaminated, and the known or suspected level of contamination. A list of the solutions expected to be used for decontamination are presented in Table 5.

Each constituent in the formulation has a specific function:

- Tetrasodium ethylenediamine tetraacetate is a chelant, which dissolves transition metal compounds including lead, nickel, copper, and mercury, so that they can be removed from the equipment.
- Sodium tripolyphosphate and TSP help prevent the precipitation of calcium and magnesium from the alkaline solution and act as buffers in the alkaline pH range.
- The remaining constituents, "Solar" products and ethylene glycol monobutyl ether, act as surfactants and organic coupling agents to emulsify and stabilize solvents, oils, and other organics. Such solutions are typically diluted with water in the ratio of 1:10 to 1:25.

The standard industrial washing solution that will be used is TSP. This material is commonly used in industrial cleaning applications and is typically mixed at a ratio of 1 pound per every 10 gallons of water. The solution can be sprayed at room temperature with a pressure washer or at high temperatures with a steam cleaner. If found to be necessary to accomplish decontamination, a heavy-duty cleaning solution will be selected from available commercial products or formulated specifically for use at the facility.

6.0 Performance Standard Verification

This section addresses the sampling and analyses that will be conducted for closure performance standard verification. The detailed approach, rationale and description of field procedures are presented in the field sampling and analysis plan (SAP) (Attachment A). The SAP describes the specific methodologies to be used in collecting and analyzing samples from the facility. It also includes descriptions of the QA/QC measures to be used during sampling. The SAP will be used in conjunction with a site health and safety plan.

6.1 Sampling Objectives

The objective of the sampling and analysis plan is to collect data after decontamination is complete, that can be used to assess whether the facility surfaces in a given management area contain residual contamination at levels that exceed the closure performance standards. Based on this assessment, decisions will be made on appropriate methods for managing the closed facility or closure debris and whether additional actions are appropriate.

6.2 Selection of Sampling Sites

Section A2 of the SAP provides the approach to be used for the selection of sample locations and the quantity of samples to be collected during closure.

6.3 Sampling and Analysis Procedures

It is anticipated that the following media will be sampled during onsite closure:

- Washwater and rinsate generated during and after decontamination activities
- Sand Blasting Grit generated during sand blasting operations
- Concrete surfaces and containment sumps

The sampling and analysis procedures and material disposition for these items are discussed individually in the following subsections. A summary of performance standard verification and media disposition procedures is presented in Table 6.

Washwater and Rinsate Generated During Decontamination Activities

Washwater and rinsate generated during decontamination activities will be collected and tested for disposal purposes. Fluids from different decontamination areas will not be mixed until the analytical results have been evaluated and they indicate that it is appropriate to do so.

Rinsate Generated After Decontamination Activities

Rinsate generated after decontamination activities have been completed will be collected and tested in Areas 8 and 9. The purpose of this sampling is to demonstrate that closure performance standards have been met.

Concrete Surfaces and Containment Sumps

The concrete surfaces of containment sumps, load/unload areas, and tank storage areas will be sampled according to the SAP. Concrete sampling will be accomplished by collecting a core sample per the SAP for the CACO units.

6.4 Comparison of Analytical Results to Closure Performance

For concrete surfaces, containment sumps, and other surfaces, the results of post decontamination sampling and analysis will be used to determine whether the closure performance standards described have been met. If analysis results of a containment system indicate that contaminant levels are below the closure performance standards, no additional decontamination will be conducted.

6.5 Quality Assurance/Quality Control

All data submitted to Ecology will be generated by an accredited analytical laboratory in accordance with SW-846 and/or CLP requirements. The SAP addresses the necessary QA/QC activities associated with closure. They include the following:

- Project description
- Project organization and responsibilities
- QA objectives for measurement
- Sampling procedures
- Sample custody
- Calibration procedures
- Analytical procedures
- Data reduction, validation, and reporting
- Internal quality control
- Performance and systems audits
- Preventive maintenance
- Data precision, accuracy, and completeness
- Corrective actions

6.6 Analytical Methods

Samples will be analyzed by one or more Ecology-certified laboratories using Ecology- and EPA-approved methods to determine whether performance standards have been met. The types of dangerous wastes handled at the NWES facility include:

- Acids
- Caustics
- Solvents
- Paints
- Metal-finishing solutions
- Petroleum products

The parameters of concern and associated analytical methods for these wastes are summarized in Table A-3 of Attachment A. The parameters of concern are also listed in Table 2 of this closure plan.

7.0 Inspections

Closure activities will be reviewed by an independent registered PE to assess whether they have been conducted in accordance with this plan. The key closure activities warranting inspection are described in Table 7.

If the PE's observations indicate that closure is not being conducted in accordance with the approved closure plan, suggestions to bring the activities into accordance with the plan will be made. The observations will provide the basis for the engineer's certification of closure.

8.0 Certification of Closure

Within 60 days of Ecology's approval of the closure plan, a representative of NWES will submit a certification signed by an authorized NWES representative and independent qualified registered professional engineer (PE) that states that the dangerous waste container and tank storage and treatment facility has been closed in accordance with the approved closure plan. Documentation supporting the PE's certification will be maintained on file at the facility and will be furnished to the regulatory agencies upon request until NWES is released from the financial assurance requirements for closure.

Refer to Section 1.3 of this plan for further certification submittal requirements.

9.0 Financial Requirements

9.1 Facility Closure Cost Estimate

A cost estimate has been prepared for the closure activities described in this interim status closure plan. Table 8 presents an estimated cost for the elements required to close the facility. This is an order-of-magnitude cost estimate last revised in February 2004. As defined by the American Association of Cost Engineers, this is an estimate produced without the aid of detailed engineering data and is projected to have an accuracy of +50 percent to -30 percent. Therefore, a contingency of 10 percent has been added to this estimated cost.

9.2 Financial Assurance

NWES has selected a letter of credit as its financial assurance for closure of the facility. A signed copy of the financial assurance documentation will be sent to Ecology by certified mail after final approval of the closure plan. Post closure financial assurance information will be provided in the post closure plan.

9.3 Coverage for Nonsudden Accidental Occurrences

Per the CACO Compliance Order Task D.iii., NWES will maintain coverage for the Primary Sedimentation Tank for nonsudden accidental occurrences as required by WAC 173-303-400(3) and by reference 40 CFR 265.147. NWES has obtained an insurance policy to demonstrate the required liability coverage.

Tables

TABLE 1

Hazardous Waste Management Unit Descriptions

NWES Closure Plan

Area	Unit Description	Dimensions [a]	Construction Material	Maximum Capacity (gal)	Type of Waste Handled
1	Tank EB	H=5'1" W=8'1" L=12'1" t=0.5"	Steel	4,400	TCLP, corrosives, petroleum
	Tank WB	H=5'1" W=8'1" L=12'1" t=0.5"	Steel	4,400	TCLP, corrosives, petroleum
	Shredder	H=16'0" W=10'4" L=5'0"	Steel	N/A	Magnesium and alkaline batteries, characteristic waste
2	Centrifuge	D-54" H-42"	Steel	150	Oily wastes, wastes with solvents, corrosives, or metals
	Tank C-1	D=8' H=14' t=3/8"	Steel	5,500	TCLP, corrosives, petroleum, solvents
	Tank C-2	D=8' H=14' t=3/8"	Steel	5,500	TCLP, corrosives, petroleum, solvents
	Tank 60-C	D=8' H=17' t=3/8"	Steel	6,250	TCLP, corrosives, petroleum, solvent water rinsate
	Tank 60-E	D=8' H=17' t=3/8"	Steel	6,250	Antifreeze
2	Tank 60-D		Steel	6,000	Petroleum and solvents
(con't)	Oil Water Separator Tank/Fruehauf Pit	H=2' W=10' L=71'	Steel	7,518	Oily wastewaters and sludges (nonhazardous)
3	Primary Sedimentation Tank (PST/Large Pit)	H=15' W=11' L=43'	Steel	54,222	Oily wastewater form offsite Onsite stormwater Laundry water Tanker truck washdown water Filtrate from blue filter press
5	Tank PE-1	D = 5' L = 12'	Steel	1,700	Filtrate from red filter press

TABLE 1

Hazardous Waste Management Unit Descriptions

NWES Closure Plan

Area	Unit Description	Dimensions [a]	Construction Material	Maximum Capacity (gal)	Type of Waste Handled
	Tank CP-13	D=5' H=12'6" t=3/8"	Steel	1,500	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Tank CP-67	D=10' H=13'6" t=1/2"	Steel	7,000	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
5 (con't)	Tank CP-68	D=10'6" H=13' t=0.36"	Steel	7,500	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Tank CP-69	D=10' H=13'6" t=5/16"	Steel	7,000	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Tank CP-70	D=10'6" H=13' t=0.36"	Steel	7,500	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Tank CP-71	D=10' H=13'6" t=1/2"	Steel	7,000	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Tank CP-72	D=10' H=13'6" t=1/2"	Steel	7,000	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water

TABLE 1
Hazardous Waste Management Unit Descriptions
NWES Closure Plan

Area	Unit Description	Dimensions [a]	Construction Material	Maximum Capacity (gal)	Type of Waste Handled
5 (con't)	Tank CP-74	D=10' H=13'6" t=1/2"	Steel	7,000	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Red filter press	N/A	Steel	N/A	Sludge from treatment tanks
	Small-container processing	85-gallon drum	Steel, concrete base	85-gallon drum	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
	Batch tank container	95-gallon drum	Polyethylene	95-gallon drum	Non-oily wastewaters with listed organics, wastes, and phenolic compounds Cyanides, organic/inorganic acids and caustics Hazardous waste liquid, n.o.s. (metals) Paint booth fall water
6	Tank CS-42	D=10' H=8' t=3/16"	Steel	4,300	TCLP, corrosives (base)
	Tank CS-61	D=8'10" H=13' t=1/4"	Steel	5,900	TCLP, corrosives (base)
	Tank AH-120	H = 14'6" D = 12'	Fiberglass	11,800 gallons	TCLP, corrosives (acid)
8	Container Storage Area	W = 13' L = 240'	Containers on a concrete base	1,296 55-gallon drums [b] 71,280 gallons total	Containerized wastes
9	Small-container processing	85-gallon drum	Steel, concrete base	85-gallon drum	TCLP, corrosives
	Profiling holding area	W = 30' L = 160'	Concrete	N/A	Containerized wastes
	Sump No. 2 (D-2)	W = 51" L = 41" H = 49"	Concrete	438	Onsite stormwater
10	Tank S-1	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents

TABLE 1

Hazardous Waste Management Unit Descriptions

NWES Closure Plan

Area	Unit Description	Dimensions [a]	Construction Material	Maximum Capacity (gal)	Type of Waste Handled
	Tank S-2	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
	Tank S-3	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
	Tank S-4	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
	Tank S-5	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
10 (con't)	Tank S-6	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
	Tank S-7	D=10' H=30' t=0.352"	Steel	22,000	Petroleum products, virgin gasoline, solvent rinsate, solvents
	Tank S-8	D=10' H=20' t=3/8"	Steel	11,800	Antifreeze and other organic wastes
	Sump No. 4 (C-1)	W = 51" L = 50" H = 51"	Concrete (monolithic pour)	563	Area 10 stormwater and washdown water

[a] H=height; W=width; L=length; t=thickness; D=diameter.

[b] Containers may include a combination of other DOT-approved containers in addition to 55-gallon drums.However, the maximum volume will not exceed 4,400 gallons.

TABLE 2
Secondary Containment Area Design Information
NWES Closure Plan

Area	Year Constructed	Year Tanks Installed	Construction Material	Maintenance/Inspection Procedures Related to Concrete Integrity
5	1979-80	1981-92	Concrete	Surface sealant program Physical integrity inspection Crack resealing program
6	1979-80	1983	Concrete	Sump inspection policy Spill reporting policy Spill prevention controls
10	1979	1981	Concrete (base 18” thick)	Tank inspections Tank corrosion and erosion protection

TABLE 3
Tank Decontamination Procedures
NWES Closure Plan

Tank Type	Procedures
Carbon steel, polyethylene, stainless steel, or concrete storage tank (oily wastewaters)	1. Hot-water and steam-spray with rotating ball. 2. Wash with TSP, alkaline surfactant (anionic, pH 11.0 or above) or “Believe”. 3. Rinse with hot water
Carbon steel, polyethylene, stainless steel, or concrete wastewater tank (corrosive liquids, wastewaters)	1. Pressure wash with water to remove suspended solids 2. Pressure wash with ammoniating or sodium/citric acid solution (pH 5.0) or “Believe”

TABLE 4
Equipment List
NWES Closure Plan

Trucks (including vacuum trucks)	Pumps
Forklifts	Pump connections
Safety equipment	Valve connections
Ladders	Transfer lines
Tools	Piping
Jackhammers	Containerized waste compactor
Drilling equipment	Decontamination equipment (brushes,
Hand augers	buckets, etc.)
Sampling equipment	Steam-cleaning equipment
Hoses	High-pressure wash equipment

TABLE 5
Typical Heavy-Duty Decontamination Solutions
NWES Closure Plan

Tetrasodium ethylenediamine tetraacetate	1 to 2 percent
Sodium tripolyphosphate	1 to 3 percent
Trisodium phosphate (TSP) (anhydrous)	1 to 3 percent
"Solar"[a] TE (or similar product)	5 to 20 percent
"Solar"[a] NP (or similar product)	0.5 to 5 percent
Ethylene glycol monobutyl ether	3 to 8 percent
"Solar"[a] S-2552	1 to 5 percent
“Believe” [b]	5 to 20 percent
Water	Balance

[a] Swift & Company
[b] SL Johnson and Son

TABLE 6
Closure Performance Standard and Contaminated Media Disposition
NWES Closure Plan

Sampled Media or Material	Closure Performance Standards[a]	Action and Media Disposition
Washwater	Metro discharge permit	Solutions will be analyzed for parameters necessary to assess the capability for treatment in onsite wastewater treatment system and subsequent discharge to the Metro POTW under a permit variance. Otherwise, solutions will be managed as dangerous waste; treated or disposed at an offsite TSDF
Sandblast Grit	Dangerous waste regulations	Sandblast grit will be analyzed for TCLP metals to determine whether it is subject to dangerous waste regulations. If the sandblast grit is determined not to be a dangerous waste, it would be disposed at a non-hazardous landfill. If analytical results indicate that it is a dangerous waste, it would be disposed in a hazardous waste landfill.
Final Rinsate Solution	MTCA Method B for Groundwater	Solutions will be analyzed for volatiles, semivolatiles, metals, and TPH. Discharge to Metro POTW.
Concrete Core,	MTCA Method B for Soil	Material will be treated or disposed in a sanitary landfill following the preparation of a disposal plan and receipt of health department approval.
Surface soil at concrete/soil interface	MTCA Method B for Soil	

[a] Closure performance standard (CPS): depending on waste constituent, CPS will be health-based (MTCA), background, or Practical Quantitation Limit (PQL); refer to Section 4.0.Note: Media contaminated with listed wastes are subject to land disposal restrictions (40 CFR 268) and associated management requirements. TSDF: Treatment, Storage, and Disposal Facilities.
WAC 173-303 Dangerous waste regulations

TABLE 7
Key Closure Activities Warranting Inspection
NWES Closure Plan

Closure Step	Inspection Intervals	Activity
1. Inventory removal	Initial inspection	• First day wastes removed
	Final inspection	• When all containers are gone
2. Bulk tank decontamination	Initial inspection	• First day tanks rinsed
	Intermediate inspection	• Day rinsate sampled
	Final inspection	• Review of analytical data
3. Surface cleaning	Initial inspection	• First day surfaces cleaned
	Intermediate inspection	• Day rinsate sampled
	Final inspection	• Review of analytical data
4. Sampling	Initial inspection	• First day of sampling
	Intermediate inspections	• Day rinsate sampled
		• First day concrete sampled
	Final inspection	• Review of analytical data

TABLE 8
Closure Cost Estimate Revised February 2004
Airport Way South Facility
NWES Closure Plan

Task	Quantity	Unit	Unit Price	Total
RCRA Interim Status Tanks				
1. Removal of final waste inventory based on maximum storage tank quantities and drum storage				
• Completed prior to closure.				$0
2. Decontamination of storage and processing tanks, piping, pumps and liners.				
• Completed prior to closure.				$0
3. Debris Standard Closures - Containment Areas				
a. Washing labor	40	hours	$40	$1,600
b. Equipment	1	lump sum	$300	$300
c. Disposal of sandblast residue	5	drums	$350	$1,750
Subtotal of RCRA Interim Status Tanks				**$3,650**
PST, OWS, Sump #2, Sump #4 - CACO Units				
1. Removal of Final Waste Inventory				
• Completed prior to closure.				$0
2. Decontamination of the four units				
• Completed as part of the PST Interim Measures				$0
3. Removal and disposal of wash water				
• Completed as part of the PST Interim Measures				$0
4. Fill and cap PST				
• Completed as part of the PST Interim Measures				$0
5. Independent professional engineer certification				
• Completed as part of the PST Interim Measures				$0
6. Sampling and analysis (concrete and soil)				
• Completed as part of the PST Interim Measures				$0
Subtotal of CACO Units				**$0**
Containers				
1. Removal of Final Waste Inventory				
• Completed prior to closure.				$0
2. Labor to Load Flatbed at NWES				
• Completed prior to closure.				$0
3. Disposal of Container Storage Area Decontamination Washes				
• Completed prior to closure.				$0
Subtotal of Containers				**$0**
Decontamination of Equipment				
1. Rental of Steam Cleaner	10	days	$75	$750
2. Disposal of Decontamination Residues (Previously figured into volumes generated)	0		$0	$0
Subtotal of Decontamination of Equipment				**$750**

TABLE 8
Closure Cost Estimate Revised February 2004
Airport Way South Facility
NWES Closure Plan

Task	Quantity	Unit	Unit Price	Total
Soil Sampling and Analysis				
1. Labor to Collect Representative Samples				
• Completed during remedial investigation				$0
2. Analysis Costs - Appendix IX - Soils				
• Completed during remedial investigation				$0
Subtotal of Soil Sampling and Analysis				**$0**
Final Cover System				
• No longer a component of RCRA closure.				
Subtotal of Final Cover System				**$0**
Closure Certification				
1. Labor (professional engineer)	80	hours	$100	$8,000
Subtotal of Closure Certification				**$8,000**
SUBTOTAL				
1. Subtotal				$12,400
2. Plus 10% Contingencies				$1,240
TOTAL CLOSURE COST				**$13,640**

Figures

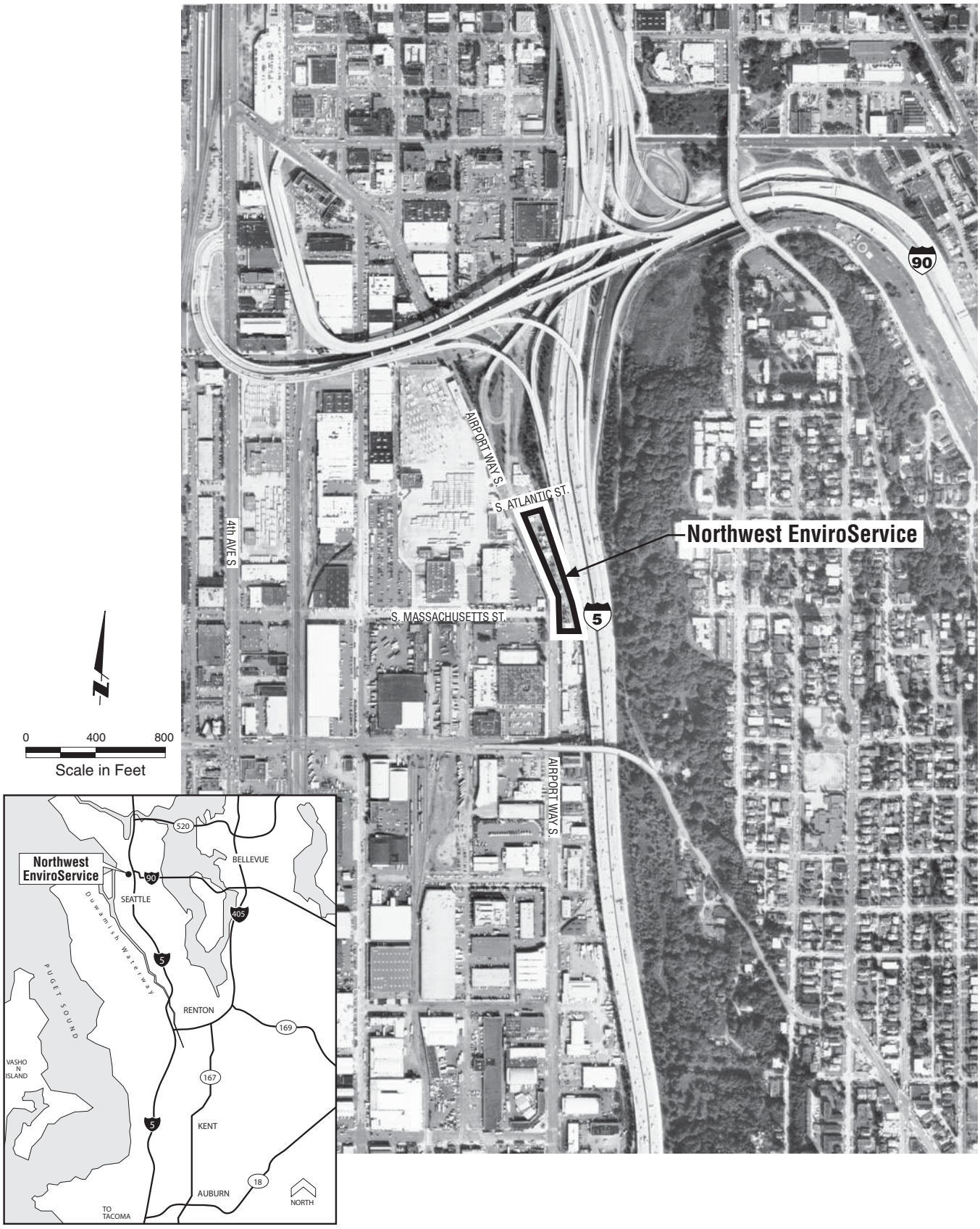

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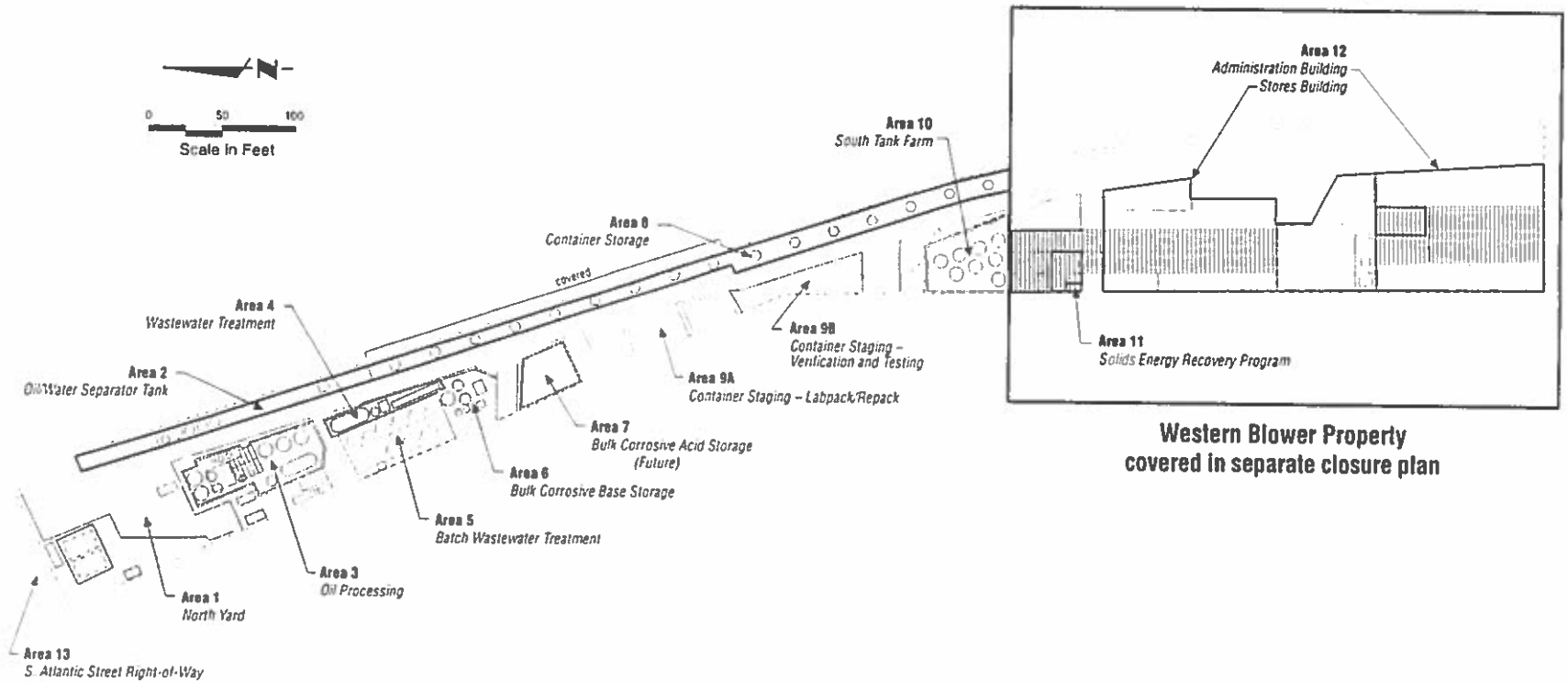
Figure 1

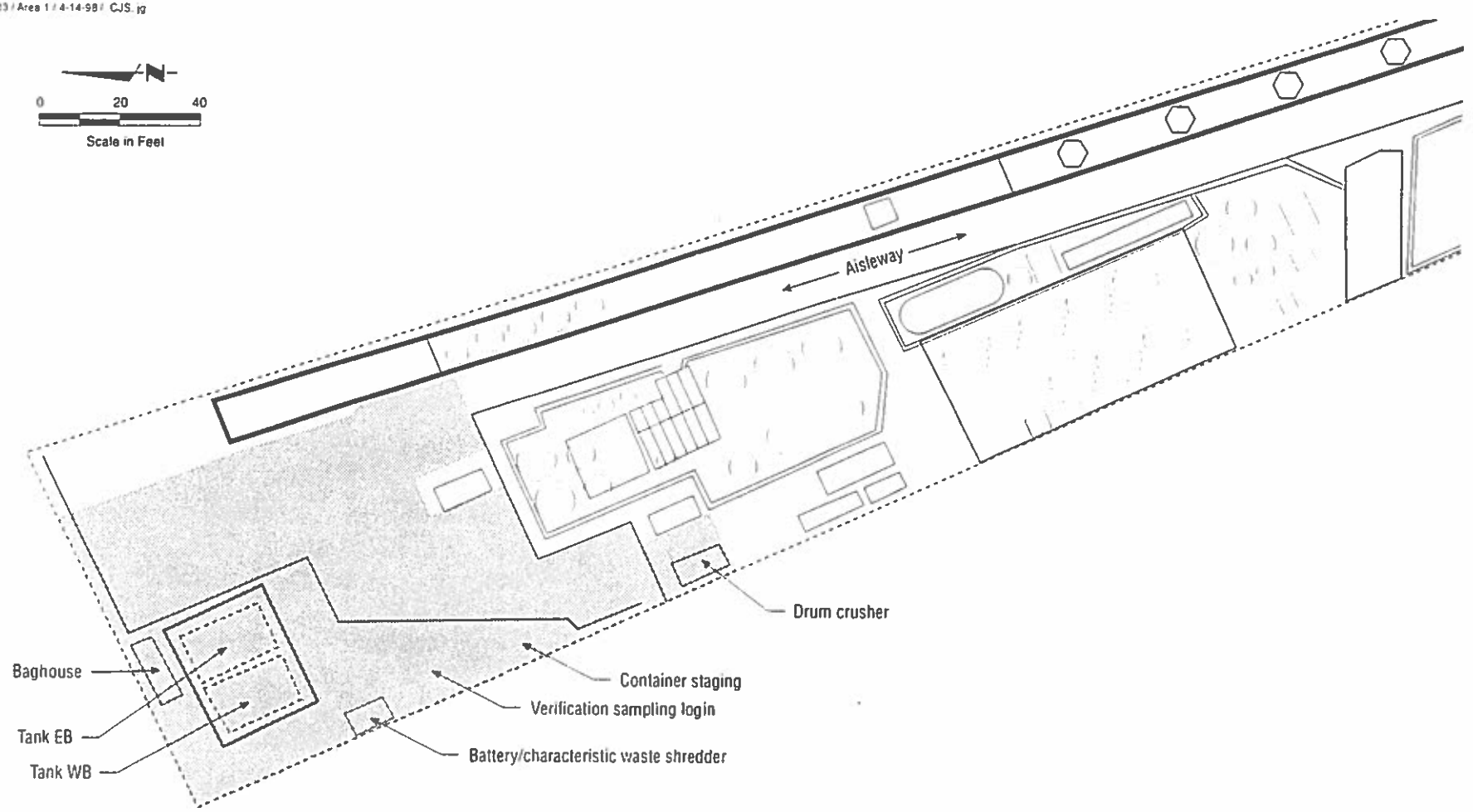
Site Vicinity Map

NORTHWEST ENVIROSERVICE, SEATTLE, WA



Revised April 16, 1998

Figure 2
Facility Operational Areas



Revised April 16, 1998

Figure 3
Area 1 – North Yard

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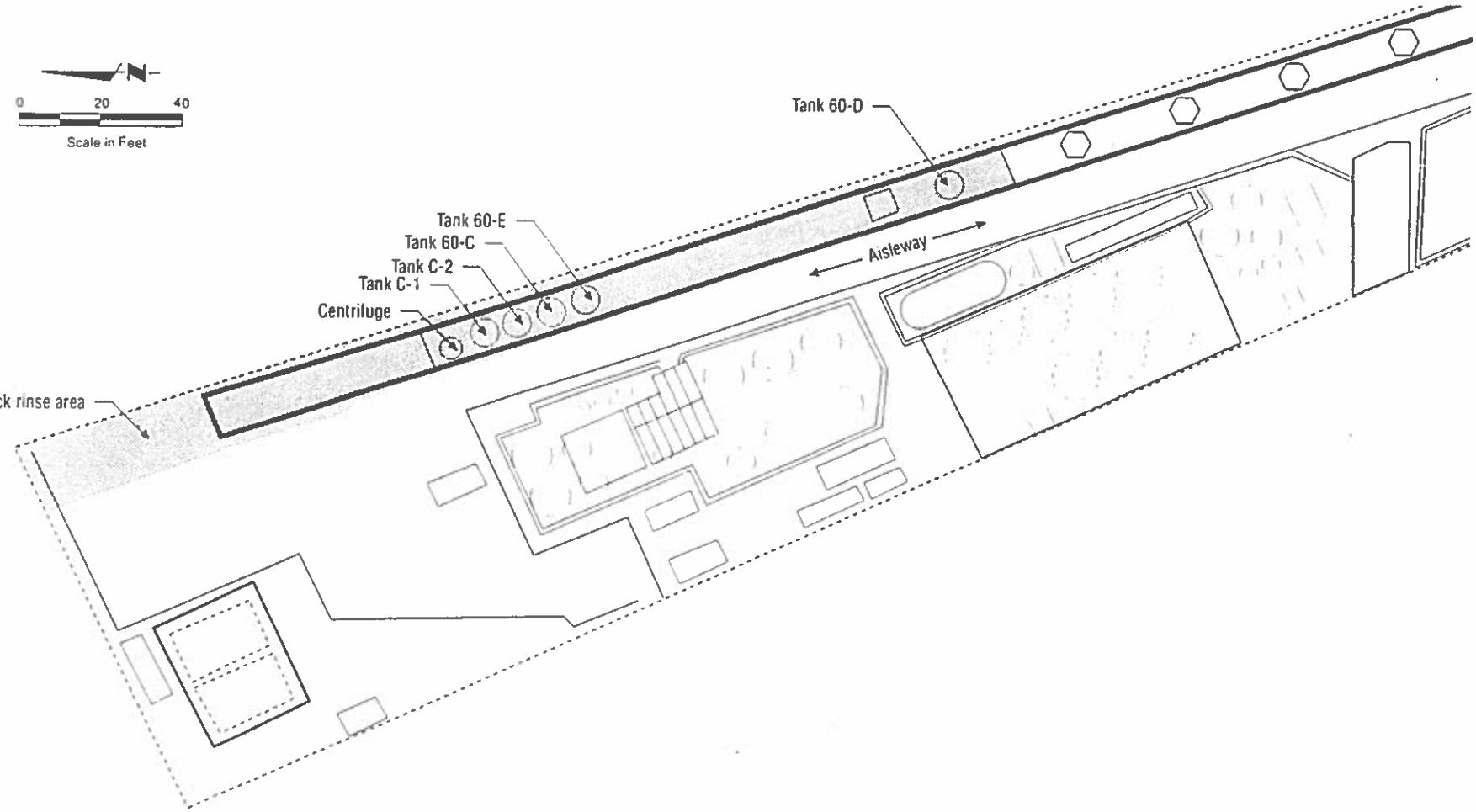

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Figure 4

Area 2 – Oil/Water Separator Tank Area

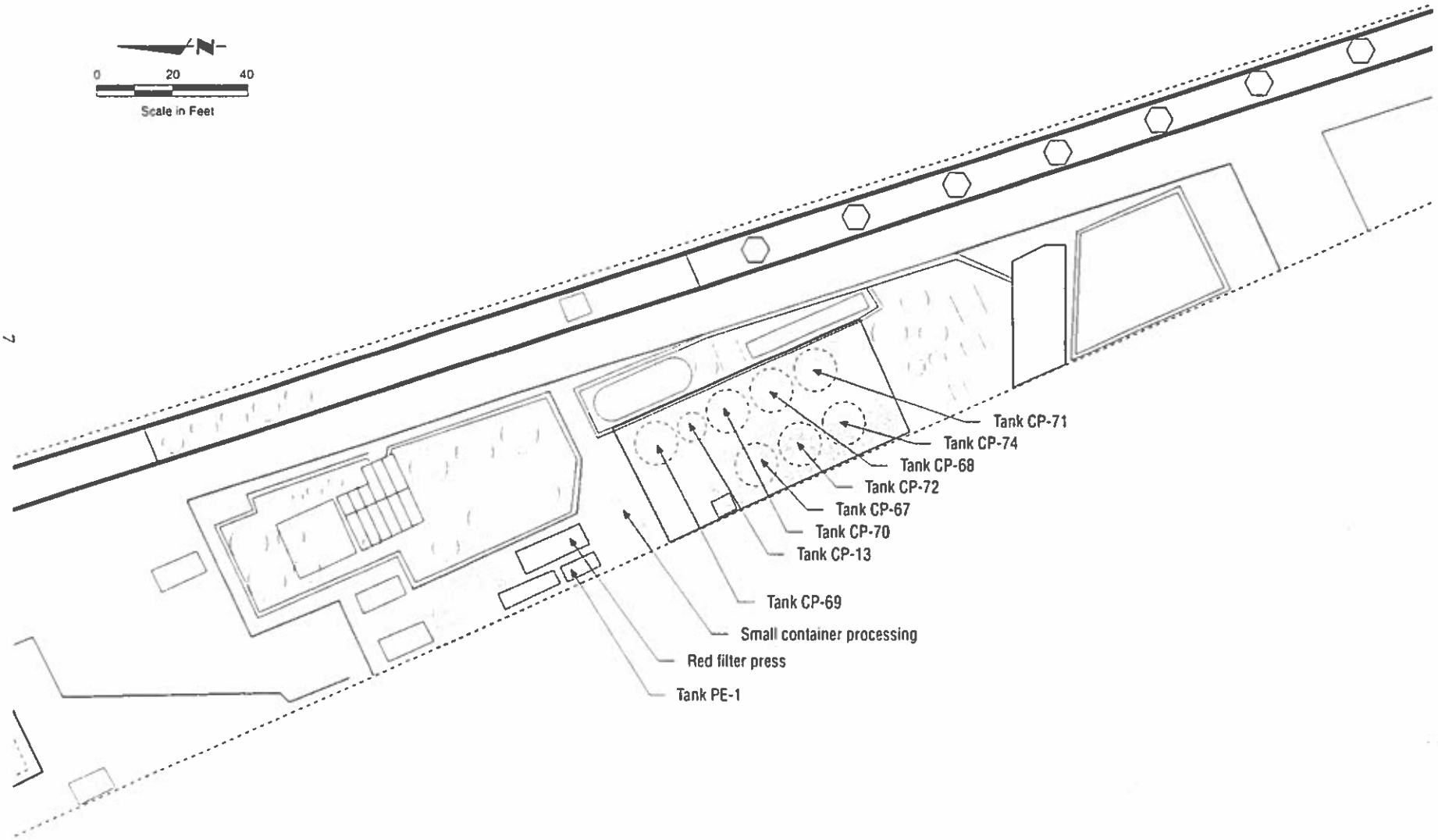

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Figure 5
Area 5 – Batch Wastewater Treatment Area

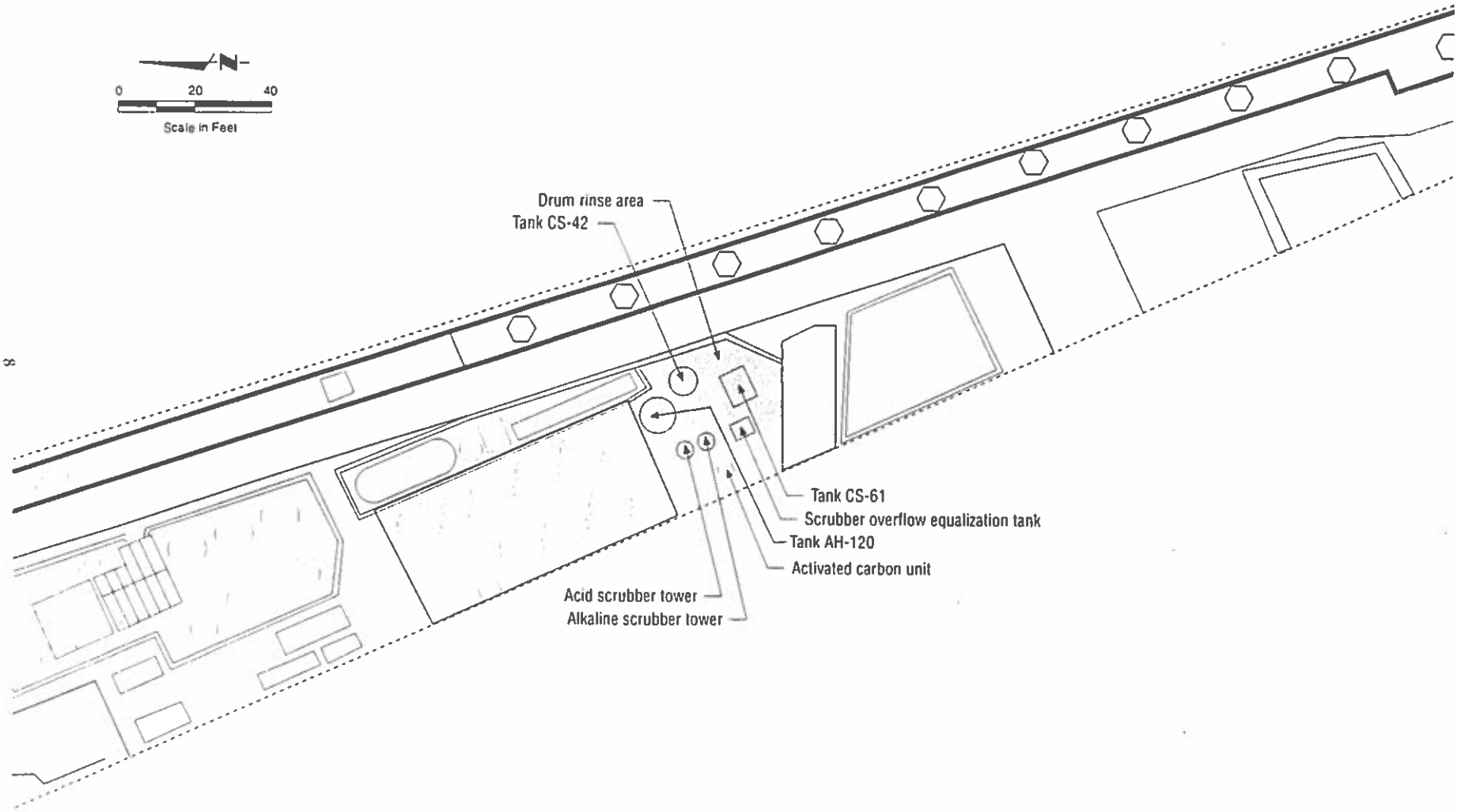

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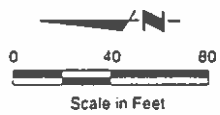
Figure 6

Area 6 – Bulk Corrosive Base Storage Area



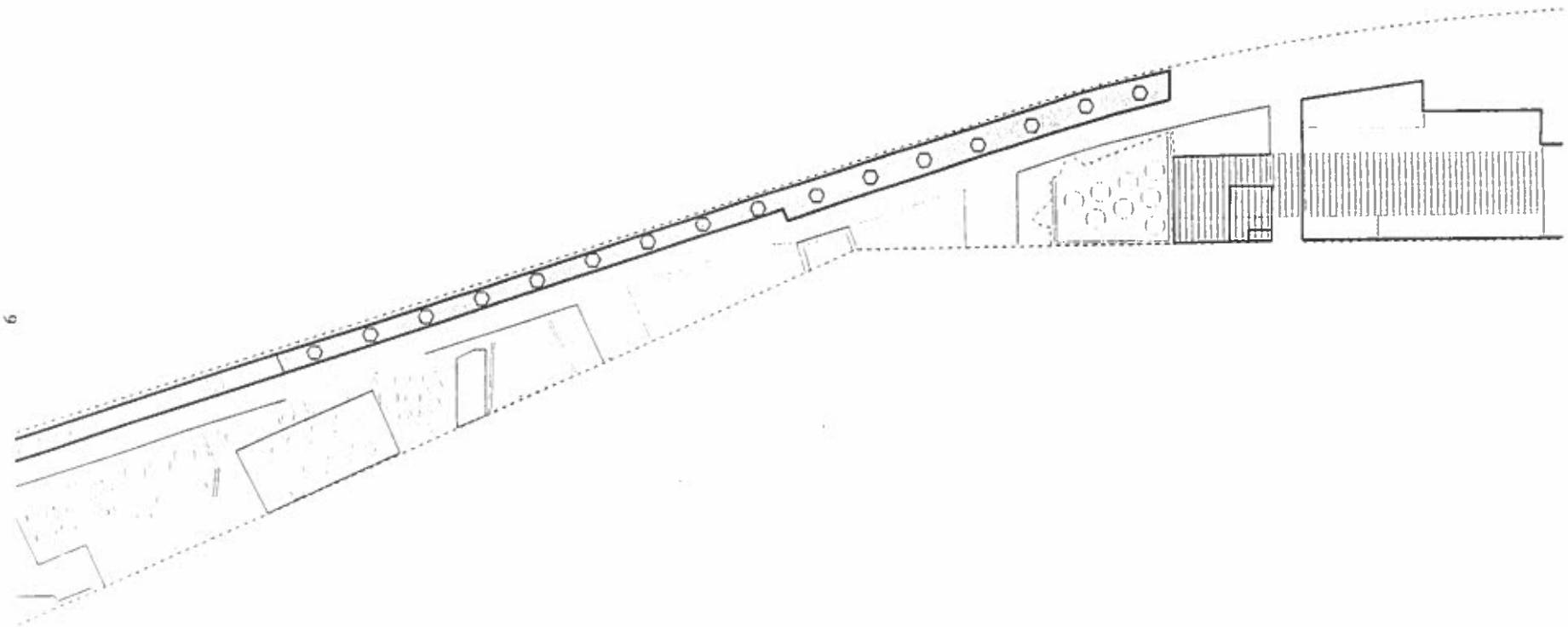


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Figure 7
Area 8 – Container Storage Area

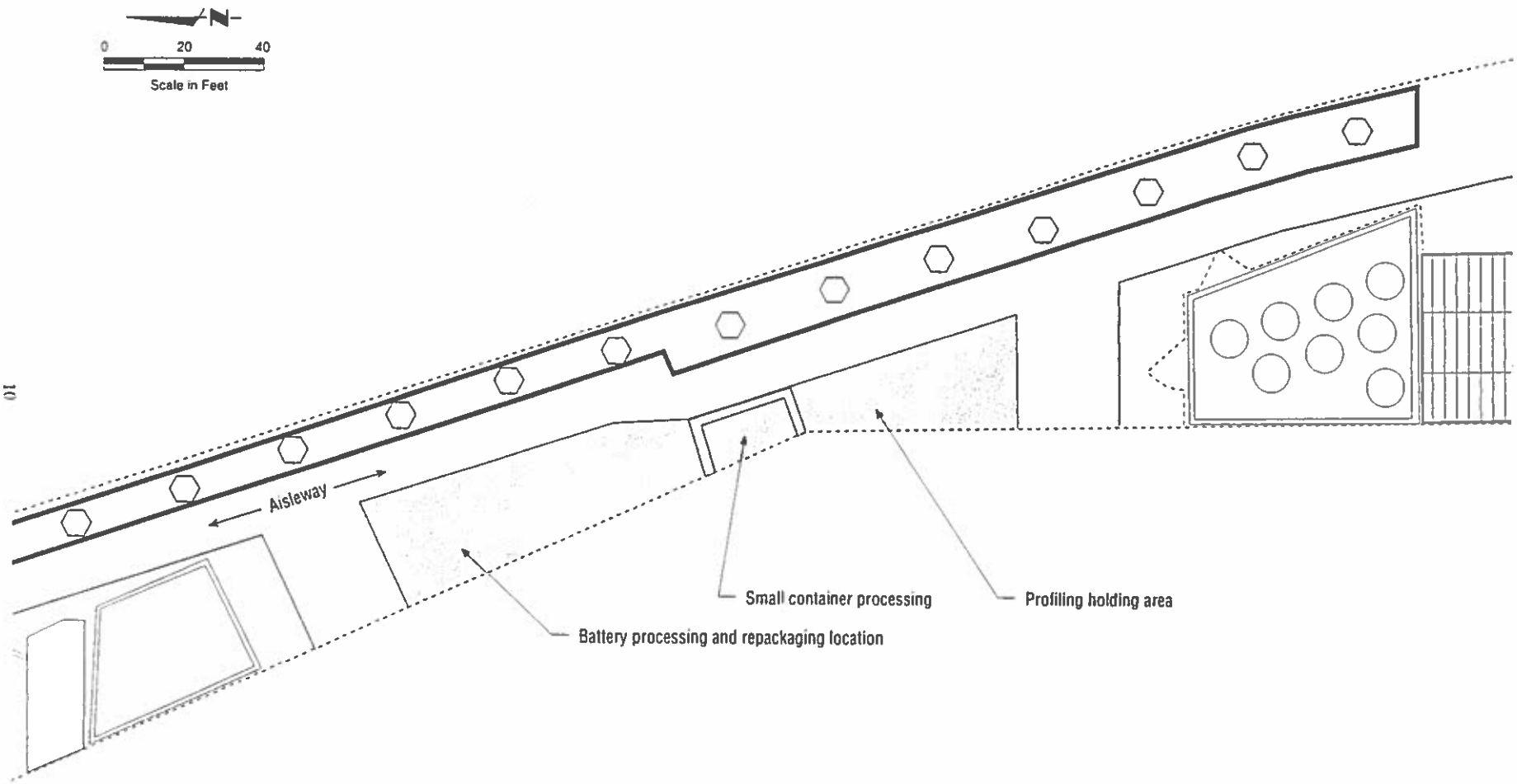

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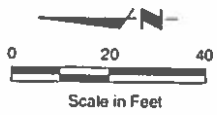
Figure 8
Area 9 – Container Staging Area



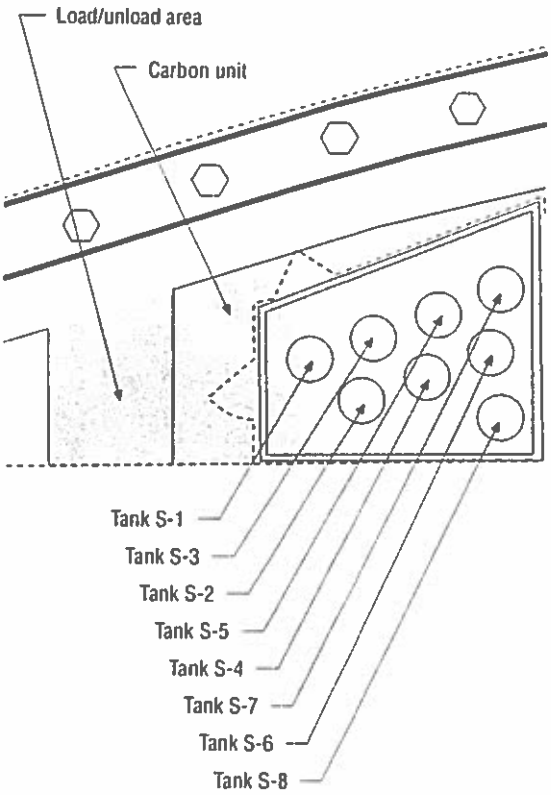


Figure 9
Area 10 – South Tank Farm

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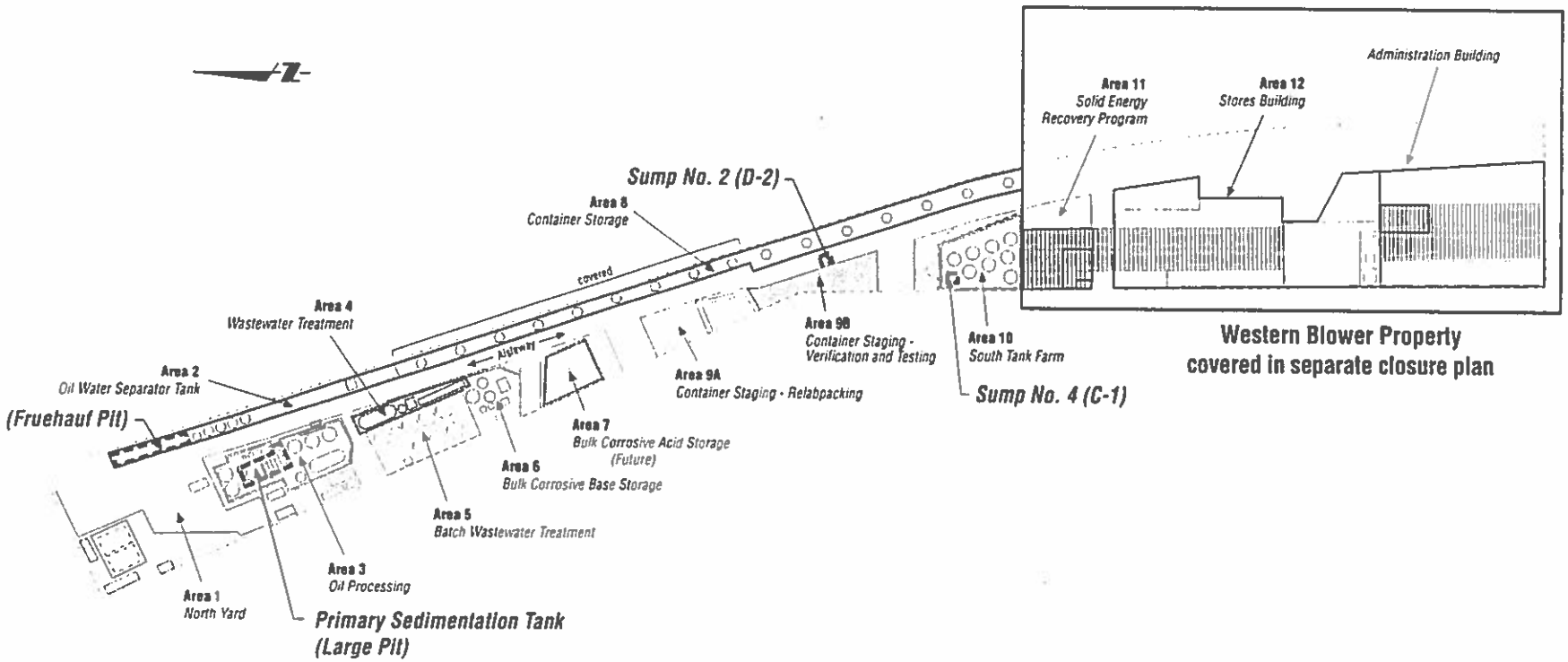

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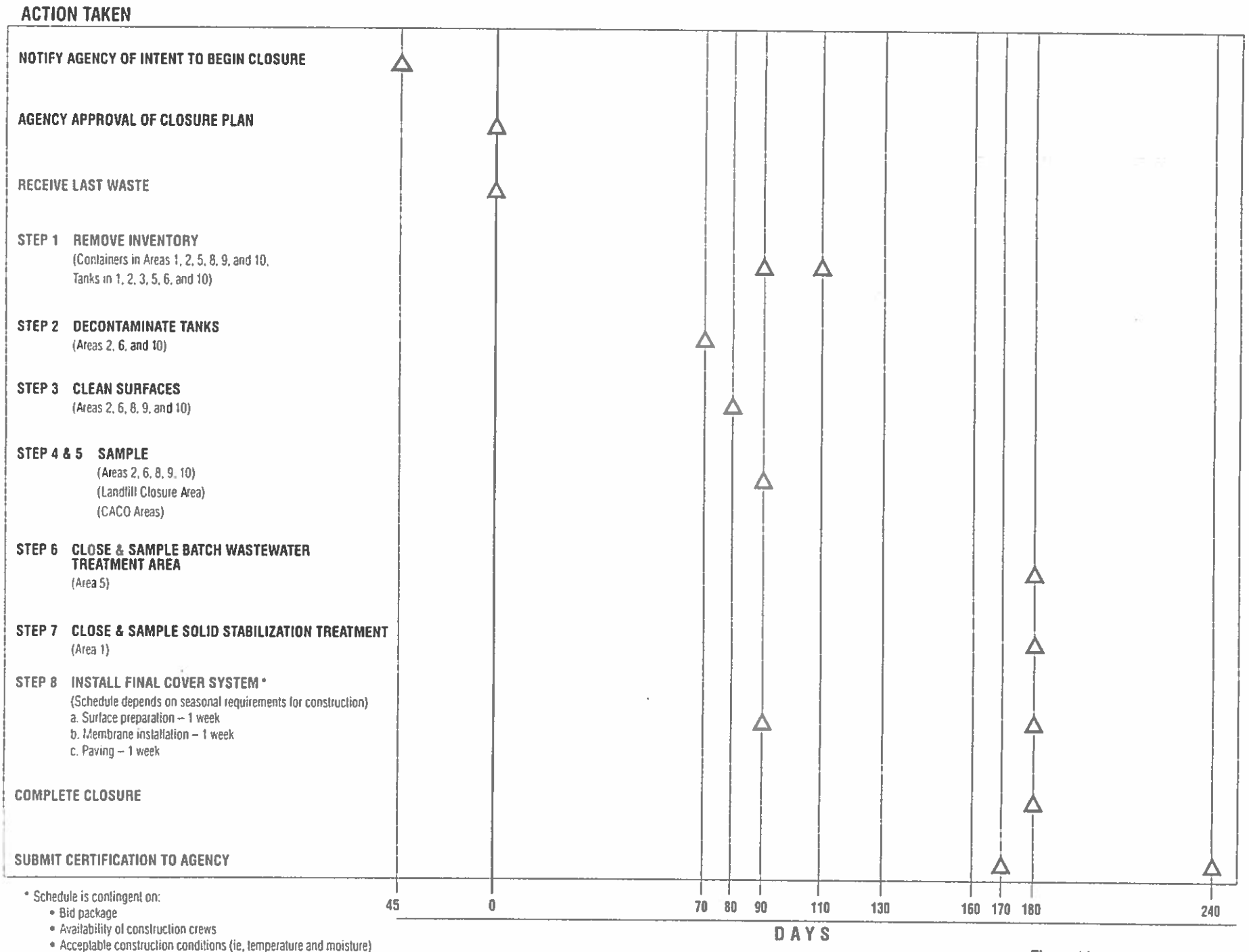
Figure 10
CACO Closure Units



* Schedule is contingent on:
- Bid package
- Availability of construction crews
- Acceptable construction conditions (ie, temperature and moisture)

Revised April 16, 1998

Figure 11
Facility Closure Schedule

ATTACHMENT A

Field Sampling and Analysis Plan in Support of Closure

Contents

Tables

A1. Introduction

During RCRA interim status closure of the Northwest EnviroService, Inc. (NWES) Airport Way facility, portions of the facility will proceed through the Washington State Department of Ecology (Ecology) clean closure and debris standard closure process. For clean closure, samples need to be collected from the affected media to show that the closure performance standard has been met.

For clean closure, as defined in Section 4 of the Closure Plan, NWES proposes to meet the Method B cleanup levels established under MTCA (WAC 173-340) for environmental media, which are based on the protection of human health and the environment. These cleanup levels have been adopted by the Dangerous Waste Regulations. If no health-based limit exists or insufficient toxicity data are available to calculate a health-based limit, the background level or the PQL (whichever is greater) will be used.

A2. Sampling Approach and Rationale

A2.1 Summary

The closure plan requires that samples be collected during closure. The sample analysis results will be compared to the performance standards to verify that clean closure has been achieved. This section summarizes the basis for developing the closure sampling approach. As discussed in the closure plan, materials to be sampled during closure include the following:

- Washwater and rinsate generated during and after closure decontamination activities
- Sandblast grit generated during sandblasting of the concrete secondary containment structures
- Concrete surfaces and containment sumps

The collection of samples for washwater rinsate and sandblast grit will follow systematic, random grab sampling procedures. These sampling procedures are described in Section A3.

Two approaches will be used to collect concrete and soil samples: random samples distributed over a systematic grid and biased samples where there is obvious evidence of contamination (e.g., staining). A summary of these sampling approaches is presented in Sections A2.2 and A2.3. Sampling procedures are described in Section A3.

A2.2 Sampling Approach and Sample Size

A2.2.1 Washwaters

Because the volume of washwater generated during closure cannot be accurately estimated, a sampling strategy based on systematic, random sampling will be conducted at the time of closure. Rinse waters and decontamination fluids will be accumulated by process area in individual totes before they are discharged to Metro. Grab samples from the totes will not be composited. The results will be compared to Metro's discharge limits before discharge to the facility. The precise numbers and locations of samples will depend upon the number of rinsate totes at the time of closure. These numbers and locations will be documented in the field logbook.

Final rinsate samples will be collected from Areas 8 and 9 where no RCRA tank units are present. Grab samples will be collected after the area has been decontaminated according to the procedures described in this plan. The results will be compared to MTCA Method B standards for groundwater. Table A-1 presents the proposed chemical analyses for each area by sample media.

A2.2.2 Sandblast Grit and Debris

Sandblast grit and debris from the sandblasting of three concrete secondary containment structures will be collected in drums. One grab sample from each of the three secondary containment structures will be collected and analyzed for TCLP metals. The sample results will be compared to WAC 173-303-100, Maximum concentration of contaminations for the toxicity characteristics. Table A-1 presents the proposed chemical analyses for each area by sample media.

A2.2.3 Concrete Surfaces

Concrete cores will be collected from two of the four units proceeding under the closure directed by the Consent Agreement and Consent Order (CACO). Samples will be collected from the center of the base of each structure (Sump No. 2 and Sump No. 4). Table A-1 presents the proposed chemical analyses for the concrete samples.

A2.3 Interpretation of Sampling Results

The decisions regarding the presence or absence of contamination at the NWES facility will be based on comparison of the analytical results with the performance standards for clean closure. If all samples meet the performance standard criteria for each constituent, the surface or the underlying area will be considered clean. If sample analysis results indicate the presence of subsurface contamination above the performance standard, additional analyses may be required to define the spatial extent and location of contamination and to establish a basis for cleanup during closure.

A3. Sampling Procedures

This section describes the procedures that NWES and contractor field personnel will use to conduct sampling, decontaminate sampling tools, label and package samples and maintain sampling records. Washwater, rinsate, sandblast grit, concrete and soil sampling procedures are detailed in the following subsections and summarized in Table A-2.

A3.1 Washwater and Rinsate Generated

Washwater and rinsate generated during closure decontamination activities will be collected in totes. Samples will be collected per the procedures outlined in Table A-2 and analyzed by the NWES laboratory, which is certified by Ecology for the required Metro discharge parameters. Fluids from different sources will not be mixed until the analytical results have been received and evaluated by NWES. After the washwater is tested, it will be discharged to the NWES wastewater treatment plant for discharge to Metro or will be sent offsite for appropriate disposal.

All totes containing washwater and rinsate generated during decontamination will be labeled with the following information:

- Process area
- Source
- Date generated
- Percent solids/liquids

Totes will be marked "hold for analysis" pending laboratory analysis. Tanker trucks will be sampled before they are emptied.

For the final rinsate samples from Areas 8 and 9, samples will be collected according to the procedures outlined in Table A-1 and analyzed by STL laboratory, which is certified by Ecology.

A3.2 Sandblast Grit

Sandblast grit and debris generated during sandblasting of the secondary containment structures will be collected in drums. Samples will be collected per the procedures outlined in Table A-2 and analyzed by the NWES laboratory, which is certified by Ecology. Sandblast grit from different areas will not be mixed until the analytical results have been received and evaluated by NWES. After the samples have been tested, the grit will be sent offsite for appropriate disposal.

A3.3 CACO Units

Samples of concrete surfaces, including containment and sump systems, will be collected after they are decontaminated. As noted in Table A-1, a core sample through the concrete will need to be collected.

A3.4 Sampling Tool Decontamination

All sampling tools that come in contact with sampling media, either for identification or verification sampling, will be properly decontaminated prior to use at the facility and between sampling locations or depth intervals. Hand tools will be decontaminated per the following minimum decontamination procedure:

1. Liquinox and tap-water wash
2. Tap-water rinse
3. Distilled/deionized water rinse
4. Isopropyl alcohol rinse
5. Distilled/deionized water rinse

If hand tools will not be used immediately, they will be wrapped in aluminum foil to prevent contamination until the time of use. Any drilling equipment used for sampling will be steam-cleaned before drilling begins and between drilling at each sample station.

If the analytical results indicate that performance standards have not been met, as determined by NWES, a decision will be made either to decontaminate again using the same method, use a more aggressive method (see Section 5.3 of the closure plan), or to cease the decontamination process and properly dispose of the material as summarized in Table 7 of the closure plan.

A3.5 Sample Containers, Preservation, and Holding Times

Table A-3 in Section A4, Methods of Analysis, presents the sample containers, preservation requirements, and holding times.

A3.6 Documentation and Field Observation

A3.6.1 Sample Identification and Labeling

All samples will be appropriately labeled for identification and tracking. Sample labels will be completed using waterproof-ink pens and affixed to containers at the time of sampling. The sample designation number will include identifiers that facilitate sample tracking. The sample designation number will contain, at a minimum, the following identifiers.

- A__ = Area (number)
- Sample media:
  - W = washwater
  - C = concrete

- Sample number (three digits beginning with 001)

For example, the first rinsate sample collected in Area 8 would be designated as A8-W-001.

Additional information included on the sample label will be the date and time the sample was collected, the analytical parameter(s), and the name(s) of personnel collecting the sample.

A3.6.2 Field Logbooks

The sampling team leader will maintain a field logbook that contains all information pertinent to the field sampling plan. The logbook will include at a minimum:

- Project name
- Project number
- Personnel
- Weather conditions
- Equipment calibration and decontamination
- Health and safety monitoring
- Photograph log (if photographs are taken)
- Sample data
  - Process area and location of sample
  - Date of sample collection
  - Time of sample collection
  - Type of samples taken
  - Sample identification numbers
  - Sampling method
- Personnel decontamination procedures

All members of the field team will use the notebook, make entries in ink, then initial and date each page.

A3.6.3 Corrections to Documentation

Unless prohibited by weather conditions, all entries in field and laboratory notebooks will be written in waterproof ink. No accountable serialized documents will be destroyed or thrown away, even when they are illegible or contain inaccuracies that require a replacement document. When an error is made on an accountable document, the person who made the error will make the correction by crossing a line through the error and entering the correct information. The erroneous information should not be obliterated. Any subsequent error discovered on an accountable document should be corrected by the person who made the entry. All corrections will be initialed and dated.

A3.6.4 Sample Chain of Custody and Shipment

The management of samples collected in the field involves specific procedures that must be followed to ensure field sample integrity and custody. The possession of samples must be traceable from the time they are collected through the time they are analyzed by the contract laboratory.

The chain of custody of a sample is defined by the following criteria:

- The sample is in a person's possession, or is in his/her view after being in his/her possession.
- The sample was in a person's possession and was locked up or transferred to a designated secure area by him/her.

Each time the samples change hands, both the sender and receiver will sign and date a chain-of-custody form and specify which item(s) has changed hands. When a sample shipment is sent to the laboratory, the top signature copy is enclosed in plastic with the sample documentation and secured to the inside of the sample shipment containers. The second copy of the chain-of-custody form will be retained in the project files. A chain-of-custody record will be completed for each shipping container.

The following information is included on the chain-of-custody form:

- Sample number
- Signature of sampler
- Date and time of collection
- Project name and number
- Type of sample
- Number and type of container
- Inclusive dates of possession
- Signature of receiver

In addition to the labels, seals, and chain-of-custody form, other sample tracking components include the field logbook, sample request sheet, sample shipment receipt, and laboratory logbook. Before packaging samples, field personnel will make certain that the exterior of the sample container is clean and that the sample label is legible.

A3.6.5 Sample Packaging

The sample packaging and shipping containers will be assembled and packed to meet the following requirements:

- There will be no release of materials to the environment.
- Inner containers that are breakable must be packaged to prevent breakage and leakage. Completed packages must be capable of withstanding a 4-foot drop on solid concrete in the position most likely to cause damage. The cushioning and absorbent material must not be reactive with the sample contents.

The packaging procedures will be in compliance with all U.S. Department of Transportation and commercial carrier regulations. Only waterproof ice chests or coolers will be considered acceptable shipping containers.

Samples for shipment will be packed using the following procedure:

- Seal the drain plug in the cooler.
- Place vermiculite or Styrofoam peanuts in the bottom of the container.

- Wrap glass bottles with bubble wrap or Styrofoam wrapping; place them inside Ziploc-type plastic bags and then place them in the cooler.
- Add ice in double-bagged Ziploc-type plastic bags.
- Fill with vermiculite, Styrofoam peanuts, or bubble wrap.
- Place the shipping list chain-of-custody form in a plastic bag attached to the inside of the cooler lid.
- Attach two chain-of-custody seals (front and back of container) so that the seals must be broken if the cooler is opened.
- Place the name and address of the receiving laboratory in a position clearly visible on the outside of the cooler.
- Secure the lid with fiber tape.

All shipments for analysis will be transported directly to the laboratory or shipped to the laboratory via overnight courier. In either case, the laboratory will be notified immediately when samples are shipped.

A3.7 Field Quality Assurance/Quality Control Samples

Samples will be placed in new sample bottles supplied by the laboratory contracted to do the analyses. The samples will be placed in a cooler immediately after collection and maintained at approximately 4°C with ice.

Three types of field QA/QC samples are collected to document the accuracy and representativeness of the sample aliquots: field duplicate samples, equipment blank samples, and trip blank samples.

A3.7.1 Field Duplicate Samples

Field duplicate samples will be collected at a minimum of 10 percent of the sampling locations for each analytical method, including at least one sample per method. A field duplicate is obtained by collecting an additional set of bottle aliquots, at the same time, and with the same procedures as those used to collect the original sample. Field duplicate samples will be identified with the sample location number designation. For example, a field duplicate of the sample mentioned in Section A3.6.1, Sample Identification and Labeling, would be A1-S-002.

A3.7.2 Equipment Blank Samples

Equipment blank samples are organic-free water aliquots that are placed in contact with non-dedicated sampling equipment (e.g., split-spoons) after the equipment has been decontaminated using the proper decontamination procedures outlined in the sampling plan. The results from these samples are used to evaluate the integrity of the decontamination process, and to alert the field manager of possible cross-contamination of samples. A minimum of one equipment blank sample per day will be collected where non-dedicated sampling equipment is used. Equipment blanks will be identified with a letter

designation with a sample location number, e.g., A1-S-003-EB. The sample location number will be the last location where the piece of equipment was used.

A3.7.3 Trip Blank Samples

Trip blank samples are also organic-free aliquots used to evaluate possible cross-contamination of samples that may occur at any time during the sample bottle handling history. The trip blank usually originates at the contract laboratory and accompanies delivery of the sample bottles to the facility. Trip blank bottles and sample analyses are usually limited to 40-ml VOAs and volatile organic analyses. Usually, one trip blank is sent for each sampling event conducted. The trip blank will be identified with the sample number A1-W-100.

A4. Methods of Analysis

For each process area at the facility undergoing RCRA interim status closure, the parameters of concern have been identified by Ecology as those constituents identified in 40 CFR 264 Appendix IX. These parameters serve as the basis for assigning analytical laboratory procedures. For the process units identified in the Consent Agreement and Consent Order (CACO) to be closed, the parameters of concern have been identified as the basis of specific wastes handled in those units by NWES.

For each parameter group, analytical methods are selected in accordance with Ecology's sampling and testing method requirements (WAC 173-303-110) and EPA's laboratory manual, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846). Table A-3 provides a summary of the sample handling requirements based on the analytical methods.

A5. Management of Sampling-Derived Waste

Disposable materials generated during the sampling activities (Tyvek, booties, gloves, etc.) will be handled in a manner consistent with the protocols set forth by NWES personnel. The contents should be labeled on the side of the drum and stored onsite. They will be stored onsite for a period of less than 90 days in designated waste accumulation areas. Handling, shipment, and disposal will be commensurate with the analysis results and WAC 173-303 requirements.

Drums will be marked "hold for analysis" if laboratory analysis is being performed. They will be stored onsite for less than 90 days in designated waste accumulation areas. Handling, shipment, and disposal will be commensurate with the analysis results and WAC 173-303 requirements as well as with any protocol set forth by NWES personnel.

A6. References

CH2M HILL. *Revised Final RCRA Facility Investigation Report*, Northwest EnviroService, Inc. April 2004.

Northwest EnviroService, *RCRA Facility Investigation Workplan* for Northwest EnviroService Inc. May 2001.

U.S. Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* USEPA SW-846, Third Edition. 1986.

U.S. Environmental Protection Agency. *Statistical Methods for Evaluating the Attainment of Superfund Cleanup Standards.* Volume 1, Soils and Solids Media. 1988.

Conover, W. J. *Practical Nonparametric Statistics*, 2nd edition. New York: John Wiley & Sons. 1980.

TABLE A-1
Summary of Sampling and Analysis
NWES Closure Plan

Area	Media	Quantity	Type of Analysis	Method
Tanks, Equipment, and Concrete Surfaces				
1, 2, 5, 6, 8, 9, 10	Washwater	1 grab sample per tote	Parameters per Metro discharge permit (metals)	SW 846 6010
8	Final Rinsate Water	1 grab sample	Volatile organics	SW 846 8240
			Semivolatile organics	SW 846 8270
			Metals	SW 846 6010/7000
			TPH	NWTPH – HCID
9	Final Rinsate Water	1 grab sample	TCL Volatile organics	SW 846 8240
			TCL Semivolatile organics	SW 846 8270
			Total Metals	SW 846 6010/7000
			TPH	NWTPH – HCID
Secondary Containment				
5	Sandblast Grit	1 grab sample	TCLP Metals	SW 846 1311 and 6010
6	Sandblast Grit	1 grab sample	TCLP Metals	SW 846 1311 and 6010
10	Sandblast Grit	1 grab sample	TCLP Metals	SW 846 1311 and 6010
CACO Closure Sampling				
OWS (Oil Water Separator Tank)	Surface soil at concrete/soil interface	1 grab sample	Volatile organics (Benzene, Tetrachloroethene, Trichloroethene, Vinyl chloride)	SW 846 8240 SW 846 6010/7000
			Metal (Arsenic, Cadmium, Chromium, and Lead)	
PST*	Surface soil at concrete/soil interface			
Sump No. 2 (D-2)	Concrete Core	1 grab sample	Volatile organics (Benzene, Tetrachloroethene, Trichloroethene, Vinyl chloride)	SW 846 8240 SW 846 6010/7000
	Surface soil at concrete/soil interface	1 grab sample	Metal (Arsenic, Cadmium, Chromium, and Lead)	
Sump No. 4 (C-1)	Concrete Core	1 grab sample	Volatile organics (Benzene, Tetrachloroethene, Trichloroethene, Vinyl chloride)	SW 846 8240 SW 846 6010/7000
	Surface soil at concrete/soil interface	1 grab sample	Metal (Arsenic, Cadmium, Chromium, and Lead)	

* The PST was retrofitted with two smaller steel tanks during the interim measure completed during the RCRA Facility Investigation. A total of nine samples were collected from beneath the concrete slab at the base of this unit. One composite sample of gravel from each of the four quadrants just below the slab, one grab sample of silty gravel with sand from the center of each of the four quadrants (8-10 inches below the northern portion of the slab, 18-20 inches below the southern portion of the slab), and one grab sample of sandy gravel 20-24 inches below the center of the slab. All samples were analyzed for selected metals. The grab samples were also analyzed for volatile organic compounds (benzene and vinyl chloride) and diesel and motor oil range total petroleum hydrocarbons.

TABLE A-2
Washwater, Rinsate, Concrete and Soil Sampling Procedures
NWES Closure Plan

Media	Sampling Procedures
Washwater	1. Positively identify the tote in question as a washwater or rinsate tote.
	2. Carefully open tote sampling port. Splash and eye protection should be worn by sampling personnel
	3. Collect a representative sample of the content.
	4. Close tote.
Final Rinsate	1. Place sample container at the edge of drainage sump.
	2. Collect a representative sample of the rinsate.
Sandblast Grit	1. Positively identify the drum in question.
	2. Open the drum top, collect a representative sample of the content.
	3. Close drum.
Concrete Core	Refer to Appendix B2 of RFI Workplan (CH2M HILL, 2001)
Surface soil at Concrete/soil interface	Refer to Appendix B2 of RFI Workplan (CH2M HILL, 2001)

TABLE A-3
Sample Parameters, Analytical Methods, Containers,
Sample Preservation, and Holding Times
NWES Closure Plan

Sample Parameter	EPA Method	Container	Preservation	Holding Time
Analyses for Washwater				
Metals	6010 (SW-846)	1-500 ml HDPE bottle	4°C	6 months
Analyses for Final Rinsate				
Volatile Organics - TCL	8240 (SW-846)	2-40 ml glass vials	4°C	14 days
Semivolatile Organics – TCL	8250 or 8270 (SW-846)	3-1 L amber bottle	4°C	7 days for extraction, 40 days after for analysis
Metals	6010 (SW-846)	1-500 ml HDPE bottle	4°C	6 months
Total Petroleum and Fuel Hydrocarbons (TPH)	WTPH-HCID	1-1L amber bottle	4°C	14 days
Analyses for Sandblast Grit				
TCLP Metals	1311 (SW-846) 6010 (SW-846)	One 8-ounce glass Teflon-lined lid	4°C	6 months
Analyses for Concrete and Soil at Concrete, Soil Interface				
Volatile Organics – Benzene, Tetrachloroethene, Trichloroethene, Vinylchloride	8240 (SW-846)	One 4-ounce glass Teflon-lined lid	4°C	14 days
Metals – Arsenic, Cadmium, Chromium, Lead	6010 (SW-846)	One 8-ounce glass Teflon-lined lid	4°C	6 months

[a] Ecology – required and recommended analyses for petroleum substances (April 1992).