June 4, 2021

SENT ELECTRONICALLY

Mr. Brett Feldhahn United States Environmental Protection Agency Region 10 1200 6th Avenue, Suite 155 Seattle, WA 98101-3188

RE: Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company Kent Facility Polychlorinated Biphenyl (PCB) Commercial Storage Revised Permit Application

Dear Mr. Feldhahn:

Per discussions with EPA on May 28, 2021, Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company has revised the permit application to reflect the change in operator identification and increase to the TSCA closure bond based on PCB inventory disposal costs.

The completed permit application was submitted to EPA on December 11, 2020, meeting the applicable requirements as specified in 40 CFR § 761.65(d).

If you have any questions or require additional information, please contact me at (206) 715-1974 or by email at <u>kpotter@harsco.com</u>.

Sincerely,

Kacupaan

Katey Potter Permitting Compliance Manager

Enclosure: Revised Commercial Storage Permit Application

cc: Hector Sanchez, Clean Earth Megan Swick, Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company Mark Furnish, Department of Ecology, HQ Patrick Hsieh (PE), DOF

USEPA F	United States Environmental Protection A: Washington, DC 20460	gency	F	orm Approved MB No. 2070-0112
No	tification of	PCB A	ctivity	
Datum Tai			For Official Use C	Inly
Document Control Offic Office of Solid Waste U.S. Environmental Prot 1200 Pennsylvania Ave., Washington, DC 20460	er (5305P) ection Agency , N.W. -0001			
1. Name of Facility	Name of Owner Facility		2. EPA Identification	1 Number (if already assigned under RCRA)
Burlington Environmental, LLC, a Clean Earin Environmental Solutions Inc. company	Burlington Environmen	ntal, LLC	WAD9912817	767
3. Facility Mailing Address (Street or PO B 20245 77th Avenue South Kent, WA 98032	4. Location of Facil 20245 77th A Kent, WA 980	lity (No. Street, City, venue South)32	State, & Zip Code)	
5. Installation Contact (Name and Title)		6. Type of PCB Act	ivity (Mark 'X' in app	propriate box. See Instructions.
Megan Swick, Plant Manager	r	A. Generator w/onsi	ite storage facility	B. Storer (Commercial) D. R&D/Treatability
Telephone Number (Area Code and Number (253) 872-8030	er)	E. Approved Dispos	ser	F. Scrap Metal Recovery Oven/Smelter, High Efficiency Boilers
7. Certification Under civil and criminal pena or representations (18 U.S.C. accompanying this document document for which I cannot p supervisory responsibility for that this information is true, a	lties of law for the mal 1001 and 15 U.S.C. 26 is true, accurate, and c personally verify truth the persons who, actin ccurate, and complete.	king or submiss 515), I certify th complete. As to and accuracy, I ng under my dire	sion of false or finat the information of the identified so l certify as a con ect instructions,	raudulent statements on contained in or ection(s) of this npany official having made the verification
Signature	Name and Offic	cial Title (Type of Pr	cint)	Date Signed
Megan Sw		ck, Plant Manage	er	6-4-2021
The annual public burden for this collection of information is estimated to average 0.57 hours per response. This estimate includes time for reading instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, Collection Strategies Division, U.S. Environmental Protection Agency (mail code 2822), 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460-0001. Include the OMB number identified above in any correspondence.				

Do not send the completed form to this address. The actual information or form should be submitted in accordance with the instructions accompanying the form, or as specified in the corresponding regulations.

EPA Form 7710-53 (Rev 3/08) Previous editions are obsolete

Commercial PCB Storage Permit Application

Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. companyKENT FACILITY20245 77th Avenue SouthKENT, WASHINGTON

June 4, 2021

Prepared by: DALTON, OLMSTED, & FUGLEVAND 1001 SW Klickitat Way, Suite 200B Seattle, Washington 98134

Prepared for: Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company 20245 77th Avenue South Kent, WA 98032

CleanEarth

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ACRONYMS AND ABBREVIATIONS

BELLC	Burlington Environmental, LLC
CFR	Code of Federal Regulations
EHS	Environmental Health and Safety
MRW	Moderate Risk Waste
РСВ	Polychlorinated Biphenyl
PHSKC	
PODF	Performance-based Organic Decontamination Fluid
POTW	Publicly-owned Treatment Works
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasure
TSCA	Toxic Substances Control Act
TSDF	Treatment Storage and Disposal Facility

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A. QUALIFICATIONS OF OWNER/OPERATOR AND KEY EMPLOYEES

A.1. Facility Name/Address/Location

Owner Name:	Burlington Environmental, LLC
Operator/Facility Name:	Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company
Corporate Address:	1701 East Alexander Avenue Tacoma, WA 98421
Telephone Number:	253.627.7568
Physical Address:	20245 77th Avenue South Kent, WA 98032
EPA ID #:	WAD991281767
Telephone Number:	253.872.8030

The Kent Facility is a dangerous and non-dangerous waste management facility. Waste management is performed under the Resource Conservation and Recovery Act (RCRA) Part B Permit (WAD991281767), Solid Waste Moderate Risk Waste (MRW) permit issued by King County Public Health (PR0063893), and the Wastewater Discharge Permit issued by King County Department of Natural Resources and Parks (7159-10). The Kent Facility is also a commercial Polychlorinated Biphenyl (PCB) storage facility.

A.2. Facility Owner/Operator

Burlington Environmental, LLC (BELLC) owns two dangerous waste management facilities in Washington State. The company (formerly known as Chemical Processors, Inc.) was founded in Seattle in 1970 to provide an outlet for proper treatment, recycling, and storage for dangerous wastes. The Kent Facility offers alternative fuel blending, waste oil recycling, and bulk or containerized waste treatment services to industries throughout the Pacific Northwest.

In January 1992, Chemical Processors, Inc. formally changed its corporate name to "Burlington Environmental, Inc." (BEI). Philip Services Corporation purchased the Kent Facility from BEI in 1994. When Philip Services Corporation purchased BEI, the legal entity remained BEI. Philip Services Corporation underwent corporate restructuring between 2000 and 2008 and the parent company was named PSC Environmental Services, LLC (PSC). The Kent facility's legal name, as a result of the restructuring, is Burlington Environmental, LLC.

In April 2014, Stericycle Environmental Solutions, Inc. acquired Burlington Environmental, LLC in a stock purchase. Harsco Corporation acquired Stericycle Environmental Solutions, Inc. in April 2020 through a stock purchase. As a result, Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc.

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company is identified as the facility operator and is a wholly owned subsidiary of PSC Environmental Services, LLC, which is a wholly owned subsidiary of Clean Earth Environmental Solutions, Inc. The facility will be referred to in this plan as the "Kent facility."

Individuals with direct management responsibility for the operations at the Kent Facility are identified as follows:

Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company

David Stanton	President
Hector Sanchez	Senior Vice President Operations
Kris Iverson	Northwest Regional Operations Director
Kent Facility	
Megan Swick	Manager Facility – Plant Operations (Plant Manager)
Jerremmy Miller	Plant Production Supervisor
Guadalupe Montes	Manager, Operational EHS (EHS Manager)
Katey Potter	Permitting Compliance Manager (Permitting Manager)

A.3. Plant Management

The Kent Facility is operated by a Plant Manager who is responsible for day-to-day operations. The Plant Manager's duties include managing personnel requirements, scheduling and coordinating plant production and material flow, developing job safety practices, ensuring day-to-day compliance with all applicable regulations and permits, maintaining all required documents and records, and implementing and coordinating Contingency Plan procedures. The Plant Manager reports to the Northwest Regional Operations Director.

The Plant Production Supervisor manages the facility labpack depacking team and is responsible for the safe and efficient handling and processing of labpack waste at the TSDF. Ensures the plant consistently meets regulatory and safety compliance measures and operates in a productive and profitable manner.

The Environmental, Health and Safety Manager acts as the primary EHS contact by leading, planning, coordinating, and implementing the company's EHS management systems in their respective geographical areas. This requires the application of EHS engineering principles, such as job safety analyses, task-based evaluations, EHS Management systems technology and root cause analysis to prevent or correct unsafe working conditions and regulatory compliance issues.

The Permitting Compliance Manager acts as the primary regulatory contact and expert for all permitting, reporting and regulatory actions and regulatory agency issues within the organization as it relates to facilities and operation. This includes tracking all regulations related to EPA and state and local environmental agencies.

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A.4. Technical Qualifications of Key Employees

The persons responsible for the overall operation of the Kent Facility and the employees responsible for handling PCB waste and other wastes have the technical qualifications and experience to sufficiently perform their duties. This is accomplished through regularly scheduled continual employee training and by maintaining minimum job qualifications.

The Kent Facility provides an employee training program which prepares personnel to maintain and operate the Kent Facility in a safe manner and in compliance with all applicable local, state, and federal regulations. All new employees receive general orientation training and job-specific introductory training. General orientation training introduces a new employee to the management and the operations of the Kent Facility. Job-specific introductory training is training related to the specific duties of each job function. It is uniquely tailored for the position based on the new employee's education, experience, and other qualifications.

At a minimum, every employee involved in the facility operations involving hazardous waste treatment or storage, including PCBs, receives orientation and introductory training in compliance with 29 CFR 1910. Currently, OSHA requires 24 hours of training to satisfy this requirement. In addition, the RCRA Part B Permit requires 40 hours of training within 90 days of employment. No employee is permitted to work unsupervised until their training is complete. A certificate of completion is issued to every employee as they complete the training. Training will be completed within 3 months of employment at the Kent Facility.

In addition, every employee involved in the operations of the Kent Facility participates in continuing training. Employees receive continuing training to maintain proficiency, learn new techniques and procedures, and reinforce safety, quality, and compliance consciousness. Records of employee training are maintained in personnel files.

At a minimum, every employee involved in operations associated with hazardous waste treatment or storage, including PCBs, at the facility receives 8 hours of annual refresher training in compliance with 29 CFR 1910. Currently, OSHA requires 8 hours of training to satisfy this requirement. This training updates all previous training. It includes a review of site operations and the types and characteristics of waste streams handled at the facility. The Contingency Plan performance in emergency response is also reviewed. Changes in pertinent regulations are identified and current compliance status is reviewed.

The Kent Facility also maintains minimum job qualifications for all positions directly involved with PCB and hazardous material tracking and handling. The specific job title, function, and minimum qualifications of the positions that are responsible for the overall operation of the Kent Facility and for handling PCB materials and other wastes are described in Appendix A-1, Minimum Job Qualifications. All current and future Kent Facility employees responsible for handling PCB contaminated materials and other wastes meet or exceed the minimum qualifications for their respective position.

Examples of general orientation, job-specific introductory, and continuing training programs are provided in Appendix A-3. Specific educational and training history documenting the qualifications of the

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individual key employees noted in Section A2.0 are included in Appendix A-4. Table A4-1 shows the current training level guide based on job title.

A.5. Listing of Environmental Violations

Section 761.65(d)(3)(iv) of the Environmental Protection Agency rules for managing PCBs under the Toxic Substance Control Act requires information concerning any past State or Federal environmental violations involving the same business or another business with which the principals or supervisory employees were affiliated directly that occurred within 5 years preceding the date of submission and which relate directly to violations that resulted in either a civil penalty (irrespective of whether the matter was disposed of by an adjudication or by a without prejudice settlement) or judgment of conviction whether entered after trial or a plea, either of guilt or nolo contendere or civil injunctive relief and involved storage, disposal, transport, or other waste handling activities.

A summary of the violations found, and corrective actions taken meeting these criteria are provided in Table A5-1. Original documents can be provided to EPA upon request.

A.6. Affiliates

Companies currently owned and/or operated by principals or key employees:

Burlington Environmental, LLC is a wholly owned subsidiary of PSC Environmental Services, LLC which is a wholly owned subsidiary of Clean Earth Environmental Solutions, Inc. David Stanton, Jeffrey Diaz, and Sarah Kowalczyk are officers of Burlington Environmental, LLC.

Burlington Environmental, LLC's direct parent is PSC Environmental Services, LLC, an entity serving as a holding company. David Stanton, Jeffrey Diaz, and Sarah Kowalczyk are officers of the LLC.

PSC Environmental Services, LLC, in turn, is held by Clean Earth Environmental Solutions, Inc. which conducts general waste services, including hazardous and chemical waste transportation services. David Stanton, Jeffrey Diaz, and Sarah Kowalczyk are corporate officers of the incorporation.

The corporate chain and affiliates are provided in Appendix A-5.

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B. FACILITY DESIGN QUALIFICATIONS

B.1. General PCB Storage Facility Description

The Kent Facility is a dangerous and non-dangerous waste management treatment and storage facility that offers alternative fuel blending, waste oil recycling, and bulk or containerized waste treatment services to industries throughout the Pacific Northwest. Additionally, the Kent Facility is used for the commercial storage and transfer of PCB (Polychlorinated Biphenyl) contaminated materials. The facility began operations in April 1981.

The Kent Facility is located on a contiguous 6 ¼ -acre site with approximately 3 acres developed for facility operation. The remaining acreage to the west of the facility includes a stormwater treatment and infiltration facility and a 10-day transfer facility for inbound and outbound shipments of containerized dangerous waste. The area developed for facility operations is entirely asphalt or concrete surfaced. The developed area is also surrounded by an earthen berm constructed approximately 2 feet above the lot elevation. Land use for the facility is permitted and zoned by the City of Kent as a General Industrial Zone (M3). A site plan of the facility is provided in Figure C1-6, Kent Facility Site Plan with details provided for 3 sub-areas of the facility on C1-6a/b/c.

Regulated PCB material handling and storage operations are limited to a designated area within the Process Containment Building. The designated area is used for both the storage of PCB contaminated materials and RCRA hazardous wastes. PCB material truck loading/unloading operations occur on an adjacent staging area. The staging area is used for the immediate transfer of PCB containers and equipment from trucks to the PCB storage facility and vice versa.

The PCB storage area has a calculated design capacity of 180 standard 55-gallon drums of PCB Articles and PCB Containers. Calculations which demonstrate adequate containment for the 180 maximum drum capacity are provided in Appendix B-1, Kent Facility PCB Storage Containment Calculations. However, based on operational experience and projected PCB handling, the maximum projected PCB inventory will most likely consist of additional items including non-packaged flushed PCB transformer carcasses and 85-gallon overpack drums.

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B.2. Maximum PCB Storage Capacity Inventory

The PCB storage area has a calculated design capacity of 9,900 gallons or the equivalent of 180 standard 55-gallon drums of PCB Articles and PCB Containers. Calculations which demonstrate adequate containment for the 180 maximum drum capacity are provided in Appendix B-1, Kent Facility PCB Storage Containment Calculations.

An estimate of the maximum inventory of different types of PCB wastes that could be handled at one time at the facility is provided in Table B2-1, Maximum Projected PCB Inventory by Type. Table B2-1 provides maximum values for each type of PCB material typically received onsite. Depending on client needs different types of PCB containers are accepted at the Kent Facility. As a result, the type of PCB container and material (liquid vs solid, ballasts vs transformers) varies widely. However, the facility does not accept PCB materials in excess of the 9,900 gallon capacity and no single type of PCB container will be onsite in excess of the maximum quantities listed on Table B2-1. The facility cannot physically fit the maximum number of every type of container listed in Table B2-1 in the PCB storage area at the same time.

	, , , , ,				
ltem	Quantity	Container	Volume (gallons)	Disposal	
Delleste (Correcitore	30	55-gallon drums	55	Secure Landfill	
Ballasts/Capacitors	2	85-gallon drums	85	Secure Landfill	
	3	Carcass (180 ft ³)	1350	Secure Landfill	
Transformers	5	Carcass (20 ft ³)	150	Secure Landfill	
	3	85-gallon drums	85	Secure Landfill	
DCD Calida	10	СҮВ	202	Secure Landfill	
PCB Solids	70	55-gallon drums	55	Secure Landfill	
Delleste	20	55-gallon drums	55	Incineration	
Ballasts	2	85-gallon drums	85	Incineration	
	10	55-gallon drums	55	Incineration	
Capacitors	2	4ft x 4ft x 2ft plastic tote	240	Incineration	
	2	4 ft x 4 ft x 3 ft metal bins	359	Incineration	
DCD Liquide (oile)	30	55-gallon drums	55	Incineration	
PCB LIQUIDS (OIIS)	4	totes	325	Incineration	
DCD Liquids (water)	20	55-gallon drums	55	Incineration	
PCB Liquids (water)	4	totes	325	Incineration	
	3	Undrained (180 ft ³)	1350	Incineration	
Transformers	5	Undrained (20 ft ³)	150	Incineration	
	3	Undrained 85-gallon drums	85	Incineration	
PCB Liquids (rinsate) 10 55-gallon drums		55	Incineration		
DCR Solids	45	55-gallon drums	55	incineration	
PCD SUIIUS	10	СҮВ	202	incineration	

Table B2-1. Maximum Projected PCB Inventory by Type

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B.3. Compliance for PCB Storage Facility

The Kent Facility's PCB storage area design and construction standards meet the requirements outline in 40 CFR 761.65(b)(1). A detailed discussion of the facility design is provided in Section C1.5, PCB Waste Storage Facility Design. Specifically, the PCB storage area meets the following criteria:

- 1. Adequate roof and walls exist which prevent rainwater from reaching any stored PCBs and PCB ltems.
- 2. An adequate floor exists which has a minimum continuous 6 inch high curb. The floor and curbing provide a containment volume equal to at least two times the internal volume of the largest PCB Article or PCB Container stored therein or 25 percent of the total internal volume of all PCB Articles or PCB Containers stored therein, whichever is greater.
- 3. No drain valves, floor drains, expansion joints, sewer lines, or other openings exist that would permit liquids to flow from the curbed area.
- 4. Floors and curbing are constructed of Portland cement, concrete, or a continuous smooth, nonporous surface as defined at §761.3, which prevents or minimizes penetration of PCBs; and
- 5. The PCB Facility is not located at a site that is below the 100-year flood water elevation (as described in Section C1.3.1.)

A written statement certifying compliance with facility design and construction standards is provided in Section F, Compliance Statement.

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C. CLOSURE PLAN

C.1. Facility Description

C.1.1. GENERAL DESCRIPTION

Owner Name:	Burlington Environmental, LLC
Operator/Facility Name:	Burlington Environmental, LLC, a Clean Earth Environmental Solutions, Inc. company
Corporate Address:	1701 East Alexander Avenue Tacoma, WA 98421
Telephone Number:	253.627.7568
Physical Address:	20245 77th Avenue South Kent, WA 98032
EPA ID #:	WAD991281767
Telephone Number:	253.872.8030

The Kent Facility is a dangerous and non-dangerous waste storage and treatment facility located at 20245 77th Avenue South, Kent, Washington.

In 2017, the facility completed an extensive expansion of their DW facility in Tacoma, WA, which allowed the majority of containerized DW operations to be relocated from the Kent facility. Accordingly, several of Kent's former DW management units transitioned into MRW-only service, which eliminated dual handling of MRW and DW in common areas, as well as the storage or processing of any MRW materials on asphalt surfaces. With the completion of the transition, all MRW materials at the Kent facility are stored and/or processed within concrete secondary containment structures. In addition, all asphalt forklift driving surfaces at the Kent facility were replaced with new high-density asphalt in late 2017.

Types of wastes managed at the facility include wastewaters, oily wastes, sludges, and aqueous and non-aqueous metal-bearing wastes. In addition, Kent is a commercial storage facility for polychlorinated biphenyls. The facility can receive, store, and process wastes in either bulk loads or containers. The Kent Facility manages the following DOT Hazard Classes: Compressed Gases (2.1, 2.2 & 2.3), Flammables (3, 4.1 & 4.2), Dangerous When Wet (4.3), Oxidizers/Organic Peroxides (5.1 & 5.2), Poisons/Toxics (6.1), Corrosives – Acids and Bases (8), and Class 9 – Miscellaneous (9).

Current dangerous waste and MRW operations occur on approximately three of the 6 ¼ acres. The remaining acreage to the west of the facility includes a stormwater treatment and infiltration facility and a 10-day transfer facility for inbound and outbound shipments of containerized dangerous waste. Dangerous waste operations include storage and treatment in tanks and storage in containers.

The Kent Facility typically manages the following waste streams:

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- Waste Acid and Alkalines
- Organic Solvents
- Waste Oil and Coolants
- Miscellaneous Solids and Sludges
- Industrial Wastewater
- Materials for specialized handling and lab-scale treatment (including lab packs, household hazardous wastes, discarded chemical products, and miscellaneous wastes)
- Cylinders for Depressurization
- Miscellaneous containerized Materials

The following treatment processes are used to manage these waste streams:

- Existing Processes:
- Carbon Adsorption
- Chemical Oxidation
- Chemical Precipitation
- Chemical Reduction
- Coagulation
- Container or Cylinder Depressurization
- Consolidation/Compaction
- Decanting/Clarification
- Demulsification
- Drying or Dewatering
- Emulsification
- Filtration
- Flocculation
- Lab Packing
- Loose Packing
- Neutralization
- Sedimentation
- Solidification
- Specialized Lab-Scale Treatment

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A plan for the clean closure of the RCRA-regulated operations at the Kent Facility is contained in the Kent Facility Part B Permit Application. The RCRA closure plan includes decontamination of structures and equipment for PCBs and sampling for PCBs in areas of dual RCRA/TSCA use.

C.1.2. JURISDICTION

The Kent Facility is located within the city limits of Kent in King County, Washington. The site lies within the Duwamish Valley in the SE 1/4 of Section 1, Township 22N., Range 4 E., W.M. The site is about two miles north of downtown Kent, four miles south of the city of Renton, and about 1.3 miles east of the Green River.

The Kent Facility is under the jurisdiction of Region 10 of the US Environmental Protection Agency (EPA) and the Northwest region of the Washington Department of Ecology (Ecology).

C.1.3. WRITTEN DESCRIPTION AND TOPOGRAPHIC MAP

The topographic features and surrounding land uses at the Kent Facility are depicted in Figures C1-1 through C1-4. Each figure highlights different information. Specifically, the figures provide and illustrate the following information: (1) general topographic characterization, (2) location of the PCB storage area (TSCA/DW Area), (3) location of hazardous waste management units, (4) identification of relevant buildings and structures, (5) 100-year flood plain, and (6) surrounding land uses. The location of the Kent Facility in relation to the greater Puget Sound area was previously depicted in Figure A1-1, Kent Facility Location Map.

Figure C1-1, Kent Facility Topographic Map, depicts the boundaries of the Kent Facility. This figure along with the other figures in this section include a map scale, map date, and north arrow. Contour intervals of 1 foot are depicted on the figure.

C.1.3.1. General Features

The location of the Kent Facility PCB storage area (labelled TSCA/DW Area) and current hazardous waste management units are depicted in Figure C1-2, Waste Management Units. The PCB storage area is described in detail in Section C1.5; PCB Waste Storage Facility Design. The hazardous waste management units include tank systems and container storage areas. There are no underground storage tanks and no closed PCB management units at the Kent Facility. Closed hazardous waste management units include tanks, container storage units, treatment areas, and process equipment. See Appendix C-1, Closed Solid Waste Management Units, for specific information regarding the closed units.

The dangerous waste operations (including the TSCA DW Area) at the Kent Facility are not located within a 100-year flood plain. The FEMA Preliminary 100-year Floodplain is shown is Figure C1-3, Floodplain Designation Map. A small section of the Preliminary 100-year Flood Plain crosses the Northwest corner of the facility, Zone AH (elevation 26.5 feet). However, the outline of the AH zone is not consistent with the elevations of the existing site topography. There is only a small amount of the Kent Facility below 27 feet in elevation, as shown on Figure C1-1. There is a surface water drainage ditch running East/West along the Western half of the North property boundary (as noted on Figure C1-2) that is at or below 26.5 feet, but the rest of the Northwest corner of the facility rises up to between 28 to 30 feet in elevation

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(as shown on Figure C1-1). The PCB Storage Area is in the center of the site inside the Process Containment Building (labelled as the TSCA/DW Area as shown on Figure C1-2).

Land uses in the vicinity of the Kent Facility are shown on Figure C1-4, Adjacent Land Uses. This information was obtained from the King County GIS Center. All land immediately adjacent to the facility is used for industrial purposes.

C.1.3.2. On-site Traffic Patterns

Traffic patterns within the Kent Facility are shown in Figure C1-5, On-Site Traffic Patterns. Traffic within the active portions of the facility are restricted to transportation vehicles, intra-facility operational equipment (e.g., forklifts), and service vehicles as needed. All other outside vehicular traffic (employee and visitor vehicles) are required to remain in the parking area east of the plant office.

There are five locations within the facility where waste and product are loaded and unloaded. These include the container area west of the Process Containment Building, the PCB area on the north end of the Process Containment Building, the solidification area, the South Check-in Pad, and the Bulk Receiving Area (North Truck Load/Unload Area) north of the tank system area.

There are two gates in which to enter the site. The north gate faces east onto 77th Avenue South and is located in the northeast corner of the facility. This gate is primarily used for trucks headed to the 10-Day Transfer Facility. The main gate, located between the north and south borders of the property, also faces east onto 77th Avenue South. This gate serves as the main entrance to the facility and as the main exit for passenger, commercial (nonhazardous), and non-plant related vehicles. The west lot gate opens to South 206th Street and is located in the southwest corner of the property. This gate is used to exit the 10-Day Transfer Facility. The south gate on South 206th Street is not used.

C.1.3.3. Facility Security

The Kent Facility is surrounded by a six foot high cyclone fence, topped off with three strands of barbed wire. There are three gates which provide access to the site. Gates are opened remotely or with a keycard but are otherwise kept closed. After operating hours all gates are kept closed and secured with entry by security card or code. Warning signs are posted at each entrance which bear the legend "Danger-unauthorized personnel keep out."

The PCB storage area is located within the Process Containment Building which is also locked after operating hours. Access to the PCB storage area is gained through a gate and a retractable door attached to the building. The gate and door are secured at all times except when in use by appropriate site personnel.

The facility is monitored by a security service (Sonitrol) for unauthorized entry and fire alarms during non-operating hours.

C.1.4. ENVIRONMENTAL CONDITIONS ON-SITE

This section highlights environmental conditions at the Kent Facility that may be affected by PCB spills and which could be the basis for requiring cleanup levels more stringent than those required in the Spill Cleanup Policy. Such conditions include: (1) proximity to surface waters, (2) proximity to drinking water

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sources, (3) sewer location and design, (4) location of nearby grazing or agricultural lands, and (5) presence of a shallow well, near surface groundwater, or a soil type that poses a high potential for groundwater contamination.

The Kent Facility is not located near any storage reservoirs or drinking water sources. The Kent Facility is not adjacent to any surface water bodies, or wetlands. The nearest surface water body is Mill Creek (512 feet to the southwest). A surface water drainage ditch is located approximately 430 feet north of the PCB storage area and a stormwater detention and infiltration pond is located approximately 250 feet west of the PCB storage area as shown in Figure C1-6, Kent Facility Site Plan. Run-on is prevented from entering the site by an earthen berm surrounding the perimeter of the facility (Figure C1-1). Run-off from waste management areas is collected on-site and routed to the on-site wastewater treatment plant. Stormwater from non-waste management areas is directed to the onsite stormwater detention and infiltration system.

The PCB storage area is protected from the elements, and therefore, has no drainage systems or piping of any kind. The Kent Facility has several drainage collection sumps located throughout the facility. All on-site run-off is collected in sumps and treated through the on-site wastewater treatment plant before final discharge under a POTW discharge permit. Refer to Figure C1-6 for stormwater drainage patterns. Any spills that could potentially occur are contained within the PCB storage area and drained via pumping or through the use of suitable absorbents. Spills reaching collection sumps are collected by a use of a vacuum truck. There is no sewer or sewage treatment system near the facility which could become contaminated from a PCB spill.

The geology of the Duwamish Valley (Kent Facility location) is characterized by Pleistocene glacial deposits of sand and gravel and recent alluvial deposits of sand, gravel, silt, and clay. Groundwater occurs at shallow depths throughout the Duwamish Valley. Depth to water typically ranges from 5 to 20 feet. No surface water drainage ditches or creeks are present on the facility property.

Loading, unloading, and storage of PCB materials are conducted within secondary containment systems designed with berms and blind sumps. The PCB storage area is not subject to run-on from a 25-year/24-hour storm because it is located inside a building. Should a spill occur outside of the secondary containment, emergency response measures are taken to ensure rapid containment and cleanup of spilled materials to protect ground and surface waters.

Discharges of stormwater and treated wastewater from the active waste management areas of the Kent Facility are regulated under the King County Industrial Waste Program, Waste Discharge Permit No. 7159-09. Stormwater from parking areas and non-active waste management areas are directed to the onsite stormwater detention and infiltration facility. Run off from unpaved areas outside the facility follows natural drainage patterns, flowing to local storm drains or low-lying areas. Stormwater from containment is collected in on-site sumps, analyzed, and routed to the facility's wastewater treatment system when necessary. The Waste Discharge Permit incorporates provisions for compliance with federal, state, and local laws and regulations addressing water pollution control standards. These measures ensure that groundwater at the site is not subject to PCB contamination.

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There are no grazing lands, farms, or vegetable gardens in the immediate proximity of the Kent Facility. The land surrounding the facility is zoned as General Industrial by the City of Kent.

C.1.5. PCB WASTE STORAGE FACILITY DESIGN

Regulated PCB material handling and storage operations occur in designated areas within the Kent Facility. PCB materials are stored in a bermed area inside the Process Containment Building (TSCA/DW Area, Figure C1-6, Facility Site Plan). PCB material is loaded and unloaded from trucks adjacent to the Process Containment Building and immediately placed in storage. The design and construction standards meet the requirements outlined in 40 CFR 761.65(b)(1). Storage of compatible RCRA-regulated wastes may also occur in the same storage area.

The designated PCB storage area is situated in the northwest corner of the Process Containment Building and has rectangular dimensions of 23 feet 6 inches by 42 feet 3 inches (Figure C1-8). A 6-inch high perimeter berm constructed on the warehouse floor defines the boundary of the PCB storage area. The PCB storage area is designed to store PCB items and equipment and can provide containment for 2,606 gallons. There is no PCB storage outside the designated PCB area or in bulk tanks.

The floor and berm of the PCB storage area is constructed of 6-inch thick wire-mesh reinforced concrete. The berm joints are caulked with sealant and the concrete floor and berm surfaces are sealed with a suitable resistant epoxy coating material which provides a smooth and impervious surface (see Appendix C-6, Specifications for Concrete Epoxy Coating). The PCB storage area has no drainage systems or piping of any kind. The secondary containment system is inspected daily for accumulated material. Chain link fencing has been provided around the storage area to limit entry. Access to the area is gained through a gate in the chain link fencing and through a retractable door attached to the Process Containment Building.

The Kent Facility Process Containment Building is constructed of steel with metal siding. The Process Containment Building provides a roof and walls which protects the PCB storage area from the elements and prevents rainwater from reaching any stored PCB items. Drawings which show details of the Process Containment Building floor plan, the roof and walls, and the designated PCB storage area are provided in Appendix C-2.

C.1.6. ON-SITE MANAGEMENT OF PCBS

Procedures for managing PCBs at the Kent Facility assure that the potential for PCB contamination is minimized. Piping and bulk tanks are not used for PCB management at the facility. PCBs managed at the facility consist of transformers, containerized PCB solids and liquids, and other PCB items which can be containerized (e.g., capacitors, light ballasts, laboratory waste). All containers used for PCB management are 85 gallons or less.

All containerized PCB items and transformers are stored within the designated PCB storage area. The concrete floor of the PCB storage area is coated with a suitable epoxy coating impervious to PCB penetration. All processing operations (including draining of fluids, consolidation, flushing and decontamination) are also conducted within the PCB storage area. Containers and PCB items are kept sealed unless processing, if required, dictates that they be briefly opened.

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PCB shipments are pre-scheduled into the facility to assure that adequate contained storage and processing space is prepared and available. Upon arrival, the transport vehicle is moved to the North Loading/Unloading Area. The manifest and shipping papers are verified for piece count, waste description, and PCB concentration. Each PCB item is checked for container integrity to assure that it is non-leaking and free of external residue or spillage. If the PCB container or PCB item's integrity is questionable, or if external residue/spillage is present, it will be overpacked/secured immediately, and cleaned prior to placing into storage. When unloaded, the PCBs are immediately transferred into the PCB storage area for storage and/or processing. When PCBs are shipped from the facility, they are moved directly from the PCB storage area to the transport vehicle. Containers are stacked no more than six feet high, which is equivalent to the height of two 55-gallon drums. Storage of containers complies with Uniform Fire Code storage requirements, as well as Washington State Dangerous Waste Regulations. A minimum 30-inch aisle spacing is maintained between container rows, walls, berms, and other structures.

Due to PCB management practices employed on site, indoor and outdoor walls and roofs are not expected to be contaminated with PCBs. Any spills which may have occurred during the active life of the facility will have been cleaned up in accordance with 40 CFR 761 Subpart G - PCB Spill Cleanup Policy. In addition, inspection procedures and emergency response procedures required by the RCRA and the Washington State Dangerous Waste Regulations ensure that any leaks or spills are detected and remedied in a timely manner. Containers may be stored up to six feet high (two tiers) to within one foot of the north wall in the PCB storage area. Although this surface is not expected to be contaminated with PCBs, due to the proximity of the containers, samples will be collected from the North wall for confirmation purposes prior to decontamination activities on surrounding surfaces.

C.2. Disposal of PCB Waste Inventory

C.2.1. MAXIMUM INVENTORY

The estimated maximum PCB inventory is based on the storage area design capacity and projected PCB handling operations and represents the most likely scenario for capacity and maximum disposal cost. Closure cost estimates are based on a scenario in which closure costs would be most expensive. Table C2-4, Cost Comparison for Possible Disposal Scenarios, represents the likely highest cost scenarios for PCB inventory disposal at the time of closure. As such, the quantities identified for the various PCB items described in Tables C2-1 to C2-4 are for closure cost estimation only and are not to be used as a limit to the number or type of PCB items which may be in storage at any one time.

The amount of waste in the PCB storage area at any one time will not exceed the design and containment capacities as shown in Appendix B-1, Kent Facility PCB Storage Containment Calculations. These containment calculations also take into consideration the displacement of 55-gallon drums to account for possible storage of RCRA wastes in the same storage area.

Incoming PCB shipments are prescheduled to assure sufficient storage capacity exists at the facility prior to receiving the waste. If the maximum inventory is attained, no further incoming shipments are accepted.

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C.2.2. DISPOSAL OF INVENTORY

The Kent Facility is a commercial storage facility and a PCB generator with on-site storage. The Kent Facility is not a PCB disposal facility or a PCB transporter. As a PCB waste generator, the Kent Facility is in compliance with generator requirements including manifesting, recordkeeping, and tracking the delivery and disposal of PCB wastes.

All PCB wastes on-site at the time of closure will be sent off-site for disposal within 90 days of receipt of the final shipment in accordance with the closure schedule described in Section C6.0, Closure Schedule. The estimated maximum PCB inventory is based on the facility design capacity and projected PCB handling operations and it represents the most likely worst-case scenario for disposal cost estimates. The maximum PCB inventory is lower than the sum of the maximum container inventory types (Table B2-1). For closure purposes, the estimated inventory to be disposed off-site is the maximum inventory described in Tables C2-1 to C2-3, summarized on Table C2-4 (Cost Comparison for Possible Disposal Scenarios). On-site treatment of PCB wastes at closure is not expected to be performed prior to transport for disposal. Bulk storage tanks as described in 40 CFR 761.65(c)(7) are not used to manage PCB wastes at the Kent Facility.

It is projected that PCB wastes will be sent for disposal at approved disposal facilities currently being used by Kent Facility at the time closure is begun. Currently the Kent Facility uses Veolia (Port Arthur, TX), Clean Harbors (La Porte, TX), US Ecology Idaho (Grandview, ID) and Chemical Waste Management (Arlington, OR) for landfill disposal or disposal by incineration.

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ltem	Quantity	Container	Volume (gallons)	Disposal	Total Volume (gallons)
Pallasts/Capacitors	30	55-gallon drums	55	Secure Landfill	1,650
Ballasts/Capacitors	2	85-gallon drums	85	Secure Landfill	170
	1	Carcass (180 ft ³)	1350	Secure Landfill	1,350
Transformers	2	Carcass (20 ft ³)	150	Secure Landfill	299
	2	85-gallon drums	85	Secure Landfill	170
DCR Solida	5	СҮВ	202	Secure Landfill	1,010
PCB Solius	70	55-gallon drums	55	Secure Landfill	3,850
Ballasts	2	55-gallon drums	55	Incineration	110
Dallasts	0	85-gallon drums	85	Incineration	0
	2	55-gallon drums	55	Incineration	110
Capacitors	0	4ft x 4ft x 2ft plastic tote	240	Incineration	0
	0	4 ft x 4 ft x 3 ft metal bins	359	Incineration	0
	6	55-gallon drums	55	Incineration	330
	0	totes	325	Incineration	0
PCB Liquids	2	55-gallon drums	55	Incineration	110
(water)	0	totes	325	Incineration	0
	0	Undrained (180 ft ³)	1350	Incineration	0
Transformers	0	Undrained (20 ft ³)	150	Incineration	0
Transformers	0	Undrained 85-gallon drums	85	Incineration	0
PCB Liquids (rinsate)	0	55-gallon drums	55	Incineration	0
PCR Solids	6	55-gallon drums	55	incineration	330
	2	СҮВ	202	incineration	404
				Total Gallons	9,893
				Estimated Disposal Cost	\$28,000

Table C2-1. PCB Inventory Disposal Cost- 2021 Scenario 1

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ltem	Quantity	Container	Volume (gallons)	Disposal	Total Volume (gallons)
Pallasts/Capacitors	20	55-gallon drums	55	Secure Landfill	1,100
Ballasts/Capacitors	1	85-gallon drums	85	Secure Landfill	85
	0	Carcass (180 ft ³)	1350	Secure Landfill	0
Transformers	2	Carcass (20 ft ³)	150	Secure Landfill	299
	0	85-gallon drums	85	Secure Landfill	0
DCR Solida	6	СҮВ	202	Secure Landfill	1,212
PCB Solius	30	55-gallon drums	55	Secure Landfill	1,650
Ballasts	10	55-gallon drums	55	Incineration	550
Dallasts	1	85-gallon drums	85	Incineration	85
	5	55-gallon drums	55	Incineration	275
Capacitors	0	4ft x 4ft x 2ft plastic tote	240	Incineration	0
	0	4 ft x 4 ft x 3 ft metal bins	359	Incineration	0
	10	55-gallon drums	55	Incineration	550
	2	totes	325	Incineration	650
PCB Liquids	5	55-gallon drums	55	Incineration	275
(water)	0	totes	325	Incineration	0
	0	Undrained (180 ft ³)	1350	Incineration	0
Transformers	2	Undrained (20 ft ³)	150	Incineration	300
Transformers	0	Undrained 85-gallon drums	85	Incineration	0
PCB Liquids (rinsate)	10	55-gallon drums	55	Incineration	550
	20	55-gallon drums	55	incineration	1,100
	6	СҮВ	202	incineration	1,212
				Total Gallons	9,893
				Estimated Disposal Cost	\$65,000

Table C2-2. PCB Inventory Disposal Cost- 2021 Scenario 2

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ltem	Quantity	Container	Volume (gallons)	Disposal	Total Volume (gallons)
Pallasts (Capacitors	4	55-gallon drums	55	Secure Landfill	220
Ballasis/Capacitors	0	85-gallon drums	85	Secure Landfill	0
	0	Carcass (180 ft ³)	1350	Secure Landfill	0
Transformers	0	Carcass (20 ft ³)	150	Secure Landfill	0
	0	85-gallon drums	85	Secure Landfill	0
DCP Solids	0	СҮВ	202	Secure Landfill	0
PCB Solius	10	55-gallon drums	55	Secure Landfill	550
Ballasts	12	55-gallon drums	55	Incineration	660
Dallasts	2	85-gallon drums	85	Incineration	170
	8	55-gallon drums	55	Incineration	440
Capacitors	0	4ft x 4ft x 2ft plastic tote	240	Incineration	0
	0	4 ft x 4 ft x 3 ft metal bins	359	Incineration	0
PCP Liquids (oils)	20	55-gallon drums	55	Incineration	1,100
PCB LIQUIUS (OIIS)	2	totes	202	Incineration	404
PCB Liquids	16	55-gallon drums	55	Incineration	880
(water)	3	totes	325	Incineration	975
	1	Undrained (180 ft ³)	1350	Incineration	1,350
Transformers	2	Undrained (20 ft ³)	150	Incineration	300
Hansionners	2	Undrained 85-gallon drums	85	Incineration	170
PCB Liquids (rinsate)	5	55-gallon drums	55	Incineration	275
PCB Solids	25	55-gallon drums	55	incineration	1,375
r CD Solids	5	СҮВ	202	incineration	1,010
				Total Gallons	9,879
				Estimated Disposal Cost	\$93,000

Table C2-3. PCB Inventory Disposal Cost- 2021 Scenario 3

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ltem	Cost
Maximum PCB Inventory Disposal Cost (based on 1990 Table B2-1 PCB material types, with 2021 unit costs)	\$75,000
PCB Inventory Disposal Cost- 2021 Scenario 1	\$28,000
PCB Inventory Disposal Cost- 2021 Scenario 2	\$65,000
PCB Inventory Disposal Cost- 2021 Scenario 3	\$93,000
PCB Inventory Disposal Cost- 2021 Scenario 4 (180 55 gallon drums PCB liquids- incineration cost)	\$97,000
Maximum Increase to TSCA Closure Bond based on highest cost Scenario 3	\$18,000
Maximum Increase to TSCA Closure Bond based on 180 Drum Scenario 4	\$22,000

Table C2-4. Cost Comparison for Possible Disposal Scenarios

C.3. Closure Plan Sampling, Decontamination and Compliance with Spill Cleanup Policy

C.3.1. ID/CLASSIFICATION OF ITEMS TO BE DECONTAMINATED

At the time of closure of the Kent Facility, all PCB handling areas and structures will either be cleaned to the numerical decontamination levels for non-restricted access areas or disposed of as PCB waste. Under the current plan for final closure of the entire Kent Facility as a RCRA-permitted storage and treatment facility, decontamination of the facility includes PCBs. The sampling and analysis plan also includes PCBs. No PCB waste or any hazardous waste will remain on-site. The Kent Facility will not maintain restricted access to the facility after completion of final closure.

Movable equipment used for handling PCB containers will be decontaminated in accordance with 40 CFR 761.79 by swabbing surfaces that have contacted PCBs with a performance-based organic decontamination fluid (PODF), as defined in 40 CFR 761.79(c)(3)(iv). Equipment to be decontaminated includes two barrel-grabber forklift attachments, one dolly, one diaphragm pump and one drum hoist. Drum dolly wheels and sampling equipment (e.g., stingers) will be disposed as PCB waste at a TSCA-permitted facility.

Table C3-1, Classification and Cleanup Levels for Structures and Equipment, lists the classifications of the structures and equipment on-site and their associated cleanup level.

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Table C3-1. Classification and Cleanup Levels for Structures and Equipment

Item	Classification	Cleanup Level
PCB Storage Area (incl. floor and north wall up to 6' high)	2, A	10 µg/100 cm ²
Forklifts and container handling equipment	2, A	10 μg/100 cm ²
*Other indoor and outdoor walls	2, B	10μg/100 cm ²
*Other indoor and outdoor concrete and asphalt surfaces	2, B	10 µg/100 cm ²
*Soils	N/A	10 ppm by wt. at 10" depth

1 – High-contact industrial surface

2 - Low-contact industrial surface

A – Impervious solid surface

B – Non-impervious solid surface

* Due to PCB management practices employed on site, these surfaces are not expected to be contaminated (see Section C1.6, On-Site Management of PCBs.)

C.3.2. PRE-CLEANUP SURVEY AND SAMPLING

C.3.2.1. Site Health and Safety

The site is covered by several health and safety requirements in various plans and standard operating procedures. Facility personnel, contractors, and all others associated with the closure of the facility will follow the site standard operating procedures and health and safety practices.

The facility manages RCRA wastes in addition to PCBs. The management of all wastes on site is conducted in a manner which limits the exposure of personnel to the maximum extent possible. Proper personal protective equipment (PPE) is required to be worn at all times. All operations related to the management of PCB materials are performed in closed containers and within adequate secondary containment. An inspection program and emergency response procedures ensure that integrity of secondary containment and impervious coating is maintained, and any leaks or spills are detected and remedied in a timely manner.

C.3.2.2. Visual Inspection of the Facility

After the decision to commence closure of the facility, an inspection of the facility will be performed to identify known and suspected areas, structures, and equipment to be decontaminated under closure. Other tasks included in the pre-cleanup survey will be to ascertain sampling boundaries, to review the Site Safety and Health Plan and Closure Plan objectives with closure personnel, and to modify closure plans and documents if necessary.

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The initial inspection will include a visual inspection, structural inspection as necessary, historic operational and records review, and personnel interviews. The inspection information will be documented in writing and through photographic records.

Proper PPE will be worn at all times throughout the initial inspection and closure procedures.

Areas, Structures and Equipment to be Surveyed

- PCB storage area.
- PCB handling equipment (e.g., forklifts, container dollies, tools).
- Indoor and outdoor walls, and indoor and outdoor concrete and asphalt floors and surfaces associated with operational patterns and storage of wastes.
- Other areas suspected of contamination based on visual observation, personnel interviews, facility records review, and historical operations.
- The entire facility and its boundary.

Sampling of PCB areas, structures, equipment, and any additional areas identified as potentially contaminated with PCBs through the initial inspection will not be conducted prior to inventory elimination and decontamination.

Indoor and outdoor walls are not expected to be contaminated; however, the inside north wall in the PCB storage area will be sampled initially up to six feet high for verification purposes, because of the potential proximity of containers storing PCB materials. Containers are stacked no more than six feet high, which is equivalent to the height of two 55-gallon drums. A minimum one-foot aisle is maintained between the end of the rows of containers and the north wall. A minimum three-foot aisle is maintained between the container stacks and the west wall of the PCB storage area. Therefore, the west wall of the PCB storage area will not require initial verification sampling.

The PCB management area is well defined. Any spills which may have occurred during the active life of the facility will have been cleaned up in accordance with 40 CFR Part 761 Subpart G - Spill Cleanup Policy. In addition, inspection procedures and emergency response procedures required by the RCRA and the Washington state Dangerous Waste Regulations ensure that any leaks or spills are detected and remedied in a timely manner (the area is inspected daily for leaks and containment area integrity is checked semi-annually with PE certification).

C.3.2.3. Sampling Plan

The floor of the PCB storage area will be decontaminated without prior sampling. Post-cleanup verification sampling will be performed on this area to ensure complete decontamination. See Section C4.3, Post Cleanup Verification Sampling, for description of the sampling plan. If post-cleanup sampling shows that the floor surface is not decontaminated, further decontamination procedures will be performed until PCB contamination is not detected above levels for non-restricted access areas (10 μ g/100 cm2). If decontamination of the surface is not achievable, the concrete surfaces will be scarified or removed and disposed of as PCB waste. If the concrete surfaces are removed, the

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foundation soils will be sampled. It is assumed for cost estimation that initial decontamination operations will be successful.

The interior and exterior walls of the PCB storage area are not expected to be contaminated; however, the inside north wall of the PCB storage area will be sampled up to six feet high for verification purposes, because of the potential proximity of containers storing PCB materials. If PCB contamination is detected above levels for non-restricted access areas ($10 \mu g/100 \text{ cm2}$), the surfaces will be decontaminated or will be removed and disposed of as PCB waste at a TSCA-permitted facility.

A sampling grid has been designed for determining the number of samples to be taken to verify that the north interior wall surface is not contaminated. The grid is shown as Figure C3-1. The sampling protocol is described in Appendix C-5, Sampling Plan. A total of 11 samples plus one duplicate sample will be required for the wall (including the inside of the door) inside the PCB storage area to show that the surface is free of PCB contamination (12 samples total).

Surface soil background samples will be collected in the field (off-site where feasible). Where possible, samples will be collected upgradient in a direction not impacted by site surface drainage. Eight background soil samples will be collected and analyzed individually.

Movable equipment used for handling PCB containers will be decontaminated by swabbing surfaces that have contacted PCBs with PODF, in accordance with 40 CFR 761.79. Post-decontamination verification samples will be taken from the surfaces that have undergone decontamination. See Section C4.3, Post Cleanup Verification Sampling, for a description of the sampling plan.

All sampling wastes, including excess sample materials, disposable items (e.g., rubber gloves, disposable wipes), and decontamination solutions shall be disposed of as PCB waste as required.

C.4. Decontamination

C.4.1. DECONTAMINATION METHODS FOR EACH COMPONENT

Impervious solid surfaces (metal, glass, aluminum, enameled or laminated surfaces) can be successfully decontaminated. Concrete, a non-impervious solid surface, may only be decontaminated to a depth of approximately one-half inch.

The concrete surfaces in the PCB storage area is coated with a suitable impervious epoxy coating. Coated concrete may be successfully decontaminated. The metal walls of the Process Containment Building are also impervious, and can therefore be decontaminated successfully, if necessary. Although asphalt is also a non-impervious solid surface, it cannot be successfully decontaminated.

If initial verification sampling indicates that all or portions of the walls are contaminated, the surfaces will be decontaminated by double washing/rinsing with a PODF. If the coated concrete surfaces cannot be successfully decontaminated, further methods may be employed, including scarification. Breaking up and completely removing the contaminated concrete is an option as well. If the walls cannot be successfully decontaminated, they will be removed and disposed as PCB waste at a TSCA-permitted facility.

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Since asphalt cannot be decontaminated, it must be removed if sampling indicates contamination. Removal of only the contaminated areas - can be achieved by scarification or by break up and complete removal.

Other impervious materials and equipment found to be contaminated with PCBs will be decontaminated by double washing/rinsing with a PODF. Movable equipment used in storage such as forklifts and drum dollies shall be decontaminated by swabbing surfaces that have contacted PCB containers with a PODF. Rubber drum dolly wheels will be disposed as PCB waste. PCB contaminated non-impervious materials and equipment will be disposed of as a PCB waste if they cannot be easily and successfully decontaminated by double washing/rinsing with a PODF.

C.4.2. DESCRIPTION OF THE CRITERIA USED TO CHOOSE DECONTAMINATION METHOD(S) FOR COMPONENTS

The three methods chosen to decontaminate surfaces (see above Section C4.1) are dictated by the surface type (impervious or non-impervious) and based on the following criteria.

Double Wash/Rinse with a PODF

Effectiveness - PCBs are highly soluble (greater than 5% soluble by weight) in PODF solutions. Impervious surfaces are quickly, and effectively decontaminated, and uncoated concrete can be decontaminated to one-half inch.

Equipment - Hand-held pressure sprayers, absorbent pads, and scrubbing brushes are the primary pieces of equipment required.

Support Facilities - No support facilities are needed.

Time Requirements - Impervious surfaces can be double washed/rinsed at a rate of 100 ft2/hour, and uncoated concrete at 50 ft2/hour.

Safety Requirements - PODF solutions present a minimal safety hazard to personnel. PPE includes Tyvek type suits, organic/HEPA cartridge respirators, boots, and gloves.

Amount of Waste Generated - Absorbent pads containing the PODF cleaning solution are generated at a rate of one 55-gallon drum/200 ft2 for impervious surfaces, and one 55-gallon drum/100 ft2 for non-impervious surfaces.

Scarification of Non-Impervious Surfaces

Effectiveness - Up to one inch of a surface can be removed with a scarifying machine (mobile unit which removes to a set depth by grinding/scoring the surface). This is effective for both large and localized areas and preserves the integrity of the surface. The machine allows the removed material to be collected and controlled easily. Areas undergoing scarification can be enclosed with negative pressure environment for further control of removed material.

Equipment - A scarifier is the primary piece of equipment.

Support Facilities - No support facilities are needed.

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Time Requirements - Surfaces can be scarified at a rate of 2,000 ft2/day (contractor estimate).

Safety Requirements - Scarification presents a minimal safety hazard to personnel. PPE includes Tyvek type suits, organic/HEPA/dust cartridge respirators, boots, gloves, hearing protection. Supplied air may be required if scarification area is enclosed.

Amount of Waste Generated - Waste quantity generated is a function of the surface area and depth of scarification.

Break Up and Removal of Surface

Effectiveness - Entire contaminated surface is removed.

Equipment - Heavy equipment is required (includes backhoe, loader, ram, and cutter).

Support Facilities - No support facilities are needed.

Time Requirements - Concrete can be removed at a rate of 2,000 ft2/day, and asphalt at a rate of 3,000 ft2/day.

Safety Requirements - Break up and removal presents a minimal safety hazard to personnel. PPE includes Tyvek type suits, organic/HEPA/dust cartridge respirators, boots, gloves, hearing protection.

Amount of Waste Generated - Waste quantity generated is a function of the surface area and the thickness of surface.

C.4.3. POST-CLEANUP VERIFICATION SAMPLING

Post-cleanup verification sampling will be completed to confirm that all PCB handling areas and structures will have been cleaned to the numerical decontamination levels for non-restricted access areas.

Sampling grids have been designed for the PCB Storage Area. The grid for this area is shown in Figure C4-1, PCB Storage Area Sampling Grid. A total of 25 samples plus three duplicates will be taken to verify decontamination of the PCB storage area (28 samples total).

The "hot spot pursuit" sampling method described in Appendix C-5 will be used if the initial grid sampling of the concrete or asphalt areas indicate localized PCB contamination. If only a portion of the concrete or asphalt surface of a hot spot is removed by scarification, verification sampling will be done on the surface itself. If the entire concrete or asphalt surface of a hot spot must be removed, the soil beneath will be sampled for verification.

If initial verification grid sampling results indicate that removal of the entire concrete or asphalt surface is necessary, the soil beneath will be sampled using the hexagonal grid patterns of the initial sampling program. Any subsequent sampling of the soil will be conducted according to the sampling plan.

Movable equipment used for handling PCB containers will be decontaminated without prior sampling. Post- decontamination verification samples will be taken from the surfaces of the equipment that have undergone decontamination. Two random wipe samples each will be taken from the forklift barrel grabber attachments, one drum hoist, one diaphragm pump, and one drum dolly (8 samples total).

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C.4.4. DECONTAMINATION, CONTAINERIZATION AND DISPOSAL OF PCB AND NON-PCB DECONTAMINATION WASTES

The following are estimates of both the PCB and non-PCB waste that would be produced from initial verification sampling, decontamination, and post-cleanup verification sampling for closure of the facility. These wastes will be disposed of properly in accordance with the TSCA requirements of 40 CFR 761.60 and with RCRA Subtitle C and D landfill requirements. The estimated quantities are based on the closure procedures and costs described in Section C, and the cost estimates in Section D.

These wastes will be transported for disposal by highway transportation. Non-PCB wastes will be sent for disposal as appropriate; transportation and disposal costs will be minimal.

Table C4-1. Estimated Quantity of PCB and Non-PCB Waste Generated from Decontamination and Sampling

Item	PCB Waste	Non-PCB Waste
Structure Decontamination (incl. storage area floor, drum handling equipment, forklifts)	5 drums	1 drum
Equipment Decontamination Debris (incl. absorbents, rags, equipment, Visqueen)	1 drum	1 drum
Pre- and Post-Cleanup Verification Samples (incl. inside PCB storage area floor, north wall inside PCB storage area, PCB container handling equipment)	1 drum	1 drum
Personal Protective Equipment – PPE (solids)	3 drums	1 drum
Decontamination of Other Surfaces (incl. concrete, asphalt, other interior walls and exterior walls*)	28 drums	1 drum

* Due to PCB management practices employed on site, these surfaces are not expected to be contaminated (see Section C1.6, On-Site Management of PCBs). Therefore, no costs are included for the disposal of these wastes.

C.5. Other Activities

C.5.1. GROUNDWATER MONITORING

No PCB waste residues or contaminated materials will be left in place upon final closure of the Kent Facility. Adequate protective measures are currently in place to ensure that there is no potential for PCB contamination of groundwater. Therefore, groundwater monitoring will not be necessary after final closure of the facility.

C.5.2. RUN-ON AND RUN-OFF

The Kent Facility is designed such that there is no run-on or run-off of surface water to/from the facility. All precipitation falling within the active waste handling areas of the facility is collected in sumps and

June 4, 2021

treated on-site before discharge to the industrial sewer system under a King County Industrial Waste Discharge Permit.

C.5.3. SECURITY MEASURES

The Kent Facility is completely surrounded by a six-foot high chain link fence. Access is controlled by gates which are closed and secure during non-operational hours. The facility is monitored by a security service during non-operating hours. A detailed description of the facility's security is provided in Section C1.3.3, Facility Security.

C.6. Closure Schedule

The Kent Facility PCB storage area will be closed by the time schedule required under 40 CFR 761.65(e)(6). This schedule is described in Table C6-1 below. For reasons explained in the following paragraph, the expected year of closure is not given.

The facility is a RCRA-permitted treatment and storage facility in addition to PCB commercial storage facility and is not expected to close prior to expiration of the RCRA permit. There are no PCB or RCRA disposal units on site, thus capacity is an inventory issue only. There are no related industrial plants or businesses which singularly account for a significant portion of the incoming PCB waste.

Table C6-1. Closure Time Schedule

Requirements	Deadline
Notification to EPA of intent close the facility	60 days before closure begins
Start of closure (a)	30 days after final shipment of PCBs received
Completion of inventory elimination (a)	90 days after final shipment of PCBs received
Completion of closure (a)	180 days after start of closure
Certification of closure (a)	60 days after completion of closure

(a) These deadlines may be extended by the EPA with just cause.

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D. CLOSURE COST ESTIMATES

D.1. Regulatory Requirements

The closure cost estimates contained in Section D cover all direct and indirect costs associated with the closure of the Kent Facility PCB storage area as described in this closure plan. This includes inventory elimination, decontamination, sampling and analysis, and the associated labor, transportation, and disposal costs.

The closure cost estimates reflect an estimate of the cost of facility closure at a point when the extent and manner of its operations would make closure the most expensive.

All PCB waste will be disposed at an off-site permitted facility. There are no disposal units at the Kent Facility.

The unit costs and man-hours for all closure activities are based on the cost of hiring a third party to close the facility. Unit costs were obtained, where possible, from actual operating costs and experience.

Although costs reflect the use of third parties to close the facility, it is intended that closure will be performed to the extent possible by trained Kent Facility technicians familiar with the facility and the operational procedures.

Supplies and equipment will be salvaged to the extent possible. However, salvage value has not been incorporated into the closure cost estimate.

During the operating life of the facility, BELLC annually adjusts the closure cost estimates to take inflation into account. The adjustments will be made by recalculating closure costs in current dollars or by using an inflation factor derived from the most recent annual implicit price deflater for the Gross National Product (GNP) and the annual implicit price deflator of the previous year.

D.1.1. CERTIFICATION STATEMENT

A written statement certifying the closure cost estimates for the Kent Facility is provided in Section F, Compliance Statement.

D.2. Closure Costs

D.2.1. TOTAL CLOSURE COST

The total closure cost for TSCA related closure for 2020 was \$128,520. TSCA closure costs are a subset of the closure costs for all dangerous waste operation areas the facility provides under Section I of the RCRA Part B Permit with Ecology. Unit costs as well as inventory elimination, decontamination, sampling and analysis, and the associated labor, transportation, and disposal costs are provided in Appendix D-1.

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E. FINANCIAL ASSURANCE

BELLC has established financial assurance for closure of each PCB storage facility which it owns or operates. Financial assurance is provided by a surety bond established in accordance with 40 CFR 264.143(b), guaranteeing payment into a closure trust fund. The amount of financial assurance is determined by the facility's TSCA closure cost estimate, based on the site-specific TSCA closure plan for each facility. When TSCA closure cost estimates are increased due to annual adjustments for inflation, or due to changes in plans for facility operation, the amount of financial assurance will be increased accordingly.

PCB storage areas for which financial assurance is provided may also be used for RCRA hazardous waste storage. BELLC has prepared separate RCRA Part B Permit Applications which include cost estimates for closure of these areas under RCRA.

Appendix E-1 contains a copy of the surety bond and attachments used to provide financial assurance for TSCA closure of the commercial PCB storage areas at the Kent Facility.

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F. COMPLIANCE STATEMENT

The Kent Facility is in compliance with facility design and construction standards outlined in 40 CFR 761.65(b) and noted in Section B, Facility Design Qualifications. Furthermore, the written closure cost estimate provided in Section D, Closure Cost Estimate, is accurate (761.65(d)(3)(vii)).

"Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete."

Name: Megan Swick

Signature:

Title: Plant Manager

Date: June 04, 2021


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Tables

Table A5-1 Facility Compliance History					
Burlington Environmental, LLC (Kent)					
EPA ID# WAD991281767					
		20245 77TH Avenue	South		
		Kent, WA 9803	2		
Date Issued	Issuing	Description	Comments/ Disposition	Date	Notice of Penalty
	Agency			Resolved	Assessment
11/6/2020	KCDPH	No violations noted from November 6, 2020 solid waste inspection.		11/6/2020	None
9/9/2020	KCDPH	No violations noted from September 9, 2020 solid waste inspection.		9/9/2020	None
8/4/2020	KCDPH	Violations noted during August 4, 2020 site inspection - 1) 0256 - Three drums did not have	1) The three containers were properly labeled with required	8/4/2020	Abated - No Penalty
0/ 1/2020	NCDI II	required hazard labels.	hazard labels.	0, 1, 2020	
6/15/2020	KCDPH	No violations noted from June 15, 2020 solid waste inspection.		6/15/2020	None
2/10/2020	KFD	No violations noted from the February 10, 2020 site inspection.		2/10/2020	None
1/24/2020	WDOE	Violations noted during October 24, 2019 dangerous waste compliance inspection - 1) Permit condition F2.3.1.3.4 accumulated precipitation will be removed within 24 hours from the secondary containment system - south check-in sump held accumulated precipitation. 2) Permit condition D2.1.6 containers of waste are marked with the major risk - several containers were not properly labeled. 3) WAC 173-303-240(6)(i) and by reference 630(3) a transporter may store manifested shipments of dangerous waste for ten days or less at a transfer facility - roll off container was not properly labeled. 4) Permit condition H4.5 key training topics are refreshed quarterly - required training courses for contingency plan, PPE, PUSO, and 8-hour HAZWOPER refresher was not completed.	 The south check-in area is covered under the MRW permit and requires a daily visual inspection for accumulated liquids. All containers were properly labeled prior to the issuance of the inspection report. The roll off container was properly labeled prior to the issuance of the inspection report. Training was conducted and current at the time of inspection. A software upgrade to the electronic database disabled the ability to generate a training report containing all necessary information. 	2/6/2020	Abated - No Penalty All required actions and responses were addressed with no outstanding issues as noted in close-out letter from WDOE dated February 11, 2020.
9/26/2019	KCIW	Notice of Violation for violations noted during September 11, 2019 site inspection - 1) pH compliance monitoring was not being conducted in accordance with an approved pH method. 2) pH data was reported inaccurately. 3) Modifications to the regulated wastewater treatment system were made without approval. Additional violations noted during the site inspection - 4) One of the bag filter canisters for the non-regulated treatment system was not in use as the top cover was not operational. 5) Quarterly random sample results for Q1 and Q2 were requested. 6) pH buffer solutions were past expiration date.	1) A portable pH meter was purchased, treatment plant operators were re-trained, and disciplinary actions were taken. 2) The corrective actions listed above were also used to correct the inaccurate reporting. 3) Revision to the figure for the treatment system was provided. 4) The bag filter top cover was replaced. 5) Q1 results were provided. Q2 was not sampled due to a failure by Tacoma plant personnel. 6) New solutions were purchased and a tracking form was developed and implemented for quarterly tracking of pH solution expiration dates.	10/21/2019	Assessment of Penalty issued February 24, 2020 in the amount of \$2,875. Post violation monitoring charges issued in the amount of \$10, 170. Penalty and monitoring charges paid in full on
7/16/2019	KCDPH	No violations noted from July 16, 2019 solid waste inspection.		7/16/2019	None
5/14/2019	KCDPH	No violations noted from May 14, 2019 solid waste inspection.		5/14/2019	None
1/31/2019	KFD	Violations noted during January 31, 2019 site inspection - 1) IFC 506.2 - Keys were not provided for Fire Department key box.	1) Key card was provided for north gate access.	2/25/2019	Abated - No Penalty
11/2/2018	KCDPH	Violations noted during November 2, 2018 site inspection - 1) 0254 - Drums were stored incompatibly.	1) The drums were moved and stored compatibly based on the hazardous materials segregation chart in the operations plan.	11/2/2018	Abated - No Penalty

Table A5-1 Facility Compliance History					
Burlington Environmental, LLC (Kent)					
EPA ID# WAD991281767					
20245 77TH Avenue South					
Date Issued	Issuing	Description Kent, WA 9805	Comments/ Disposition	Date	Notice of Penalty
10/17/2018	KCIW	Information request from September 26, 2018 site inspection - 1) Annual calibration certificate for Mag meters. 2) Update on status of effluent flow meter. 3) Source/generator of waste stream and waste characterization with July 4, 2018 and August 23, 2018 discharge events. 4) Details on development and implementation of random waste load metal sampling program. 5) Revise the wastewater treatment system engineering report, operations and maintenance manual, and process flow diagrams representative of the current and desired states of the non-regulated treatment system.	1) Calibration certificates were provided. 2) Instrument test report documenting calibration was provided. 3) The source of the waste stream was identified and provided. 4) Details on the metals sampling program was provided. 5) An engineering review was conducted and the revised documents were provided.	11/16/2018	Assessment
9/12/2018	KCDPH	No violations noted from September 12, 2018 solid waste inspection.		9/12/2018	None
7/25/2018	KCDPH	No violations noted from July 25, 2018 solid waste inspection.		7/25/2018	None
5/25/2018	KCDPH	Violations noted during May 25, 2018 site inspection - 1) 0252 - two class 8 drums were stored the flammable solid area; numerable drums labeled MRW toxic were stored in areas not labeled for toxics; a shrink wrap box labeled corrosive 8 was stored in the solidification process area.	1) The identified containers were moved to the correct storage locations.	5/25/2018	Abated - No Penalty
3/14/2018	KCDPH	Violations noted during March 14, 2018 site inspection - 1) 0252 - two drums labeled toxic 6.1 were stored in the corrosive storage area. 2) 0257 - MRW containers must be stored accessible for inspection with 30" aisle space - paint related material was surrounded by a pond of water that prevented inspection.	 The drums were moved to the correct storage location. The water was pumped out allowing for accessibility. 	3/14/2018	Abated - No Penalty
2/15/2018	KFD Violations noted during February 15, 2018 site inspection - 1) IFC 901.62 - fire sprinkler at the paint related material (PRM) loading dock was not tagged or labeled. 2) IFC 901.62 - lens on PRM camera was not cleaned. 1) Fire camera		1) Fire sprinkler was properly tagged and labeled. 2) PRM camera lens was cleaned.	3/15/2018	Abated - No Penalty
1/23/2018	Violations noted during January 23, 2018 solid waste inspection - 1) 0254 - MRW on site "violations noted during January 23, 2018 solid waste inspection - 1) 0254 - MRW on site "must be compatible with the containment system - the paint related material storage area was a pond of water that was overflowing its berm. 2) 0257 - MRW containers must be stored accessible for inspection with 30" aisle space - paint related material was surrounded by a pond of water that prevented inspection. 3) 0258 - Containers must be maintained in good condition with no defects - seven cardboard gaylord boxes had collapsed inward and some were leaning over the side of their pallet.		 The water was pumped out of the containment system. The water was pumped out allowing for accessibility. The integrity of the containers was addressed. 	1/23/2018	Abated - No Penalty
1/26/2018	WDOE	Violations noted during September 13, 2017 site inspection - 1) Permit condition D3.2.1.3 and D3.2.1.4 - tank system secondary containment coating deficiencies. 2) Permit condition F2.5.6 - secondary containment deficiencies were not categorized on the daily inspection forms and a work order was not created. 3) Permit condition C8.11.1.1 - outbound wastes were not properly designated. 4) Permit condition D2.1.6 - containers were not properly labeled with the risk.	1) A qualified coating contractor evaluated the tank containment system and options for a long term solution were proposed. 2) Secondary containment deficiencies were noted as Level 3 on the daily inspection forms and work orders were completed. 3) Outbound wastes are conservatively over coded/overtreated to allow for variances that may occur. 4) Containers were properly labeled with the risk.	2/23/2018	Abated - No Penalty

Table A5-1 Facility Compliance History					
Burlington Environmental, LLC (Kent)					
EPA ID# WAD991281767					
		20245 //IH Avenue Kont WA 0802	2		
Date Issued	Issuing	Description	Comments/ Disposition	Date	Notice of Penalty
Date Issueu	Agency	Description		Resolved	Assessment
11/16/2017	KCDPH	No violations noted from November 16, 2017 solid waste inspection.		11/16/2017	None
4/28/2017	KCDPH	Violations noted during April 28, 2017 solid waste inspection - 1) 0266 - routine inspections must be conducted weekly or once each operating day - July 1, 2016 daily inspection report was missing.	1) July 1, 2016 inspection report was emailed on May 1, 2017.	4/28/2017	Abated - No Penalty
		Violations noted during February 28, 2017 site inspection - 1) Fire suppression system	1) Fire suppression system inspections were conducted. 2)	- / /	
2/28/2017	KFD	inspections overdue. 2) Dust accumulation in back room of stabilization pits over 32 of an inch. 3) Old propane shut off sign was not removed.	Dust accumulation was removed. 3) Propane shut off sign was removed.	3/10/2017	Abated - No Penalty
2/13/2017	KCDPH	No violations noted from February 13, 2017 solid waste inspection.		2/13/2017	Abated - No Penalty
1/4/2017	WDOE	Violations noted during May 18-19, 2016 dangerous waste compliance inspection - 1) Permit Condition H2.1i Orientation Training - hot work training was not completed for three employees. 2) Permit Condition H3.1i Task/Process Specific Training - records for dangerous waste shredder training were not completed. 3) Permit Condition D2.1.6.1i Description of Containers - dangerous waste containers not adequately labeled to identify the major risk. 4) Permit Condition D2.2.6.4.3i TSCA/DW Area - waste other than TSCA/DW was stored in the area. 5) Permit Condition G7.5i Coordination Agreements - copies of the updated contingency plan were not submitted to agencies/organizations. 6) Permit Condition Appendix C-5i Process Under Supervision Only (PUSO) Procedures (interim) - PUSO checklists were not completed. 7) Permit Condition F2.3.5i Semi-Annual Inspections - semi- annual secondary containment inspections were not conducted. 8) Permit Condition F2.7.3i Record Keeping/Inspection Log - work orders were not fully documented on multiple daily inspection logs. 9) Permit Condition F2.5.2i Remedial Action and Reporting - twelve work order forms were not properly completed. 10) Permit Condition C5.11.13.1i Profile Development - ten profiles did not contain generator approval signatures.	1) Hot work training was completed and training records uploaded to the database. 2) Dangerous waste shredder training was completed and training records uploaded to the database. 3) Containers were properly labeled. 4) The waste identified was sent offsite for disposal demonstrating that only TSCA/DW materials are stored in the area. 5) Coordination agreements were mailed to all required agencies/organizations. 6) PUSO checklists were corrected. 7) Secondary containment inspection was completed and report dated June 21, 2016. 8) Work order completion dates were filled in on the identified inspection logs. 9) Work order forms were completed. 10) Generator approval signatures were obtained for the identified profiles.	2/2/2017	Abated - No Penalty All required actions and responses were addressed with no outstanding issues as noted in close-out letter dated February 15, 2017.
1/4/2017	KCDPH	Information request from December 2, 2016 site inspection - 1) Documentation for final disposition of three containers.	Responses to the information request were sent in an email dated January 4, 2017. No violations were noted from the inspection.	2/16/2017	Abated - No Penalty
10/17/2016	KCIW	Information request from October 12, 2016 site inspection - 1) Flow meter calibration certificate. 2) Non-reg wastewater treatment system tank replacement project update. 3) Stormwater management update. 4) Addition of filter cartridges to the non-reg wastewater treatment system. 5) Volatile organics sampling procedure.	Responses to the information request were sent in a letter dated October 28, 2016. No violations were noted from the inspection.	10/28/2016	Abated - No Penalty



June 4, 2021

Figures











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- ABOVEGOUND STORMWATER PIPE
- CATCH BASIN
- UNDERGROUND SANITARY SEWER PIPE
- ABOVEGROUND SANITARY PIPE
- МН SANITARY SEWER MANHOLE со **о**
- SANITARY SEWER CLEANOUT
- RENCH DRAIN
 - FLOW DIRECTION

- PUMP Р CONCRETE CONTAINMENT AREA CONCRETE
 - ASPHALT
 - COVERED AREA \boxtimes
 - VEGETATED AREA









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June 4, 2021

Appendix A-1

Minimum Job Qualifications

Job Description

Job Title:Environmental Technician IDepartment:Haz Waste OperationsLocation:VariousReports to (direct):Supervisor – Plant ProductionFLSA Status:HourlyDATE:23 October 2020

General Purpose

Under general supervision, performs routine and frequent manual and heavy labor tasks to properly consolidate, treat, store, pack, transport and/or dispose of hazardous waste in accordance with environmentally responsible and cost-effective practices and ESOL policies, practices and procedures. Job requires maintenance of records, accuracy and attention to detail, the ability to follow instruction and to work independently once proper training provided.

Primary Responsibilities (Essential Functions):

- Segregate and package material for transport along with completion of required paperwork in accordance with appropriate regulations and customer policies, practices, and procedures.
- May assist in maintaining inventory and storage of hazardous materials in accordance with appropriate regulations and policies, practices, and procedures.
- Follow all Health & Safety/Job Safety Analysis (JSA's) procedures as outlined in procedures and policies.
- Operate fork trucks and other heavy equipment when properly trained to assist in the movement of containers to storage, treatment, and/or loading/unloading of trailers.
- Complete paperwork legibly, accurately, and in a timely manner.
- Performs other duties as assigned.

Ancillary Responsibilities:

Basic Required Qualifications:

• High school diploma or equivalent (GED).

Preferred Qualifications:

• One or more years related work experience preferred.

- Possess strong attention to detail and ability to follow procedures.
- Demonstrates knowledge of Hazardous Materials and OSHA Regulations.
- Proficient in Windows based programs (i.e. Excel and Word).
- Demonstrates the ability to operate a powered industrial truck, e.g., forklift and possesses safe driving record.

Physical and Mental Demands

- Must be able to exert in excess of 100 pounds of force occasionally and/or up to 50 pounds of force frequently and/or up to 20 pounds of force constantly to move objects.
- Must be able to work in extreme environmental conditions. Activities occur inside and outside. Must be able to tolerate extreme heat and cold. Temperatures above 100 degrees F for periods of more than one hour. (South and Southeastern part of the country). Temperatures below 32 degrees F for periods of more than one hour. (North and Northeast part of the country).
- Position requires extensive walking, bending, reaching, and repetitive motion.
- Must be able to work in an outdoor plant environment occasionally
- Must be willing and able to wear personal protection equipment such as Tyvek suit, goggles, and respirator.

Disclaimer:

Job Description

Job Title:Environmental Technician IIDepartment:Haz Waste OperationsLocation:VariousReports to (direct):Supervisor – Plant ProductionFLSA Status:HourlyDATE:23 October 2020

General Purpose

Under general supervision, performs routine and frequent manual and heavy labor tasks to properly consolidate, treat, store, pack, transport and/or dispose of hazardous waste in accordance with environmentally responsible and cost-effective practices and ESOL policies, practices and procedures. Job requires maintenance of records, accuracy and attention to detail, the ability to follow instruction and to work independently once proper training provided.

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- May assist in maintaining inventory and storage of hazardous materials in accordance with appropriate regulations and policies, practices, and procedures.
- Follow all Health & Safety/Job Safety Analysis (JSA's) procedures as outlined in procedures and policies.
- Operate fork trucks and other heavy equipment when properly trained to assist in the movement of containers to storage, treatment, and/or loading/unloading of trailers.
- Complete paperwork legibly, accurately, and in a timely manner.
- Performs other duties as assigned.

Ancillary Responsibilities:

Basic Required Qualifications:

- High school diploma or equivalent (GED).
- 2 plus years' experience in a hazardous waste facility

Preferred Qualifications:

- Possess strong attention to detail and ability to follow procedures.
- Demonstrates knowledge of Hazardous Materials and OSHA Regulations.
- Proficient in Windows based programs (i.e. Excel and Word).
- Demonstrates the ability to operate a powered industrial truck, e.g., forklift and possesses safe driving record.

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- Must be able to exert in excess of 100 pounds of force occasionally and/or up to 50 pounds of force frequently and/or up to 20 pounds of force constantly to move objects.
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Disclaimer:

Job Description

Job Title:Environmental Technician IIIDepartment:Haz Waste OperationsLocation:VariousReports to (direct):Supervisor – Plant ProductionFLSA Status:HourlyDATE:23 October 2020

General Purpose

Under general supervision, performs routine and frequent manual and heavy labor tasks to properly consolidate, treat, store, pack, transport and/or dispose of hazardous waste in accordance with environmentally responsible and cost-effective practices and ESOL policies, practices and procedures. Job requires maintenance of records, accuracy and attention to detail, the ability to follow instruction and to work independently once proper training provided.

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- Segregate and package material for transport along with completion of required paperwork in accordance with appropriate regulations and customer policies, practices, and procedures.
- May assist in maintaining inventory and storage of hazardous materials in accordance with appropriate regulations and policies, practices, and procedures.
- Follow all Health & Safety/Job Safety Analysis (JSA's) procedures as outlined in procedures and policies.
- Operate fork trucks and other heavy equipment when properly trained to assist in the movement of containers to storage, treatment, and/or loading/unloading of trailers.
- Complete paperwork legibly, accurately, and in a timely manner.
- Performs other duties as assigned.

Ancillary Responsibilities:

Basic Required Qualifications:

- High school diploma or equivalent (GED).
- 2 plus years' experience in a hazardous waste facility

Preferred Qualifications:

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- Demonstrates knowledge of Hazardous Materials and OSHA Regulations.
- Proficient in Windows based programs (i.e. Excel and Word).
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Physical and Mental Demands

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- Must be able to work in extreme environmental conditions. Activities occur inside and outside. Must be able to tolerate extreme heat and cold. Temperatures above 100 degrees F for periods of more than one hour. (South and Southeastern part of the country). Temperatures below 32 degrees F for periods of more than one hour. (North and Northeast part of the country).
- Position requires extensive walking, bending, reaching, and repetitive motion.
- Must be able to work in an outdoor plant environment occasionally
- Must be willing and able to wear personal protection equipment such as Tyvek suit, goggles, and respirator.

Disclaimer:

Job Description

Job Title:	Manager Facility – Plant Operations
Department:	Operations
Location:	Various
Reports to (direct):	Regional Director – Facility Operations
Reports to (indirect):	N/A
FLSA Status:	Salary Exempt (USA only)
DATE:	19 November 2020

General Purpose

This position is responsible for the overall operational and financial results of the TSDF location. In conjunction with sales, customer service, accounting, and health and safety groups, ensure that all regulatory compliance and safety issues are addressed and are within compliance. Ensure that the location meets or exceeds its goals as it pertains to regulatory compliance, revenue growth, budget, profit growth, account retention, safety and continuous improvement. The plant manager will lead production staff and operations to ensure the proper handling and treatment of all waste streams in compliance with Clean Earth policy and applicable local, state, and federal regulations.

Primary Responsibilities (Essential Functions):

- Assigns work to production crew and supervises their activities throughout the shift. Audits crew's
 performance for quality, quantity, safety conformance and utilization of resources to ensure
 maximum effectiveness and to continuously improve all aspects of our health, safety, and
 environmental performance.
- Manages staff, including hiring, firing and development in accordance with Clean Earth Human Resources policies, practices, and procedures.
- Monitors production schedules and progress to coordinate work between shifts. Ensures adequate personnel and resources are available to support the Clean Earth core values.
- Reviews schedule board, shift reports, procedures and records for receiving, handling, storing, packaging and transporting materials to ensure accuracy, safety efficient and compliance with all applicable regulations, company policies, and Facility Operating Permits.
- Conducts activities to protect the wellbeing of our employees, the public, and the environment to
 ensure compliance with preventative measures by inspecting production area and equipment
 including properly completing required inspection forms, identifying regulatory compliance and
 maintenance problems and implementing appropriate corrective action.
- Enforces and monitors safety rules and practices to ensure a safe and healthy work environment for all personnel and ensures personnel are knowledgeable about any potential or known hazards and

takes all necessary precautions. Oversees plant safety committee. Conducts crew safety meetings. Makes recommendations to achieve and maintain safe working conditions. Encourages personnel to achieve and maintain safe working conditions. Encourages personnel to identify health, safety, and environmental risks and participate in the development of appropriate solutions to mitigate risks.

- Assists in presentation of personnel training programs by providing on-the-job training and by providing instruction.
- Reports and responds to plant emergencies. Performs published Contingency Plan Emergency Response procedures and acts as Alternate Emergency Coordinator for Clean Earth if appointed. When accidents or incidents occur identifies the cause, reviews and amends procedures as necessary and communicates finding to personnel.
- Develops waste profile sheets on in-plant generated wastes. Coordinates outgoing loads and ships materials in compliance with operational procedures and regulatory regulations.
- Performs other reasonably related tasks as assigned by management

Ancillary Responsibilities:

Basic Required Qualifications:

- Bachelor's degree in engineering or bio sciences (Chemistry / Environmental science) or the equivalent in related work experience.
- Five or more years experience in hazardous waste industry or related industry
- Three or more years managing an operations team.
- Demonstrates effective management skills including leadership and motivation.
- Demonstrates a general knowledge of RCRA and DOT Regulations as it relates to the transportation and processing of waste.
- Advanced knowledge of math and science with an emphasis on Chemistry.
- Strong communication skills both verbal and written.

Preferred Qualifications:

- Must be able to work efficiently and independently.
- Demonstrates the ability to provide guidance to individuals and groups towards the accomplishment of meaningful goals that support business goals; ensure safety; build on strengths; provide encouragement and recognize accomplishments.
- Demonstrates the ability to concentrate on tasks at hand, even in distracting work environments.
- Demonstrates the ability to be straight forward, candid while setting a professional standard for treating others with dignity and respect; maintain a high level of integrity and professionalism.
- Demonstrates the ability to make sound and thorough decisions after reviewing the facts, incorporating perspectives of others, applying technical knowledge, past experience, and incorporating company policy.
- Demonstrates the ability to identify problems as they occur; follow rules, guidelines, and procedures to resolve problems and make decisions.

- Demonstrates the ability to manage own time, activities, and resources. Identify specific activities required to accomplish objectives, rank them in order of importance, and coordinate and take action to achieve desired results. Prioritize multiple activities and projects.
- Demonstrates ability to use multiple systems and software while performing multiple transactions.
- Demonstrates the ability to persist with a specific course of action. Must be willing to commit the necessary time and effort to complete work assignments and do a quality job.
- Demonstrates the ability to present ideas and information in a clear, concise, organized and diplomatic manner; listen to others to respond effectively to ideas and questions.
- Demonstrated excellent attention to detail and ability to review work for accuracy.
- Demonstrates strong networking and proven relationship building skills and proven customer relationship development skills.

Physical and Mental Demands

- Position requires extensive lifting, walking, bending, reaching, and pushing
- Must be able to lift up to 75 pounds and push/ or pull carts weighing up to 500 pounds.
- Must be able to work in an outdoor plant environment occasionally
- Must be willing and able to wear personal protection equipment such as Tyvek suit, goggles, and respirator.

Disclaimer:

Job Description

Manager Operational EHS
Operations
Various
Director Operational EHS
N/A
Salary Exempt (USA only)
19 November 2020

General Purpose

Act as the primary EHS contact and subject matter expert (SME) for Clean Earth Operations related to compliance with the company's EHS Programs and Policies as well as the regulations and permits which govern our business. The role is pivotal to mitigating Clean Earth's exposure to risk by leading, planning, coordinating, and implementing the company's EHS management systems in their respective geographical areas. This requires the application of EHS engineering principles, such as job safety analyses, task-based evaluations, EHS Management systems technology and root cause analysis to prevent or correct unsafe working conditions and regulatory compliance issues. The overarching goal is for tactical EHS professionals to prevent and correct unsafe working conditions and behaviors as well as those that may impact our regulatory compliance.

Primary Responsibilities (Essential Functions):

- Work directly with Operations to ensure effective adherence to the company's EHS programs, such that facility compliance with all permits and environmental regulations is maintained. This is accomplished via detailed regulatory assessments of facility compliance with regulatory/permit requirements as well as company requirements. The ability to effectively "coach" operations personnel is critical to this activity.
- Advise and direct the Ops team to ensure incidents are appropriately captured, reviewed for causal analysis, and closed, with effective corrective actions set in place, assigned, and tracked to completion. Utilize the QA/QC process of review, follow up, and closure, to foster continuous improvement, understanding of our incidents, via the most effective use of our EHS Management System.
- Evaluate facility operating permits for applicability to current business practices and identify/coordinate any required amendments and renewals with the EHS Permit team.
- Provide feedback and support to other EHS departments, to assist in safety program development, revisions, and implementation, training content development and revision, standard work sheet development, medical surveillance program refinement, improvements to our claims management process, etc.

- Use subject matter expertise to evaluate the impact of upcoming regulatory changes working in concert with other corporate teams.
- Support new acquisition transition, ensuring that newly acquired operations get folded into the company's EHS Programs
- Perform comprehensive EHS audits as part of a cross-functional team completed in accordance with the EHS Internal Audit Program (~1-2 per year)
- Performs other reasonably related tasks as assigned by management

Ancillary Responsibilities:

Basic Required Qualifications:

- Bachelor's degree in Science, Healthcare, or an Environmental Health and Safety Discipline, or the equivalent in related work experience. Demonstrated knowledge of EHS regulations and experience with the effective implementation of compliance programs
 - 5+ years of industry experience, demonstrating good knowledge of regulatory requirements as they apply to the medical waste, hazardous waste, or secure shredding industry.
 - Demonstrates working knowledge of federal, state, and local EHS regulations.
 - Possess a valid drivers' license

Preferred Qualifications:

- Demonstrates the ability to work independently in support of multiple locations separated by significant geography.
- Must be a self-starter capable of utilizing multi-location management techniques to drive improvement.
- Ability to effectively probe an issue, asking questions to gather information not necessarily readily seen. Clearly identify problems, understand the root causes, and provide sustainable solutions.
- Be familiar with the process of researching regulations and providing effective interpretations.
- Demonstrates attention to detail during the review of work product for accuracy and effectiveness. Complete assignments as directed in a timely manner. Concentrates on tasks at hand, in potentially distracting work environments.
- Demonstrates the ability to present ideas and information in a clear, concise, organized and diplomatic manner; listen to others to respond effectively to ideas and questions.
- Demonstrates the ability to modify behavior, as needed, in order to maintain effectiveness in a changing situation; and with varying tasks, responsibilities, or people.
- Demonstrates the ability to manage own time, activities, and resources. Identify specific activities required to accomplish objectives, rank them in order of importance, and coordinate and take action to achieve desired results. Prioritize multiple activities and projects.

Physical and Mental Demands

• Must be willing and able to travel up to 40% of the time. Travel varies in frequency, duration, and the distance from office location.

Disclaimer:

Job Description

Job Title:Manager, Permitting ComplianceDepartment:Haz Waste OperationsLocation:VariousReports to (direct):Director, Permitting ComplianceFLSA Status:Salary Exempt (USA only)DATE:19 November 2020

General Purpose

Act as primary regulatory contact and expert for all permitting, reporting and regulatory actions and regulatory agency issues within the organization as it relates to facilities and operation. Review and interpret analytical data related to air, water, and waste, and assist local management with processes and procedures to remain below permit and regulatory limits. Manage notices of violations (NOVs) to mitigate impact to the company. Ensure the environmental management system (currently SCM) is accurate and up-to-date as it relates to permits and environmental requirements. Responsible for tracking all regulations related to EPA and state and local environmental agencies. Working with new acquisitions on integration of permitting, develop programs, policies and training for the organization around environmental regulations related to their facilities and establish standards for audit programs for their areas.

Primary Responsibilities (Essential Functions):

- Identify all applicable environmental regulations, permitting requirements and reporting requirement; develop programs around regulations to be implemented in the field.
- Provide Regulatory support for active acquisitions. Evaluate process and implement changes to programs, training and policies to ensure a smooth transition as we acquire new companies.
- Work with EHS operations team to ensure that permit conditions are being met including reporting on required elements in the permit or regulations, ensuring that required sampling/testing is being conducted and periodic auditing is done to ensure compliance.
- Meet with regulatory agencies as required for permitting, regulatory actions and reporting as required. Meet with regulatory agencies on pending changes to regulations/legislation or new activities.
- Participate with the Government affairs team on development of regulations, new regulation or legislation changes and provide regulatory expertise and guidance on issues related to their area. Provide support to Government Affairs team on issues related to customer situations arising from regulatory requirements.
- Performs other related duties as required or requested.

Ancillary Responsibilities:

Basic Required Qualifications:

- Bachelor's Degree in a Science, Healthcare, or Environmental Discipline
- Five or more years of experience, demonstrating the ability to manage internal and external customer relationships.

• Experience with environmental regulations including, but not limited to EPA, DOT, and standards and codes, as they apply to the various industries.

Preferred Qualifications:

- Attainment of one or more Environmental certifications preferred.
- Ability to analyze the customer's situation, understand the customer's needs, and act upon them in a way that satisfies the customer beyond expectations.
- Ability to provide direction and instruction on action plans to meet performance goals and objectives; gives specific feedback on performance; provides support and follows up.
- Ability to provide direction in addressing difficult issues; influence others to implement needed changes. Demonstrates the ability to handle difficult situations and customers in a professional and courteous manner.

Physical and Mental Demands

- Willing and able to travel approximately 15-25% of the time
- Ability to sit for extended periods of time
- Ability to occasionally lift and carry up to 20 pounds
- Ability to predictably and regularly attend work during scheduled hours. Must be willing and able to occasionally work nights, weekends and variable schedule(s) as necessary.
- The ability to deal politely and professionally with customers and/or coworkers
- The ability to manage several tasks at once to meet deadlines
- The ability to follow direction or instruction
- The ability to use a computer to communicate, create, and access information

Disclaimer:

Job Description

Job Title:	Mechanic
Department:	Operations
Location:	Various
Reports to (direct):	Transportation Manager
Reports to (indirect):	N/A
FLSA Status:	Hourly
DATE:	19 November 2020

General Purpose

Under minimal supervision, coordinates routine service and inspection of fleet vehicles by systematic selection. Performs non-scheduled repairs. Minimize repair costs by preventative maintenance and competitive price shopping with vendors. Maintains all repair and inspection records. Keeps work area clean.

Primary Responsibilities (Essential Functions):

- Repairs and maintains fleet vehicles by diagnosing problems correctly and using correct parts while completing repairs on time.
- Ensures BIT inspection items are completed in a timely manner and in compliance. Maintains all records of repairs/inspections per regulations. Maintains work area in compliance with company policy.
- Anticipates routine maintenance requirements, schedules vehicle down time with operations and coordinates outside vendor repair scheduling
- As needed, performs field work
- Performs other reasonably related tasks as assigned by management

Ancillary Responsibilities:

Basic Required Qualifications:

- High school diploma or GED.
- Minimum 1-3 years of progressive experience as a light truck mechanic, including gas and diesel engine experience.
- Must possess a valid Driver's License, some locations require a Commercial Drivers' License class A or B.
- Knowledge of Federal Motor Carrier Safety Regulations and CHP/CA vehicle.

Preferred Qualifications:

- Demonstrates technical knowledge to make recommendations.
- Ability to work both independently and with a team.
- Demonstrates ability to communicate effectively with all levels of staff, management and outside vendors.
- Demonstrates ability to organize and prioritize workflow.
- Possess effective written and oral communication skills.
- Ability to multi-task.
- Ability to be a self-starter.
- Demonstrates excellent record-keeping skills.

Physical and Mental Demands

- Position requires extensive walking, bending, reaching, and repetitive motion.
- Must be able to work in an outdoor plant environment occasionally
- Must be willing and able to wear personal protection equipment such as Tyvek suit, goggles, and respirator.

Disclaimer:

Job Description

Job Title:Regional Director OperationsDepartment:Haz Waste OperationsLocation:VariousReports to (direct):SVP, OperationsFLSA Status:Salary Exempt (USA only)DATE:23 October 2020

General Purpose

Provide oversight of the overall operating efficiency of all fields and plant operation and other waste management processes at service centers in the West Coast region. Drive and ensures that all locations meets or exceeds all environmental health and safety, regulatory compliance, production, financial, and continuous improvement waste management goals.

Primary Responsibilities (Essential Functions):

- Selects, trains, and develops an effective and efficient staff:
 - Makes every reasonable effort to select, train, and develop qualified, diverse workforce.
 - Recommends salary adjustments, promotions, transfers and dismissals.
 - Counsels and coaches employees on educational and job opportunities in order to enhance career development, and keeps staff informed of current problems, procedural/operational changes, and new developments in the department and Company by conducting periodic meetings.
 - Administers and communicates all Company policies and procedures, communicates to staff, interprets, as necessary, and ensures compliance and safety.
 - Develops subordinate managers and/or supervisors, particularly in the management techniques of planning, organizing, leading and controlling through continue coaching and feedback on performance, and conduct performance appraisals.
 - Promotes Safety and Security initiatives across the entire team. Ensures stringent adherence to Safety and Security protocols and takes steps to identify opportunities for continuous improvement in these areas.
 - Ensures compliance with program requirements and customer satisfaction in accordance with company policies, practices and procedures.
 - Supports sales department in the implementation of new accounts, presentation of services, response to inquiries and technical information.
- Plans, directs, implements, and ensures all waste processing functions are completed timely, accurate and sufficient to meet standards. Meets with TSDF (treatment, storage, disposal and facility) and Service Center Waste Processing teams regularly to discuss and analyze reports, with the goal of improving productivity and service. Identifies inconsistencies and develop action plans
to correct recurring problems. Monitors work productivity, reports on trends, and recommends and implements changes to continually improve work productivity. Establishes and communicates performance standards and objectives.

- Implements and communicates continual improvement of productivity standards and team member safety performance in all phases of the operation in order to achieve all financial/budgetary goals. Initiate actions to assure timely resolution of identified hazards or unsafe conditions and practices
- Directs, manages, analyzes and approves all activities related to the following:
 - Payroll registers-Ensure all overtime hours are necessary and all team members are working efficiently.
 - A/P batches and expense reports Monitor expenses and account for unexpected changes.
 - Capital expense requests.
 - Monthly expense reporting (FRX).
 - Monthly revenue/volume reports.
 - Weekly TSDF update slides
 - Weekly and Monthly Production summaries.
 - New Team Member offers and paperwork.
- Develops improvement, comprehensive and sustainable plans aligned with the regional strategy for growth.
- Visits each TSDF and processing Service Center in the region on a monthly or quarterly basis to provide direct management oversight for each location.
- Builds solid working relationships with sales, customer service, transportation, field service, and finance teams.
- Performs other related duties and/or project work as required or requested.

Ancillary Responsibilities:

Basic Required Qualifications:

- Bachelor's degree
- Ten or more years of progressive environmental/hazardous waste management experience in an operations capacity, demonstrating the ability to manage people in a TSDF or waste management or processing environment.

Preferred Qualifications:

- Demonstrates the ability to provide safe and regulatory compliant work conditions for all employees.
- Demonstrates knowledge and the ability to stay abreast of applicable regulations and codes, as they apply to the waste industry and those specific to area of responsibility.
- Demonstrates the ability to manage within an established budget as well as strong knowledge of budgetary processes, P&L statements, asset management, and project management.
- Demonstrates sound knowledge of Microsoft Office including Word, Excel, PowerPoint, and Outlook. Must be able to input, monitor and manipulate data within these applications.
- Demonstrates a general understanding and knowledge of electrical distribution, steam generation, hydraulics, material handling concepts, and other general mechanical equipment

Physical and Mental Demands

- Willing and able to travel approximately 50-75% of the time
- Must be able to work in extreme environmental conditions. Some activities occur inside and outside. Must be able to tolerate extreme heat and cold. Temperatures above 100 degrees F for periods of more than one hour.

Disclaimer:

This job description has been designed to indicate the general nature and level of work performed by employees within this classification. It is not intended to contain or be interpreted as a comprehensive inventory of all duties, responsibilities, and qualifications required of employees assigned to this position.

CleanEarth

Job Description

Job Title:	Supervisor- Plant Production
Department:	Operations
Location:	Various
Reports to (direct):	Manager, Facility Plant Operations
Reports to (indirect):	N/A
FLSA Status:	Salary Exempt (USA only)
DATE:	19 November 2020

General Purpose

Manages the facility retail/labpack depacking team and is responsible for the safe and efficient handling and processing of retail and labpack waste at TSDF. Ensures the plant consistently meets regulatory and safety compliance measures and operates in a productive and profitable manner.

Primary Responsibilities (Essential Functions):

- Oversees and assists de-packing of labpack and retail waste including all reactive, cylinders and specialty waste.
 - Acts as technical resource for the team overseeing consolidation and repacking operations
 - o Submits labpack consolidation sheets to end disposal facilities for approval.
 - o Works with management team to adhere to implement and develop standard work practices
 - Works with team to ensure that daily production goals are met
 - Ensures housekeeping issues; i.e., spills cleaned up, floor is dry, and debris not on floor, etc., are addressed immediately
- Oversees and trains an effective and efficient staff:
 - o Makes recommendations for merit increases and performance appraisals
 - Monitors operations and staff and recommends, when necessary, changes in methods, procedures and structure, to secure optimum utilization of resources
 - Administers all Company policies and procedures, communicates to staff, interprets, as necessary, and ensures compliance
 - Monitors and ensures that employees are performing their functions safely and productively. Makes recommendations for changes or improvement, when necessary, in order to prevent accident or injuries
- Assists in ensuring the plant meets regulatory and safety compliance measures and operates in a productive and profitable manner
- Maintaining a high level of customer satisfaction, either internally or externally
- Initiate actions to assure timely resolution of identified hazards or unsafe conditions or practices
- Perform periodic audits and review of inbound containers and provides feedback to appropriate management group

Ancillary Responsibilities:

Basic Required Qualifications:

- Bachelor's degree in area of General Science or the equivalent in work related experience.
- Three or more years related experience as a labpack chemist or similar experience in an environment, demonstrating strong communication skills and tact. One or more years of experience managing others.
- Demonstrates knowledge of Microsoft office and basic computer skills.
- Demonstrates knowledge of Hazardous Materials and OSHA Regulations.
- Demonstrates the ability to operate a powered industrial truck, e.g., forklift.
- Demonstrates the ability ensure that team members are performing their functions safely and productively.

Preferred Qualifications:

- Demonstrates the ability to present ideas and information in a clear, concise, organized and diplomatic manner; listen to others to respond effectively to ideas and questions.
- Demonstrates the ability to persist with a specific course of action. Must be willing to commit the necessary time and effort to complete work assignments and do a quality job.
- Demonstrates the ability to work with & for others in a team environment, giving direction often.
- Demonstrates the ability to communicate clearly and concisely to all plant personnel.
- Demonstrates the ability to perform the job tasks with little or no supervision.
- Demonstrates the ability to identify and understand personnel needs; takes appropriate actions to ensure personnel needs are met and proactively searches for ways to decrease employee turnover.
- Demonstrates the ability to take and follow directions from others.
- Demonstrates the ability to identify and understand our customer needs and to provide excellent customer service both internally and externally.
- Demonstrates the ability to concentrate on detailed work assignments even with distractions; proofread written materials for completion and accuracy.

Physical and Mental Demands

- Must be able to exert in excess of 100 pounds of force occasionally and/or up to 50 pounds of force frequently and/or up to 20 pounds of force constantly to move objects.
- Must be able to work in extreme environmental conditions. Activities occur inside and outside. Must be able to tolerate extreme heat and cold. Temperatures above 100 degrees F for periods of more than one hour. (South and Southeastern part of the country). Temperatures below 32 degrees F for periods of more than one hour. (North and Northeast part of the country).
- Position requires extensive walking, bending, reaching, and repetitive motion.
- Must be able to work in an outdoor plant environment occasionally
- Must be willing and able to wear personal protection equipment such as Tyvek suit, goggles, and respirator.

Disclaimer:

This job description has been designed to indicate the general nature and level of work performed by

employees within this classification. It is not intended to contain or be interpreted as a comprehensive inventory of all duties, responsibilities, and qualifications required of employees assigned to this position.

CleanEarth

Job Description

Job Title:	Waste Tracking Specialist Lead
Department:	Haz Waste Operations
Location:	Kent, WA
FLSA Status:	Salary Non-Exempt (USA only)
DATE:	19 November 2020

General Purpose

Tracks materials received at treatment plant in accordance with applicable Federal, State and local hazardous waste regulations and in accordance with our policies, practices and procedures.

Primary Responsibilities (Essential Functions):

- Identifies materials received and completes appropriate paperwork. Enters data on computerized tracking database. Identifies all incoming waste streams at treatment plant.
- Leads 2-3 other employees in department and acts as support, training for new waste tracker team members.
- Integrates information with manifests, process forms, check-in sheets, and customer profiles.
- Enters all system required waste tracking information into database; records customer information to ensure compliance with program objectives. Maintains computer files, logbooks and other files and records.
- Prepares necessary manifest and land disposal restriction forms and maintains associated filing systems.
- Creates and edits reports, including incoming and outgoing daily, weekly, and monthly inventory reports.
- Provides clerical support including reception duties, phone coverage, word processing, office supply inventory, computer user support, mail distribution.
- Prepares regular activity reports for management review.
- Performs other duties as required.

Ancillary Responsibilities:

Basic Required Qualifications:

- High school diploma or GED
- Two plus years related experience (hospital billing coding experience strongly desired)
- Knowledge of 29CFR, 40CFR and other applicable regulations

Preferred Qualifications:

- Bachelor's degree in related field
- HM126 certification

• Proficiency using Microsoft Word and Excel.

Physical and Mental Demands

- Ability to sit for extended periods of time
- Ability to occasionally lift and carry up to 20 pounds
- Ability to predictably and regularly attend work during scheduled hours.
- The ability to deal politely and professionally with customers and/or coworkers
- The ability to manage several tasks at once to meet deadlines
- The ability to follow direction or instruction
- The ability to use a computer to communicate, create, and access information

Disclaimer:

This job description has been designed to indicate the general nature and level of work performed by employees within this classification. It is not intended to contain or be interpreted as a comprehensive inventory of all duties, responsibilities, and qualifications required of employees assigned to this position.

CleanEarth

Job Description

Job Title:	Waste Tracking Specialist Lead
Department:	Haz Waste Operations
Location:	Kent, WA
FLSA Status:	Salary Non-Exempt (USA only)
DATE:	19 November 2020

General Purpose

Tracks materials received at treatment plant in accordance with applicable Federal, State and local hazardous waste regulations and in accordance with our policies, practices and procedures.

Primary Responsibilities (Essential Functions):

- Identifies materials received and completes appropriate paperwork. Enters data on computerized tracking database. Identifies all incoming waste streams at treatment plant.
- Integrates information with manifests, process forms, check-in sheets, and customer profiles.
- Enters all system required waste tracking information into database; records customer information to
 ensure compliance with program objectives. Maintains computer files, logbooks and other files and
 records.
- Prepares necessary manifest and land disposal restriction forms and maintains associated filing systems.
- Creates and edits reports, including incoming and outgoing daily, weekly, and monthly inventory reports.
- Provides clerical support including reception duties, phone coverage, word processing, office supply inventory, computer user support, mail distribution.
- Performs other duties as required.

Ancillary Responsibilities:

Basic Required Qualifications:

- High school diploma or GED
- Two plus years related experience (hospital billing coding experience strongly desired)
- Knowledge of 29CFR, 40CFR and other applicable regulations

Preferred Qualifications:

- Bachelor's degree in related field
- HM126 certification
- Proficiency using Microsoft Word and Excel.

Physical and Mental Demands

- Ability to sit for extended periods of time
- Ability to occasionally lift and carry up to 20 pounds
- Ability to predictably and regularly attend work during scheduled hours.
- The ability to deal politely and professionally with customers and/or coworkers
- The ability to manage several tasks at once to meet deadlines
- The ability to follow direction or instruction
- The ability to use a computer to communicate, create, and access information

Disclaimer:

This job description has been designed to indicate the general nature and level of work performed by employees within this classification. It is not intended to contain or be interpreted as a comprehensive inventory of all duties, responsibilities, and qualifications required of employees assigned to this position.



June 4, 2021

Appendix A-2

Additional Information on Environmental Violations

(Summary provided in Table A5-1, original documents can be provided upon EPA request)



June 4, 2021

Appendix A-3

Training Programs

SECTION H

PERSONNEL TRAINING

SECTION H. PERSONNEL TRAINING

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H1. INTRODUCTION AND GENERAL DESCRIPTION

WAC 173-303-330, 806(4)(a)(xii)

Burlington Environmental, LLC is the legal owner of the facility and is a wholly owned subsidiary of PSC Environmental Services, LLC which is a wholly owned indirect subsidiary of Harsco/Clean Earth. The facility will be referred to in this plan as "the Kent facility" or BELLC Kent.

H1.1. The training program conducted by the Kent Facility prepares personnel to maintain and operate the Kent Facility in a safe manner and in compliance with regulatory requirements, including the dangerous waste permit. The program also prepares personnel to respond effectively in emergency situations.

H1.2. All personnel employed at the Kent Facility undergo training according to this plan. In addition, all personnel who support waste management operations and requirements of the dangerous waste permit (e.g. materials management staff, sales representatives, etc.) must undergo training according to this plan.

H1.3. A copy of the complete training plan meeting the requirements in WAC 173-303-330(2) is kept at the facility at all times. This includes:

- H1.3.1. The name of the employee(s) filling each job title listed on Table H1-1.
- H1.3.2. The curriculum for each of the required training courses by class title as presented in Table H1-1 is kept in the operating record.
- H1.3.3. An outline of training courses listed on Table H1-1 is provided in Appendix H-2.
- H1.3.4. Records documenting employees have received and completed the training required by the training plan.
- H1.3.5. Documentation and results of annual evaluations of the training programs as outlined in H5.4.2.

H1.4. Kent Facility Management will review the personnel and responsibilities outlined in the training plan annually. Any updates identified during this review will be distributed as required by the Part B Permit.

H1.5. The Kent Facility training plan addresses the following types of training:

- Orientation training (Section H2)
- Task/Process Specific training (Section H3)
- Continuing training (Section H4)

H1.5.1. All new employees involved in the handling and management of wastes receive Orientation training (applicable for the job title as identified in Table H1-1) which introduces a new employee to the management and operations of the Kent Facility and provides an understanding of health and safety principles, applicable permit requirements and environmental regulations.

H1.5.2. Task/Process Specific training is training related to the specific duties of each job title at the Kent facility. Materials Management and Sales personnel not assigned to the Kent facility also receive training relative to waste preacceptance functions.

H1.5.3. In addition, as specified in Table H1-1, every employee involved in or support of the dangerous waste operations of the facility will participate in regularly scheduled continuing training. Employees receive continuing training to maintain proficiency, learn new techniques and procedures, reinforce safety, quality, and compliance consciousness (including current facility permit conditions), and retain accumulated knowledge.

H1.6. Employees with new job duties will also receive Orientation and Task/Process Specific training courses applicable for the new job title within the timeframes outlined in Table H1-1. The employee will not work unsupervised in the new job title/job duty until training courses relevant to those titles/duties are completed.

H1.7. During non-operational hours (holidays, Saturday and Sunday nights, etc.) a private security guard may patrol the perimeter of the facility. To ensure effective emergency response, the private security person is required to receive training on the

H2

orientation of the facility and the contingency plan emergency reporting procedures identified in Table H1-1.

H1.8. The training program is designed to provide employees with training relevant to performance of their respective job activities, as summarized in Section H7, Personnel Duties, Job Descriptions, and Requisite Qualifications. Documentation to demonstrate that employees have completed training sessions is maintained using procedures described in Section H6. Training program administration is discussed in Section H5. Refer to Table H1-1, for a description of the training requirements applicable to each job title.

H1.9. Employees that sign Dangerous Waste manifests must receive training in the following classes:

- Check-In Procedures and Discrepancies (AC-0002)
- Incoming Manifest / Problem Manifest (AC-0001)
- Waste Tracking (incl. 45-Day Outbound Manifest) (WT-0005)
- Waste Analysis Plan (LB-0008)
- DOT Shipper (TD-0008)

H2. ORIENTATION TRAINING

WAC 173-303-330(2)(b), 806(4)(a)(xii)

H2.1. All new employees including all personnel who support waste management operations and requirements of the dangerous waste permit receive Orientation training regarding facility operations, regulatory requirements, applicable Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Act (WISHA) standards, and health and safety policies. Employees are trained on those Orientation topics which pertain to the specific duties of each job title as outlined under Orientation Training in Table H1-1.

H2.2. The Orientation training has been designed to enable employees to perform their assigned duties in a safe and healthful manner and in compliance with the regulatory requirements including the dangerous waste permit, so as not to endanger themselves or other employees.

H2.3. No employee covered by this plan is permitted to work unsupervised on a task until all required Orientation training and all Task/Process Specific training for that job title is completed per Table H1-1. Employees may only perform the job duties that they have been trained for per Table H1-1. This training must be completed within the timeframes specified in Table H1-1.

H2.3.1. Prior to beginning any activity at the Kent facility, all new employees are trained in the contingency plan, including emergency procedures, the location and use of emergency equipment, evacuation routes, and emergency systems that relate to their area of responsibility.

H2.3.2. Operations staff receive additional training in specific emergency procedures required in their work area which includes, but is not limited to:

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- Key parameters for automatic waste feed cut-off systems;
- Communications or alarm systems;
- Response to fires or explosions;
- Response to ground-water contamination incidents;
- Operation shutdown;
- Use of facility emergency equipment; and,
- Response to flammable liquid spills.

H2.3.3. At least annually, a drill based on the contingency plan will be conducted to evaluate facility readiness and provide additional training based on possible emergencies. The Kent Fire Department will be encouraged to participate in these emergency drills.

H3. TASK/PROCESS SPECIFIC TRAINING

WAC 173-303-330(1)(a)(c)(ii) & (d), (2)(b), 806(4)(a)(xii)

H3.1. In addition to Orientation training, all new employees and employees assuming new duties must successfully complete Task/Process Specific training relevant to their job title in the areas of waste identification and record keeping, dangerous waste

management/facility operations, lab procedures and protocols, and release prevention and emergency response. Task/Process Specific training correspond to Job Titles/Job Duties in Table H1-1.

H3.2. No employee covered by this plan is permitted to work unsupervised on a task until all relevant Orientation training and all Task/Process Specific training for that job title is completed per the schedule in Table H1-1.

H3.3. Competency is evaluated by the employee's immediate supervisor or other qualified employee through any or all of the following as applicable to the training topic: oral and written testing, practical exercise, and/or observation and supervised demonstration of ability. While task-oriented topics require physical demonstration of competency to be approved by an authorized employee (Plant Supervisor, etc.), concept based topics require the employee to demonstrate a comprehensive understanding of concepts during the training course, (quiz, etc.). Additional information regarding the evaluation of competency is provided in Section H6.2.

H4. CONTINUING TRAINING

WAC 173-303-330(1)(b) & (2)(b), 806(4)(a)(xii)

H4.1. The Kent Facility also conducts a continuing training program. Continuing training is designed to maintain proficiency in job skills, increase safety, quality, compliance consciousness, ensure employee knowledge retention, and teach new skills. Training topics are selected based on the particular needs of the facility employees. The required continuing training Class Titles/Training Courses are presented in Table H1-1.

H4.2. Continuing Training requirements are also based on the employee's job title as outlined in the previous section. Should an employee change job title, work-site or department, additional training requirements will be added according to the initial schedule, and refresher training is provided according to the needs of the new job title. The Kent Facility has instituted a refresher training schedule similar to the introductory training schedule outlined in the previous section. Under this schedule, training topics are required per the schedule outlined in Table H1-1.

H4.3. Proficiency Refresher Training

H4.3.1. General training topics initially covered in Orientation Training (Section H2) are refreshed in Proficiency Refresher Training. Orientation training topics and associated refresher schedules are listed in Table H1-1.

H4.3.2. Every employee involved in dangerous waste treatment or storage operations receives eight hours of annual refresher training in compliance with 29 CFR 1910 (OSHA) and WAC 296-843-20030 (WISHA). This training updates previous 40 Hour HAZWOPER training, and is based on the sub-topics listed under 8-Hour HAZWOPER Refresher Training in Appendix H-2.

H4.4. Task/Process Specific Refresher Training

Topics initially covered in Task/Process Specific training are periodically refreshed as indicated by the schedule column in Table H1-1. Some of the topics may repeat material covered in the 8-hour refresher but are covered in more depth in refresher training.

H4.5. Quarterly Refresher Training

For purposes of emergency preparedness and safety, key training topics are refreshed at least quarterly. These topics are:

- Contingency Plan (w/ Fire Training, Emergency Equipment, On-site Spill Management) (ER-0001)
- Personal Protective Equipment (HS-0007)
- PUSO ("Process Under Supervision Only") (HS-0017)

Table H1-1 identifies the required training courses for each job title.

H4.6. Training Content Review

H4.6.1. As changes in pertinent regulations are identified, and/or changes in operations procedures occur, current compliance status and procedures are reviewed. If necessary, course curriculums including relevant SOPs is revised and employees are retrained on the pertinent topics.

H4.6.2. At a minimum, all current course curriculum including relevant SOPs are reviewed by the Operations and EH&S Departments on an annual basis. Significant revisions require timely retraining while minor corrections will be covered under the regular refresher schedule.

H5. TRAINING PROGRAM ADMINISTRATION

WAC 173-303-330(1)(a)

H5.1. General

H5.1.1. The Plant Manager has overall responsibility for directing the training program. The Plant Manager is knowledgeable in dangerous waste management procedures, as required by WAC 173-303-330 (1)(a), and with the assistance of the Plant Supervisor and EH&S, will oversee the administration of the training including training record maintenance, coordination of trainers, and competency evaluation. Responsible EH&S or Operations Management personnel designate qualified instructors, approve the training program content and format, and provide the necessary resources to ensure an effective training program is maintained.

H5.1.2. The selection of qualified trainers, use of effective training formats, and establishment of meaningful methods for evaluating employee's learning are described in the following sections.

H5.2. Training Personnel Qualifications

WAC 173-303-330(1)(a)

H5.2.1. Introductory and Refresher training conducted by management level personnel or an in-house expert with broad experience in the specific field and who is skilled in the current methods of performing the task. These in-house experts may include plant operators, plant managers and supervisors, safety specialists, engineers, chemists or other professionals. For example, training sessions related specifically to waste management are directed by a person trained in dangerous waste management procedures.

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H5.2.2. In some cases, training may be performed by off-site experts. An example of this would be 40-Hour HAZWOPER training (OP-0002). Upon request, the Kent Facility will provide Ecology qualifications of any prospective trainer.

H5.3. Training Format

H5.3.1. Training is conducted in meetings, small discussion groups, classroom settings or at the employee's work-site. Lectures, plant tours, visual media and field demonstrations are also used as training methods. Much of the training is on-the-job training performed at the site, using actual equipment under actual job conditions with close supervision.

H5.3.2. Most training courses (especially Task/Process Specific topics) have an associated Standard Operating Procedures (SOP) document which serves as the primary training document with detailed procedural descriptions and references to additional training material and permit requirements. SOPs and the complete training curriculum for each class will be maintained in the operating record, and an outline showing the key elements of training courses is provided in Appendix H-2. Applicable federal, state, local regulatory and permit requirements are accessible. Programmed instruction such as video tapes or printed materials are sometimes used, in which case a representative of Operations or EH&S management is present or accessible to answer questions. Such supplemental material is listed on the main SOP document. For some training, courses and teaching materials developed by experts in the field are used. In addition, some of this training is accomplished by attending seminars, short-courses or college courses.

H5.4. Training Effectiveness Evaluation

H5.4.1. Various evaluation techniques are used to measure a trainee's proficiency level. Examples of evaluation techniques are performance in written and oral exams and careful observation of on-the-job performance. Periodically, employees critique formal training sessions using a training evaluation form. The supervisor determines whether the trainee has mastered the skills at the competency level necessary to perform the tasks described in the job description. The Plant Manager is responsible for ensuring all employees receive all required training in the timeframes specified.

H8

H5.4.2. In addition, the training program itself is evaluated annually by EH&S and Operations Management personnel. This review will address the effectiveness of training materials, instructional methods, and subject matter, and will determine if revisions to the training curriculum are required as a result of changes to operations, emergency procedures, waste types handled, permit conditions, or regulations. As needed, new and useful instructional material is incorporated to improve the quality and effectiveness of the training program.

H5.4.3. An evaluation of training effectiveness will also be conducted as part of any incident investigation, or in the event of any significant non-compliance issues identified. An assessment will be made as to whether the incident or non-compliance was the result of the responsible employee's lack of knowledge or lack of concern. If lack of knowledge is found to be a root cause of the incident, the relevant training material will be assessed for adequacy by EH&S and Operations Management personnel, and modified as needed.

H6. DOCUMENTATION OF TRAINING

WAC 173-303-330(2)(b)(c)&((3)

H6.1. Training records of employees at the facility and other positions described in Table H1-1, are maintained in the operating record. Training records of former employees are kept at least three years from the date the employee last worked at the facility. Training records of current personnel are kept at the site until closure of the facility. For at least three years after closure of the facility, personnel training records will be kept at the corporate offices.

H6.2. Competency Evaluation

H6.2.1. The level and amount of training for each employee is tailored to the duties and responsibilities of that employee, the employee's education, job-experience and other qualifications. Employees are trained in all orientation class titles specified for their particular job title, and are trained in specific job titles/job duties prior to being allowed to perform such job titles/job duties unsupervised (see Table H1-1). Each employee is appropriately trained and competency evaluated on each topic. Competency evaluation may include testing for comprehension relating to a conceptual topic (e.g.,

regulatory training), or for a manual operation, supervision by a worker skilled in that specific operation would be required prior to allowing the employee to work unsupervised.

H6.2.2. Facility management level personnel (e.g. Plant Manager and Plant Supervisor) have a responsibility to train personnel in facility operations and procedures. Task/Process Specific training is conducted by operations personnel who have demonstrated experience and expertise in the particular task.

H6.3. Class Roster

Documentation of completed training is provided by a class sign-in roster that is distributed during each meeting which records attendance at training sessions. The roster contains the class title of the training topic (which for required training corresponds to a class title (training course) in Table H1-1), the instructor, date, and a list of attendees, their job titles, attendees' signatures, and the authorization signature of a person qualified to approve the training and its evaluation of competency. When the training has been completed, the form is approved by the Plant Manager or his/her designee. This form is shown in Appendix H-1, and completed forms are kept in the operating record.

H6.4. Employee Training History

H6.4.1. A personal training history for each facility employee is kept at the facility. All training outlined in Table H1-1 (including Orientation, Task/Process Specific introductory and continuing training), is recorded. The personal training history is accessible from records and lists all the training completed by the employee from hire date forward. This history is updated quarterly in each employee's file at the facility to include recent training.

H6.4.2. Training history and records for Materials Management, Private Security Guard, EH&S, and Technical Sales Representative positions must be furnished upon request and made available at all reasonable times for inspection.

H6.4.3. In addition to the Employee Training History, training records include copies of certificates of attendance at seminars. The electronic and physical training

records, supported by signatures kept in the master class roster file serve as documentation that the required training for each employee has been satisfactorily completed.

H7. PERSONNEL DUTIES, JOB DESCRIPTIONS, AND REQUISITE QUALIFICATIONS

WAC 173-303-330(2)(a)

This section contains the job descriptions for positions involved with the handling and/or management of dangerous wastes at the Kent Facility. These job descriptions identify the responsibilities, duties, and requisite qualifications of each position. The facility organization chart shown in Figure H7-1 depicts the reporting relationships of all job positions related to the management of dangerous wastes at the facility. A list of the names of each person filling each position is kept with the written training plan in the facility operating record.

JOB TITLE: Regional Vice President of Facility Operations

REPORTS TO: Vice President of Facility Operations

FUNCTION: Direct the overall operations of the plants to ensure facilities are safe, are in compliance with all applicable federal, state and local regulations and are operated as efficiently and profitable as possible.

DUTIES:

Ensure adequate personnel and resources are available to support Kent Facility principles by providing direction and support to plant management and continually assess the plants' processes, expenses, procedures, equipment and personnel needs.

Conduct periodic facility inspections and evaluate present procedures and processes to ensure compliance with all applicable federal, state and local regulations as well as all Company policies, directives, standards, procedures, and commitments.

Review regulations and assist EH&S in the drafting and review of permits affecting the facilities to continuously improve all aspects of our health, safety, and environmental performance.

Provide cost analysis of material treatment and disposal methods including review of charges and billings to ensure accuracy.

Assist with the research and purchase of equipment to improve the efficiency of operations and provide instruction, equipment and training to ensure employees have the skills and equipment to perform their jobs safely and in a compliant manner.

Assist with the research, development and implementation of new treatment processes to ensure employees are knowledgeable about any potential or known hazards and take all necessary precautions.

Review profiles and recommend treatment methods and charges.

Conduct our activities in a manner, which protects the well being of our employees, the public, and the environment, by focusing on preventative measures and interact with regulatory agencies and community representatives to promote the services and reputation of the company.

Oversee the plants' training program to ensure all employees are properly trained and encourage employees to identify health, safety, and environmental risks and participate in the development of appropriate solutions.

Direct the plant operations to ensure equal opportunity is provided to all employees and applicants for employment and that the Affirmative Action goals are actively supported.

SPECIFIC SKILLS REQUIRED:

Thorough working knowledge of all facility operations. Good knowledge of federal, state and local regulations. Ability to express self effectively, both verbally and in writing. Ability to establish effective working relationships with operational groups and regulators.

EDUCATION AND EXPERIENCE REQUIRED:

Bachelor's degree in a related field or equivalent training and experience. Minimum 5 years progressively responsible experience with a minimum of 3 years management experience in the hazardous waste industry. Extensive training in all related regulations required.

WORKING CONDITIONS:

Outdoor industrial plant environment where there is exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 25%

Normal office environment: 75%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

JOB TITLE: Plant Manager

REPORTS TO: Regional Vice President of Facility Operations

FUNCTION: Manage the day-to-day operations of the plant to ensure the plant operates safely, efficiently and in compliance with company policy and all applicable local, state and federal regulations.

DUTIES:

Manage and control personnel requirements and scheduling to ensure maximum productivity by providing instruction, equipment and training to ensure employees have the skills and equipment to perform their jobs safely and in a compliant manner.

Conduct and/or coordinate plant tours for customers, regulatory agencies, employees and other approved visitors.

Coordinate material flow including scheduling, receiving, sampling and analysis, treatment, transfer, sewer discharge and off-site disposal to meet the requirements of all Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits.

Ensure adequate personnel and resources are available to support Kent Facility principles to issue routine operating reports to sales/operations departments as needed.

Assist in design, modification and implementation of new or existing material handling equipment and treatment processes to improve both the efficiency of the plant operations and all aspects of our health, safety, and environmental performance.

With assistance and input from other department personnel, develop and implement a personnel training program that will prepare personnel to perform dangerous waste management operations in a safe manner and in compliance with regulatory requirements to ensure employees are knowledgeable about any potential or know hazards and take all necessary precautions. With assistance from other department personnel, maintain employee-training records in the facility operating record.

Oversee compliance with the Hazard Communication Standard including training, availability of safety data sheets (SDS) and proper storage, labeling and handling techniques to conduct plant activities in a manner which protects the well being of our employees, the public, and the environment, by focusing on preventative measures.

Encourage employees to identify health, safety, and environmental risks to develop and enforce job safety practices including use of personal protective equipment, good housekeeping techniques, lock out/tag out procedures, mobile equipment operation, etc. to ensure a safe and healthy work environment for all employees.

Conduct plant inspections to ensure compliance with all permit requirements and applicable local, state and federal regulations and identify and implement corrective action when necessary to continuously improve all aspects of our health, safety, and environmental performance.

Develop the plant operating budget and monitor on an ongoing basis by comparing actual expenses to budget and account for variances.

Maintain all required documents and records in a current, accessible and orderly manner. This includes maintaining training records, reconciling manifest discrepancies, developing waste profile sheets on in-plant generated wastes and other related information. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

Implement and coordinate published Contingency Plan emergency response procedures, as needed, and act as Primary Emergency Coordinator or alternate as appointed. When accidents or incidents occur, identify the cause, review and amend procedures as necessary, and communicate findings with employees.

Direct the operations of the plant ensuring all policies and practices are in compliance with Equal Opportunity regulations and Affirmative Action commitments.

SPECIFIC SKILLS REQUIRED:

Knowledge of chemistry with an emphasis in dangerous waste treatment and handling. Thorough knowledge of all plant operations and equipment. Ability to express self effectively, both orally and in writing. Ability to establish effective working relationships with operational groups, customers and regulators.

EDUCATION AND EXPERIENCE REQUIRED:

Bachelor's degree or 5-10 years experience in dangerous waste and/or chemical handling procedures. Chemical plant experience desirable. Supervisory experience required. First aid and safety training required.

WORKING CONDITIONS:

Outdoor plant environment where there is exposure to dirt, dust, noise, odors, temperature extremes, machinery and a potential exposure to hazardous chemicals and fumes: 20%

Normal office environment: 80%

OTHER REQUIREMENTS:

Facial hair must conform to requirements of proper fitting and sealing of respiratory equipment.

JOB TITLE: Plant Supervisor

REPORTS TO: Plant Manager

FUNCTION: Responsible for supervising shift supervisors and production personnel and managing daily plant operations to ensure the proper handling of all waste streams and to assist the Plant Manager in ensuring that the plant operates safely, efficiently and in compliance with company policy and all applicable federal, state and local regulations.

DUTIES:

Coordinate material flow including scheduling, receiving, sampling and analysis, treatment, transfer, sewer discharge and off site disposal in a manner, which protects the well being of our employees, the public, and the environment, by focusing on preventative measures.

Ensure adequate personnel and resources are available to support Kent Facility principles. Plan, schedule and monitor, daily activities of plant production personnel including the coordination of work assignments between shifts, plant maintenance, troubleshooting operational problems, completion of paperwork, and customer, contractor and inter-department communications.

Provide instruction, equipment and training to ensure employees have the skills and equipment to perform their jobs safely and in a compliant manner.

Encourage employees to identify health, safety, and environmental risks and participate in the development of appropriate solutions. Ensure employees are knowledgeable about any potential or known hazards and take all necessary precautions. Assist in monitoring and presenting the personnel-training program including orientation, on the job training and ensuring that job safety practices are enforced.

Ensure regulatory compliance in all areas of plant by reviewing regulatory certifications and keeping abreast of regulatory requirements, Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits.

Conduct and/or coordinate plant tours for customers, regulatory agencies, employees and other approved visitors.

Report and respond to plant emergencies, as needed. Perform published Contingency Plan emergency response procedures and act as Emergency Coordinator or Alternate as appointed for The Kent Facility. When accidents or incidents occur identify the cause, review and amend procedures as necessary, and communicate findings with employees.

Assist in the maintenance of all required documents and records in a current, accessible and orderly manner. This includes maintaining training records, reconciling manifest discrepancies, developing waste profile sheets on in-plant generated wastes and other related information to continuously improve all aspects of our health, safety, and environmental performance. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

Perform miscellaneous projects as required.

SPECIFIC SKILLS REQUIRED:

A knowledge of math and science with emphasis in chemistry. Good problem solving and analytical skills. Ability to express self effectively, both orally and in writing. Ability to assume responsibility. Ability to establish effective working relationships with others.

EDUCATION AND EXPERIENCE REQUIRED:

Bachelor's degree in related field or equivalent combination of education and experience. Minimum of 3 years experience in related field. Supervisory experience required. First aid and safety training required.

WORKING CONDITIONS:

Outdoor plant environment where there is exposure to dirt, dust, noise, odors, heat, cold, machinery and potential exposure to hazardous chemicals and fumes: 60%

Normal office environment: 40%

OTHER REQUIREMENTS:

Able to work any shift. Facial hair must conform to requirements of proper fitting and sealing of respiratory equipment.

JOB TITLE: Maintenance Supervisor

REPORTS TO: Plant Manager

FUNCTION: Maintain, install and repair all plant facilities, machinery and equipment.

DUTIES:

Maintain, inspect, test, install, adjust, remove, disassemble, repair and replace plant facilities, machinery and equipment. Report any deficiencies or malfunctions to plant manager

Maintain inventory of repair supplies and requisition materials as needed.

Perform routine service and repairs on mobile equipment including checking oil, fuel, water, tires, brakes, lights, horns. Report defects to plant managerr

Inspect, maintain and repair emergency equipment such as fire extinguishers, spill stations, safety showers, eyewash stations, etc. daily and after use. Report defects and deficiencies to plant manager.

Perform routine maintenance on all equipment including oiling and lubrication of all motors and pumps/agitators and packing on agitator shafts.

Assist in planning modifications and additions to plant facilities and processes. Implement, construct and install related modified or new equipment and processes as planned.

Maintain logs, records and all required forms including daily maintenance log in a current, accessible and orderly manner.

Conform to all safe operating procedures including keeping equipment and work area in a clean and orderly condition, using personal protective equipment, and proper chemical handling, storage and labeling.

Report and respond to emergencies, as needed and in accordance with the Contingency Plan.

Also performs administrative tasks. These tasks include both their standard work (maintenance, preventive maintenance, ordering equipment, etc.) and state, federal and company safety, health and environmental regulatory compliance. These administrative tasks may take a majority or all of the technicians' time during a certain work period. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

EDUCATION AND EXPERIENCE REQUIRED:

High school diploma or equivalent training and experience. Previous experience in welding, machine shop or other industrial maintenance preferred. Chemical plant experience desirable.

SPECIFIC SKILLS REQUIRED:

Good communication and mechanical problem solving skills. Capable of climbing ladders and stairs and able to stand for several hours at a time. Able to lift 100 pounds.

WORKING CONDITIONS:

Outdoor plant environment and normal office environment in an industrial plant where there is exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

JOB TITLE: Environmental Technician

REPORTS TO: Plant Supervisor

FUNCTION: Perform a variety of duties related to processing and shipping hazardous materials.

DUTIES:

Ship and receive materials in compliance with operational procedures and regulatory requirements. Report discrepancies to supervisory personnel.

Sample all materials, as required, to verify waste stream identification and assure safe and appropriate consolidation, transfer and shipment for disposal operations.

Distribute materials to proper storage and treatment areas.

This includes operating industrial mobile equipment such as forklifts, sweepers, etc. and selecting, inspecting and operating pumps, hoses, fittings, gaskets, and compressors.

Perform segregation, transfer and compacting procedures according to company policies, job safe practices, quality assurance guidelines and in compliance with all applicable regulatory requirements.

Conform to all job safe operating procedures including keeping equipment and work area in a clean and orderly condition, using proper chemical storage, labeling and handling techniques and using personal protective equipment.

Inspect work area for proper storage, labeling, leaks, equipment and material deficiencies and process malfunctions. Report discrepancies to supervisory personnel.

Report and respond to plant emergencies, as needed, and in accordance with the Contingency Plan.

Also performs administrative tasks. These tasks include both their standard work and state, federal and company safety, health and environmental regulatory compliance. These administrative tasks may take a majority or all of the technicians' time during a certain work period. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

EDUCATION AND EXPERIENCE REQUIRED:

High school diploma or equivalent training and experience. Chemical plant experience desirable.

SPECIFIC SKILLS REQUIRED:

Good problem solving and communication skills. Capable of climbing ladders and stairs and able to stand for several hours at a time. Able to lift 100 pounds.

WORKING CONDITIONS:

Outdoor plant environment and normal office environment in an industrial plant where there is exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

JOB TITLE: Environmental Technician – Waste Water Treatment

REPORTS TO: Plant Supervisor

FUNCTION: Perform a variety of duties related to processing and handling hazardous materials.

DUTIES:

Ship, receive and process materials in compliance with operational procedures and regulatory requirements to meet the requirements of all Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits. Report discrepancies to supervisory personnel.

Sample all materials, as required, to verify waste stream identification and assure safe and appropriate consolidation, transfer and shipment for disposal operations to protect the well being of our employees, the public, and the environment, by focusing on preventative measures.

Participate fully in training to expand knowledge and understanding of EH&S policies and SOPs to distribute materials to proper storage and treatment areas. This includes operating industrial mobile equipment such as forklifts, sweepers, etc. and selecting, inspecting and operating pumps, hoses, fittings, gaskets, and compressors.

Perform segregation and transfer procedures according to company policies, job safe practices, and quality assurance guidelines and in compliance with all applicable regulatory requirements to continuously improve all aspects of our health, safety, and environmental performance.

Understand job responsibilities and comply with all Kent Facility EH&S policies and Kent Facility SOPs to conform to all job safe-operating procedures including keeping equipment and work area in a clean and orderly condition, using proper chemical storage, labeling and handling techniques and using personal protective equipment.

Inspect work area for proper storage, labeling, leaks, equipment and material deficiencies and process malfunctions. Report both discrepancies and any unsafe act or working condition to supervisory personnel.

Be on the lookout for any risks, equipment, or conditions that may endanger employees or the environment. Report and respond to plant emergencies, as needed, and in accordance with the Contingency Plan.

Also performs administrative tasks. These tasks include both their standard work and state, federal and company safety, health and environmental regulatory compliance. These administrative tasks may take a majority or all of the technicians' time during a certain work period. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility management personnel and government agencies.
EDUCATION AND EXPERIENCE REQUIRED:

High school diploma or equivalent training and experience. Chemical plant experience desirable.

SPECIFIC SKILLS REQUIRED:

Good problem solving and communication skills. Must be capable of climbing ladders and stairs and able to stand for several hours at a time. Also, be able to lift 100 pounds.

WORKING CONDITIONS:

Outdoor plant environment and normal office environment in an industrial plant where there is exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

JOB TITLE: Laboratory Manager

REPORTS TO: Plant Manager

FUNCTION: Manage the day-to-day operations of the plant laboratory to ensure the laboratory operates safely, efficiently and in compliance with company policy and all applicable local, state and federal regulations.

DUTIES:

Manage laboratory analytical functions and other facility laboratory operations including sample tracking, records keeping, result communication, and proper sample disposal in accordance with the facility Waste Analysis Plan, Chemical Hygiene Plan, and all other applicable Environmental and Health & Safety regulations.

Manage laboratory staff including scheduling daily work activities, overseeing operations to ensure required work is completed in a timely manner.

Assist facility and other department personnel with the development and implementation of the personnel training program, to prepare personnel to perform dangerous waste management operations in a safe manner that is in compliance with regulatory requirements.

Assist Operations, Sales, and Materials Management department personnel by providing material information and treatability assessment information. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility management personnel and government agencies.

Provide assistance as needed conducting plant tours for customers, regulatory agencies, employees and other approved visitors.

Oversee compliance with the Hazard Communication Standard including training, availability of safety data sheets (SDS) and proper storage, labeling and handling techniques to conduct plant activities in a manner which protects the well being of our employees, the public, and the environment, by focusing on preventative measures.

Encourage employees to identify health, safety, and environmental risks to develop and enforce job safety practices including use of personal protective equipment, good housekeeping techniques, lock out/tag out procedures, mobile equipment operation, etc. to ensure a safe and healthy work environment for all employees.

Develop the laboratory operating budget and monitor on an ongoing basis by comparing actual expenses to budget and account for variances.

SPECIFIC SKILLS REQUIRED:

Knowledge of chemistry with an emphasis in dangerous waste treatment and handling. Thorough knowledge of all plant operations and equipment. Ability to express self effectively, both orally and in writing. Ability to establish effective working relationships with operational groups, customers and regulators. EDUCATION AND EXPERIENCE REQUIRED:

Bachelor's degree or 5-10 years experience in dangerous waste and/or chemical handling procedures. Chemical plant experience desirable. Supervisory experience required. First aid and safety training required.

WORKING CONDITIONS:

Outdoor plant environment where there is exposure to dirt, dust, noise, odors, temperature extremes, machinery and a potential exposure to hazardous chemicals and fumes: 20%

Normal office environment: 80%

OTHER REQUIREMENTS:

Facial hair must conform to requirements of proper fitting and sealing of respiratory equipment.

- JOB TITLE: Laboratory Technician
- REPORTS TO: Laboratory Manager
- FUNCTION: Sampling, analysis, data reporting and treatment recommendations based on analytical results.

DUTIES:

Sample, analyze and record analytical data to verify waste stream identification and assure safe and appropriate consolidation, treatment, transfer and disposal operations to meet the requirements of all Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits.

Determine and recommend optimum treatment, storage and disposal operations based on analytical data to continuously improve all aspects of our health, safety, and environmental performance.

Prepare and maintain all applicable records, paperwork and reports as required by the job to be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility management personnel and government agencies.

Understand job responsibilities and comply with all Kent Facility policies and SOPs to conform to all job safe operating procedures including keeping equipment and work area in a clean and orderly condition, using proper chemical storage, labeling and handling techniques and using personal protective equipment.

Conduct our activities in a manner that protects the well being of our employees, the public, and the environment, by focusing on preventative measures. Inspect work area for proper storage, labeling, leaks, equipment and material deficiencies and process malfunctions. Report discrepancies to supervisor.

Be on the lookout for any risks, equipment, or condition that may endanger employees or environment. Report any unsafe act or working condition. Report and respond to plant emergencies, as needed, and in accordance with the Contingency Plan.

Also performs administrative tasks. These tasks include both their standard work and state, federal and company safety, health and environmental regulatory compliance by fully participating in training to expand knowledge and understanding of Kent Facility EH&S policies and SOPs.

EDUCATION AND EXPERIENCE REQUIRED:

Bachelor's degree in chemistry or related field. Dangerous waste or chemical handling experience. At least 1 year laboratory experience.

SPECIFIC SKILLS REQUIRED:

Good written and verbal communication skills. Good problem solving skills. Demonstrated knowledge of job safe practices.

WORKING CONDITIONS:

Industrial plant laboratory and normal office environment in an industrial plant and field work where there is exposure to dirt, dust, noise, odors, varying temperatures, machinery and a potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements of proper fitting and sealing of respiratory equipment.

JOB TITLE: Admin Supervisor

REPORTS TO: Plant Manager

FUNCTION: Supervise administrative staff; maintain files and data entry required for plant operating records and regulatory agency reports.

DUTIES:

Manage administrative staff including scheduling daily work activities, overseeing operations to ensure required work is completed in a timely manner.

Prepares reports as required by plant and corporate personnel. Maintains records and data entry for waste tracking system. Enters data from waste process forms, manifests and checkout sheets into operating records on computer to meet the requirements of all Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits.

Understand job responsibilities and comply with all Kent Facility EH&S policies and Kent Facility SOPs by preparing all necessary paperwork for outgoing shipments, in accordance with all applicable federal, state and local regulations.

Coordinates production reporting with Accounting Department to insure correct and timely invoicing.

Receives incoming manifests and completes waste receipts.

Answer telephones, take and relay messages. Operates miscellaneous office equipment, including computers, as required by the position. Be on the lookout for any risks, equipment, or conditions that may endanger employees, the public, or the environment. Report any unsafe act or working condition.

Organizes and maintains filing system for all manifests, process forms, waste profiles, inspection reports and other plant operating records. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

Prepares reports as required by plant and corporate personnel.

Participate fully in training to expand knowledge and understanding of Kent Facility EH&S policies and SOPs.

Strive to continuously improve all aspects of our health, safety, and environmental performance. Endeavor to conduct our activities in a manner, which protects the well being of our employees, the public, and the environment, by focusing on preventative measures.

EDUCATION AND EXPERIENCE REQUIRED:

High school graduate plus related work experience. Chemical plant experience desirable.

SPECIFIC SKILLS REQUIRED:

Good organizational skills (information management and filing). Qualified typist, familiarity with computers, office equipment operation and data entry. Good sentence structure, grammar and spelling. Proficiency for accuracy. Secretarial and clerical office procedures.

WORKING CONDITIONS:

Normal office environment in an industrial plant environment where there may be exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

JOB TITLE: Waste Tracking Specialist

REPORTS TO: Admin Supervisor

FUNCTION: Maintains files and enters data required for plant operating records and regulatory agency reports.

DUTIES:

Prepares reports as required by plant and corporate personnel. Maintains records and data entry for waste tracking system. Enters data from waste process forms, manifests and checkout sheets into operating records on computer to meet the requirements of all Company policies, directives, standards, procedures, and commitments as well as all applicable laws and regulations and Facility Operating Permits.

Understand job responsibilities and comply with all Kent Facility EH&S policies and Kent Facility SOPs by preparing all necessary paperwork for outgoing shipments, in accordance with all applicable federal, state and local regulations.

Coordinates production reporting with Accounting Department to insure correct and timely invoicing.

Receives incoming manifests and completes waste receipts.

Answer telephones, take and relay messages. Operates miscellaneous office equipment, including computers, as required by the position. Be on the lookout for any risks, equipment, or conditions that may endanger employees, the public, or the environment. Report any unsafe act or working condition.

Organizes and maintains filing system for all manifests, process forms, waste profiles, inspection reports and other plant operating records. Be truthful, accurate and timely in maintaining records, submitting documents, and making reports to Kent Facility Management personnel and government agencies.

Prepares reports as required by plant and corporate personnel.

Participate fully in training to expand knowledge and understanding of Kent Facility EH&S policies and SOPs.

Strive to continuously improve all aspects of our health, safety, and environmental performance. Endeavor to conduct our activities in a manner, which protects the well being of our employees, the public, and the environment, by focusing on preventative measures.

EDUCATION AND EXPERIENCE REQUIRED:

High school graduate plus related work experience. Chemical plant experience desirable.

SPECIFIC SKILLS REQUIRED:

Good organizational skills (information management and filing). Qualified typist, familiarity with computers, office equipment operation and data entry. Good sentence structure, grammar and spelling. Proficiency for accuracy. Secretarial and clerical office procedures.

WORKING CONDITIONS:

Normal office environment in an industrial plant environment where there may be exposure to dirt, dust, noise, odors, heat and cold, machinery and where there is potential exposure to hazardous chemicals and fumes: 100%

OTHER REQUIREMENTS:

Facial hair must conform to requirements for proper fit, seal and function of respiratory equipment.

TABLE H1-1. TRAINING MATRIX

NOTE: This table reflects the minimum content of the Orientation, and Task/Process Specific training required. All of the training courses and frequency are required per Table H1-1. Changes to this matrix require a permit modification per WAC 173-303-830.

---INSERT TABLE H1-1 AND FIGURE H7-1 ORG CHART

Page 1 of 2

							J	ob T	itles	/Job	Dut	ies					
Class Title/Training Course	Class ID#	Initial Schol	Refresher c.	Waste T. Cunedule (Days)	Admin c.	Environment	Mainternal Tech	Environme Supervisor	Lab Tech - WMT	Plant Sumoian	Plant M.	Laborat	Material Material	Private o	EHS Becurity Guard**	Technical	al Sales Representation
Orientation Training				1													ı
		00	NIA			V	V	V	V	V		V		-	1		1
4000 HAZWOPER Training	OP-0002	90	1NA 265	V	V		$\hat{}$	\sim	\sim		$\hat{\mathbf{v}}$		V		V	V	
8-Hour HAZWOPER Refresher Training	OP-0003	90	305	$\hat{}$			$\hat{\mathbf{v}}$	$\overline{\mathbf{v}}$			$\hat{\mathbf{v}}$		~			~	
	RG-0018	90	365	X	X	X	X	X	X	X	X	X		V	X		
Contingency Plan (Incl Emergency Response)	ER-0001	/	Q."	X	X	X	X	X	X	X	X	X		X	X		
PPE	HS-0007	90	Q."	X	X	X	X	X	X	X	X	X	V		X		
PUSO	HS-0017	90	Q^	<u> </u>		X	V	X	Х	X	X	Х	X		X		
Pressurized Container Management	OP-0023	180	365			X	X	X	X	X	X	X			V		
Inspection Plan Requirements	EM-0003	180	365		N	X	X	Х	Х	X	X	X			X		
DOT -Shipper	TD-0008	180	1095	X	X	X				Х	X	Х	Х		X	Х	
RCRA / WAC overview	RG-0006	180	365	X	X	Х	Х	Х	Х	Х	X	Х	X		Х	Х	
TSCA	RG-0007	180	365	X	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	X	
Waste Analysis Plan	LB-0008	180	365	X	Х	Х		Х	Х	Х	Х	Х	Х		Х	X	
Record Keeping Training	RG-0010	180	365	Х	Х		Х		Х	Х	Х	Х	X		Х		ĺ
Hot Work	HS-0011	180	365				Х			Х	Х						
Forklift Operation/Certification	TD-0001	180	1095			X	X	X		X	X						1

Task / Process Specific Trai	ning													
Check In Proc and Discrepancies	AC-0002	180	365	Х	Х		Х	Х	Х	Х	Х			
Incoming Manifest/Problem Manifest	AC-0001	180	365	Х	Х		Х	Х	Х	Х	Х		Х	Х
Waste Tracking (incl 45 Day Outbound Manifest)	WT-0005	180	365	Х	Х					Х			Х	
Sampling Training	OP-0034	180	365			Х	Х	Х	Х	Х	Х			
Profile Creation	WT-0006	180	365							Х	Х	Х	Х	X

*Quarterly refresher training as described in Section H4.5

							J	ob T	itles	/Job	Dut	ies					
Class Title/Training Course	Class ID#	Initial School	Refresher S.	Waste T Ochedule (Days)	Admin c.	Environ	Maintence	Environ	Lab Tech / Supy WINTE	Plant S	Plant M.	Laborat	Material Manager	Private S	EHS	Technical o	ales Representative
Task / Process Specific Trainin	g (cont)	-															
Chemical Segregation and Storage	WS-0002	180	365			Х		Х	Х	Х	Х	Х	Х		X		
Chemical Compatibility	WS-0001	180	365			Х		Х	Х	Х	Х	Х	Х		X		
Container Pump-up	OP-0012	180	365			Х		Х		Х	Х						
Storing Product Chemical Drums	WS-0003	180	365			Х		Х	Х	Х	Х	Х					
Triple Rinse	OP-0007	180	365			Х		Х		Х	Х						
PCB Management	OP-0036	180	365	Х	Х	Х			Х	Х	Х	Х					
Transfer Facility Procedures	TD-0013	180	365	Х	Х	Х				Х	Х				X		
Disposal of Lab Wastes	LB-0009	180	365						Х	Х	Х	Х			X		
Mandatory Verification Analysis	LB-0012	180	365			Х		Х	Х	Х	Х	Х					
FID/PID Calibration/Operation	LB-0024	180	365						Х	Х	Х	Х					
PCB Management for Kent Lab	LB-0018	180	365						Х	Х	Х	Х					
Waste Water Treatment & Permit Conditions	TT-0011	180	365					Х	Х	Х	Х	Х					
Tanker Truck Load/Unload incl Vac Truck	OP-0035	180	365			Х		Х		Х	Х						
Container Integrity	WT-0002	180	365			X		Х		Х	Х						
Outbound Load Procedures	OB-001	180	365	X	Х	Х				Х	Х						

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APPENDIX H-1

TRAINING FORMS

The forms included in this Appendix are for example only. The forms themselves may change in appearance. The information contained on the forms will remain the same on any version used for the same purposes.

APPENDIX H-2

TRAINING COURSE OUTLINES

Orientation Training

40 Hour HAZWOPER Training (OP-0002)

All new employees directly involved in the handling and management of wastes must successfully complete an orientation training session that fulfills the requirements outlined in 29 CFR 1910.120 (e)(3)(i) (OSHA Hazardous Waste Operations and Emergency Response training regulations) and WAC 296-843-20010 (WISHA). Under OSHA and WISHA, employees involved in dangerous waste operations at treatment, storage, and disposal facilities are currently required to complete 40 hours of introductory training and three days of supervised work experience prior to working without direct supervision. 40 Hour HAZWOPER training is normally provided by an outside consulting firm.

8 Hour HAZWOPER Refresher Training (OP-0003)

All Kent facility employees attend an annual in-house 8 Hour HAZWOPER refresher class. Topics are presented in a way to maximize relevance to plant operations and are taught by experienced Kent Facility employees. The following list of topics represents the normal curriculum:

- Accident Statistics Overview
- Ethics and the Cost of Non-Compliance
- Incident Reporting
- Substance Abuse
- Medical Surveillance
- "Safe on Purpose" Accident Prevention Program
- Security Plan
- Exposure Controls -- Engineering, Administrative, PPE / Decon
- Respiratory Protection / Respirator Cleaning
- Toxicology / Industrial Hygiene
- Drum Handling
- Job Safety Analysis
- Confined Space Entry Requirements
- Lock-Out/Tag-Out/Hot Work
- Housekeeping
- Bloodborne Pathogens
- Chemical Principles and Hazards

- Hazard Communication
- Fire / Emergency Response

Part B Permit Training (RG-0018)

- Role of EPA and WDOE
- Overview of the permitting process
- Overview of Part A and B Application
- Section C Waste Analysis Plan
- Section D Process Information
- Section E Groundwater Monitoring
- Section F Procedures to Prevent Hazards
- Section G Contingency Plan
- Section H Training Plan
- Section I Closure Plan
- Part B Permit Conditions
- Modifying a permit

Contingency Plan (ER-0001)

WAC 173-303-330(1)(d)

As part of Orientation training, all employees involved in facility operations are instructed in their specific duties and responsibilities as they relate to emergency response and the Contingency Plan. Orientation and refresher Contingency Plan training (and corresponding class ID numbers) includes:

- Incident Reporting Hierarchy (ER-0003)
- Emergency Equipment (ER-0002)
- Fire Training/Fire Extinguishers/Foam Cannon (ER-0008 / ER-0009)
- On-Site Spill Management (ER-0006)

Additionally, Contingency Plan training incorporates emergency evacuation procedures and routes, in addition to the use of emergency systems (alarms, etc.).

<u>PPE (HS-0007)</u>

- Applicability when to use it
- PPE Design

- Hazard assessment and equipment selections
 - Level A
 - Level B
 - Level C
 - Level D
- Defective and damaged equipment
- Training
- Hearing Conservation Program

Process Under Supervision Only (PUSO) (HS-0017)

Process Under Supervision Only (PUSO) is an operating procedure that details precautions for the treatment, storage or consolidation of potentially reactive or unstable waste. PUSO training covers the following:

- Identification of applicable waste streams by a qualified chemist or Materials Management personnel
- Operations procedures managing identified PUSO waste streams
- Use of the PUSO form including management review and authorization.

Pressurized Container Management (OP-0023)

- Identification of potentially pressurized containers
- Methods to address pressurized containers
- Plant management notification
- Risk assessment
- Environmental, Safety & Health requirements

Inspection Plan Requirements (EM-0003)

- Container Storage / Staging / Process Areas
- DW wastewater tank systems
- Safety and Emergency Equipment
- Security Equipment
- Operational Equipment General
- Operational Equipment Treatment Plant
- Priority Levels
- Corrective Measures
- Documentation / Recordkeeping

DOT -Shipper (TD-0008)

- General Awareness Requirements
- Shipping Requirements
 - Hazardous Materials Table
 - Reportable Quantity Table
 - List of Marine Pollutants
 - Special Provisions
- Shipping Papers
- Marking and Labeling
- Packaging
- Placards and Segregation

RCRA / WAC overview (RG-0006)

- History of environmental regulations
- Waste designation Characteristic, criteria, and listed waste codes
- Generator, transporter and facility requirements
- Land disposal restrictions

TSCA (RG-0007)

- History and authorization
- Applicability and classification (PCBs)
- Shipping and storage requirements
- Marking requirements
- Disposal requirements
- Record keeping

Waste Analysis Plan (LB-0008)

- Waste pre-acceptance procedures
- Waste acceptance procedures
- Sampling methodologies
- Analytical techniques
- Waste tracking systems

Record Keeping Training (RG-0010)

Training includes record keeping and retention requirements including those for the following:

- Manifests
- Annual Reports
- Records of test results and waste analyses
- Reports of incidents requiring implementation of the contingency plan
- Inspection Records
- Unmanifested Waste Reports and Exception Reports.

Hot Work (HS-0011)

- PPE required
- Hot Work Permit form completion
- Confined Space Permit requirements
- Fire Prevention requirements
 - Combustible / Flammable materials
 - Fire extinguishers
 - Fire watch
- LEL and Oxygen monitoring requirements
- Contractor Hot Work procedures

Forklift Operation/Certification (TD-0001)

- Pre-Operational Safety Check
 - Brakes
 - Wheels and Tires
 - Steering
 - Clutch
 - Horn
 - Control Levers
 - Seat Belt
- Starting Procedures
- Know the Area of Travel
- Know the Load
 - Stability and Center of Gravity
 - Capacity (Weight and Load Center)
- Container Stacking Requirements
- Training Re-certification Requirements

Task / Process Specific Training

Check-In Procedures with Discrepancies (AC-0002)

- Incoming Waste Paperwork Review
- Identification of Discrepancies
- Administrative Verification Form
- "Hold Do Not Process" Label
- Drum Jail Procedures
- Discrepancy Resolution Procedures
- Recordkeeping and Reporting Requirements

Incoming Manifest / Problem Manifest (AC-0001)

- Incoming Waste Paperwork Review
- Definition of Manifest Discrepancy
- Manifest Discrepancy Resolution Procedures
- Unmanifested Waste Load Procedures
- Rejected Shipment Procedures
- Unmanageable, Non-transportable Shipment Procedures
- Recordkeeping and Reporting Requirements

Waste Tracking (incl 45 Day Outbound Manifest) (WT-0005)

Describes the procedures to be used by administrative personnel (waste tracking specialists, etc.) to provide documentation relating to the movement of waste from manifesting through disposal. Includes procedures to be taken in the event manifests bearing the signature of the receiving facility are not returned within timeframes allowed.

Sampling Training (OP-0034)

- Representative Sampling Techniques
- Container Selection
- Visual Confirmation
- Sampling Equipment Selection and Decontamination
- Labeling and Recordkeeping Requirements

Profile Creation (WT-0006)

Course provides a step-by-step guide to entering profile information in the profile database, primarily intended for use by salespeople and customer service representatives. Includes instructions on how to populate the fields within the profile module of the profile database.

Chemical Segregation and Storage (WS-0002)

- Container Integrity Requirements
- Container Labeling Requirements
- Aisle Spacing and Stacking Patterns
- Table D1-2 Segregation / International Fire Code (IFC) Compliance
- Applicability to Lab Packs
- Explanation of Dispositioning Markings
- Procedures for Managing Incompatibles in Storage

Chemical Compatibility (WS-0001)

- Overview of Chemical Compatibility and Reactivity
- Flammables, Dangerous When Wet
- Anions / Cations
- Exothermic Reactions
- Acids / Alkalines / Neutralization
- Oxidizers / Reducing Agents
- Organic Peroxides
- PPE Requirements
- Safety Equipment / Emergency Response Procedures

Container Pump-up (OP-0012)

- PPE Requirements
- Identification of Key Points / Hazards in Process
- Review of Work Order
- Verify Proper Connections and Grounding
- Conduct Compatibility Testing
- Proper Pump Operation Procedures
- "RCRA Empty" Standard
- Cleanup Procedures
- Recordkeeping Requirements

Storing Product Chemical Drums (WS-0003)

- PPE Requirements
- Identification of Key Points / Hazards
- Table D1-2 Segregation Compatibility Chart
- HMIS Labels
- Selection of Proper Storage Location

Triple Rinse (OP-0007)

- PPE Requirements
- Identification of Key Points / Hazards
- "RCRA Empty" Standard
- Triple Rinse Procedures

PCB Management (OP-0036)

- PPE Requirements
- Identification of Key Points / Hazards
- TSCA Storage Area
- PCB Check-in Procedures
- PCB Receiving Report
- PCB Markings Required
- PCB Log Procedures
- Recordkeeping Requirements

Transfer Facility Procedures (TD-0013)

- Inbound Load Procedures
- Admin Staff Paperwork Review
- "Live Offload" vs. Staging in West Lot (10-day) Procedures
- Driver Completion of Drop Sheet
- Requirements for Signing Manifests
- Time Limits for Inbound Staging
- Time Limits for Outbound Staging
- Inspection Procedures

Outbound Load Procedures (OB-001)

Load Disposition and Staging Procedures

- Completion of Scan Sheet
- Preparation of Outbound Manifest
- Loading Procedures
- Requirements for Generator Signature on Manifest
- Transporter Signature on Manifest
- Time Limits for Outbound Staging
- Recordkeeping Requirements

Disposal of Lab Wastes (LB-0009)

- Management of Samples vs. Wastes
- Satellite Accumulation Area Management Standards
- Labeling / Marking Requirements
- Disposition of Lab Wastes
- Recordkeeping Requirements

Mandatory Verification Analysis (LB-0012)

- PPE Requirements
- Identification of Key Points / Hazards
- Representative Sampling Procedures
- Sampling Frequency
- Overview of WAP Requirements for MVAs
- Identification of Discrepancies
- Administrative Verification Form
- Recordkeeping Requirements

FID/PID Calibration/Operation (LB-0024)

- Step-by-Step FID/PID Calibration Procedures
- PID Operating Instructions
- FID Operating Instructions

PCB Management for Kent Lab (LB-0018)

- Overview of TSCA Applicability to Lab Samples
- Chain of Custody
- Satellite Accumulation / PCB Marking Requirements
- TSCA Disposal Requirements

Kent Wastewater Treatment and Permit Conditions (TT-0011)

This training describes operational procedures for the treatment of wastewater received at the Kent facility including:

- Sampling
- Verification
- Offloading
- Process analysis
- Full-scale treatment
- Conformance with King County Department of Natural Resources and Parks Pretreatment discharge permit.

Training also addresses records associated with discharges and other conditions as specified in the discharge permit.

Tanker Truck Load/Unload incl Vac Truck (OP-0035)

- PPE Requirements
- Identification of Key Points / Hazards
- Inbound Paperwork Review
- Representative Sampling
- Authorized Offloading Locations
- Proper Offloading Procedures
- Tanker Rinsing Procedures
- Recordkeeping Requirements

Container Integrity (WT-0002)

- DW Container Labeling Requirements
- Visual Inspection for Integrity Issues
- Correcting Deficiencies
- Recordkeeping Requirements



June 4, 2021

Appendix A-4

Qualifications of Key Employees

Employee Name:	David Stanton				
Position:	President				
Experience:	Over twenty-seven years' experience in the water and environmental industries in the United States and abroad. Prior to joining Clean Earth, Mr. Stanton served as CEO of Suez Utility Holdings, Inc., responsible for overseeing the third largest portfolio of regulated water and wastewater businesses in the nation. While at Suez, Mr. Stanton led a transformation of the customer experience and employee engagement through innovated use of digital and smart solutions. Innovation, coupled with ar increased investment in renewal capital and acquisitions, drove the business to an unprecedented improvement in sustainability and economic metrics.				
	Prior to Suez, Mr. Stanto environmental service co and member of the boar on re-use of difficult to the chief financial officer of S company through a turna company. As executive v Tyco Company focused of worldwide, which sold to in 1990 with a startup co Technologies and now is	n led the growth and improvement of water and ompanies. He served as chief executive officer d of APTwater, LLC, a start-up company focused reat water. As chief operating officer and interim SouthWest Water where he helped lead the around ending in a sale to a private equity ice president and Interim CFO of Earth Tech, a on environmental and infrastructure projects o AECOM. Mr. Stanton launched his water career ompany which was acquired by Wheelabrator an integral part of Evoqua, Inc.			
Work History:	2020 to Present	President Clean Earth Hatboro, PA			
	2012-2020	President/CEO Suez Utility Holding Inc. Paramus, NJ			
	2010-2012	Chief Executive Officer/Board Member APTwater, LLC Long Beach, CA			

	2006-2010	Chief Operating Officer/Interim Chief Financial Officer SouthWest Water Inc. Los Angeles, CA
	2000-2006	Executive Vice President- International Asset Management Division Tyco international, Inc., Earth Tech Division Long Beach, CA
	1999-2000	Vice President- Sales and Marketing Waterlink, Inc. Canton, OH
	1995- 1998	President- Ceilcote APC Division Iteq, Inc. Strongsville, OH
	1990 -1994	Vice President- General Manager Westates Division Wheelabrator (a Waste Management Company) Los Angeles, CA
	1987 -1989	Regional Sales Manager Lutron Electronics, Inc. Los Angeles, CA
Education:	B.S. Degree in E Cornell Univers	Electrical Engineering sity
Training:	Training include training for haz	es, but not limited to OSHA 40-hour health and safety zardous waste sites and hazard communication.

Employee Name:	Guadalupe Montes						
Position:	Operational Environmen	Operational Environmental Health and Safety Manager					
Experience:	Twelve years of experience in occupational safety and health. Five years of experience in hazardous waste operations.						
Work History: ¹	2019 to Present	Operational Environmental Health and Safety Manager Burlington Environmental, LLC (Clean Earth) Tacoma, WA					
	2016-2019	Safety and Health Professional Vigilant, Counsel for Employers Everett, WA					
	2013-2016	Health and Safety Manager Stella Jones Corporation Tacoma, WA					
	2008-2013	Environmental Health and Safety Manager PSC Environmental Services, LLC Kent, WA					
Education:	B.S. Degree in Occupatic Construction Safety Spec Central Washington Univ	onal Safety and Health cialization versity					
Training:	Training includes, but no 40-hour health and safe annual refresher training labeling and handling, en chemical properties and System (HMIS), and first	ot limited to RCRA/TSCA/DOT regulations, OSHA ty training for hazardous waste sites / 8-hour g and 10-hour training certificate, chemical mergency response, hazard communication, toxicology, Hazardous Materials Identification aid/CPR.					

¹ Employment history shown is limited to positions held that are/were directly related to occupational health and safety and waste management activities.

Employee Name:	Hector Sanchez					
Position:	Senior Vice Presiden	Senior Vice President - Operations				
Experience:	Over thirty years' ex extensive knowledge RCRA Part B hazardo operations, and safe	perience in the environmental industry and e in the management and business development of ous waste facilities, environmental services, ety.				
Work History: ¹						
	2010 to Present	Senior Vice President of Operations Clean Earth Hatboro, PA				
	2005-2009	Senior Vice President of Operations ESD PSC Environmental Services, LLC Houston, TX				
	2001-2005	Regional Vice President PSC Environmental Services, LLC Houston, TX				
	1995-2001	Regional Operations Manager - South Philip Services Corporation Houston, TX				
	1993-1995	Plant Manager - Kent Philip Services Corporation Kent, WA				
	1987-1993	Lab Manager Chemical Processors, Inc Seattle, WA				
Education:	B.S. Degree in Chem National Polytechnic	ical Engineering ts Institute (Mexico City)				

¹Employment history shown is limited to positions held that are/were directly related to waste management activities.

Training:Training includes, but not limited to RCRA/TSCA/DOT regulations,
chemical labeling and handling, emergency response, hazard
communication, chemical properties and toxicology, Hazardous
Materials Identification System (HMIS), lab packing, and CPR/First Aid.

Employee Name:	Jerremmy D. Miller					
Position:	Plant Production Supe	Plant Production Supervisor				
Experience:	Seven years work expe as a technician/superv	Seven years work experience in the field of Hazardous waste operations as a technician/supervisor.				
Work History:1						
	2019 to Present	Plant Production Supervisor Burlington Environmental, LLC (Clean Earth) Kent, WA				
	2013-2019	Environmental Technician Stericycle Environmental Solutions, Inc. Kent, WA				
Education:	B.A. Degree in Environ University of Washing	mental Studies ton				
Training:	Training includes, but not limited to RCRA/TSCA/DOT regulations, OSHA 40-hour health and safety training for hazardous waste sites / 8-hour annual refresher training, first aid/CPR, chemical labeling and handling, emergency response, hazard communication, chemical properties and toxicology, and Hazardous Materials Identification System (HMIS).					

¹ Employment history shown is limited to positions held that are/were directly related to waste management activities.

Employee Name:	Kris Iverson					
Position:	Northwest Regional Operations Director					
Experience: Work History ¹	Twenty-five years of experience in hazardous waste and materials management.					
work instory.	2020 to Present	NW Regional Operations Director Burlington Environmental, LLC (Clean Earth) Washougal, WA				
	2014-2020	Regional Operations Manager Stericycle Environmental Solutions, Inc. Washougal, WA				
	2010-2014	General Manager PSC Environmental Services, LLC Washougal, WA				
	2004-2010	Location Manager PSC Environmental Services, LLC				
	2000-2004	Contract Manager PSC Environmental Services, LLC Washougal, WA				
	1996-2000	Environmental Specialist PSC Environmental Services, LLC Washougal, WA				
Education:	B.S. Degree in Biology University of Oregon					
Training:	Training includes, but no 40-hour health and safe	ot limited to RCRA/TSCA/DOT regulations, OSHA ty training for hazardous waste sites / 8-hour				

¹ Employment history shown is limited to positions held that are/were directly related to waste management activities.

annual refresher training, hazardous materials characterization, Haz-Cat system certification, forklift certification, and emergency response.

Employee Name:	Katey Potter						
Position:	Permitting Compliance	Permitting Compliance Manager					
Experience:	Nine years of experien and sixteen years wor	Nine years of experience in the field of hazardous waste management and sixteen years work experience in permitting and compliance.					
Work History: ¹	2018 to Present	Permitting Compliance Manager Burlington Environmental, LLC (Clean Earth) Tacoma, WA					
	2017-2018	Environmental Specialist City of Tacoma Tacoma, WA					
	2011-2017	Environmental Specialist 4 Washington Department of Ecology Olympia, WA					
	2004-2011	Customer Service Specialist 4 Washington Department of Fish and Wildlife Olympia, WA					
Education:	B.S. Degree in Environ Evergreen State Colleg	mental Sciences ge					
Training:	Training includes, but 40-hour health and sa annual refresher train professionals fundame awareness, Incident Co and 700), chemical ha Sediment Control Lead Inspections Program c	not limited to RCRA/TSCA/DOT regulations, OSHA fety training for hazardous waste sites / 8-hour ing, first Aid/CPR, chemistry for environmental entals and applied, sampling and science ommand System (ICS) training (100, 200, 300, 400, zard and recognition, Certified Erosion and d (CESCL); Ken Kerry Pretreatment Facility ertification.					

¹ Employment history shown is limited to positions held that are/were directly related to permitting compliance and waste management activities.

Employee Name:	Megan Swick				
Position:	Manager Facility – Plant Operations (Plant Manager)				
Experience:	Twenty-one year's work experience in a hazardous waste facility.				
Work History: ¹	2016 to Present	Manager Facility – Plant Operations Burlington Environmental, LLC (Clean Earth) Kent, WA			
	2016-2016	Shipping and Receiving Manager Stericycle Environmental Solutions, Inc. Kent, WA			
	2009-2016	Administrative Supervisor PSC Environmental Services, LLC Kent, WA			
	2007-2009	Certificate Production Specialist PSC Environmental Services, LLC Kent, WA			
	2004-2007	Waste Tracking Specialist II PSC Environmental Services, LLC Kent, WA			
	2002-2004	Accounting Clerk PSC Environmental Services, LLC Kent, WA			
	1999–2002	Waste Tracking Specialist Philip Services Corporation Kent, WA			

¹Employment history shown is limited to positions held that are/were directly related to waste management activities.
DOT regulations, OSHA waste sites / 8-hour rtificate, first aid/CPR, onse, hazard ogy, and Hazardous



June 4, 2021

Appendix A-5

Affiliates

Directors and Officers of Calrissian Holdings, LLC

Entity	FEIN	Directors / Managers and Officers	Date of Appointment
Harsco Corporation	23-1483991	Publicly Traded – HSC	
Harsco Clean Earth Holdings, LLC (DE) (FKA - Calrissian Holdings, LLC)	30-121470	 Russell Hochman, President Daniel King, Treasurer Jon S. Ploetz, Secretary Sole Member LLC – Sole Member is Harsco Corp. 	May 8, 2019
CEHI Acquisition, LLC (DE)	47-1568997	Directors: • Daniel King • Michael Kolinsky • Jon S. Ploetz	December 31, 2019
		 Daniel King, Treasurer Michael Kolinsky, President Jon S. Ploetz, Secretary 	December 31, 2019
Clean Earth Holdings, LLC (DE)	20-3546677	Managers: • Samuel Fenice • Michael Kolinsky • Jon S. Ploetz	December 31, 2019
		Officers: • Daniel King, Treasurer • Michael Kolinsky, President • Jon S. Ploetz, Secretary •	December 31, 2019
CEI Holding, LLC (DE)	47-0868929	Managers: Jon S. Ploetz Michael Kolinsky Samuel Fenice David Stanton	December 31, 2019
		Officers: • Daniel King, Treasurer • Michael Kolinsky, President • Jon S. Ploetz, Secretary	December 31, 2019

Entity	FEIN	Directors / Managers and Officers	
Clean Earth, LLC (DE) 334 S. Warminster Road, Hatboro, PA 19040	23-2650298	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020
Accelerated Remediation Kinetics, LLC ¹ (DE)	11-3694973	INACTIVE	
Advanced Remediation & Disposal Technologies of Delaware, LLC (DE)	58-2365565	INACTIVE	
Allied Environmental Group, LLC (DE)	23-2853816	INACTIVE	
Assessment & Remedial Design Technologies, Inc. ² (PA)	74-3083568	INACTIVE	
Carteret Asphalt Corporation ³ (DE)	22-3824173	INACTIVE	
Clean Earth of Carteret, LLC (DE) dba Clean Earth of Connecticut dba Phoenix Soil –A Clean Earth Company Operations: Carteret, NJ; Plainville, CT	65-0791457	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020
Clean Earth Dredging	23-2897350	Managers:	Sarah Kowalczyk
Technologies, LLC (DE) Headquarters: Hatboro, PA Operations: Jersey City, NJ; Kearny, NJ		 Sarah Kowalczyk Jeff Diaz David Stanton Officers: David Stanton –President Jeff Diaz – Vice President/Treasurer Sarah Kowalczyk - Secretary 	– 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020

¹ This entity was formed in 2002, and while it has never been dissolved it is inactive and has no assets or liabilities. ² This entity was incorporated in 2003, and while it has never been dissolved it is inactive and has no assets or liabilities.

³ This entity was incorporated in 1999, and while it has never been dissolved it is inactive and has no assets or liabilities.

Clean Earth Environmental	22-3187953	Directors:	Sarah Kowalczyk
Services, Inc. (DE)		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Clean Earth of Georgia, LLC	46-0574278	Managers:	Sarah Kowalczyk
(DE)		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		• Sarah Kowalczyk - Secretary	
Clean Earth of Greater	46-1457809	Managers:	Sarah Kowalczyk
Washington (DE), LLC dba		Sarah Kowalczyk	- 1/1/2021
Clean Earth Aggregates		Jeff Diaz	Jeff Diaz – 7/31/2020
Operations: Upper		David Stanton	David Stanton –
Marlboro, MD; Waldorf,		Officers:	4/3/2020
MD		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Clean Earth of Maryland,	52-1749937	Managers:	Sarah Kowalczyk
LLC (DE)		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Clean Earth of New Castle,	23-2650295	Managers:	Sarah Kowalczyk
LLC (DE)		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

Clean Earth of North	22-3632779	Directors:	Sarah Kowalczyk
Jersey, Inc. (NJ)		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth of	23-2677346	Managers:	Sarah Kowalczyk
Philadelphia, LLC (DE)		 Sarah Kowalczyk 	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth of Southeast	20-4755155	Managers:	Sarah Kowalczyk
Pennsylvania, LLC (DE)		 Sarah Kowalczyk 	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		 David Stanton 	David Stanton –
		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth of Southern	45-3760023	Managers:	Sarah Kowalczyk
Florida, LLC (DE)		 Sarah Kowalczyk 	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth of	45-2908171		
Williamsport, LLC (DE)	52 4044645	DISCONTINUED	
Clean Rock Properties, Ltd.	52-1841645	Directors:	Sarah Kowalczyk
(טואו)		Saran Kowalczyk	- 1/1/2021
		Jen Diaz	$\frac{1}{1000} = \frac{1}{31} = \frac{1}{2020}$
			1/3/2020
		Unicers:	-, J/ 2020
		David Stanton –President	
		 Jeli Didz – Viče Drosident / Tracsurar 	
		President/Treasurer	
	1	 Sarah Kowalczyk - Secretary 	

Clean Earth of West	20-2570596	DISCONTINUED	
AES Asset Acquisition Corporation dba Clean Earth of Calvert City dba Clean Earth of Morgantown dba AES Environmental, LLC dba American Transportation Solutions, LLC Headquarters: Seven Fields, PA Operations: Calvert City, KY; Morgantown, WV	47-2406435	Directors: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020
Clean Earth of Alabama, Inc.	81-2481324	Directors: Sarah Kowalczyk Jeff Diaz David Stanton Officers: David Stanton –President Jeff Diaz – Vice President/Treasurer Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020
Real Property Acquisition LLC (DE) <u>Sole Member</u> : Clean Earth, Inc.	81-3508937	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton – President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020
AERC Acquisition Corporation dba AERC Recycling Solutions, A Clean Earth Company; dba DART, A Clean Earth Company Operations: Allentown, PA; Richmond, VA; West Melbourne, FL; Hayward, CA; Modesto, CA; Charlotte, NC	81-5137592	Directors: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/3/2020

⁴ This entity was incorporated in 2005, and while it has never been dissolved it is inactive and has no assets or liabilities.

MKC Acquisition	82-4571766	Directors:	Sarah Kowalczyk
Corporation		Sarah Kowalczyk	- 1/1/2021
dba MKC Enterprises, A		Jeff Diaz	Jeff Diaz – 7/31/2020
Clean Earth Company		David Stanton	David Stanton –
Operations: Doraville, GA		Officers:	4/3/2020
		David Stanton – President	
		leff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Environmental Soil	02 0444640	Directors:	Sarah Kowalczyk
Management Inc	02-0444049	Sarah Kowalczyk	= 1/1/2021
Management, mc.			= 1/1/2021
		Jeli Diaz	David Stanton
		David Stanton	
		Officers:	4/3/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Environmental Soil	14-1784837	Managers:	Sarah Kowalczyk
Management of		 Sarah Kowalczyk 	- 1/1/2021
New York, LLC		Jeff Diaz	Jeff Diaz – 7/31/2020
dba ESMI, A Clean Earth		David Stanton	David Stanton –
Company		Officers:	4/3/2020
Fort Edward, NY		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth Mobile	83-2866413	Managers:	Sarah Kowalczyk
Services. LLC		Sarah Kowalczyk	- 1/1/2021
Operations: Eglin AFB, FI		leff Diaz	leff Diaz $- 7/31/2020$
		David Stanton	David Stanton –
		Officers	4/3/2020
		David Stanton Brosident	1,0,2020
		David Stanton – President	
		 Jeli Diaz – vice Drosident/Tropsurer 	
		President/Treasurer	
Clean Fauth of Michigan	02 4400267	Sarah Kowaiczyk - Secretary	Canala Kaunalari di
Clean Earth of Michigan,	83-1190367	Managers:	
		Saran Kowalczyk	= 1/1/2021
dba DART, Inc., A Clean		Jett Diaz	Jen Diaz – 7/31/2020
Earth Company		David Stanton	David Stanton –
Operations: Detroit, MI		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

Gardner Road Oil, LLC	83-1584703	Managers:	Sarah Kowalczyk
Dba Clean Earth of		 Sarah Kowalczyk 	- 1/1/2021
Brandywine		Jeff Diaz	Jeff Diaz – 7/31/2020
Operations: Brandywine,		David Stanton	David Stanton –
MD		Officers:	4/3/2020
		 David Stanton – President 	
		 Jeff Diaz – Vice 	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

Entity	FEIN	Directors / Managers and Officers	Date of
			Appointment
ESOL TOPCO LLC	85-0537415	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/6/2020
Solutions, Inc. FKA Stericycle Environmental Solutions, FKA PSC Holdings, INC.	20-2830012	 Sarah Kowalczyk Jeff Diaz David Stanton Officers: David Stanton –President Jeff Diaz – Vice President/Treasurer Sarah Kowalczyk - Secretary 	– 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/6/2020
PSC Environmental Services, LLC	26-2133522	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/6/2020
Clean Earth Specialty Waste Solutions, Inc. FKA Stericycle Specialty Waste Solutions, Inc.	26-0811463	Directors: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/6/2020
Luntz Acquisition LLC	26-2246301	Managers: • Sarah Kowalczyk • Jeff Diaz • David Stanton Officers: • David Stanton –President • Jeff Diaz – Vice President/Treasurer • Sarah Kowalczyk - Secretary	Sarah Kowalczyk – 1/1/2021 Jeff Diaz – 7/31/2020 David Stanton – 4/6/2020

21 st Century	26-2275838	Managers:	Sarah Kowalczyk
Environmental		Sarah Kowalczyk	- 1/1/2021
Management of NV LLC		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
21 st Century	26-2275807	Managers:	Sarah Kowalczyk
Environmental		Sarah Kowalczyk	- 1/1/2021
Management of RI LLC		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Chemical Pollution Control	26-2247675	Managers:	Sarah Kowalczyk
LLC of NY		 Sarah Kowalczyk 	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Chemical Pollution Control		Managers:	Sarah Kowalczyk
LLC of FL		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Northland Environmental	262247610	Managers:	Sarah Kowalczyk
LLC		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

General Environmental	46-1693717	Managers:	Sarah Kowalczyk
Management of Rancho		Sarah Kowalczyk	- 1/1/2021
Cordova LLC		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Burlington Environmental	26-2182042	Managers:	Sarah Kowalczyk
LLC		 Sarah Kowalczyk 	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Solvent Recovery LLC	26-2161885	Managers:	Sarah Kowalczyk
		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
PSC Recovery Systems LLC	26-2246178	Managers:	Sarah Kowalczyk
		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Republic Environmental	26-2277300	Managers:	Sarah Kowalczyk
Systems (PA) LLC		Sarah Kowalczyk	, - 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

Republic Environmental	26-2277543	Managers:	Sarah Kowalczyk
Systems (Transportation		Sarah Kowalczyk	- 1/1/2021
Group) LLC		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Republic Environmental	22-2601518	Directors:	Sarah Kowalczyk
Recycling (NJ) Inc.		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		• Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Nortru LLC	26-2033525	Managers:	Sarah Kowalczyk
		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Allworth LLC	26-2161392	Managers:	Sarah Kowalczyk
		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Rho-Chem LLC	26-2181807	Managers:	Sarah Kowalczyk
		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	

Chemical Reclamation	26-2275955	Managers:	Sarah Kowalczyk
Services, LLC		Sarah Kowalczyk	- 1/1/2021
		Jeff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		Sarah Kowalczyk - Secretary	
Philip Reclamation	26-2276941	Managers:	Sarah Kowalczyk
Services Houston LLC		Sarah Kowalczyk	- 1/1/2021
		leff Diaz	Jeff Diaz – 7/31/2020
		David Stanton	David Stanton –
		Officers:	4/6/2020
		David Stanton – President	, -,
		 Jeff Diaz – Vice 	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	
Clean Earth of Duarta Rica	66 0044770	Managors:	Sarah Kowalezyk
	00-0944770	Widildgels.	= 1/1/2021
		Sarah Kowalczyk	= 1/1/2021
		Jeli Diaz	Jeli Diaz -0/20/2020
		David Stanton	
		Officers:	4/0/2020
		David Stanton – President	
		Jeff Diaz – Vice	
		President/Treasurer	
		 Sarah Kowalczyk - Secretary 	



June 4, 2021

Appendix B-1

Kent Facility PCB Containment Calculations

Kent TSCA DW Area Secondary Containment Calculations		
Maximum Number of Drums (55-gal)	180	#
Drums Quantity on Bottom of stack	94	#
Drum Diameter	22	inches
Containment Area Dimensions	Containment	:
length	42.25	feet
Width	23.5	feet
Depth	0.5	feet
Containment Area Calculations		
Area in Containment	993	Square foot
Total Containment Area Valume within Curb	496	Cubic foot
	3,713	Gallons
Displacement Calculations		
Volume of North Ramp	180	Gallons
Volume Displaced by Drums	928	Gallons
Total Available Containment Volume	2,606	Gallons
(Containment volume within curb)-(Volume North Ramp)-(Volume Drum	Displacement)	
Required Containment Volume (25% of maximum capacity)	2,475	Gallons
Total available volume	e is greater than r	equired volume
2,00		2,7/3



June 4, 2021

Appendix C-1

Closed Solid Waste Management Units



Resolution of SWMUs and AOCs for Corrective Action

Summary of Corrective Action Timeline

The RCRA Facility Assessment (RFA) and the Remedial Investigation (RI) report identified Solid Waste Management Units (SWMUs) and Areas of Concern (AOC) to be included in the RI. The RI summarized SWMU and AOC status and was completed in December 17, 2007. Additional updates to the status of the SWMUs and AOCs were provided during RCRA Part B permit renewal with the Washington Department of Ecology (Ecology) and approved as Attachment A and B of the RCRA Part B Permit on June 25, 2012. The Final Feasibility Study (FS) was submitted on June 21, 2017. Ecology approved the RI and Feasibility Study (FS) and held a public comment period for the RI and FS from October 16, 2017 to November 14, 2017, with final approval on March 20, 2018.

A draft Corrective Action Plan (dCAP) was submitted to Ecology in 2018 and was revised and resubmitted on October 30, 2020. Ecology plans to post the dCAP for public comment in 2021. The dCAP describes the cleanup action selected by Ecology which includes eventual contaminated soil remediation, maintenance of surface cover over the remaining source soils, and monitored natural attenuation (MNA) to address affected site soil and groundwater.

MNA monitors soil and groundwater contamination under its natural conditions to ensure that it is breaking down at an appropriate rate. The COCs in soil are not a threat to workers on site and the COC concentrations in groundwater are very low and are unlikely to reach potential receptors. Contamination remaining in soil for the majority of the active areas of the Kent Facility is to be evaluated and remediated at site closure, as maintenance on the tanks/structures is needed, and/or as redevelopment activities allow. The areas to be assessed for further remediation at site closure are shown on Figure 5 and include approximately 9,000 square feet within the central area of AOC-2 under the tank farm (Source Area 1) and two smaller source areas—an approximately 1,000 square foot area in the northwest corner of AOC-2 (Source Area 2) near sample location S-1, and an approximately 500 square foot area on the east side of the Treatment Stabilization Building in AOC-3 (Source Area 3).

A brief summary of up to date remedial actions is provided in the table below with SWMU locations shown on the Attached Figure C-1. Relevant pieces of the documents noted above are also provided in this Appendix:

- RI-Appendix 8C Draft Remedial Investigation Report Summary
- 2012 RCRA Part B Permit- Attachment A and B
- dCAP Figure 5- Proposed Cleanup Action

Table C-1 AOC and SWMU Summary

	AOC 1 – Former USTs			
	SWMUs	Remedial Action Summary	Current Area Use/Status	
56	Former USTs (Three tanks removed, one was a 5000 gallon tank. Tanks held diesel, leaded gasoline, and unleaded gasoline.)	No Further Action (RFI 2004), Monitored Natural Attenuation (dCAP 2020).	Active MRW operations, storage and secondary containment.	

AOC 2 – Tank Farm		
SWMUs	Remedial Action Summary	Current Area Use/Status
1 Bulk Receiving Area	No Further Action (RFI 2004)	Active MRW operations, PRM
		staging area.
13 Former Roto Strainer	No Further Action (RFI 2004)	Active, non-regulated tank farm
Accumulation Area		operations.
13A Roto Strainer Screen	No Further Action (RFI 2004)	Active MRW operations, PRM
	Removed.	staging area.
15 Former Solidification A	rea Characterization complete (RI	Active MRW operations, PRM
	2007), removed, Groundwater	staging area.
	Monitoring ongoing (dCAP	
	2020).	
15A Solidification and Bulk	Characterization complete (RI	Active MRW operations, PRM
Receiving Area Sump	2007), Groundwater Monitoring	staging area.
	ongoing (dCAP 2020).	
16 T5302 ('J'6B) Sludge	This unit was closed and is no	Active, new tank for non-
Treatment Tank ¹	longer treating dangerous	regulated tank farm operations.
	waste. Characterization	
	complete (RI 2007),	
	Groundwater Monitoring	
	ongoing (dCAP 2020).	
17 T-5301 (T6A) Sludge	This unit was closed and is no	Active, new tank for non-
Treatment Tank ⁺	longer treating dangerous	regulated tank farm operations.
	waste. Characterization	
	complete (RI 2007),	
	Groundwater Monitoring	
	ongoing (dCAP 2020).	
18 I-5401 (I-2) Wastewate	er I his unit was closed and is no	Active, new tank for non-
Storage Tank	longer treating dangerous	regulated tank farm operations.
	waste. Characterization	
	complete (RI 2007),	
	Groundwater Monitoring	
	ongoing (dCAP 2020).	

	AOC 2 – Tank Farm			
	SWMUs	Remedial Action Summary	Current Area Use/Status	
19	T-5402 (T-3A) Wastewater Storage Tank ¹	This unit was closed and is no longer treating dangerous waste. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations.	
20	T-5101 (T-1) Primary Separator Treatment/Storage Tank ¹	This unit was closed and is no longer treating dangerous waste. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations.	
21	T-5102 (T-10) Batch Wastewater Treatment/Storage ¹	This tank was removed, and the unit was closed. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations (Tanks F1 and S1).	
22	T-5201 (T-8) Oily Waste Treatment/Storage Tank ¹	This tank was removed, and the unit was closed. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, new tank for non- regulated tank farm operations.	
23	T-5202 (T-9A) Oily Waste Treatment/Storage Tank ¹	This tank was removed, and the unit was closed. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, now operating a new tank (9B) for DW regulated tank farm operations.	
24	T-5203 (T-9B, moved to location of T-9A) Oily Waste Treatment/Storage Tank	This tank was removed, and the unit was closed. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, now operating new tanks (9A and 9C) for DW regulated tank farm operations.	
25	F5100 Air Scrubber	No Further Action (RFI 2004), removed.	Active, non-regulated tank farm operations.	
26	H-5100 Roto Strainer Screen	No Further Action (RFI 2004), removed.	Active, non-regulated tank farm operations.	
29	T-5405 Electro-Flotation Basin Treatment Tank (RCRA exempt)	No record of leaks or releases (RI 2007), removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated controls area.	
30	T-5407 Coagulation cell Electroclear (ECC) Waste Treatment Tank	No record of leaks or releases (RI 2007), removed, Characterization complete (RI	Active, non-regulated controls area.	

	AOC 2 – Tank Farm			
	SWMUs Remedial Action Summary Current Area Use/Statu			
		2007), Groundwater Monitoring ongoing (dCAP 2020).		
31	T-5408 Electro-Flotation Basin Wastewater Treatment/Storage Tank (EFB)	No record of leaks or releases (RI 2007), removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated controls area.	
36	Former T5406 (T-7) Recycled Water Storage Tank	No record of leaks or releases (RI 2007), removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations.	
37	Former TEB Pretreatment Tank (Baker Tank)	No Further Action (RFI 2004), removed.	Active, non-regulated tank farm operations.	
38	Former TWB Pretreatment Tank (Baker Tank)	No Further Action (RFI 2004), removed.	Active, non-regulated tank farm operations.	
39	Former Reactor Tank (T-21)	Formerly located under Bulk Receiving Area west of Tank Farm. Tank was removed. Groundwater Monitoring ongoing (dCAP 2020).	Active MRW operations, PRM staging area.	
42	Former Storage Tank (T-22)	Formerly located west of the former Solidification Area. Tank was removed. No Further Action (RFI 2004), removed.	Active MRW operations, PRM staging area.	
43	Sump	Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations.	
44	Sump	Groundwater Monitoring ongoing (dCAP 2020).	Active, non-regulated tank farm operations.	
45	Sump	Groundwater Monitoring ongoing (dCAP 2020).	Active, DW regulated tank farm operations.	
46	Former T504	Formerly under Bulk Receiving Area west of Tank Farm. Tank was removed. Groundwater Monitoring ongoing (dCAP 2020).	Active MRW operations, PRM staging area.	
47	Former T537	Formerly under Bulk Receiving Area west of Tank Farm. Tank was removed. Groundwater Monitoring ongoing (dCAP 2020).	Active MRW operations, PRM staging area.	
54	T-5603 Mercury Treatment Tank ¹	This unit was closed and the tank was removed. No Further Action (RFI 2004), removed.	Active, non-regulated tank farm operations.	

	AOC 3 – Stabilization Area			
SWMUs Remedial Action Summary Curr			Current Area Use/Status	
12	Centrifuge Drop Box Satellite Accumulation Area	No Further Action (RFI 2004), removed.	Active, MRW solidification staging area.	
12A	Former Moderate Risk Waste (MRW) Sump	This sump was formerly the containment for a truck scale which was removed and converted to MRW handling including liquid solid waste. This waste process has been moved to Tanks T-5305 and T-5306. Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW solidification staging area.	
14	Stabilization Area	No record of leaks or releases (RI 2007), Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW operations area. It includes Tanks T-5305 (SWMU 32) and T-5306 (SWMU 40), and all related sumps	
27	T-5403 Electro-Flotation Basin Treatment Tank (RCRA exempt)	No record of leaks or releases (RI 2007)), removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW solidification process area.	
28	T-5404 Electro-Flotation Basin Treatment Tank (RCRA exempt)	No record of leaks or releases (RI 2007), removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW solidification process area.	
32	T-5305 Stabilization Building Receiving Treatment Pit	Removed, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, new tank for MRW operations.	
33	C5301 Centrifuge	No Further Action (RFI 2004) Removed	Active, MRW stabilization operations.	
34	C5301 Centrifuge Conveyor	No Further Action (RFI 2004) Removed	Active, MRW stabilization operations.	
40	T-5306 Stabilization Receiving Treatment Pit	Above-ground portion closed Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW stabilization operations.	
40A	Former Drum/Truck Washing Area	Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW stabilization operations.	

AOC 3 – Stabilization Area		
SWMUs Remedial Action Summary Current		Current Area Use/Status
48–51 Old Centrifuge	Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active, MRW stabilization operations.

	AOC 4 – Stormwater Drainage System		
	SWMUs	Remedial Action Summary	Current Area Use/Status
35	Stormwater Drainage System	Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Active. Includes the ditch at the northern property boundary. Oil/Water Separator by MW-16 (35a) and Sumps (35b–i).
35B	Stormwater Drainage Ditch	Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	No stormwater from the Kent Facility flows to this ditch. Offsite stormwater flows through it.

	AOC 5 – Process and Storage Areas		
	SWMUs	Remedial Action Summary	Current Area Use/Status
2	Indoor Flammable Waste Storage Area (PCB Facility)	No Further Action (RFI 2004)	Active, TSCA area
3	Indoor Lab Pack & Household DW Storage Area	No Further Action (RFI 2004)	Active, MRW operations.
3A	Indoor Lab Pack & Household DW Storage Area SUMP	No Further Action (RFI 2004)	Active, MRW operations.
4	Compactor Area	No Further Action (RFI 2004) Not active, removed.	Current activity- MRW cylinder depressurization.
5	Aerosol Can	No Further Action (RFI 2004)	Current activity- MRW cylinder
	Depressurization Area	Not active, removed.	depressurization.
5A	Former Can crush canopy	No Further Action (RFI 2004)	Current activity- MRW traffic
	area in SW Corner of Facility	Not active, removed.	area.
5B	Former Can crush canopy area located between MW-	No Further Action (RFI 2004) Not active, removed.	Current activity- MRW empty drum staging area.
	Storage Area		
5C	Can crusher area in south	No Further Action (RFI 2004)	Current activity- MRW traffic
	check-in area	Not active, removed.	area.
5D	Can crusher area in new	No Further Action (RFI 2004)	Current activity- MRW empty
	North Staging Area	Not active, removed.	drum staging area.

	AOC 5 – Process and Storage Areas		
	SWMUs	Remedial Action Summary	Current Area Use/Status
6	North Container Storage Area	No Further Action (RFI 2004)	Active, MRW container storage.
6A	North Container Storage Area SUMP	No Further Action (RFI 2004)	Active, MRW container storage.
7	South Container Storage Area	No Further Action (RFI 2004)	Active, MRW container storage.
7A	South Container Storage Area SUMP	No Further Action (RFI 2004)	Active, MRW container storage.
8	South Staging Area	No Further Action (RFI 2004)	Active, MRW staging.
9	North Staging Area	No Further Action (RFI 2004)	Active, MRW traffic.
9A	North Staging Area Located North of Warehouse	No Further Action (RFI 2004)	Active, MRW staging.
10	Household hazardous waste dumpster	No Further Action (RFI 2004)	Active, MRW traffic area.
11	Solid Waste Dumpster	No Further Action (RFI 2004)	Active, MRW traffic area.
40A	Former Drum/Truck Washing Area	This process discontinued, Characterization complete (RI 2007), Groundwater Monitoring ongoing (dCAP 2020).	Current activity- MRW traffic area.
41	Former Container Management Area	This process discontinued, No Further Action (RFI 2004)	Current activity- MRW traffic area.
52	South Container Loading/Unloading Area	No Further Action (RFI 2004)	Active, MRW traffic area.
52A	South Unloading Area SUMP	Same area as 52, No Further Action (RFI 2004)	Active, MRW traffic area.
53	North Container Loading/Unloading Area	No Further Action (RFI 2004)	Active, MRW storage.
55	Drum Dock, West side of facility	No Further Action (RFI 2004)	Active, South Dock for 24 hour inbound/outbound.

¹ These tanks and their secondary containment have been certified closed. At the time of closure the tanks and secondary containment were decontaminated and either removed or placed back in service to treat only non-dangerous waste liquids. These tanks are **not covered by this permit and must treat non-dangerous wastes only**. The investigation and cleanup of contaminated soils underneath the tanks will take place at the time that the units are no longer in active service. The closure will take place according to the closure plan, Section I of the Permit Application incorporated by reference into this permit (see Part 1), and will comply with the regulations for closure, WAC I 73-303-806(4)(a)(xiii), -610.

References

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Appendix C-1

2020 dCAP Figure 5



Appendix C-1

2012 RCRA Part B Permit- Attachment A and B



Attachment B Resolution of SWMUs and AOCs for Corrective Action

Red Highlight - RCRA Facility Assessment High Priority¹

Orange Highlight – RCRA Facility Assessment Medium Priority¹

Red Text – Tank certified closed and placed back in service as part of the Wastewater Treatment Plant

SWMUs Incorporated Into AOCs 1-5

Cleanup of soil and groundwater at the AOC to meet the Facility cleanup standards addresses cleanup of the incorporated SWMUs [Unit may also be included in Facility Closure Plan]

AOC 1 – Former USTs		
SWI	MUs	STATUS
56	Former USTs (Three tanks removed, one was a 5000 gallon tank. Tanks held diesel, leaded gasoline, and unleaded gasoline)	Tanks and soil removed in 1991, soil sampling, and subsequent groundwater monitoring shows NFA is warranted. Still included in groundwater monitoring.

AOC 2 – Tank Farm			
SWMUs		STATUS	
1 Bulk Receivin	ng Area	Active	
13 Former Roto	Strainer Accumulation Area	Not Active	
13A Roto Strainer	Screen	Active – part of wastewater treatment (WWT) system	
15 Former Solidi	fication Area	Removed. Included in RI investigation.	
15A Solidification	and Bulk Receiving Area Sump	Active. Included in RI Investigation	
16 T5302 (J6B)	Sludge Treatment Tank ²	This unit was closed and is no longer treating dangerous waste. The tank is still in use in the wastewater treatment area for non-dangerous waste only.	

RCRA Facility Assessment, Preliminary Review/VSI Report, Burlington Environmental, Inc., Kent

Washington; SAIC (Science Applications International Corporation), prepared for EPA Region X, January 1996. ² These tanks and their secondary containment have been certified closed. At the time of closure the tanks and secondary containment were decontaminated and either removed or placed back in service to treat only nondangerous waste liquids. These tanks are **not covered by this permit and must treat non-dangerous wastes only**. The investigation and cleanup of contaminated soils underneath the tanks will take place at the time that the units are no longer in active service. The closure will take place according to the closure plan, Section I of the Permit Application incorporated by reference into this permit (see Part 1), and will comply with the regulations for closure, WAC 173-303-806(4)(a)(xiii), -610.

AO	AOC 2 – Tank Farm		
Recolution of SWMUs and AOC's for Corrective Actions			
SWMUs		STATUS	
	The second se	THE MINISTER A VICTORY A BROWN DURING THE	
1.11	Acquisite Provintes?	Memory Alline PS March South Constant	
17	T-5301 (T6A) Sludge Treatment Tank ²	This unit was closed and is no longer treating dangerous waste. The tank is still in use in the wastewater treatment area for non-dangerous waste only.	
18	T-5401 (T-2) Wastewater Storage Tank'	This unit was closed and is no longer treating	
	The state of the second s	dangerous waste. The tank is still in use in the wastewater treatment area for non-dangerous waste only.	
19	T-5402 (T-3A) Wastewater Storage Tank ²	Hole in tank discovered at closure. The tank was removed. Subsequent sampling of the sub-base material (SBM) below the tank did not find evidence of a release	
20	T-5101 (T-1) Primary Separator Treatment/Storage Tank ²	This unit was closed and is no longer treating dangerous waste. The tank is still in use in the wastewater treatment area for non-dangerous waste only.	
21	T-5102 (T-10) Batch Wastewater Treatment/Storage ²	This tank was removed and the unit is closed. A hole was discovered during an inspection, and subsequent sampling of the SBM did not find evidence of a release.	
22	T-5201 (T-8) Oily Waste Treatment/Storage Tank ²	This unit was closed and is no longer treating dangerous waste. The tank is still in use in the wastewater treatment area for non-dangerous waste- only.	
23	T-5202 (T-9A) Oily Waste Treatment/Storage Tank ²	This tank was closed and removed.	
24	T-5203 (T-9B, moved to location of T-9A) Oily Waste Treatment/Storage Tank ²	This tank was closed and moved to the former location of T-9A. The SBM was sampled and no evidence of a release was found. This tank is now DW Tank T-9B.	
25	F5100 Air Scrubber	Removed	
26	H-5100 Roto Strainer Screen	Active – part of wastewater treatment (WWT) system	
29	T-5405 (T-5) Electro-Flotation Basin Treatment Tank	Removed	
30	T-5407 Coagulation cell Electroclear (ECC) Wastewater Treatment Tank	Removed	
31	T-5408 Electro-Flotation Basin Wastewater Treatment/Storage Tank (EFB)	Removed	
36	Former T5406 (T-7) Recycled Water Storage Tank	Removed	
37	Former TEB Pretreatment Tank (Baker Tank)	Removed	
38	Former TWB Pretreatment Tank (Baker Tank)	Removed	
39	Former Reactor Tank (T-21)	Formerly located under Bulk Receiving Area west of Tank Farm.	

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AOC 2 – Tank Farm		
SW	MUs	STATUS
F		Tank was removed.
42	Former Storage Tank (T-22)	Formerly located west of the former Solidification Area. Tank was removed.
43	Sump	Active. Located in Tank Farm Area
44	Sump	Active. Located in Tank Farm Area
45	Sump	Active. Located in Tank Farm Area
46	Former T504	Formerly under Bulk Receiving Area west of Tank Farm. Tank was removed
47	Former T537	Formerly under Bulk Receiving Area west of Tank Farm. Tank was removed
54	T-5603 Mercury Treatment Tank ²	This unit was closed and the tank was removed.

AOC 3 – Stabilization Area	2. Indoor Instructor Wasterbridge Alex.
SWMUs	STATUS
12 Centrifuge Drop Box Satellite Accumulation Area	Not Active
12A Former Moderate Risk Waste (MRW) Sump	Not Active. This sump was formerly the containment for a truck scale which was removed and converted to MRW handling including liquid solid waste. This waste process has been moved to Tanks T-5305 and T-5306. This area is being closed.
14 Stabilization Area	Active. The stabilization area includes the MRW Area, the area under cover, and the stabilization pad. It includes Tanks T-5305 (SWMU 32) and T- 5306 (SWMU 40), and all related sumps
27 T-5403 (T4A) Wastewater Treatment Tank	Removed
28 T-5404 (T-4B) Electro-Flotation Basin Treatment Tank	Removed
32 T-5305 Stabilization Receiving Treatment Pit	Above-ground portion closed and converted to MRW use
33 C-5301 Centrifuge	Removed
34 C-5301 Centrifuge Conveyor	Removed
40 T-5306 Stabilization Receiving Treatment Pit	Above-ground portion closed and converted to MRW use
40A Former Drum/Truck Washing Area	Not Active.
48-51 Old Centrifuge	Removed. Formerly located by T-22 (SWMU 42) and Solidification Area (15)

AOC 4 – Stormwater Drainage System		
SWMUs	STATUS	
35 Stormwater Drainage System	Active. Includes the ditch at the northern property boundary, Oil/Water Separator by MW-16 (35a) and Sumps (35b – i).	
35B Stormwater Drainage Ditch	Active. The stormwater drainage system includes the ditch at the northern property boundary.	

AOC	5 – Process and Storage Areas	
NO 1	the second s	
SWMUs		STATUS
2	Indoor Flammable Waste Storage Area (PCB Facility)	Active
3	Indoor Lab Pack & Household DW Storage Area	Active
3A	Indoor Lab Pack & Household DW Storage Area SUMP	Active
4	Compactor Area	Active
5	Aerosol Can Depressurization Area	Not Active
5A	Former Can crush canopy area in SW Corner of Facility	Not Active
5B	Former Can crush canopy area located between MW-15 and North Container Storage Area	Not Active
5C	Can crusher area in south check-in area	Active
5D	Can crusher area in new North Staging Area	Active
6	North Container Storage Area	Active
6A	North Container Storage Area SUMP	Active
7	South Container Storage Area	Active.
7A	South Container Storage Area SUMP	Active
8	South Staging Area	Active
9	North Staging Area	Active

AOC 5 – Process and Storage Areas		
SWMUs		STATUS
N. S. W.		
9A	North Staging Area Located North of Warehouse	Active
10	Household hazardous waste dumpster	Active
11	Solid Waste Dumpster	Active
40A	Former Drum/Truck Washing Area	Active
41	Former Container Management Area	Not Active
52	South Container Loading/Unloading Area	Active
52A	South Unloading Area SUMP	Active
53	North Container Loading/Unloading Area	Active
55	Drum Dock, West side of facility	Active

Appendix C-1

2007 RI-Appendix 8C Draft Remedial Investigation Report Summary


APPENDIX 8C Permit Attachment CC



REVISION OF PART B PERMIT ATTACHMENT C

Section VII.C.11.b.2) of the Kent Facility Part B Permit requires an update of Attachment C and the accompanying notes and figures. This appendix meets this permit requirement.

Many of the issues raised by Ecology in Attachment C are more related to operational activities at the facility than corrective action activities. PSC has reviewed all corrective action, regulatory affairs, and operations files and interviewed senior operations managers in attempt to resolve questions raised in Attachment C. However, in some cases the specific information requested by Ecology was not available.

A revised summary of all the Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) is provided in Table 1. Upon approval by Ecology, this table will become Attachment CC of the permit and will replace the current Attachment C. Table 1 provides a description of the SWMUs, a revision of the status of the SWMUs and any further action that might be necessary at each SWMU. Table 2 provides information to address specific comments and questions posed by Ecology in the footnotes of the original permit Attachment C. Figures 1 and 2 support the information on Tables 1 and 2.

As discussed in the main text of this RI Report, PSC has not conducted specific RI sampling and analysis for each of the SWMUs identified as requiring further action (FAR) in Attachment C of the Permit. Instead, many of the SWMUs have been combined into Areas of Concern that were subsequently characterized in the RI. As a result, in cases where an AOC has been sufficiently characterized to propose NFA status, the NFA status is applicable to all of the SWMUs contained within that AOC.

Areas of Concern

As described in Chapter 2, the (SWMUs) and (AOCs) for the facility were identified during two RCRA Facility Assessments (RFAs) conducted in 1988 (TetraTech, 1988) and 1996 (SAIC, 1996). During permit negotiations between PSC and Ecology, a majority of the SWMUs were consolidated into four AOCs as follows:

- AOC 1–Former USTs
- AOC 2–Tank Farm
- AOC 3–Stabilization Area
- AOC 4–Storm Water Drainage System

The locations of the SWMUs and AOCs are presented in Figure 1.

AOC No. 1 consists of three former USTs (16,000-gallon gasoline, 10,000-gallon diesel, and 5,000-gallon gasoline), which were located between the current north and south container storage pads and were removed.



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AOC No. 2, the tank farm, is located in the northeastern corner of the property and consists of aboveground storage tank (AST) units containing petroleum products, various solvents, caustics, and treatment operations. The ASTs are located within containment structures.

AOC No. 3, the stabilization area, is located south of the tank farm and consists of a concretelined pit. The area also includes tanks T-5305, T-5306, and T-5307.

AOC No. 4 includes the site's storm water drainage system, the associated catch basins and sumps, underground piping, and the formerly exposed ditch on the north side of the facility. In addition, the process and storage area includes such as the north and south container storage pads, the north container loading/unloading pad, the process containment building, the check-in area, and the area between AOC 3 and the north container loading/unloading pad where various activities and processes have occurred.

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BEI, 1994. Letter from Nancy Sanders, BEI to Galen Tritt, Ecology. April 28, 1994.

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BEI, 1996. Unit Closure of Tanks T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603. May 17, 1996.

BEI, 1997. Letter from Mark Warner, BEI to Galen Tritt, Ecology, January 10, 1997. (Final documentation certifying clean closure of T-10, T-3, T-9A, T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603.)



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BEI, 1999. Letter from Carolyn Mayer, BEI to Galen Tritt, Ecology. January 25, 1995. (Re: Discovery of Piping During Excavation of New Staging Area).

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Ecology & EPA, 1998. Permit for the Storage and Treatment of Dangerous Waste. August 29, 1998.

SAIC, 1996. RCRA Facility Assessment, Preliminary Review/VSI Report, Burlington Environmental Inc., Kent, Washington. January 1996.

USEPA, 1988. Final Report, RCRA Facility Assessment, Crosby and Overton, Inc., Kent, WA. July 15, 1988.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying SWMU	AOC	SWMU in 1998	Status in 2004	
1	Bulk Receiving Area		2, 3		NFA	NFA	
2	Indoor Flammable Waste Storage Area (PCB Facility)		1, 2, 3		NFA	NFA	
3	Indoor Lab Pack & Household Hazardous Waste Storage Area		2, 3		NFA	NFA	
4	Compactor Area	Paint Storage & Consolidation Area	2, 3		FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from paint storage and consolidation areas. Available soil groundwater data do not indicate a release from this SWMU.
5	Aerosol Can Depressurization Area		2, 3		NFA	NFA	
5A	Former Can Crusher Canopy Area in SW Corner of Facility				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from former can crusher canopy area. Available soil groundwater data do not indicate a release from this SWMU.
5B	Former can crush canopy area located between MW-15 and North Container Storage Area				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from former can crusher area. Available soil groundwater data do not indicate a release from this SWMU.
5C	Can crusher area in south check-in area				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from former can crusher area. Available soil groundwater data do not indicate a release from this SWMU.
5D	Can Crusher Area in New North Staging Area				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from can crusher area. Available soil groundwater data do not indicate a release from this SWMU.
6	North Container Storage Area		2, 3		NFA	NFA	
6A	North Container Storage Area Sump				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from north container storage area sump. Available soil groundwater data do not indicate a release from this SWMU.
7	South Container Storage Area		2, 3		NFA	NFA	
7A	South Container Storage Area Sump				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from south container storage area sump. Available soil groundwater data do not indicate a release from this SWMU.
8	South staging area		2, 3		FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from south staging area. Available soil groundwater data do not indicate a release from this SWMU.
9	North staging area		2, 3		FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from north staging area. Available soil groundwater data do not indicate a release from this SWMU.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying SWMU	AOC	SWMU in 1998	Status in 2004	
9A	New North Staging Area (located north of warehouse)				FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from north staging area. Available soil groundwater data do not indicate a release from this SWMU.
10	Household hazardous waste dumpster		2, 3		NFA	NFA	
11	Solid waste dumpster		2, 3		NFA	NFA	
12	Centrifuge Drop Box Satellite Accumulation Area		2, 3		NFA	NFA	
13	Roto Strainer Accumulation Area		2, 3	2	FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from former roto strainer area.
13A	Roto Strainer Screen	SWMU 26		2	FAR	NFA	This equipment is part of the roto strainer in the WWT system and has been in place since the inception of the tank farm. No recorded releases resulting in soil and groundwater contamination occurred from roto strainer unit.
14	Stabilization Area		1, 2, 3	3	Current	FAR	There are no records of releases to soil and groundwater in the stabilization area. The current design of this area includes metal double-walled containment tanks over concrete, which would limit any potential future release to the soil or groundwater. Soil and groundwater data collected in the Stabilization Area indicate that there have been minimal impacts to soil (only copper is detected above CLs and background concentrations) and there are no apparent impacts to groundwater. Characterization of contamination in this area is complete, however, PSC intends to continue routine groundwater monitoring in this area.
15	Solidification Area		1, 2, 3	3	Current	FAR	Soil and groundwater samples were collected in and around the solidification area to determine whether releases to the environment occurred due to operations. PSC collected soil/groundwater samples near this sump during RI, as explained in Chapter 6. Data from well MW- 120-I1, show vinyl chloride and TCE have been detected in groundwater at this well at concentrations just slightly exceeding CLs. Data indicate that the concentrations of these chemicals do not appear to be increasing and the extent of chlorinated ethene contamination appears to be limited to the area near MW-120-I1 in the intermediate aquifer. In addition, the data suggests that biodegradation is limiting the lateral and vertical migration of chlorinated ethenes in groundwater at the site. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying	AOC	SWMU in 1998	Status in 2004	
			SWMU				
15A	Solidification Sump		1, 2, 3	3	FAR	FAR	Soil and groundwater samples were collected in and around the sump in the solidification area to determine whether releases to the environment occurred due to operations. PSC collected soil/groundwater samples near this sump during RI, as explained in Chapter 6. Data from well MW-120-11, show vinyl chloride and TCE have been detected in groundwater at this well at concentrations just slightly exceeding CLs. Data indicate that the concentrations of these chemicals do not appear to be increasing and the extent of chlorinated ethene contamination appears to be limited to the area near MW- 120-11 in the intermediate aquifer. In addition, the data suggests that biodegradation is limiting the lateral and vertical migration of chlorinated ethenes in groundwater at the site. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
16	T-5302 Sludge Treatment Tank	T-6B	1, 2, 3	2	Current	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
17	T-5301 Sludge Treatment Tank	T-6A	1, 2, 3	2	Current	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
18	T-5401 Wastewater Storage Tank	T-2	1, 2, 3	2	Current	FAR	This tank was certified closed under RCRA requirements and is now part of the Permit-by-Rule WWT system. No leaks or tank failures were found during closure inspections or otherwise. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying SWMU	AOC	SWMU in 1998	Status in 2004	
19	T-5402 Wastewater Storage Tank	Т-ЗА	1, 2, 3	2	Current	FAR	Tank underwent RCRA closure and during inspection a hole was identified in the bottom of the tank. However, the thick sludge at the bottom of the tank apparently prohibited a release. Following decontamination, the tank was removed from service and the SBM below the tank was sampled to verify that there had not been a release. The SBM was clean confirming that no release to the environment had occurred. Subsequent groundwater monitoring indicates that there have not been releases to groundwater from the tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
20	T-5101 Primary Separator Treatment/Storage Tank	T-1	1, 2, 3	2	Current	FAR	This tank was certified closed under RCRA requirements and is now part of the Permit-by-Rule WWT system. No leaks or tank failures were found during closure inspections or otherwise. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
21	T-5102 Batch Wastewater Treatment/Storage Tank	T-10	2, 3	2	Current	FAR	During inspection a hole was identified in the bottom of the tank. The tank was immediately decontaminated and removed. This tank underwent RCRA closure. The top of the SBM was removed and the remaining SBM was sampled and determined to be clean indicating no release to the environment had occurred. Subsequent groundwater monitoring indicates that there have not been releases to groundwater from the tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
22	T-5201 Oily Wastewater Treatment/Storage Tank	T-8	1, 2, 3	2	Current	FAR	This tank was certified closed under RCRA requirements and is now part of the Permit-by-Rule WWT system. No leaks or tank failures were found during closure inspections or otherwise. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying	AOC	SWMU in 1998	Status in 2004	
			SWMU				
23	T-5202 Oily Waste Treatment/Storage Tank	T-9A	1, 2, 3	2	Current	FAR	This tank underwent RCRA closure and during inspection, two holes were identified in the bottom of the tank. However, the thick sludge at the bottom of the tank apparently prohibited a release. The tank was removed from service after decontamination. Analytical tests indicated that there have not been releases to soil and groundwater from the tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
24	T-5203 Oily Waste Treatment/Storage Tank	Т-9В	1, 2, 3	2	Current	FAR	BEI completed RCRA closure at this tank in 1996, which included decontamination, removal of the tank, and sampling the SBM base to confirm that no releases had occurred. After sampling, the ring wall area was capped with concrete. The analytical results indicated that no release to the environment from this tank had occurred. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
25	F-5100 Air Scrubber		2, 3	2	FAR	NFA	No recorded releases resulting in soil and groundwater contamination occurred from this unit.
26	H-5100 Roto Strainer Screen		2, 3	2	Current	NFA	No recorded releases resulting in soil and groundwater contamination occurred from this unit.
27	T-5403 Wastewater Tank (RCRA Exempt)	T-4A	2, 3	2	FAR	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
28	T-5404 Wastewater Tank (RCRA Exempt)	T-4B	2, 3	2	FAR	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
29	T-5405 Electro Flotation Basin Treatment Tank (RCRA Exempt)	T-5	2, 3	2	FAR	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying SWMU	AOC	SWMU in 1998	Status in 2004	
30	T-5407 Coagulation Cell Electroclear Wastewater Treatment Tank (RCRA Exempt)	ECC	1, 2, 3	2	FAR	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
31	T-5408 Electrofloatation Basin Wastewater Treatment/Storage Tank (RCRA Exempt)	EFB	1, 2, 3	2	Current	FAR	This tank has been in RCRA exempt wastewater treatment service. It was refurbished in October 1995. Internal visual tank inspections are made every three years. There are no records of leaks or releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
32	T-5305 Stabilization Receiving Treatment Pit		2, 3	3	Current	FAR	Soil and groundwater samples were collected in and around the solidification area to determine whether releases to the environment occurred due to operations. Soil and groundwater data collected in the Stabilization Area indicate that there have been minimal impacts to soil (only copper is detected above CLs and background concentrations) and there are no apparent impacts to groundwater. Characterization of this SWMU is complete, however, PSC intends to continue routine groundwater monitoring in this area.
33	C5301 Centrifuge		2, 3	3	NFA	NFA	
34	C-5301 Centrifuge Conveyor		2, 3	3	NFA	NFA	
35	Storm water drainage system		2, 3	4	Current	FAR	An extensive investigation of the integrity of the storm water system was conducted to determine whether there were any leaks or breaks in the system. This led to a series of repairs and to the replacement of two major sections of the storm water system, which included excavation of potentially contaminated soils and confirmation soil sampling. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
36	Former T-5406 Recycled Water Storage Tank	T-7	2, 3	2	FAR	FAR	There are no records of releases from this tank. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
37	Former TEB Pretreatment Tank (Baker Tank)		1, 2, 3	2	NFA	NFA	
38	Former TWB Pretreatment Tank (Baker Tank)		1, 2, 3	2	NFA	NFA	

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			Identifying SWMU	AOC	SWMU in 1998	Status in 2004	
40	Former Drum/Truck Washing Area		1, 2, 3		FAR	FAR	Reviewed incident logs to verify that no releases occurred from the former drum/truck washing area that resulted in soil or groundwater contamination. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
41	Former Container Management Area		1, 2, 3		FAR	FAR	Reviewed incident logs to verify that no releases occurred from the former container management area that resulted in soil or groundwater contamination. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
42	Former Storage Tank T-22		1, 2, 3	2	FAR	NFA	There are no records of releases from this tank.
43	*						
44	*						
45	*						
46	Former Location of T-504 in Bulk Receiving Area - T-504 was a 500 gallon stainless steel tank used for pre-treatment of wastes. Wastes were vacuum pumped and trucked to tanks T-1 and T-8.		1, 2, 3		FAR	FAR	There are no records of releases from these tanks. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
47	Former Location of T-537 (in Bulk Receiving - T-537 was a 500 gallon stainless steel tank used for pre-treatment of wastes. Wastes were vacuum pumped and trucked to tanks T-1 and T-8.		1, 2, 3		FAR	FAR	There are no records of releases from these tanks. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
48	Old Centrifuge (once located by T- 22/Solidifcation Area)		1, 2, 3		FAR	FAR	There are no records of releases from this unit. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.
49	*						
50	*						
51					E 4 D		
53	South Unloading Area and Sump North Unloading Area		3	2	FAR	INFA FAR	I here are no records of releases in this area. According to PSC personnel, this area has been in use since the Crosby & Overton operated the facility. There are no records of releases to soil or groundwater from this area. No further characterization of this SWMU is required, however, PSC intends to continue routine groundwater monitoring in this area.

SWMU	SWMU Name	SWMU Alias	Document	Associated	Status of	Proposed	Rationale for Proposed Change in Status
Number			SWMU	AUC	SWW0 III 1996	Status III 2004	
54	T-5603 Mercury Treatment Tank		3	2	FAR	NFA	This tank has been in RCRA exempt wastewater treatment service since it underwent RCRA closure in 1995. It was refurbished in October 1995. Internal visual tank inspections are made every three years. BEI has collected soil and groundwater samples in the WWT area for mercury. There have not been any exceedances of the mercury CLs in soil or shallow groundwater throughout the facility. There have been a couple of exceedances of mercury in the intermediate aquifer at monitoring well, MW-123-I1, in the WWT area. These exceedances have been in turbid samples and may have been a results of mercury adhering to soil particles in the water sample. Therefore, mercury is not considered a groundwater contaminant and is not expected to migrate from the property at concentrations exceeding the screening levels.
55	Drum Dock, West side of facility		3		FAR	NFA	This is the same area as the South Unloading Area. There are no records of releases in this area.
	Former USTs		2, 3	1	FAR	NFA	The latest analytical data from this AOC demonstrate that no COPCs were detected in soil or groundwater samples collected from the area. Therefore, no further action is recommended for this AOC.

* No SWMU identified for this SWMU number.

1 USEPA, 1988. Final Report, RCRA Facility Assessment, Crosby and Overton, Inc., Kent, WA. July 15, 1988.

2 SAIC, 1996. RCRA Facility Assessment, Preliminary Review/VSI Report, Burlington Environmental Inc., Kent, Washington. January 1996.

3 WDOE & EPA, 1998. Permit for the Storage and Treatment of Dangerous Waste. August 29, 1998.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
2D	8	South staging area		Because the south staging area is constructed of asphalt, which may be permeable to hazardous constituents, and past practices in these areas are unknown, there is a potential for releases to soil and groundwater. Provide complete information on any spills/leaks and actions taken.	There are no records of releases to the soil or groundwater from this area.
2D	9	North staging area		Because the north staging area is constructed of asphalt, which may be permeable to hazardous constituents, and past practices in these areas are unknown, there is a potential for releases to soil and groundwater. Provide complete information on any spills/leaks and actions taken.	There are no records of releases to the soil or groundwater from this area.
2E	5A	Former Can Crusher Canopy Area in SW Corner of Facility		Former can crusher area in southwest corner (5A) and can crusher area located between MW-15 and North Drum Storage Area (5B) are no longer in operation. Can crusher area in south check in area (5C) and in new north storage area (5D) are currently in use.	There is no information in BEI records that indicate there were releases from this operation.
2E	5B	Former can crush canopy area located between MW-15 and North Container Storage Area		Former can crusher area in southwest corner (5A) and can crusher area located between MW-15 and North Drum Storage Area (5B) are no longer in operation. Can crusher area in south check in area (5C) and in new north storage area (5D) are currently in use.	There is no information in BEI records that indicate there were releases from this operation.
2E	5C	Can crusher area in south check-in area		Former can crusher area in southwest corner (5A) and can crusher area located between MW-15 and North Drum Storage Area (5B) are no longer in operation. Can crusher area in south check in area (5C) and in new north storage area (5D) are currently in use.	There is no information in BEI records that indicate there were releases from this operation.
2E	5D	Can Crusher Area in New North Staging Area		Former can crusher area in southwest corner (5A) and can crusher area located between MW-15 and North Drum Storage Area (5B) are no longer in operation. Can crusher area in south check in area (5C) and in new north storage area (5D) are currently in use.	There is no information in BEI records that indicate there were releases from this operation.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
3C	3	Indoor Lab Pack & Household Hazardous Waste Storage Area		This area has a lined sump that is pumped and trucked to the wastewater treatment area. On a 11/6/97 site visit, the sump had been filled with concrete and there were plans to install another sump in the location. Need to investigate history of leaks from old sump before new sump is installed.	Reviewed incident logs to verify that no releases occurred from the indoor lab pack area that resulted in soil or groundwater contamination. There is no information in BEI records that indicate there were leaks from this sump.
3E	6A	North Container Storage Area Sump		This was a blind sump that ran the entire length of the area. No history of spills in this area. Need date of installation, type of lining, inspection results, etc	The North Container Storage area was installed in the 1989-1990 time period. As described in Section D of the permit application, the secondary containment for the north container storage pad consists of concrete reinforced with rebar to meet ACI standards. Each pad is sloped to drain to a dedicated blind sump. The sumps are constructed of concrete and coated with a chemically resistant sealant. The sumps are included in routine inspections and there are no records of releases from the sumps.
4A	4	Compactor Area	Paint Storage & Consolidation Area	Compactor area no longer in use. Need history of unit, such as dates of service, any spills or leaks and actions taken, etc	This process equipment is used for consolidating small empty containers to facilitate handling and to reduce bulk prior to disposal at an off-site facility. PSC is not sure exactly where you are referring to, but there were a few paint storage areas in the process containment building. PSC does not have records showing the dates of service. There were no recorded releases to the soil or groundwater from these operations.
4C	5	Aerosol Can Depressurization Area		Aerosol depressurizing area moved to various locations throughout facility. No history of spills and difficult to pinpoint this activity to one specific area.	

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
4D	14	Stabilization Area		The exact location of the Stabilization Area is not clear. According to the RFA (CO 1988), it appears to cover the area just east of the stabilization/mixing bay (where pug mill, conveyor belt and waste pile used to be). However, this area has changed since the visual site inspection of 1993 and the fire of 1995. Need to clarify the specific area(s) which SWMU 14 covers.	Figure 2 shows the former and current location of the Stabilization Area.
4E	9A	New North Staging Area (located north of warehouse)		North Staging area is currently used. When and why was this change made? How is this area different from the previous North Staging Area? (in terms of configuration, site, type and amounts of constituents handled, etc)	This was constructed at the same time as the North Container Storage Area (1990- 1991). This area is now concrete with water stops, which provides a barrier to stop infiltration through the concrete (meets ACI standards). The construction of this area is part of the Part B improvements to the facility.
5C	6	North Container Storage Area		Had long blind sump that ran the entire length of the area. No history of spills in this area. Need date of installation, type of lining, inspection results, etc	The North Container Storage area was installed in the 1989-1990 time period. As described in Section D of the permit application, the secondary containment for the north container storage pad consists of concrete reinforced with rebar to meet ACI standard.
5C	7	South Container Storage Area		There was a blind sump that ran the entire length of the area. No history of spills in this area. Need date of installation, type of lining, inspection results, etc	The South Container Storage area were installed in the 1989-1990 time period. As described in Section D of the permit application, the secondary containment for the south container storage pad consists of concrete reinforced with rebar to meet ACI standards. Each pad is sloped to drain to a dedicated blind sump. The sumps are constructed of concrete and coated with a chemically resistant sealant. The sump is included in routine inspections and there are no records of releases from the sump.
5E	13	Roto Strainer Accumulation Area		Is this area still in use? Provide complete information on history of this unit.	This equipment is part of the WWT system and has been in place since the inception of the tank farm. Some waste water that has debris in it, are pumped into this equipment, which strains out solid debris. This is still in use today.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
5E	13A	Roto Strainer Screen	SWMU 26	Is Roto Strainer Screen still in use? Provide complete information on history of this unit.	This equipment is part of the roto strainer in the WWT system and has been in place since the inception of the tank farm. Some waste water that has debris in it, are pumped into this equipment, which strains out solid debris. This is still in use today.
6E	15	Solidification Area		Solidification area was located just south of Bulk Receiving Area. Area consisted of sloped, concrete floor surrounded by ecology blocks on three sides, and was used to solidify dewatered sludge. Some constituents of concern included heavy metals, phenol and corrosives. New sludge dewatering/solidification system was due to be on line by May 1988. Need complete information on this area, such as all constituents handled, length of service, date removed, methods of removal, any analytical data, incidents of spills/leaks, etc	In August 1996, BEI closed three sumps located within the shared containment area of stabilization tanks 5305 and 5306. The additional containment capacity of these sumps was no longer necessary. Two of these sumps were over six feet deep. Clean closure certification was provided to Ecology on May 12, 1997. Two other sumps within the stabilization area were closed in 2000 and clean closure certification was provided to Ecology with the Interim Status Tank Farm Closure Report in September 2000.
6E	15A	Solidification Sump		Solidification sump was located between tanks T-504/T-537 and the Solidification Area. Runoff from the Solidification Area drained into the sump. Liquids were then pumped into Tank T-1. Some constituents of concern include corrosives, phenols, and heavy metals. Need complete information on this sump, such as dates of service, date removed, method of removal, any analytical data, integrity of sump, inspection results, spills/leaks, etc See note for SWMU 15 for more information.	This sump has been in service since Crosby & Overton operated the site and is still in service. This sump is included in routine facility inspections and maintenance. There are no records of sump leaks, releases or failures. PSC collected soil/groundwater samples near this sump during RI, as explained in Chapter 6. Data from well MW- 120-11, show vinyl chloride and TCE have been detected in groundwater at this well at concentrations just slightly exceeding CLs. Data indicate that the concentrations of these chemicals do not appear to be increasing and the extent of chlorinated ethene contamination appears to be limited to the area near MW-120-11 in the intermediate aquifer. In addition, the data suggests that biodegradation is limiting the lateral and vertical migration of chlorinated ethenes in groundwater at the site. PSC intends to continue routine groundwater monitoring in this area.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
7D	20, 18	T-5101 Primary Separator Treatment/Storage Tank and T-5401 Wastewater Storage Tank	T-1 and T-2	Samples from MW-8 and borings T-1 and T-2 in and around the tank farm/treatment area displayed the presence of VOCs, BNAs, and organophosphorous pesticides. Need further investigation in tank farm area to determine these sources of contamination.	PSC has conducted additional investigation at the site. See Chapter 6 for more details.
7E	20	T-5101 Primary Separator Treatment/Storage Tank	T-1	Need information on the underground piping between T-1 and sump. The piping was apparently removed in 1991. Need information on the removal of the piping, any sampling completed and analytical results.	PSC personnel did not know anything about this underground piping until it was discovered during the excavation of the stabilization staging area in 1999. The exposed piping and impacted soil were removed. The field activities and confirmatory sampling results were summarized in a letter to Ecology on January 25, 1999.
8D	19	T-5402 Wastewater Storage Tank	Т-ЗА	Tank 3A was removed and scrapped in 1994. Samples of sand and SBM underneath the tank were taken at 6" intervals to a depth of 3'6". Soil sampling results showed that VOCs, SVOCs, metals and pesticides were below MTCA B levels. However, arsenic was not included in the analysis. Groundwater sampling was done from nearby groundwater wells and not from underneath the tank.	Chapter 6 describes arsenic contamination in groundwater and soil in the tank farm area. Arsenic does not appear to have impacted soils near this former tank. However, there does appear to be impacted groundwater in the vicinity of this former tank, but the contamination appears to be localized and stable and it is unlikely that this contamination will migrate off site. PSC will continue to monitor wells in this area for arsenic.
8E	15	Solidification Area		The blind sump next to the former Solidification Area is used only for storm water collection. It is connected to another small sump adjacent to it. It is then routed through underground piping to the low point catch basin/sump by tank 4710. Were these sumps ever part of the Solidification Area or Wastewater Treatment Area?	No.
9C	37	Former TEB Pretreatment Tank (Baker Tank)		Former TEB and TWB pretreatment Baker tanks are above ground, portable tanks which were decontaminated and removed in 1990. No history of spills/leaks	
9C	38	Former TWB Pretreatment Tank (Baker Tank)		Former TEB and TWB pretreatment Baker tanks are above ground, portable tanks which were decontaminated and removed in 1990. No history of spills/leaks.	

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
9D	No.	Household Hazardous Waste Dumpster	T-10	Permit/RFA 1998 Tank T-10 was removed in 5/93 and scrapped. Analytical data for soils is not reliable due to sampling methods used. Soil samples were taken at 6" intervals and mixed in a drum. Samples were then taken and analyzed from the drummed soils. First round of groundwater sampling taken in 6/93 showed an exceedance of methylene chloride (5.83 ppb). Second round of groundwater data collected in 10/93 showed no exceedance. Need to determine if seasonal changes in groundwater flow direction and velocity affected these	Questions Methylene chloride has not been detected in groundwater in the vicinity of the former T- 10 at concentrations exceeding groundwater screening levels. See Chapter 6 for more details.
				sampling results. Also need more soil sampling in the vicinity of the former location of T-10 and quarterly groundwater sampling from nearby wells.	
9E	NA	NA		This catch basin/sump (next to Tank 4710) is the low point for storm water collection. It then goes to Tank 4710. From Tank 4710 it is visually checked and discharged to METRO or treated if necessary. Was this catch basin/sump ever connected by underground piping to the sump with the oil/water separator?	No.
10D	19, 23	T-5402 Wastewater Storage Tank and T-5202 Oily Waste Treatment and Storage Tank	T-3A and T-9A	Can we get a copy of the 1/10/97 Certification of Tanks T-3 and T-9A and analytical data?	This data was sent to Ecology in a letter dated January 10, 1997 and is attached to this summary. A copy of this letter is included in this appendix.
10E	35	Storm Water Drainage System		Need new drawings of the site-wide storm water system and associated underground piping. Also need to investigate the possibility of leaks from underground piping.	The stormwater drainage system is illustrated in Figure 3-5 in Chapter 3 and is shown in Figure 2 of this appendix. Pipe integrity tests and inspections were performed in 2001 and 2002. Faults in the piping were repaired at that time. In addition, 2 major portions of piping were excavated and replaced. PSC conducts routine groundwater monitoring that would identify impacts resulting from former leaks in the stormwater drainage system

Table 2 Responses to Ecology's Questions from Attachment C Footnotes

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
11D	NO. 19, 23	T-5402 Wastewater Storage Tank and T-5202 Oily Waste Treatment and Storage Tank	T-3A and T-9A	For the above data, we need to know the sampling methods used, sampling locations, depth of samples.	The sampling methods and depths were provided in the Unit Closure of Tanks T-1, T- 2, T-6A, T-6B, T-8, T-9B, and 5603 Closure Plan that was submitted to Ecology on May 17, 1996 and the Letter from Mark Warner, BEI to Galen Tritt, Ecology, January 10, 1997. (Final documentation certifying clean closure of T-10, T-3, T-9A, T-1, T-2, T-6A, T- 6B, T-8, T-9B, and 5603.)
11E	17, 24	T-5302 Sludge Treatment Tank and T-5203 Oily Waste Treatment and Storage Tank	T-6B and T-9B	There were apparently sumps and underground piping next to Tanks T-6B and T 9B. When were these sumps and piping removed, how were they cleaned, inspected, repaired, need documentation of this work.	PSC has no records of any underground piping at the facility other than the stormwater management system.
12D	25	F-5100 Air Scrubber		Air scrubber no longer exists. Need more information on this unit, such as dates of service, date removed, method of removal, any analytical data, etc	This unit used hydrogen peroxide to oxidize organic materials. The unit was decontaminated and scrapped in the Spring of 1993, but BEI staff are not sure when the unit came out of service (likely prior to 1993). There are no records of releases from this unit.
12E	NA	NA		A number of volatile chlorinated and aromatic solvents were found in a "sediment" sample taken from the sump leading to the oil/water separator. Metals were also found in the sample taken from the sump at elevated levels, particularly arsenic. Use of this sump and oil/water separator was discontinued in 1988. Explain the presence of metals, in particular arsenic, in the sump. (What type of materials were directed through this sump? or what pipes/tanks were routed through this sump?)	This sump is located near the former stabilization area, where the maxon mixer was used to stabilize F-listed sludges.
13D	27	T-5403 Wastewater Tank (RCRA Exempt) - This tank is used for pH adjustment and addition of water treatment chemical. Influent is from T-2. This tank has been in RCRA exempt wastewater treatment service.	Т-4А	T-4A, T-4B, T-5, T-5407 (ECC), and T-5408 (EFB) are all wastewater treatment tanks still in operation. Need an update on these units, such as type of constituents handled, any spills, leaks, etc	This tank is used for pH adjustment and addition of water treatment chemical. Influent is from T-2. This tank has been in RCRA exempt wastewater treatment service. There are no records of leaks or releases from this tank.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
13D	28	T-5404 Wastewater Tank (RCRA Exempt) - This tank is used for pH adjustment and addition of water treatment chemical. Influent is from T-4A. This tank has been in RCRA exempt wastewater treatment service.	T-4B	T-4A, T-4B, T-5, T-5407 (ECC), and T-5408 (EFB) are all wastewater treatment tanks still in operation. Need an update on these units, such as type of constituents handled, any spills, leaks, etc	This tank is used for pH adjustment and addition of water treatment chemical. Influent is from T-4A. This tank has been in RCRA exempt wastewater treatment service. There are no records of leaks or releases from this tank.
13D	29	T-5405 Electro Flotation Basin Treatment Tank (RCRA Exempt) - This is an accumulation tank for sludges and skimmings from the EFB. The material from this tank is then routed to T-6A. This tank has been in RCRA exempt wastewater treatment service.	T-5	T-4A, T-4B, T-5, T-5407 (ECC), and T-5408 (EFB) are all wastewater treatment tanks still in operation. Need an update on these units, such as type of constituents handled, any spills, leaks, etc	This is an accumulation tank for sludges and skimmings from the EFB. The material from this tank is then routed to T-6A. This tank has been in RCRA exempt wastewater treatment service. There are no records of leaks or releases from this tank.
13D	30	T-5407 Coagulation Cell Electroclear Wastewater Treatment Tank (RCRA Exempt)- This is the electrocoagulation cell. An electrical current is applied to the wastewater to promote flocculation. Influent is from T-4B. Heavy sludges are returned to T-1, and T	ECC	T-4A, T-4B, T-5, T-5407 (ECC), and T-5408 (EFB) are all wastewater treatment tanks still in operation. Need an update on these units, such as type of constituents handled, any spills, leaks, etc	This is the electrocoagulation cell. An electrical current is applied to the wastewater to promote flocculation. Influent is from T-4B. Heavy sludges are returned to T-1, and T-6A and T-6B for treatment. This tank has been in RCRA exempt wastewater treatment service. There are no records of leaks or releases from this tank.
13D	31	T-5408 Electrofloatation Basin Wastewater Treatment/Storage Tank (RCRA Exempt) - This is the electrofloatation basin. The influent for this unit is from the ECC. An electrical current is applied producing bubbles to enhance floating of coagulated particle	EFB	T-4A, T-4B, T-5, T-5407 (ECC), and T-5408 (EFB) are all wastewater treatment tanks still in operation. Need an update on these units, such as type of constituents handled, any spills, leaks, etc	This is the electroflotation basin. The influent for this unit is from the ECC. An electrical current is applied producing bubbles to enhance floating of coagulated particles. Floc and floatables are skimmed and are moved to T-5. Heavy sludges are moved to T-1, T-6A, and T-6B. Wastewaters not meeting discharge limits are returned to T-2. Wastewaters meeting discharge limits are removed to 4404 or the Baker tanks for batch discharge. This tank has been in RCRA exempt wastewater treatment service. There are no records of leaks or releases from this tank.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
13E	46	Former Location of T-504 in Bulk		T-504 and T-537 were 500 gallon stainless	PSC has no records on these tanks.
		Receiving Area - T-504 was a 500		steel tanks used for pre-treatment of wastes.	
		gallon stainless steel tank used for		Wastes were vacuum pumped and trucked to	
		pre-treatment of wastes. Wastes		tanks T-1 and T-8. Need complete	
		were vacuum pumped and trucked		information on tanks T-504 and T-537 such	
		to tanks T-1 and T-8.		as constituents pretreated, spills/leaks, dates	
				of operation.	
13E	47	Former Location of T-537 (in Bulk		T-504 and T-537 were 500 gallon stainless	PSC has no records on these tanks.
		Receiving - T-537 was a 500		steel tanks used for pre-treatment of wastes.	
		gallon stainless steel tank used for		Wastes were vacuum pumped and trucked to	
		pre-treatment of wastes. Wastes		tanks T-1 and T-8. Need complete	
		were vacuum pumped and trucked		information on tanks T-504 and T-537 such	
		to tanks T-1 and T-8.		as constituents pretreated, spills/leaks, dates	
				of operation.	
14D	14	Stabilization Area		Need updated information on current	T-5305 is used to stabilize inorganic solid
				operations at T-5305, Stabilization Receiving	materials. No releases from this tank have
				Treatment Pit, such as types of constituents	been reported.
				handled, any spills/leaks, etc	
14E	48	Old Centrifuge (once located by 1-		Need to know function of unit, whether it was	The old centrifuge was inside the bermed
		22/Solidification Area)		inside or outside the bermed area, purpose of	area of the tank farm. It was used to dewater
				unit, constituents handled, dates of service,	non-nazardous sludge materials. I nere are
				method of removal and any analytical data.	not clear records of the dates of service for
				Ref. Final Report, RCRA Facility Assessment	this unit.
				(C.O., 1988)	
15D	25	Storm Water Drainage System		Storm water Drainage System refere to the	Chapter 4 of the PL explains the history of
150	55	Stoffit Water Drainage System		ditch on the north side of the facility and all	the drainage ditch, including the construction
				discharge points from the facility to the ditch	of a culvert by the neighbor
				The adjoining points from the facility to the ditch.	of a curvent by the heighbor.
				The adjoining heighbor, Sawdust Supply Co.,	
				aroundwater impacts to the facility from	
				coverage of this ditch	
15E	14	Stabilization Area		What was T-5306 used for? Was it used for	T-5306 was used as a stabilization nit for
102				drum and truck washing operations?	inorganic solids. It was not used as a drum
					and truck washing operation.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
16D	36	Former T-5406 Recycled Water Storage Tank	T-7	According to the RFA (C.O., 1988), the recycled water storage tank (T-7) was part of the wastewater treatment system. It was used to store water pumped from the EFB. Wastes may have contained heavy metals, phenols, and VOCs. Provide complete information on history of this tank, particularly its location(s).	There are no records of this tank's use or decommissioning in BEI files, indicating that this tank was likely decommissioned prior to BEI's purchase of the facility.
16E	NA	NA		In 1988 leakage from underground piping connecting the sump in the Old Drum & Truck Washing Area and the main sump in the Wastewater Treatment Area. Not all contaminated soils may have been removed. Need complete information regarding this incident, in particular, the exact location of the units, where soils were excavated, and all analytical data.	PSC has no records of any underground piping at the facility other than the stormwater management system and discovery of piping during excavations. There are no records in current BEI files regarding this incident.
17D	39	Former Reactor Tank	T-21	Need more information on the Former Reactor Tank. Is it the same as Tank T-21? If so, was it removed by Crosby & Overton before Chempro bought the site in 1990? Prior to 1990, there was a fire at this unit due to mixing of incompatible wastes. Need more information on this tank, such as the period of operation, constituents handled, how the tank was removed, any soil and groundwater sampling results.	There are no records of this tank's use or decommissioning in BEI files, indicating that this tank was likely decommissioned prior to BEI's purchase of the facility.
17E	14	Stabilization Area		Sump in stabilization area was at one time connected to underground piping which leaked in 1988. Need complete history of sump, in particular, any leaks and actions taken.	PSC has no records of underground piping at the facility.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
18D	40	Former Drum/Truck Washing Area		Uncertain of exact location of Former Drum/Truck Washing Area. This is a reference to the west side of the wastewater treatment (WWT) building and to T-5306. In 1/88 there was a release from the underground piping connecting the T-5306 sump and the main sump in the WWT area. Cleanup measures were taken but no soil sampling was done to confirm all contamination was removed. Since analytical data of soils does not exist, it is not possible to confirm or deny the possibility of soil and groundwater contamination. Need to determine where Drum & Truck Washing Operations took place. Also need to conduct soils investigation in this area for constituents of concern in order to determine if all contaminants were removed. (ref RFA, C.O., 1988)	See Figure 2 for the location of these areas.
18E	52	South Unloading Area and Sump		The south unloading area has a long concrete pad for trucks to unload wastes. Beyond the end of the pad is gravel. At the bottom corner of the dock is a blind sump which is pumped out as needed. During a site visit on 11/6/97, Ecology observed that the sump was full of liquid and could easily overflow into the adjacent gravel area. Need complete information on this unit, such as date installed, size, type of lining, inspection schedule and results, and any spills/leaks and actions taken, etc)	The South Unloading Area (truck dock) was constructed in Spring 1996. Standard concrete, with 4" waterstops at slab and wall construction joints. Sump was installed on the north side of the dock at the base of the dock wall shortly after the rest of the truck dock was completed. Sump was standard concrete, no liner, monopour construction. Estimated size 2' x 2' x 2'. There are no records of any spills or leaks associated with this area or this sump. Sump was removed from service, and physically removed from the site, in September 2001 during the build- out of the west lot transfer facility. Stormwater associated with the dock is managed with stormwater associated with the truck staging area.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
19D	41	Former Container Management Area		Former Container Management Area includes the entire area between Bulk Receiving Area and North Container Storage Area. This area has changed over time, but when it was in use run-off was discharged to the drainage ditch after going through an oil/water separator. Need complete information on history of this area. (Ref. RFA, C.O. 1988)	(PSC assumed for purposes of this question that Ecology was referring to the area between the Stabilization Building and the Process Containment Building) All water at the facility has drained to the surface water management system. Until 1988, the facility sent overflow storm water from the truck unloading area and drum storage area into the ditch along the northern edge of the property. In December 1988, a closed-loop storm-water system was created, directing storm water to an oil/water separator and to a wastewater treatment system.
19E	53	North Unloading Area		The north unloading area is used for the bulk hazardous waste trucks to offload liquid wastes for segregation. Regulated oils, and possibly solvents, are directed to tank T-9B. Need complete information on this area such as date installed and any spills/leaks.	There are no records of releases to soil or groundwater from this area. Soil and groundwater sampling conducted in the north unloading area, described in Section 6, does not indicate that releases from this area have occurred. There are no exceedances of CLs in soil or groundwater near this SWMU.
20D	42	Former Storage Tank T-22		T-22 was an above ground tank used for storage of corrosives. It was located such that a spill could not be easily contained and could potentially affect the groundwater and surface water pathways. Need complete information on the history of this area.	There are no records of this tank's use or decommissioning in BEI files, indicating that this tank was likely decommissioned prior to BEI's purchase of the facility.

Footnote	Associated SWMU	SWMU Name	SWMU Alias	Ecology's Notes & Questions from	PSC's Responses to Ecology's Notes &
	No.			Permit/RFA 1998	Questions
20E	54	T-5603 Mercury Treatment Tank - This tank was used for batch isolation wastewater storage and/or treatment tank for listed wastewaters (<1% organics). Prior to entering T-9B, wastewaters are passed through carbon adsorption units. Material is treated to p		Tank T-5603 is used only for treatment of mercury bearing wastes. Need complete information on this unit such as dates of operation, any spills/leaks and actions taken, etc Also, Tanks T-1, T-2, T-6A, T-6B, T-8, T-9B, and T-5603 went through partial closure and were approved for conversion to permit by rule regulation on 2/5/97. This partial closure did not apply to the secondary containment or any below ground portions of the units. Also, the closure certification document, dated 1/10/97, only included the Certifications of Decontamination and Tank Data Sheets and no analytical data for sampling from these units? (Ref. Letter from M. Warner to ecology 2/5/97, and Certification Letter dated 1/10/97).	There have not been any exceedances of the mercury CLs in soil or shallow groundwater throughout the facility. There have been a couple of exceedances of mercury in the intermediate aquifer at monitoring well, MW-123-I1, in the WWT area. These exceedances have been in turbid samples and may have been a results of mercury adhering to soil particles in the water sample. Therefore, mercury is not considered a groundwater contaminant and is not expected to migrate from the property at concentrations exceeding the screening levels.
21E	55	Drum Dock, West side of facility		Drum dock on west side of the facility is used to unload wastes from trucks. This dock was recently added. Need complete information on this unit such as the date installed, constituents handled here, any spill/leaks and actions taken, etc	Same as above (the dock is the south unloading area).
22D	NA	NA		High levels, as compared to background soil sample, of the following classes of organics were found in the sediment and soil samples taken onsite: PAHs, VOCs, PCBs, and metals.	PSC has conducted additional soil investigations at the site. See Chapter 6 for more details.





	SWMU and AOC Locations	DWN: DES.: dtb	PROJECT NO.: RI2004
25C		CHKD: APPD:	FIGURE NO.:
	PSC Kent Facility	DATE: REV.: 3/30/04	1



Former Stabilization Area



Recycling Solutions for Every Environment



January 10, 1997

CERTIFIED MAIL

Mr. Galen Tritt WA Dept. of Ecology - NWRO 3190 - 160th Avenue SE Bellevue, WA 98008-5452

Mr. Tritt:

Enclosed is the final documentation certifying the clean closure of nine dangerous waste storage tanks at the Burlington Environmental Inc. dba Philip Environmental "Philip" Kent Facility. The tank closures are described in three separate plans: *Tank T-10* submitted April 1994 (final rev. 3/96); *Tanks T-3 and T-9A* submitted April 1994 (final rev. 3/96); and *Tanks T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603* submitted May 17, 1996. Philip received approval from Ecology for these three Interim Status Closure Plans by letter dated December 24, 1996.

<u>TANK T-10</u>

Enclosed is a summary of the tank closure, copies of the independent registered professional engineer certifications, copies of the scrap metal receipts, and copies of soil analyses. This and additional information is presented in Appendix 2 of the respective Closure Plan.

TANK T-3 and T-9A

Enclosed is a summary of the tank closure, copies of the independent registered professional engineer certifications, copies of the scrap metal receipts, and copies of soil analyses. This and additional information is presented in Appendix 3 of the respective Closure Plan.

TANKS T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603

Enclosed are copies of the independent registered professional engineer decontamination and structural certifications for all tanks, the Philip certification attesting that closure procedures were followed, and copies of soil analyses with regards to Tank T-9B.

If you have any questions please contact John Stiller at (206) 227-6121.

Respectfully, ,

Mark Warner Manager, Regulatory Affairs

MW:JS

Enclosures

CHIRON TILE MURPHY WO ORCOGENES

PHILIP ENVIRONMENTAL KENT FACILITY INTERIM STATUS CLOSURE PLANS

Tank T-10 submitted April 1994 (final rev, 3/96)

As specified in the Closure Plan for Tank T-10, this certification represents that the tank decontamination and other closure procedures described therein were followed.

Tanks T-3 and T-9A submitted April 1994 (final rev. 3/96)

As specified in the Closure Plan for Tank T-3 and T-9A, this certification represents that the tank decontamination and other closure procedures described therein were followed.

Tanks T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603 submitted May 17, 1996

As specified in the Closure Plan for Tanks T-1, T-2, T-6A, T-6B, T-8, T-9B, and 5603 this certification represents that the tank decontamination and other closure procedures described therein were followed.

Tanks T-1, T-2, T-6A, T-6B, T-8, and 5603 were decontaminated in late 1995 in accordance with the procedures described the Closure Plan and have been in RCRA-exempt wastewater treatment service thereafter. These certifications were initially provided in Appendix 1 of this Closure Plan.

Tank T-9B was decontaminated in May 1996 in accordance with the procedures described in the Closure Plan for use in RCRA-exempt wastewater treatment service. The tank decontamination certification is now being provided. In July 1996 Tank T-9B was removed from its ring-wall foundation and the underlying soils sampled and analyzed in accordance with the Closure Plan.

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine apd imprisonment for knowing violations."

Kenneth Murphy

Division Manager, Western Region By-Products Recovery



Corrosion Control Specialists 6642 S. 193rd Place Suite N105B Kent, Washington 98032 Phone (206) 251-8074 Fax (206) 251-8075

> CERTIFICATION OF TANK DECONTAMINATION per 40 CFR Part 265.111(b)

Philip Environmental, Inc. (Kent Facility) 20245 77th Avenue South Kent, Washington 98032

TANK NO. T-5203(T-9B)

TANK NAME:

Oily Waste Treatment & Storage

VESSEL FLUID: Industrial waste water containing oils. coolants, sludge and water.

This tank decontamination assessment has determined that the above tank was adequately cleaned in accordance with treatment standards specified in 40 CFR Part 268 and current closures guidance of the Washington Department of Ecology.

A. DOCUMENTS USED FOR EVALUATION:

- 1. 40 CFR Part 268.45, "Treatment standards for hazardous debris"
- Federal Register. Vol. 57, No. 6, 1/9/92 Proposed Rule Land Disposal Restrictions for Newly Listed Wastes and Contamination Debris: p.1034 (Appendix IX - Requirements for Effective Treatment - Water Washing and Spraying).
- 3. Correspondence with the Washington Department of Ecology Southwest Regional Office, dated 12/13/93 with certification statement per WAC 173-303-810(12) and (13).
- 4. Philip Environmental, Inc. letter to Dennis Helgeson 9/9/96.
- 5. Burlington Environmental Inc. dba Philip Environmental Unit Closure Plan 5/17/96.

B: DESCRIPTION OF DECONTAMINATION:

The physical extraction technology of high pressure water spraying was utilized on this tank in accordance with closure guidance provided by the Washington Department of Ecology. Philip Environmental met and/or exceeded the design and operating parameters suggested by the

Environmental Protection Agency for this treatment technology (attached) during this operation. A clean debris surface, defined in 40 CFR 268.45 Footnote 3 of Table, was achieved for the tank in question.

C: COMMENTS:

The tank decontamination was completed on May 16, 1996.

The rinsate was collected by vacuum and transferred to storage tanks on site for later treatment. The sludge was collected in a 55 gallon drum and labeled and stored for future treatment. The tank is being decontaminated to be removed from RCRA service. The tank will remain on site but will be relocated and set on concrete base.

CERTIFICATION STATEMENT

" I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." WAC 173-303-810(13)(a)

The undersigned is an independent, qualified, registered professional engineer in the state of Washington

Signature:

Dennis R. Helgeson,

9/-1/96 Date:

Company:

Corrosion Control Specialists: 6642 South 193rd Place Kent, WA 98032

Telephone: (206) 251-8074



H PRESSURE WATER SPRAYS

Debris Type		. Performance Standard
All debris types	•	Treatment must be performed in accordance with the design and operating parameters below.

318

10.00

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Design and Operating Parameters

Pump Power.	20.75 Ellowatts
Pump Flow Rate	≥7.5 liters per minute
Treatment Enclosure	Fully enclosed or vacuum nozzie
Treatment Enclosure Pressure	Negative
Water Spray Pressure	≥700 kilopescals
Spray Pattern Width	<u>≤25 cm</u>
Treatment Rate	<140 square meters per hour per nozzle
Treatment Quality	All visible staining removed

Non-Applicable Debris or Application Restrictions

Objects with small or narrow surfaces.

Special Safety Requirements

None



CORROSION CONTROL SPECIALISTS

6642 South 193rd Place, Suite N-105B Kent, Washington 98032-2113 Phone (206) 251-8074 • Fax (206) 251-8075

May 17, 1996

Philip Environmental Services Attn: Paul D. Schultz Supervisor 20245 77th Ave S Kent, WA 98032

Re: Kent Plant Tank Inspection Tank 5203 (T-9B)

Dear Paul,

Our inspection report for the above referenced tank is provided for your review and files. An internal and external inspection was performed. Sketch layouts are provided with various tank items referenced.

Other than exterior paint touch-up to the roof and shell, no items were found that require attention at this time. The interior shell coating is in poor condition but the waste is relatively non-corrosive and anodes have been installed. This should abate any further corrosion problems to this tank.

No other problems were found that would compromise the containment of stored wastes.

Sincerely, Remote 11 William

Kenneth L Williams CCS

klw/J-490



Oily Waste Tank/T-9B (T-5203)

EXTERNAL INSPECTION

- 1. Roof catwalk is attached to roof plates using 3/16" welded steel L pieces.
- 2. Cat walk hand rails
- 3. 20" open collar vent with ladder attached extending to tank floor
- 4. 6" flanged pipe connection
- 5. Open slot through roof and cable guide for item 16
- 6. 6" flanged pipe connections
- 7. 24" x 24" roof manway with hinged door
- 8. Roof access ladder
- 9. Catwalk extension to adjacent tank has been removed (cut)
- 10. Bolted steel roof plates (total of 12)
- 11. 24" x 24" roof cutouts have been welded over (total of 2)
- 12. 24" manway with backing plate bolted to shell
- 13. Shell course line composed of shell plates which lip out and then bolted
- 14. 3/4" sample ports (total of 7)
- 15. Shell plates typical (total of 12, each course)
- 16. Cable and come-along. Cable is attached to end of interior drain pipe for positioning.
- 17. 4" flanged pipe connections with steel backing plate welded to shell
- 18. 4" flanged pipe connection with steel backing plate welded to shell
- 19. 2" flanged pipe connections (tank steam lines)
- 20. Areas showing some shell buckling
- 21. Uncaged access ladder to roof
- 22. 8" dia. steel plate welded to shell
- 23. Steel anchor tabs bolted to shell accommodate and position 5/8" anchor bolts embedded into concrete floor

<u>SUMMARY:</u> Tank has been moved to a new location at the Kent site. It is a vertical cylinder constructed in two courses with twelve (12) 110 mil thick carbon steel sheet plates per course. Plates are bolted using rubber gasket. The roof and floor are constructed of the same material and similarly connected using twelve (12) pie shaped sections.

The roof is slightly pitched with an open collar vent and ladder attachment which extends to the interior floor. The roof is supported with steel channel brackets. Twelve (12) anchor bolts are secured to the tank floor perimeter for seismic stability.

Exterior shell and roof vinyl coating has numerous coating holidays exhibiting rusted steel. These areas should be mechanically cleaned and recoated. All bolt connections appear secure and there is no evidence of waste product bleeding .Two areas along the shell show buckling but does not appear serious.

Other than noted above there is no active corrosion nor other impairments which would compromise the containment of stored liquid waste.


Oily Waste Tank/T-9B (T-5203)

INTERNAL INSPECTION

- 1. Five (5) zinc anodes attached to interior shell
- 2. Five (5) zinc anodes attached to interior floor
- 3. Shell reinforcement angle iron welded to interior shell for reinforcement at heat tube and drain tube entries.
- 4. Steam piping array is supported by channel bracket stand with pipe legs. Legs are welded to square steel plates which rest on floor. There is rubber gasket between plate and floor to eliminate gouging.
- 5. Two corrosion pit areas identified previously. Steel plate has been welded over these locations and were recoated.
- 6. 24" floor sump has been inverted
- 7. 2" steam lines are supported approximately 24" off floor.
- 8. Floor plate sections (total of 12)
- 9. 4" drain tube can be positioned from outside by wire attachment.

<u>SUMMARY</u> Interior floor and roof are vinyl coated .and in fair condition. Shell coating is in poor condition with large areas exhibiting coating failure. There is no corrosion activity to the underlying steel. Gasket material that is submerged is pliable but otherwise appears in fair condition. Ceiling is very dirty.

No corrosion or other impairments found which would compromise the containment of stored liquid waste. The addition of zinc anodes and other repairs added previously should adequately keep the interior free from further corrosion damage.



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

R Sa	eport Date: 07/12/96 ample Collected: 07/07/96	Faci Job 1	Facility: Regulatory Affairs Job Number: 96070046			Project Name: TANK T9B Project No:			< Т9В
R	eceived Date: 07/08/96								
Client ID	:Т9В-1-В	Lab I	D: AA059	945					
CAS	Analyte	Meth	nod	Result	MDI		Units	MTCA	B Limits
7440-22-4	Silver	EPA 6	5010	< 0.189	0.18	- 39	mg/Kg		400
7440-38-2	Arsenic	EPA 6	5010	< 1.89	1.8	9	mg/Kg		1.67
7440-39-3	Barium	EPA 6	5010	38.7	3.7	9	mg/Kg		5600
7440-43-9a	Cadmium	EPA 6	010	0.178	0.09	47	mg/Kg		80
7440-47-3	Chromium	EPA 6	010	8.31	0.18	9	mg/Kg		Z
7439-97-6	Mercury	EPA 7	471	< 0.100	0.10	0	mg/Kg		24
7439-92-1	Lead	EPA 6	010	9.82	1.8	9	mg/Kg		Z
7782-49-2	Selenium	EPA 6	010	< 5.68	5.6	8	mg/Kg		400
EPA 8260	Soil						00		
630-20-6	1,1,1,2-Tetrachloroethane	EPA 8	260	ND	4		ug/kg		38500
71-55-6	1,1,1-Trichloroethane	EPA 8	260	ND	1		ug/kg		72000000
79-34-5	1,1,2,2-Tetrachloroethane	EPA 8	260	ND	4		ug/kg		5000
79-00-5	1,1,2-Trichloroethane	EPA 82	260	ND	1		ug/kg		17500
306-83-2	1,1-DichloroTrifluoroethane	EPA 82	260	ND	7		ug/kg		z
75-34-3	1,1-Dichloroethane	EPA 82	260	ND	1		ug/kg		8000000
563-58-6	1,1-Dichloropropene	EPA 82	260	ND	1		ug/kg		Z
87-61-6	1,2,3-Trichlorobenzene	EPA 82	260	ND	1		ug/kg		Z
96-18-4	1,2,3-Trichloropropane	EPA 82	260	ND	1		ug/kg		143
120-82-1	1,2,4-Trichlorobenzene	EPA 82	260	ND	1		ug/kg		800000
95-63-6	1,2,4-Trimethylbenzene	EPA 82	260	ND	1		ug/kg		Z
96-12-8	1,2-Dibromo-3-chloropropane	EPA 82	260	ND	7		ug/kg		714
106-93-4	1,2-Dibromoethane	EPA 82	260	ND	1		ug/kg		1.18
95-50-1	1,2-Dichlorobenzene	EPA 82	260	1.6	1		ug/kg		7200000
107-06-2	1,2-Dichloroethane	EPA 82	260	ND	1		ug/kg		11000
78-87-5	1,2-Dichloropropane	EPA 82	260	ND	1		ug/kg		14700
108-67-8	1,3,5-Trimethylbenzene	EPA 82	260	12	1		ug/kg		Z
541-73-1	1,3-Dichlorobenzene	EPA 82	260	ND	1		ug/kg		Z
142-28-9	1,3-Dichloropropane	EPA 82	260	ND	1		ug/kg		Z
106-46-7	1,4-Dichlorobenzene	EPA 82	260	5.2	1		ug/kg		41700
<i>5</i> 94-20-7	2,2-Dichloropropane	EPA 82	260	ND	1		ug/kg		Z
78-93-3	2-Butanone (MEK)	EPA 82	260	ND	7		ug/kg		48000000
110-75-8	2-Chlorethyl vinyl ether	EPA 82	260	ND	1		ug/kg		Z
95-49-8	2-Chlorotoluene	EPA 82	260	ND	1		ug/kg		1600000

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

R R	eport Date: 07/12/96 ample Collected: 07/07/96 eceived Date: 07/08/96	Facility: Re Job Numbe	gulatory Affai r: 96070046	rs F F	Project Nan Project No:	ne: TANK T9B	-
Client II): T9B-1-B	Lab ID: AA	05945	·			-
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits	-
591-78-6	2-Hexanone	EPA 8260	ND	7	ug/kg	 Z	
107-83-5	2-Methylpentane	EPA 8260	ND	7	ug/kg	Z	
96-14-0	3-Methylpentane	EPA 8260	ND	. 7	ug/kg	Z	
106-43-4	4-Chlorotoluene	EPA 8260	ND	1	ug/kg	Z	
108-10-1	4-Methyl-2-Pentanone (MII	BK)EPA 8260	ND	7	ug/kg	6400000	
67-64-1	Acetone	EPA 8260	ND	7	ug/kg	8000000	
107-02-8	Acrolien	EPA 8260	ND	27	ug/kg	1600000	
107-13-1	Acrylonitrile	EPA 8260	ND	7	ug/kg	80000	
71-43-2	Benzene	EPA 8260	ND	1	ug/kg	34500	
74-97-5	Bromochloromethane	EPA 8260	ND	1	ug/kg	Z	- C
75-27-4	Bromodichloromethane	EPA 8260	ND	1	ug/kg	16100	N.
75-25-2	Bromoform	EPA 8260	ND	1	ug/kg	127000	
74-83-9	Bromomethane	EPA 8260	ND	1	ug/kg	112000	
75-15-0	Carbon Disulfide	EPA 8260	ND	1	ug/kg	8000000	
56-23-5	Carbon Tetrachloride	EPA 8260	ND	1	ug/kg	7690	
108-90-7	Chlorobenzene	EPA 8260	ND	1	ug/kg	1600000	
75-00-3	Chloroethane	EPA 8260	ND	1	ug/kg	Z	
67-66-3	Chloroform	EPA 8260	ND	1	ug/kg	164000	
74-87-3	Chloromethane	EPA 8260	ND	1	ug/kg	76900	
156-59-2	cis-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	800000	
10061-01-5	cis-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z	
124-48-1	Dibromochloromethane	EPA 8260	ND	1	ug/kg	11900	
74-95-3	Dibromomethane	EPA 8260	ND	1	ug/kg	Z	
75-71-8	Dichlorodifluoromethane	EPA 8260	ND	1	ug/kg	1600000	
100-41-4	Ethylbenzene	EPA 8260	ND	1	ug/kg	8000000	
87-68-3	Hexachlorobutadiene	EPA 8260	ND	1	ug/kg	12800	
98-82-8	Isopropylbenzene	EPA 8260	ND	1	ug/kg	Z	
96-37-7	Methylcyclopentane	EPA 8260	8.0	1	ug/kg	Z	
75-09-2	Methylene Chloride	EPA 8260	ND	7	ug/kg	133000	
104-51-8	n-Butylbenzene	EPA 8260	ND	1	ug/kg	Z	(^a
103-65-1	n-propylbenzene	EPA 8260	ND	1	ug/kg	Z	(
91-20-3	Naphthalene	EPA 8260	ND	7	ug/kg	3200000	×
95-47 - 6	o-Xylene	EPA 8260	ND	1	ug/kg	1600000	
99-87-6	p-Isopropyltoluene	EPA 8260	25	1	ug/kg	Z	

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96		Facility: Re Job Numbe	gulatory Affai r: 96070046	rs	Project Name: TANK T9B Project No:			
Client ID	:T9B-1-B	Lab ID: AA	05945	<u>`</u>				
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits		
106-42-3	m,p-Xylene	EPA 8260	ND	1	ug/kg	Z		
135-98-8	sec-Butylbenzene	EPA 8260	ND	1	ug/kg	Z		
100-42-5	Styrene	EPA 8260	ND	1	ug/kg	33300		
98-06-6	tert-Butylbenzene	EPA 8260	ND	1	ug/kg	Z		
127-18-4	Tetrachloroethene	EPA 8260	ND	1	ug/kg	19600		
108-88-3	Toluene	EPA 8260	ND	3	ug/kg	1600000		
156-60-5	trans-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	1600000		
10061-02-6	Trans-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z		
79-01-6	Trichloroethene	EPA 8260	ND	3	ug/kg	90900		
75-69-4	Trichlorofluoromethane	EPA 8260	ND	1	ug/kg	24000000		
108-05-4	Vinyl Acetate	EPA 8260	ND	1	ug/kg	8000000		
75-01-4	Vinyl chloride	EPA 8260	ND	1	ug/kg	526		
75-35-4	1,1-Dichloroethene	EPA 8260	ND	1	ug/kg	8,000,00		
	Bromobenzene	EPA 8260	ND	1	ug/kg			
EPA 8260/	/624 Surrogate							
	4-Bromofluorobenzene	EPA 8260	110		%			
	1,2-Dichlorethane-D4	EPA 8260	120		%			
	Toluene-D8	EPA 8260	91		%			
EPA 8270	Solid							
120-82-1	1,2,4-Trichlorobenzene	EPA 8270	ND	33	ug/kg	800000		
95-50-1	1,2-Dichlorobenzene	EPA 8270	ND	33	ug/kg	7200000		
541-73-1	1,3-Dichlorobenzene	EPA 8270	ND	33	ug/kg	Z		
106-46-7	1,4-Dichlorobenzene	EPA 8270	ND	33	ug/kg	41700		
95-95-4	2,4,5-Trichlorophenol	EPA 8270	ND	33	ug/kg	8000000		
88-06-2	2,4,6-Trichlorophenol	EPA 8270	ND	33	ug/kg	90900		
120-83-2	2,4-Dichlorophenol	EPA 8270	ND	33	ug/kg	240000		
105-67-9	2,4-Dimethylphenol	EPA 8270	ND	33	ug/kg	1600000		
51-28-5	2,4-Dinitrophenol	EPA 8270	ND	167	ug/kg	. 160000		
121-14-2	2,4-Dinitrotoluene	EPA 8270	ND	33	ug/kg	160000		
606-20-2	2,6-Dinitrotoluene	EPA 8270	ND	33	ug/kg	80000		
91-58 -7	2-Chloronaphthalene	EPA 8270	34	33	ug/kg	Z		
95-57-8	2-Chlorophenol	EPA 8270	ND	33	ug/kg	400000		
91-57-6	2-Methylnaphthalene	EPA 8270	62	33	ug/kg	Z		



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96		Facility: Re Job Numbe	gulatory Affairs r: 96070046		Project Name: TANK T9B Project No:				
Client IT	D: T9B-1-B	Lab ID: AA	05945			<u> </u>	<u> </u>		
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits	_		
95-48-7	2-Methylphenol	EPA 8270	ND	33	ug/kg	400000			
88-74-4	2-Nitroaniline	ÉPA 8270	ND	67	ug/kg	Z			
88-75-5	2-Nitrophenol	EPA 8270	ND	33	ug/kg	Z			
91-94-1	3,3'-Dichlorobenzidine	EPA 8270	ND	33	ug/kg	2220			
99-09-2	3-Nitroaniline	EPA 8270	ND	167	ug/kg	Z			
534-52-1	4,6-Dinitro-2-methylphenol	EPA 8270	ND	167	ug/kg	ż			
101-55-3	4-Bromophenyl-phenylether	EPA 8270	ND	33	ug/kg	Z			
59-50-7	4-Chloro-3-methylphenol	EPA 8270	ND	67	ug/kg	Z	•		
106-47-8	4-Chloroaniline	EPA 8270	ND	67	ug/kg	320000			
7005-72-3	4-Chlorophenyl-phenylether	EPA 8270	ND	33	ug/kg	Z	a		
106-44-5	4-Methylphenol	EPA 8270	ND	33	ug/kg	400000	đ		
100-01-6	4-Nitroaniline	EPA 8270	ND	167	ug/kg	z			
100-02-7	4-Nitrophenol	EPA 8270	ND	33	ug/kg	Z			
83-32-9	Acenaphthene	EPA 8270	ND	33	ug/kg	4800000			
208-96-8	Acenaphthylene	EPA 8270	ND	33	ug/kg	Z.			
98-86-2	Acetophenone	EPA 8270	ND	167	ug/kg	8000000			
62-53-3	Analine	EPA 8270	ND .	167	ug/kg	175000			
120-12-7	Anthracene	EPA 8270	ND	33	ug/kg	2400000			
103-33-3	Azobenzene	EPA 8270	ND	33	ug/kg	Z			
92-87-5	Benzidine	EPA 8270	ND	33	ug/kg	4.35	Q		
56-55-3	Benzo[a]anthracene	EPA 8270	ND	67	ug/kg	137			
50-32-8	Benzo[a]pyrene	EPA 8270	ND	33	ug/kg	137			
205-99-2	Benzo[b]fluoranthene	EPA 8270	ND	33	ug/kg	137			
191-24-2	Benzo[g,h,i]perylene	EPA 8270	ND	33	ug/kg	ż			
207-08-9	Benzo[k]fluoranthene	EPA 8270	ND	33	ug/kg	137			
65-85-0	Benzoic Acid	EPA 8270	ND	167	ug/kg	32000000			
100-51-6	Benzyl alcohol	EPA 8270	ND	67	ug/kg	3400000			
111-91-1	bis(2-Chloroethoxy)methane	EPA 8270	ND	33	ug/kg	Z			
111-44-4	bis(2-Chloroethyl)ether	EPA 8270	ND	33	ug/kg	909			
39638-32-9	bis(2-chloroisopropyl)ether	EPA 8270	ND	33	ug/kg	3200000	<i>e</i>		
117-81-7	bis(2-Ethylhexyl)phthalate	EPA 8270	190	167	ug/kg	71400	K		
85-68-7	Butylbenzylphthalate	EPA 8270	ND	33	ug/kg	1600000	×.		
218-01-9	Chrysene	EPA 8270	ND	33	ug/kg	137			
84-74-2	Di-n-butylphthalate	EPA 8270	ND	33	ug/kg	Z			

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96		Facility: Re Job Numbe	Facility: Regulatory Affairs Job Number: 96070046			ie: TANK T9B			
Client ID	:T9B-1-B	Lab ID: AA05945							
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits			
117-84-0	Di-n-octylphthalate	EPA 8270	ND	33	ug/kg	Z			
132-64-9	Dibenzofuran	EPA 8270	ND	167	ug/kg	Z			
84-66-2	Diethylphthalate	EPA 8270	ND	33	ug/kg	64000000			
131-11-3	Dimethylphthalate	EPA 8270	ND	33	ug/kg	8000000			
206-44-0	Fluoranthene	EPA 8270	ND	33	ug/kg	3200000			
86-73-7	Fluorene	EPA 8270	ND	33	ug/kg	3200000			
118-74-1	Hexachlorobenzene	EPA 8270	ND	33	ug/kg	625			
87-68-3	Hexachlorobutadiene	EPA 8270	ND	33	ug/kg	12800			
77 - 47-4	Hexachlorocyclopentadiene	EPA 8270	ND	33	ug/kg	560000			
67-72-1	Hexachloroethane	EPA 8270	ND	33	ug/kg	71400			
193-39-5	Indeno[1,2,3-cd]pyrene	EPA 8270	ND	33	ug/kg	0.012			
78-59-1	Isophorone	EPA 8270	ND	33	ug/kg	1050000			
621-64-7	N-Nitroso-di-n-propylamine	EPA 8270	ND	33	ug/kg	143			
86-30-6	n-Nitrosodiphenylamine	EPA 8270	ND	33	ug/kg	204000			
91-20-3	Naphthalene	EPA 8270	51	33	ug/kg	3200000			
98-95-3	Nitrobenzene	EPA 8270	ND	33	ug/kg	40000			
87-86-5	Pentachlorophenol	EPA 8270	ND	167	ug/kg	8330			
85-01-8	Phenanthrene	EPA 8270	120	33	ug/kg	Z			
108-95-2	Phenol	EPA 8270	ND	33	ug/kg	48000000			
129-00-0	Pyrene	EPA 8270	ND	33	ug/kg	2400000			
Polychlori	nated Biphenyls								
12674-11-2	Aroclor-1016	EPA 8080	< 0.0016	0.0016	mg/kg	5600			
11141-16-5	Aroclor-1232	EPA 8080	< 0.0016	0.0016	mg/kg	Z			
346689-21-	Aroclor-1242	EPA 8080	< 0.0016	0.0016	mg/kg	Z			
12672-29-6	Aroclor-1248	EPA 8080	< 0.0016	0.0016	mg/kg	Z			
11097-69-1	Aroclor-1254	EPA 8080	0.041	0.0016	mg/kg	1600			
11096-82-5	Aroclor-1260	EPA 8080	0.046	0.0016	mg/kg	Z			

ND = Not Detected at Detected at Detection Limit. B = Analyte Found in Method Blank.

E = The concentration of this analyte exceeds the calibration range of the instrument.

Q = Analyte concentration and/or MDL is greater than the 1996 MTCA B Limits.

z = Analyte not listed in 1996 MTCA Method B.

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

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] .]	Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96	Facility: Re Job Numbe	Facility: Regulatory Affairs Job Number: 96070046			ne: TANK T9B	
Client Ī	D:T9B-R1(38)	Lab ID: AA	.05946				
CAS EDA 82	Analyte	Method	Result	MDL	Units	MTCA B Limits	
ErA 820	1 1 1 2 Tetraphler others	EDA 9760		4	na/ka	20500	
030-20-0	1,1,1,2-Tetracmoroethane	EPA 8200	ND	4	ug/kg	38500	
71-33-0	1,1,1- Themoreenane	EFA 0200	ND	1	ug/kg	72000000	
79-34-3	1,1,2,2-Tetrachioroethane	EPA 0200		4	ug/kg	5000	
19-00-5	1,1,2-inchioroethane	EFA 0200	ND	1	ug/kg	1/500	
300-83-2	1,1-Dichlorothano	EPA 0200		1	ug/kg	z	
13-34-3	1,1-Dichlorogramona	EPA 0200		1	ug/kg	8000000	
203-28-0	1,1-Dichloropropene	EPA 8200	ND	1	ug/kg	Z	
87-61-6	1,2,3-Trichlusses	EPA 8260		1	ug/kg	Z	e se
96-18-4	1,2,3-Trichloropropane	EPA 8260		1	ug/kg	143	(
120-82-1	1,2,4-Tricesthall arrange	EPA 8200		1	ug/kg	800000	
95-63-6	1,2,4-Trimethyldenzene	EPA 8200	19	1	ug/kg	Z	
96-12-8	1,2-Dibromo-3-chioropropane	EPA 8200		/	ug/kg	/14	
106-93-4	1,2-Dibromoethane	EPA 8260		1	ug/kg	1.18	
95-50-1	1,2-Dichlorobenzene	EPA 8260	23 ND	1	ug/kg	7200000	
107-06-2	1,2-Dichloroethane	EPA 8260	ND	1	ug/kg	11000	
78-87-5	1,2-Dichloropropane	EPA 8260	ND	1	ug/kg	14700	
108-67-8	1,3,5-Trimethylbenzene	EPA 8260	160	1	ug/kg	Z	
541-73-1	1,3-Dichlorobenzene	EPA 8260	12	1.	ug/kg	Z	
142-28-9	1,3-Dichloropropane	EPA 8260	ND	1	ug/kg	Z	
106-46-7	1,4-Dichlorobenzene	EPA 8260	11	1	ug/kg	41700	
594-20-7	2,2-Dichloropropane	EPA 8260	ND	1	ug/kg	Z	
78-93-3	2-Butanone (MEK)	EPA 8260	ND	7	ug/kg	48000000	
110-75-8	2-Chlorethyl vinyl ether	EPA 8260	ND	1	ug/kg	Z	
95-49-8	2-Chlorotoluene	EPA 8260	ND	1	ug/kg	1600000	
591-78-6	2-Hexanone	EPA 8260	ND	7	ug/kg	Z	
107-83-5	2-Methylpentane	EPA 8260	ND	7	ug/kg	Z	
96-14-0	3-Methylpentane	EPA 8260	ND	7	ug/kg	Z	
106-43-4	4-Chlorotoluene	EPA 8260	ND	1	ug/kg	z	
108-10-1	4-Methyl-2-Pentanone (MIBK)	EPA 8260	ND	7	ug/kg	6400000	Careford -
67-64-1	Acetone	EPA 8260	ND	7	ug/kg	8000000	U
107-02-8	Acrolien	EPA 8260	ND	27	ug/kg	1600000	
107-13-1	Acrylonitrile	EPA 8260	ND	7	ug/kg	80000	



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

R Sa R(eport Date: 07/12/96 ample Collected: 07/07/96 eceived Date: 07/08/96	Facility: Re Job Number	e Pr Pr	Project Name: TANK T9B Project No:			
Client ID	:T9B-R1(38)	Lab ID: AA	05946				
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits	
71-43-2	Benzene	EPA 8260	ND	1	ug/kg	34500	
74-97-5	Bromochloromethane	EPA 8260	ND	1	ug/kg	Z	
75-27-4	Bromodichloromethane	EPA 8260	ND	1	ug/kg	16100	
75-25-2	Bromoform	EPA 8260	ND	1	ug/kg	127000	
74-83-9	Bromomethane	EPA 8260	ND	1	ug/kg	112000	
75-15-0	Carbon Disulfide	EPA 8260	ND	1	ug/kg	8000000	
56-23-5	Carbon Tetrachloride	EPA 8260	ND	1	ug/kg	7690	
108-90-7	Chlorobenzene	EPA 8260	ND	1	ug/kg	1600000	
75-00-3	Chloroethane	EPA 8260	ND	1	ug/kg	Z	
67-66-3	Chloroform	EPA 8260	ND	1	ug/kg	164000	
74-87-3	Chloromethane	EPA 8260	ND	1	ug/kg	76900	
156-59-2	cis-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	800000	
10061-01-5	cis-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z	
124-48-1	Dibromochloromethane	EPA 8260	ND	1	ug/kg	11900	
74-95-3	Dibromomethane	EPA 8260	ND	. 1	ug/kg	Z	
75-71-8	Dichlorodifluoromethane	EPA 8260	ND	1	ug/kg	1600000	
100-41-4	Ethylbenzene	EPA 8260	ND	1	ug/kg	8000000	
87-68-3	Hexachlorobutadiene	EPA 8260	ND	1	ug/kg	12800	
98-82-8	Isopropylbenzene	EPA 8260	ND	1	ug/kg	Z	
96-37-7	Methylcyclopentane	EPA 8260	ND	1	ug/kg	Ζ.	
75-09-2	Methylene Chloride	EPA 8260	ND	7	ug/kg	133000	
104-51-8	n-Butylbenzene	EPA 8260	ND	1	ug/kg	Z	
103-65-1	n-propylbenzene	EPA 8260	ND	1	ug/kg	Z	
91-20-3	Naphthalene	EPA 8260	81	7	ug/kg	3200000	
95-47-6	o-Xylene	EPA 8260	ND	1	ug/kg	16000000	
99-87-6	p-Isopropyltoluene	EPA 8260	75	1	ug/kg	Z	
106-42-3	m,p-Xylene	EPA 8260	ND	1	ug/kg	Z	
135-98-8	sec-Butylbenzene	EPA 8260	ND	1	ug/kg	Z	
100-42-5	Styrene	EPA 8260	ND	1	ug/kg	33300	
98-06-6	tert-Butylbenzene	EPA 8260	ND	1	ug/kg	Z	
127-18-4	Tetrachloroethene	EPA 8260	ND	1	ug/kg	19600	
108-88-3	Toluene	EPA 8260	ND	3	ug/kg	1600000	
156-60-5	trans-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	1600000	
10061-02-6	Trans-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z	

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96 Client ID: T9B-R1(38)		Facility: Re Job Numbe	gulatory Affa r: 96070046	Project Name: TANK T9B Project No:			
		Lab ID: AA05946					
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits	
79-01-6	Trichloroethene	EPA 8260	ND	3	ug/kg	90900	
75-69-4	Trichlorofluoromethane	EPA 8260	ND	1	ug/kg	24000000	
108-05-4	Vinyl Acetate	EPA 8260	ND	1	ug/kg	8000000	
75-01-4	Vinyl chloride	EPA 8260	ND	1	ug/kg	526	
75-35-4	1,1-Dichloroethene	EPA 8260	ND	1	ug/kg	8,000,00	
	Bromobenzene	EPA 8260	ND	1	ug/kg		
EPA 8260)/624 Surrogate						
	4-Bromofluorobenzene	EPA 8260	110		%		
	1,2-Dichlorethane-D4	EPA 8260	120		%		
	Toluene-D8	EPA 8260	90		%		

ND = Not Detected at Detected at Detection Limit. B = Analyte Found in Method Blank.

E = The concentration of this analyte exceeds the calibration range of the instrument.

Q = Analyte concentration and/or MDL is greater than the 1996 MTCA B Limits.

z = Analyte not listed in 1996 MTCA Method B.



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

	Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96		Facility: Regulatory Affairs Job Number: 96070046			Project Name: TANK T9B Project No:			
Client I	ID: T9B-R2(59)	Lab ID: AA05947				· · · · · · · · · · · · · · · · · · ·			
CAS EPA 82	Analyte 60 Soil	Me	thod	Result	MDL	Units	MTCA B Limits		
630-20-6	1,1,1,2-Tetrachloroethane	EPA	8260	ND	4	ug/kg	38500		
71-55-6	1,1,1-Trichloroethane	EPA	8260	ND	1	ug/kg	72000000		
79-34-5	1,1,2,2-Tetrachloroethane	EPA	8260	ND	4	ug/kg	5000		
79-00-5	1,1,2-Trichloroethane	EPA	8260	ND	1	ug/kg	17500		
306-83-2	1,1-DichloroTrifluoroethane	EPA	8260	ND	7	ug/kg	Z		
75-34-3	1,1-Dichloroethane	EPA	8260	ND	1	ug/kg	8000000		
563-58-6	1,1-Dichloropropene	EPA	8260	ND	1	ug/kg	Z		
87-61-6	1,2,3-Trichlorobenzene	EPA	8260	ND	1	ug/kg	Z		
96-18-4	1,2,3-Trichloropropane	EPA	8260	ND	1	ug/kg	143		
120-82-1	1,2,4-Trichlorobenzene	EPA	8260	ND	1	ug/kg	800000		
95-63-6	1,2,4-Trimethylbenzene	EPA	8260	30	1	ug/kg	Z		
96-12-8	1,2-Dibromo-3-chloropropane	EPA	8260	ND	7	ug/kg	714		
106-93-4	1,2-Dibromoethane	EPA	8260	ND	1	ug/kg	1.18		
95-50-1	1,2-Dichlorobenzene	EPA	8260	4.5	1	ug/kg	7200000		
107-06-2	1,2-Dichloroethane	EPA	8260	ND	1	ug/kg	11000		
78-87-5	1,2-Dichloropropane	EPA	8260	ND	1	ug/kg	14700		
108-67-8	1,3,5-Trimethylbenzene	EPA	8260	80	1	ug/kg	Z		
541-73-1	1,3-Dichlorobenzene	EPA	8260	ND	1	ug/kg	Z		
142-28-9	1,3-Dichloropropane	EPA	8260	ND	_ 1	ug/kg	Z		
106-46-7	1,4-Dichlorobenzene	EPA	8260	ND	1	ug/kg	41700		
594-20-7	2,2-Dichloropropane	EPA	8260	ND	1	ug/kg	Z		
78-93-3	2-Butanone (MEK)	EPA	8260	ND	7	ug/kg	4800000		
110-75-8	2-Chlorethyl vinyl ether	EPA	8260	ND	1	ug/kg	Z		
95-49-8	2-Chlorotoluene	EPA	8260	ND	1	ug/kg	1600000		
591-78-6	2-Hexanone	EPA	8260	ND	7	ug/kg	Z		
107-83-5	2-Methylpentane	EPA	8260	ND	7	ug/kg	z		
96-14-0	3-Methylpentane	EPA	8260	26	7	ug/kg	Z		
106-43-4	4-Chlorotoluene	EPA	8260	ND	1	ug/kg	Z		
108-10-1	4-Methyl-2-Pentanone (MIBK)	EPA	8260	NĎ	7	ug/kg	6400000		
67-64-1	Acetone	EPA	8260	230	7	ug/kg	8000008		
107-02-8	Acrolien	EPA	8260	ND	29	ug/kg	1600000		
107-13-1	Acrylonitrile	EPA	8260	ND	7	ug/kg	80000		



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

R Si R	eport Date: 07/12/96 ample Collected: 07/07/96 eceived Date: 07/08/96	Facility: Re Job Numbe	Facility: Regulatory AffairsProject Name: TANKJob Number: 96070046Project No:						
Client ID	D:T9B-R2(59)	Lab ID: AA	05947	· · · ·		·			
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits			
71-43-2	Benzene	EPA 8260	ND	1	ug/kg	34500			
74-97-5	Bromochloromethane	EPA 8260	ND	1	ug/kg	Z			
75-27-4	Bromodichloromethane	EPA 8260	ND	1	ug/kg	16100			
75-25-2	Bromoform	EPA 8260	ND	1	ug/kg	127000			
74-83-9	Bromomethane	EPA 8260	ND	1	ug/kg	112000			
75-15-0	Carbon Disulfide	EPA 8260	ND	1	ug/kg	8000000			
56-23-5	Carbon Tetrachloride	EPA 8260	ND	1	ug/kg	7690			
108-90-7	Chlorobenzene	EPA 8260	ND	1	ug/kg	1600000			
75-00-3	Chloroethane	EPA 8260	ND	1	ug/kg	Z			
67-66-3	Chloroform	EPA 8260	ND	1	ug/kg	164000			
74-87-3	Chloromethane	EPA 8260	ND	1	ug/kg	76900			
156-59-2	cis-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	800000			
10061-01-5	cis-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z			
124-48-1	Dibromochloromethane	EPA 8260	ND	1	ug/kg	11900			
74-95-3	Dibromomethane	EPA 8260	ND	1	ug/kg	Z			
75-71-8	Dichlorodifluoromethane	EPA 8260	ND	1	ug/kg	1600000			
100-41-4	Ethylbenzene	EPA 8260	14	1	ug/kg	8000000			
87-68-3	Hexachlorobutadiene	EPA 8260	ND	1	ug/kg	12800			
98-82-8	Isopropylbenzene	EPA 8260	ND	1	ug/kg	Z			
96-37-7	Methylcyclopentane	EPA 8260	100	1	ug/kg	Z			
75-09-2	Methylene Chloride	EPA 8260	ND	7	ug/kg	133000			
104-51-8	n-Butylbenzene	EPA 8260	ND	1	ug/kg	Z			
103-65-1	n-propylbenzene	EPA 8260	12	1	ug/kg	Z			
91-20-3	Naphthalene	EPA 8260	900	7	ug/kg	3200000			
95-47-6	o-Xylene	EPA 8260	15	1	ug/kg	1600000			
99-87-6	p-Isopropyltoluene	EPA 8260	30	1	ug/kg	Z			
106-42-3	m,p-Xylene	EPA 8260	40	· 1 ·	ug/kg	Z			
135-98-8	sec-Butylbenzene	EPA 8260	ND	1	ug/kg	Z			
100-42-5	Styrene	EPA 8260	ND	1	ug/kg	33300			
98-06-6	tert-Butylbenzene	EPA 8260	ND	1	ug/kg	Z			
127-18-4	Tetrachloroethene	EPA 8260	ND	1	ug/kg	19600			
108-88-3	Toluene	EPA 8260	11	3	ug/kg	1600000			
156-60-5	trans-1,2-Dichloroethene	EPA 8260	ND	1	ug/kg	1600000			
10061-02-6	Trans-1,3-Dichloropropene	EPA 8260	ND	1	ug/kg	Z			

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96 Client ID: T9B-R2(59)		Facility: Re Job Numbe	gulatory Affa r: 96070046 05947	irs	Project Name: TANK T9B Project No:		
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits	
79-01-6	Trichloroethene	EPA 8260	ND	3	ug/kg	90900	
75-69-4	Trichlorofluoromethane	EPA 8260	ND	1	ug/kg	2400000	
108-05-4	Vinyl Acetate	EPA 8260	ND	1	ug/kg	8000000	
75-01-4	Vinyl chloride	EPA 8260	ND	1	ug/kg	526	
75-35-4	1,1-Dichloroethene	EPA 8260	ND	1	ug/kg	8,000,00	
	Bromobenzene	EPA 8260	ND	1	ug/kg		
EPA 820	60/624 Surrogate						
	4-Broinofluorobenzene	EPA 8260	120		%		
	1,2-Dichlorethane-D4	EPA 8260	120		%		
	Toluene-D8	EPA 8260	91		%		

ND = Not Detected at Detected at Detection Limit. B = Analyte Found in Method Blank.

E = The concentration of this analyte exceeds the calibration range of the instrument.

Q = Analyte concentration and/or MDL is greater than the 1996 MTCA B Limits.

z = Analyte not listed in 1996 MTCA Method B.



WESTERN REGION

Phillip Environmental Laboratory 955 Powell Avenue S.W. Renton, WA 98055-2908 TEL 206.227.6110 FAX 206.227.6196

Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Report Date: 07/12/96 Sample Collected: 07/07/96 Received Date: 07/08/96		Facility: Re Job Numbe	egulatory Affairs er: 96070046	s F F	Project Name: TANK T9B Project No:				
Client ID):T9B-1-RC	Lab ID: AA	.05948	I					
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits			
7440-22-4	Silver	EPA 6010	< 0.213	0.213	mg/Kg	400			
7440-38-2	Arsenic	EPA 6010	< 2.13	2.13	mg/Kg	1.67	Q		
7440-39-3	Barium	EPA 6010	40.8	4.26	mg/Kg	5600			
7440-43-9a	Cadmium	EPA 6010	0.264	0.106	mg/Kg	80			
7440-47-3	Chromium	EPA 6010	9.88	0.213	mg/Kg	Z			
7439-97-6	Mercury	EPA 7471	< 0.0667	0.0667	mg/Kg	24			
7439-92-1	Lead	EPA 6010	5:02	2.13	mg/Kg	7			
7787-49-2	Selenium	EPA 6010	< 6.38	6 3 8	mg/Kg	400			
EPA 8270	Solid		0.50	0.50		400	Ē		
120-82-1	1.2.4-Trichlorobenzene	EPA 8270	ND	33	ug/kg	800000	(
95-50-1	1.2-Dichlorobenzene	EPA 8270	ND	33	ug/kg	7200000	`		
541-73-1	1,3-Dichlorobenzene	EPA 8270	ND	33	ug/kg	Z			
106-46-7	1,4-Dichlorobenzene	EPA 8270	ND	33	ug/kg	41700			
95-95-4	2,4,5-Trichlorophenol	EPA 8270	ND	33	ug/kg	8000000			
88-06-2	2,4,6-Trichlorophenol	EPA 8270	ND	33	ug/kg	90900			
120-83-2	2,4-Dichlorophenol	EPA 8270	ND	33	ug/kg	240000			
105-67-9	2,4-Dimethylphenol	EPA 8270	ND	33	ug/kg	1600000			
51-28-5	2,4-Dinitrophenol	EPA 8270	ND	167	ug/kg	160000			
121-14-2	2,4-Dinitrotoluene	EPA 8270	ND	33	ug/kg	160000			
606-20 - 2	2,6-Dinitrotoluene	EPA 8270	ND	33	ug/kg	. 80000			
91-58-7	2-Chloronaphthalene	EPA 8270	ND	33	ug/kg	Z			
95-57-8	2-Chlorophenol	EPA 8270	ND	33	ug/kg	400000			
91-57-6	2-Methylnaphthalene	EPA 8270	140	33	ug/kg	Z			
95-48-7	2-Methylphenol	EPA 8270	ND	33	ug/kg	4000000			
88-74-4	2-Nitroaniline	EPA 8270	ND	67	ug/kg	Z			
88-75-5	2-Nitrophenol	EPA 8270	ND	33	ug/kg	Z			
91-94-1	3,3'-Dichlorobenzidine	EPA 8270	ND	33	ug/kg	2220			
99-09-2	3-Nitroaniline	EPA 8270	ND	167	ug/kg	Z			
534-52-1	4,6-Dinitro-2-methylphenol	EPA 8270	ND	167	ug/kg	Z	and the second		
101-55-3	4-Bromophenyl-phenylether	EPA 8270	ND	33	ug/kg	z	(
59-50-7	4-Chloro-3-methylphenol	EPA 8270	ND	67	ug/kg	Z			
106-47-8	4-Chloroaniline	EPA 8270	ND	67	ug/kg	320000			
7005-72-3	4-Chlorophenyl-phenylether	EPA 8270	ND	33	ug/kg	Z			



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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

Re Sa Re	port Date: 07/12/96 mple Collected: 07/07/96 ceived Date: 07/08/96	Facility: Re Job Numbe	gulatory Affairs r: 96070046]	Project Name: TANK T9B Project No:					
Client ID	:T9B-1-RC	Lab ID: AA	05948				-			
CAS	Analyte	Method	Result	MDL	Units	MTCA B Limits				
106-44-5	4-Methylphenol	EPA 8270	ND	33	ug/kg	400000				
100-01-6	4-Nitroaniline	EPA 8270	ND	167	ug/kg	Z				
100-02-7	4-Nitrophenol	EPA 8270	ND	33	ug/kg	Z				
83-32-9	Acenaphthene	EPA 8270	ND	33	ug/kg	4800000				
208-96-8	Acenaphthylene	EPA 8270	ND	33	ug/kg	Z				
98-86-2	Acetophenone	EPA 8270	ND	167	ug/kg	8000000				
62-53-3	Analine	EPA 8270	ND	167	ug/kg	175000				
120-12-7	Anthracene	EPA 8270	ND	33	ug/kg	2400000				
103-33-3	Azobenzene	EPA 8270	ND	33	ug/kg	Z				
92-87-5	Benzidine	EPA 8270	ND	33	ug/kg	4.35	Q			
56-55-3	Benzo[a]anthracene	EPA 8270	ND	67	ug/kg	137				
50-32-8	Benzo[a]pyrene	EPA 8270	ND	33	ug/kg	137				
205-99-2	Benzo[b]fluoranthene	EPA 8270	ND	33	ug/kg	137				
191-24-2	Benzo[g,h,i]perylene	EPA 8270	ND	33	ug/kg	z				
207-08-9	Benzo[k]fluoranthene	EPA 8270	ND	33	ug/kg	137				
65-85-0	Benzoic Acid	EPA 8270	ND	167	ug/kg	32000000				
100-51-6	Benzyl alcohol	EPA 8270	ND	67	ug/kg	3400000				
111-91-1	bis(2-Chloroethoxy)methane	EPA 8270	ND	33	ug/kg	z				
111-44-4	bis(2-Chloroethyl)ether	EPA 8270	ND	33	ug/kg	909				
39638-32-9	bis(2-chloroisopropyl)ether	EPA 8270	ND	33	ug/kg	3200000				
117-81-7	bis(2-Ethylhexyl)phthalate	EPA 8270	340	167	ug/kg	71400				
85-68-7	Butylbenzylphthalate	EPA 8270	ND	33	ug/kg	1600000				
218-01-9	Chrysene	EPA 8270	ND	. 33	ug/kg	137				
84-74-2	Di-n-butylphthalate	EPA 8270	ND	33	ug/kg	Z				
117-84-0	Di-n-octylphthalate	EPA 8270	ND	33	ug/kg	Z				
132-64-9	Dibenzofuran	EPA 8270	ND	167	ug/kg	Ζ.				
84-66-2	Diethylphthalate	EPA 8270	ND	33	ug/kg	6400000				
131-11-3	Dimethylphthalate	EPA 8270	ND	33	ug/kg	80000000				
206-44-0	Fluoranthene	EPA 8270	ND	33	ug/kg	3200000				
86-73-7	Fluorene	EPA 8270	ND	33	ug/kg	3200000				
118-74-1	Hexachlorobenzene	EPA 8270	ND	33	ug/kg	625				
87-68-3	Hexachlorobutadiene	EPA 8270	ND	33	ug/kg	12800				
77-47-4	Hexachlorocyclopentadiene	EPA 8270	ND	33	ug/kg	560000				
67-72-1	Hexachloroethane	EPA 8270	ND	33	ug/kg	71400				

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Analytical Report

To: John Stiller 955 Powell Avenue Southwest Renton, WA 98055

roject Name: T roject No:	ANK T9B
Units M'	TCA B Limits
ug/kg	0.012 Q
ug/kg	1050000
ug/kg	143
ug/kg	204000
ug/kg	3200000
ug/kg	40000
ug/kg	8330
ug/kg	Z
ug/kg	48000000
ug/kg	2400000
mg/kg	5600
mg/kg	Z
mg/kg	Z
mg/kg	Z
mg/kg	· 1600
mg/kg	Z
	roject Name: T oject No: <u>Units</u> <u>M</u> ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg ug/kg

ND = Not Detected at Detected at Detection Limit. B = Analyte Found in Method Blank.

E = The concentration of this analyte exceeds the calibration range of the instrument.

Q = Analyte concentration and/or MDL is greater than the 1996 MTCA B Limits.

z = Analyte not listed in 1996 MTCA Method B.

Data Reviewed by:

Data Reported by:



Chin of Custody/ Laboratory Analysis Request

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SAMPLERS NAME TIUGK	PHONE # XG12	1	/ACI(ORG /824		met ^t	e me	SOLV	TED	ALS	5353	ICS (5 8080 3150	щ							PF C(N N
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SAMPLEID. DATE	TIME LABID	TYPE	BASE/ GC/MS	VOLAT	PCB's 608/80	TPH (0 418.1	BETX 8240 o	F-LIST 8240	TCLP 1311/8	TCLP D004-1	METAI As. Ba Ni. Hg	TCLP OI • VOA • Peste • Peste	DISCH TESTI	PROF					or same to be a set of the set of	NUMB	RECE
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Received By					Received By																
Signature					Signature																
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DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.



Chain of Custody/ Laboratory Analysis Request

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PROJECT ANK TAP CLIENT INFO CONTACT TELEPHONE # SAMPLERS NAME	2 (14) (14) The	<u>F</u>	# PHONE #_ <u>K(A</u> /2	2	NEU/ACID ORGAN S/625/8270	TILE ORGANICS S/624/8240	080	circle method) or 8015	(circle method) or 8020	TED SOLVENTS	F-LISTED SOLVENTS 8240	METALS	uts (TOTAL) a. c.d. c.d. c.d. Pb. b. Ag. Se. 11, - [. C. [.])RGANICS (specify methods) 15 8240 15 8240 15 8270 15 8280 15 91 50	HARGE ING							BER OF CONTAINERS	EIVED IN GOOD CONDIT
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June 4, 2021

Appendix C-2

Building Drawings







June 4, 2021

Appendix C-3

Site Health and Safety Plan

(Per conversation between K. Potter and B. Feldhahn on November 18, 2020, no plan is required)



June 4, 2021

Appendix C-4

Laboratory Quality Assurance Project Plan

SPECTRA Laboratories

QUALITY ASSURANCE MANUAL

Revision #5 February 2013

Uncontrolled Copy 2-22-13

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • www.spectra-lab.com

SPECTRA LABORATORIES

QUALITY ASSURANCE MANUAL

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1. INTRODUCTION

1.1 Purpose

This manual describes the quality assurance system employed at Spectra Laboratories, LLC DBA Spectra Laboratories. This is in compliance with the intent of the general quality system requirements of the following organizations: EPA, DOE, ASTM, AOAC, and other accrediting organizations. The policy of Spectra Laboratories is to apply the system to all testing and analytical activities undertaken on behalf of the customers in order to meet their requirements for quality assurance and quality control.

<u>Quality Assurance</u> is defined as those programs and procedures which determine that data generated is accurate, precise, legally defensible, and that the quality control program is effective. QA usually refers to the managerial functions associated with quality, such as the determination of recovery limits, training requirements, frequency of and corrective measures taken as the result of audits, trend analyses, etc.

<u>Quality Control</u> is defined as routine, daily activities which insure that data generated meets acceptable levels of quality. These are generally physical activities or activities where data is compared to established norms with decisions made based on that comparison. Items such as performing matrix spikes, comparing standard responses to established limits, repeating samples when concentrations are above calibration ranges, etc. are quality control activities.

The manual provides personnel and customers of Spectra Laboratories with a description of company policy for maintaining an effective quality assurance program developed in conjunction with other management planning functions.

This manual describes the general quality assurance and quality control program. The specific procedures are addressed in the Standard Operating Procedure Manual.

1.2 Proclamation

The Quality Assurance Program described in this Quality Assurance Manual has the absolute and unqualified support of the management of Spectra Laboratories. These procedures are binding on all personnel of the laboratory and shall be adhered to implicitly.

Our established goal is the delivery of accurate and reliable analytical service at a reasonable price.

All Spectra Personnel are expected to use this manual as a guide to the continued maintenance and improvement of the quality of laboratory services provided.

2. GOALS AND OBJECTIVES

2.1 Purpose and Scope

The purpose of this section is to delineate the Quality Objectives of Spectra Laboratories.

The objective of the Laboratory Quality Assurance Program is to ensure the accuracy and precision, as well as the reliability of laboratory results produced for our customers, or at the request of regulatory or accrediting bodies. The QA/QC purposes are:

To maintain the physical sample's integrity and the data results validity and usability.

To ensure the analytical measurement systems are maintained in an acceptable state of stability and reproducibility.

To detect problems through data assessment and establish corrective action procedures which keep the analytical process reliable.

To document all aspects of the measurement and reporting process in order to provide data which is technically sound and legally defensible?

2.2 Specific Objectives

Establish, and update on a regular basis, the quality assurance and quality control program, which includes this manual.

Put into service methods capable of meeting the user's needs for precision, accuracy, sensitivity, and specificity.

Ensure that all staff members receive training in basic quality technology, in sufficient depth to enable them to carry out the provisions of this manual.

Establish the level of quality of the laboratory's routine performance as a baseline against which to measure the effectiveness of quality improvement efforts.

Monitor the routine operational performance of the laboratory through participation in appropriate interlaboratory testing programs and implement corrective actions as necessary.

Improve and validate laboratory methodologies by participation in method validation studies.

3. QUALITY POLICIES

3.1 Purpose and Scope

This section lists policies to be implemented by the laboratory in order to achieve the objectives set forth in Section 2 and in the furtherance of the overall quality control program. It only outlines the Management's policies with regard to Quality Assurance. Details for carrying out these policies appear in later sections of the manual.

3.2 Laboratory Quality Policy

Quality assurance activities shall emphasize the prevention of problems as well as the detection and correction of problems after they occur.

All employees engaging in making decisions affecting the quality of laboratory output shall undergo training programs designed to be commensurate with their positions, duties, and responsibilities.

The laboratory shall use published analytical and test methodologies whenever possible.

The laboratory shall retain copies of all test and analytical reports for a period specified by regulatory and accrediting bodies or a minimum of five years, whichever is longer.

The laboratory shall have a comprehensive calibration program involving all instrumentation used for making determinations, the results of which are reported to the individual in charge of the instrument and the QA Manager.

The laboratory shall use appropriate, fresh reagents and chemicals, certified when necessary, and appropriate calibrated glassware.

The laboratory shall establish and maintain a total intra-laboratory quality control and audit system to assure compliance with various accrediting organizations. This is accomplished by the analysis of samples of known concentration. Appropriate recovery limits may have accompanied the original samples obtained from the supplier (EPA, DOE, etc.) and those shall be used. If none were given, limits shall be developed by the laboratory QA Manager.

4. QA/QC MANAGEMENT ORGANIZATION

4.1 Purpose and Scope

This section describes the QA/QC organization of Spectra Laboratories. The QA Officer of Spectra Laboratories reports to the Laboratory Manager/Director. The two positions work together to ensure each department is meeting or exceeding QA/QC requirements. All analytical chemistry responsibilities fall under the control of the Laboratory Manager/Director. The responsibilities for the overall QA/QC program are supervised by the QA Officer.

The Organization Chart of Spectra Laboratories illustrating the placement of the quality function within the organization is shown in Appendix A.

4.2 Laboratory Manager/Director - Job Description in relation to Quality Control

The Laboratory Manager/Directors position is to oversee every aspect of the lab. This includes advising, supporting and monitoring the QA Officer. They work in conjunction to manage the installation, staffing and supervision of all QC programs.

Insures Chemists/Analysts, and Technicians comply with QC requirements as outlined in the Standard Operating Procedure.

Assures the SOP Manual is current.

Reviews all client reports to ensure all QA/QC requirements have been met. QA/QC requirements include in-house requirements, regulatory requirements, project-specific requirements, and client requested requirements.

Reviews new technology, methods, and equipment and implements improvements where applicable.

Advises in the purchasing of quality equipment, materials, reagents, and chemicals.

Attends all quality round table meetings and assists the staff in achievement of quality goals.

4.3 QA Officer-Job Description

The QA Officer is responsible for Spectra Laboratories Quality Control program. The QA Officer reports to the Laboratory Manager/Director.

Schedules and evaluates performance evaluation samples. These include water supply, water pollution/LPT studies for drinking water, NPDES/DMRQA wastewater, and solid waste/soil, respectively.

Monitors quality control activities of the laboratory to determine compliance with authorized policies and procedures. Makes appropriate recommendations for correction and improvement as necessary.

Seeks out and evaluates new ideas and current developments in the field of quality control and recommends means for their application wherever advisable

Coordinates the review, issuance, and distribution of all QA Manuals.

Coordinates all chemical and administrative audits and certification programs.

Maintains the QA/QC file.

Conducts periodic training of administrative and laboratory personnel on QA/QC matters.

Attends all quality round table meetings and assists the staff in achievement of quality goals.

Performs such other related duties as may be assigned.

4.4 QA Responsibilities of remaining staff

In addition to the Lab Manager and Quality Assurance Officer, quality responsibilities fall upon various other individuals.

Chemists/Analysts and Technicians cooperate fully on a daily basis with the Laboratory Manager/Director and QA Manager in order to insure they are current on all standard operating procedures, regulatory requirements and methodologies. They are to insure instruments have been maintained and are performing at or above specifications. They are responsible for maintaining the standards and reagents used meet QA/QC requirements. They initiate non-conformance reports when variances in data or instrument performance dictate. They generate initial client data, monitor all QC facets of the analyses, and alert the Lab Manager to any abnormalities. They document all quality control activities, calibrations and attend quality round table meetings. They are instrumental in coordinating the successful completion of QA/QC within Spectra Laboratories.

Data Management is responsible for assisting in accurately converting raw data into client ready reports, and for auditing the final reports. They play a crucial role in maintaining our client's data is kept confidential. In addition to attending round table quality meetings, they are responsible for maintaining all client files, insuring accuracy of invoicing, auditing data for gross errors, and proper archiving of all laboratory data, reports, and other pertinent information to be retained.

Sample Coordinator has many duties and responsibilities where QA/QC is critical. These include sample handling, storage, shipment and disposal. A complete section of this QA manual pertains to their duties, most of which relate to the quality control of the lab, please see section 6 of this manual. The Sample Coordinator also attends quality round table meetings.

4.5 Quality Round Table Meetings

The technical and administrative personnel meet on a regular basis specifically to identify and to discuss QA/QC problems, and suggest courses of actions to correct them. Suggestions for improving the quality of data, reducing turnaround time, and improving the overall performance of the laboratory may be initiated immediately by the group or under certain circumstances may require the approval of the Lab Manager and QA Manager. A record is kept of the meeting.

5. MANAGEMENT OF QUALITY ASSURANCE MANUALS

5.1 Purpose and Scope

The purpose of this section is to define the tasks and responsibilities relating to the preparation, distribution, review, and maintenance of the Quality Manual. It deals primarily with those manuals which are issued under controlled conditions.

5.2 Issues, Distribution, and Maintenance of the Manual

The QA Officer bears the primary responsibility for the preparation, issue, review, and upkeep of the Laboratory Quality Assurance Manuals.

After the preparation of the manual, the QA Officer is responsible for the initial distribution of controlled copies of the manual. Controlled copies are serially numbered, and a distribution list is kept with the original copy showing to whom each copy has been issued. The purpose of this control is to make sure that all manuals are consistent and up-to-date.

Uncontrolled copies of the manual may be distributed, from time-to-time, to individuals or organizations outside the laboratory. These copies will not be numbered or logged and will not receive changes as they occur. Uncontrolled copies will be so marked.

The QA Officer is responsible for the timely, periodic review of the content of the manual to ensure that its requirements reflect current operating conditions.

Revisions, additions, or deletions occurring as a result of periodic review or other authorized changes will be controlled through the issue of revisions to individuals or laboratory components listed on the master distribution list.

6. SAMPLE CONTROL, HANDLING, STORAGE, AND SHIPPING

6.1 Purpose and Scope

The purpose of this section is to describe the duties and responsibilities of the Sample Coordinator with respect to shipping, packaging, handling and storage of samples.

This section provides guidance in making decisions pertinent to the validity and acceptability of samples submitted for testing or analysis. While it is particularly pertinent to samples submitted to the laboratory for environmental analysis, its principles apply broadly to all types of samples, the goal being the preservation of the integrity of the sample. It is applicable to all in-house and contract laboratory activities dealing with the handling of samples.

6.2 Physical Condition of the Sample Container

Physical damage to the sample container received from commercial clients, CLP samplers, or others may be the fault of the carrier due to abusive handling or faulty packaging. If damage to the container is evident, the condition of the container shall be noted on the Sample Receiving Checklist and the package will be carefully opened and its contents inspected. The client shall make a decision concerning the disposition of the sample as to whether or not analytical testing is to be conducted, the sample to be returned, or if it is to be discarded.

6.3 Sample Integrity

Sample integrity refers to the cumulative end result of those factors which contribute to the overall validity of a sample. Sample integrity is promoted and preserved by adhering to adequate coordinator handling, and identification procedures by those individuals collecting the samples, up to the point of receipt of the samples by the laboratory.

Spectra Laboratories shall have available proper sample containers for sample collection and transport to the lab. The lab maintains a current inventory of EPA and DOE approved containers. A current list of containers, quantities required, holding times, and preservatives can be found in the Sampling Guide, see Appendix B.

Additional information concerning the maintenance of sample integrity prior to receipt of the samples at the lab can be found in the Sample Control Standard Operating Procedures.

When the samples are received for testing or analysis, they are checked for:

Physical damage due to inadequate packing and protection.

Use of Custody seals are checked to see if intact, and the name and date are logged.

That the samples were collected in the proper container and sufficient amount was collected to perform all analyses.

Were VOA vials free of air bubbles?

Was the correct preservation added to samples?

Cooler and Sample temperature is taken and recorded.

Please see the Sample Receiving Checklist, Appendix C.

6.4 Sample Identification

A basic requirement of sample control is accurate sample identification. Samples that cannot be related to specific sample identification information on the associated sample chain of custody because of inadequate, ambiguous, or nonexistent labeling, will be quarantined until the client is able to provide specific identification.

Upon receipt at the laboratory, each independent sample shall be assigned a unique Spectra Lab identification number and labeled accordingly. The Spectra Lab number is generated by our VLP LIMS system. The number shall also be written on the Chain of Custody. Additionally, the client name, client contact, sample ID, and date sampled are also entered into the LIMS system.

6.5 Sample Storage

Immediately after the log-in procedure is complete, the samples shall be stored according to the procedures set forth in the appropriate EPA, ASTM, or other methodology. Generally, samples are stored with like matrix/sample bottles and/or in ascending identification number order at 4-6 degrees centigrade. Some samples, such as solvents, petroleum distillates, and other organic liquids may be stored at ambient room temperature as refrigeration is not required. Samples are not to be stored with standard reference materials.

7. CHAIN-OF-CUSTODY PROCEDURES

7.1 Purpose and Scope

This section describes the procedures to be followed when strict chain-of-custody (COC) protocols for samples received must be followed.

This laboratory follows strict chain-of-custody procedures in handling all environmental samples received for testing or analysis. Additionally, these procedures are followed for all other samples where it is so requested by the client. Usually chain-of-custody documentation is necessary when laboratory results are to be used as evidence in legal proceedings. We require a Chain of Custody form accompany all samples. A Spectra staff member will go over the COC for accuracy before signing and receiving the samples.

7.2 Chain-of-Custody Documentation Form

An example of our Chain of Custody form is located in Appendix D.

7.3 Procedure

All shipping containers sent to clients are to have one or more chain-of-custody forms present. The form is to be filled out by the sampling personnel and is to accompany the samples at all times.

If the sampler ships the samples via an independent carrier, the individual and the carrier should sign and date the form.

Signatures are required when samples are in your custody. EPA defines custody as being: 1. in your possession, 2. in your view after being in your possession, 3. being placed in a secure area by yourself after being in your view, and 4. in a secure area under your control.

Upon receipt at the laboratory, the samples' identification numbers, matrices, containers, etc. are checked against the information on the form, discrepancies noted. The form is signed and dated; the pink copy is given to the client at that time. The original and yellow copy are placed in the active client file, and upon completion of all tests, the yellow copy is returned with the results to the client.

The original chain-of-custody is to always accompany the sample. If a sample is split, such as for subcontracting analyses, a separate Chain of Custody shall be filled out and follow the sample as above.

After logging in, samples are then placed in the appropriate secure area until all analyses are performed.

In addition to the chain-of-custody form, a variety of laboratory sample tracking documentation is maintained such as sample log-in/log-out from the sample control area, instrument bench sheets noting when samples were prepped and analyzed, laboratory notebooks, etc. Return of samples to clients after completion of testing is documented and covered under the sample control SOP.

8. LABORATORY METHODOLOGY, VALIDATION, AND ANALYSIS CONTROL

8.1 Purpose and Scope

This section deals with the methods used at Spectra Laboratories and how the lab maintains a specified level of quality control associated with the experimental method.

8.2 Methods

Spectra uses only established methods for routine analytical testing. These methods are found in six basic references.

"Standard Methods for the Examination of Water and Wastewater," 20th edition, American Public Health Association, et. al., Washington, D.C.

"Annual Book of ASTM Standards," Volumes 05.01 and 05.05, American Society for Testing and Materials, Easton, MD

"Test Methods for Evaluating Solid Waste," SW-846, Third Edition, US EPA, Washington, D.C.

"Guidelines Establishing Test Procedures for the Analysis of Pollutants," (EPA 600 series methods), 40 CFR Part 136, Office of the Federal Register National Archives and Records Administration, Washington, D.C.

"Methods for Chemical Analysis of Water and Waste" EPA-600/4-79-020 March 1979 US EPA EMSL, Cincinnati, Ohio.

The Laboratory Manager/Director is responsible for ensuring that the most current revisions of the methods are present in the lab. Outdated copies are removed from the lab, dated, and archived. Wherever possible, the lab is placed on a list to automatically receive updates of methods as they become available.

Non-routine methods are obtained from in-house development or through scientific literature or other sources, and can be found in the Methods Manual.

8.3 Standard Operating Procedures

In addition to the methods listed in the reference materials, the laboratory maintains a complete set of SOPs which describe specifically how the referenced method is performed at the laboratory. Specific instrumentation is listed, QA/QC information, reporting limits, deviations from the original method, function and control checks, etc.

The format of the Spectra SOP for methods generally follows the format of standard methods. Specifics are given under each section heading. If no deviations are made from the original method, "No deviation" is listed under the section heading. All standard operating procedures must contain the following information:

- 1. Scope and Application
- 2. Summary of the Method with EPA, ASTM Method Reference
- 3. Interferences
- 4. Apparatus, Materials, and Reagents
- 5. Sample Collection, Preservation, Storage and Handling
- 6. Procedure and Calculations
- 7. Quality Control and Reporting
- 8.4 Method Validation

The production of data which is legally defensible may require six aspects of the method areas to be evaluated. Spectra Laboratories makes attempts to evaluate these parameters on regular basis. They are:

- 1. Accuracy how close the data result is to the true value. This is achieved by proper use and maintenance of the instruments, obtaining quality reference materials, proper standard and sample prep, etc. Spectra evaluates accuracy of the method by analyzing samples of known concentration such as EPA WP check samples, DOE certification samples, spiked samples and blended samples prepared by the Lab Manager from reference materials. Comparison of single point daily calibrations to extensive multipoint calibrations may also be performed. Results of matrix spike analyses are also used.
- 2. Precision how reproducible one result is to a repeat analysis. Spectra Laboratories routinely performs analyses on duplicately prepared samples and spike samples to determine precision. Most Spectra chromatographic methods require 5 or 10 percent of all samples to be run as duplicates. Non-chromatographic methods vary as to frequency of duplicate analysis. Refer to the specific method SOP.
- 3. Linearity achieving a one to one ratio of instrument response to increasing sample concentration. The linearity ranges are often dictated specifically by the instrument manufacturer or the original method. When not given, a working range for a routine experiment type will be determined and documented.
- 4. Selectivity the ability to differentiate one compound or analyte from another. Analytical
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methods used are generally very selective in nature. GCMS chromatographic methods require an initial demonstration that the system can differentiate analytes by the use of specific chromatographic columns, GC programs, and confirmation by ion patterns which are specific to the compound of interest. Selectivity is further addressed in each SOP.

Stability - this refers to the chemical steadiness of the instrument, standards and samples over time. Instrument stability is often addressed in the original method with requirements such as recalibrating every 12 hours automatically, or recalibrating when the operator notices drift. Data may be discarded and samples repeated if the system became unstable or severe drift was noted during an automated run. Of other concerns are the stability of standards and samples. All SOPs will have complete storage statements regarding these items. Holding times, temperature requirements, and the need for preservatives are listed.

Detection Limits - There are several types of detection limits - method detection limits, instrument detection limits, practical quantitation limits, etc. All Spectra methods shall have specific reporting limits given which are based on the method reporting limit and supported by the Method Detection Limit (MDL). MDL's are based on statistical evaluation of spiked samples which have been carried through the entire experimental procedure. As an example, the procedure used by Spectra to determine EPA Method 624 reporting limit can be found in 40 CFR Part 136, pgs. 537-539.

8.5 Function and Control Checks

Checks will be made to determine the day-to-day instrument performance, variances in analyst's techniques, and effects due to sample matrices. Function checks refer to hardware related items such as background contamination, mechanical instrument performance which influence calibrations and accuracy, etc. Control checks are those which involve statistical evaluations of data on a long-term basis, such as recovery, relative percent deviation limits for surrogates, control chart items, etc. Checks are performed through a variety of techniques which include:

Blanks - Instrument blanks used to determine background contamination due to the analytical hardware.

Method blanks - used to indicate interferences or contamination due to preparation of samples or to the laboratory environment.

Trip blanks - used to determine if samples are contaminated prior to receipt at the laboratory.

Duplicates, and Matrix Spikes/Matrix Spike Duplicates - used to determine the recovery of analytes of interest for each matrix, the accuracy of the method, and the reproducibility (precision) of the technique. Depending on the method, samples may be run in duplicate

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and/or be spiked in duplicate to determine precision.

Surrogate Recoveries - used to determine influences of the matrix on recovery of analyte. Also used as a gauge for accuracy.

Internal Standard Area - used to measure instrument drift and variances in sample introduction into the instrument.

Standard Responses - comparison of daily standard to previous standards in order to determine stability of stock standards and instrument drift.

Instrument or Signal Intensities - used to determine variances in lamp intensities, mirror alignment, etc.

8.6 Control Charts

It is the responsibility of the Laboratory Manager/Director to establish and monitor appropriate items for methods which require a high level of quality control. This is to determine if a system is out of control, to aid in determining which aspect of a system is at fault, and to provide indication of the results of corrective action. Each SOP will state which parameter must be monitored. Periodically, the Laboratory Manager/Director will coordinate the revision of control limits based on statistical evaluations of data supplied by the analysts.

If systems or procedures have outliers or trends which indicate changes in the quality of data, the analysts will inform the Laboratory Manager/Director immediately so that appropriate changes can be made. All control charts are stored in the QA/QC file.

9. FACILITIES, EQUIPMENT, AND MAINTENANCE

9.1 Purpose and Scope

This section describes briefly the facilities which comprise Spectra Laboratories, and the equipment used to analyze samples. General guidelines for conducting maintenance are also given. This section of the manual applies to all equipment used to generate client data, which includes refrigerators for sample storage, instruments used to calibrate or standardize others or the individual measurement device.

9.2 Facilities

Spectra Laboratories is a secure facility encompassing 9,000 square feet. The facility is maintained at 68-76 degrees by means of standard heating and ventilation equipment. Normal business hours are 8am to 5pm Monday through Friday.

Security

The facility is protected by a state-of-the-art electronic security system. Overall security is maintained by controlled distribution of perimeter door keys and access codes. Visitors are required to sign in and out if entering the laboratory, sample storage or data management areas.

Sample and Standard Storage

Refrigerators are used for sample storage. Additional information on this subject can be found in Section 6 of this manual. Standards are kept separately in department refrigerator/freezer units and maintained at 4 - 6 degrees C (refrigerator) and -10 to -20 degrees C (freezer). All refrigerators and freezers contain thermometers for the purpose of monitoring temperatures as dictated in the sample control SOP and method SOPs. Temperatures are taken and logged daily into the "Equipment and Deionized Water Logbook".

Samples are maintained at the appropriate controlled temperature until all requested testing has been completed. After that point, they are removed to the sample warehouse which is not temperature controlled.

Hoods

The facility maintains several fume hoods for the safety of its employees and in accordance with various methodologies. Hoods are monitored periodically as part of the routine safety inspection and must maintain a hood velocity required by the testing performed. Hood velocities will be maintained at 50, 100, or 150 CFM as needed.

Chemical and Reagent Storage

The facility has a variety of prefabricated storage cabinets for the safe and proper storage of reagents and chemicals. Flammable storage cabinets as well as acid/base storage cabinets are present and clearly marked. Additional cabinet and shelving units are available for non-hazardous chemical storage.

9.3 Instrumentation

The lab maintains a full complement of analytical instrumentation for all stages of sample processing. A list of Spectra Laboratories Instrumentation can be found in Appendix E.

Spectra Laboratories uses a variety of computer systems for general data handling, sample control and report generation. A LAN based system composed of MS Small Business Server 2008 and BayCom VLP LabPro/VLP.Net are maintained. Appropriate backup is composed of daily onto three rotating external hard drives. One of the rotating external hard drives is kept off site for safety. Hardware and Software maintenance and updates are contracted with Angel Computer Consultants.

Maintenance

Laboratory equipment is used and maintained in accordance with the manufacturer's recommendations. Additionally, some of the instruments are under service contracts with the manufacturer to provide routine maintenance and emergency services if needed.

The laboratory also conducts an orderly program of positive actions (equipment cleaning, lubricating, reconditioning, adjusting, and/or testing) to prevent instruments or equipment from failure during use. The purpose of this maintenance is to increase measurement system reliability, reduce downtime, reduce costs, and improve data validity.

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10. **REFERENCE STANDARDS**

10.1 Purpose and Scope

This section discusses the use of Standard Reference materials available from the National Institute of Science and Technology, Supelco, or other reliable sources.

10.2 Policies

Spectra will use reference standards of known purity at all times and will take measures to insure the stability of those materials. Additional control measures are present to determine if standard materials have degraded during use.

Purchase and Receipt

Standards are to be obtained from reputable sources such as major manufacturers, NIST, Supelco, VWR, etc. The purity as a percent value or known concentration of diluted standards (i.e. 2000 ug/ml dichloroethane in methanol) must be given. All standards are to be 96% pure or greater. In the event that purity is below 96%, corrections must be made for the listed purity.

In some instances, standards are obtained from local suppliers (such as gasoline standards) and are assumed 100% pure, unless in-house testing of the standard indicates otherwise. Documentation of where, when, by whom, and what type of standard (such as unleaded premium gas) was obtained is to be kept on file.

Upon receipt at the lab, each standard is marked with the date received, assigned a lot number (if not given by the manufacturer), and stored according to the manufacturer's specifications.

Certificates of analysis (or other paperwork listing purity) will be kept on file in the QA/QC file for all reference materials used in the calibration and standardization of equipment and methodologies.

In the absence of manufacturer's recommendation, the following maximum holding times are assigned:

Inorganic solids - 3 years Inorganic solutions - 2 years Buffer solutions - 6 months Organic solids - 2 years Organic liquids - 2 years Diluted organic standard solutions, unopened - 1 year Standards are stored at ambient room temperature, 4 degrees C (refrigerator) or -10 to -20 degrees C (freezer). In general, inorganics are stored at ambient room temperature or the refrigerator, and diluted organic solutions stored in either the refrigerator or freezer depending on volatility.

Daily Use

Documentation of standard preparation is discussed in the standard operating procedure for each method. Standard prep log books are maintained and contain information such as compound, manufacturer, lot, purity/initial concentration, aliquot volume, final volume, solvent, and final concentration. Each in-house prepared standard will be assigned a reference number and storage/holding time condition. Each prepared standard will be labeled with type, concentration, preparer, reference number, and date.

The suitability of standards received from vendors and standards prepared in the lab is to be evaluated routinely as part of the experimental process. Deviation in standard response, such as lower area/signal counts, increases in impurity peaks, etc. may indicate degradation of the standard. Standards will be either discarded or may under certain circumstances be reassigned a new purity value and holding time after scientific evaluation by the primary analyst.

Refer to the non-conformance section of this manual for more information concerning deviations of standards.

11. LABORATORY DOCUMENTATION

11.1 Purpose and Scope

The purpose of this section is to describe briefly some of the aspects of the documentation process which is associated with the generation of client data. The documentation process applies to all areas of the laboratory and insures the validity of data from initial receipt of samples to archiving of client project files.

All aspects of a particular project are documented from initial sample receipt, assignment of responsibilities and testing schedules, standard prep, sample prep, injection into instruments, generation of raw and calculated data, final report creation, review and archiving of project files, etc. All records are confidential and may not be copied without permission of the Office Manager or Laboratory Manager/Director. All entries are made with indelible ink and corrections are to be initialed and dated. All documentation is kept for a minimum of five years.

11.2 Client Files

Upon receipt of samples, a client file is created by Sample Control. The file is created using the VLP LIMS system and maintains a complete record of all information concerning a particular project. The following information is contained in the file:

Client Name, Address, Billing Address, Telephone number, Fax number, Email Client Contact (to whom results are to be reported) Chain-of-custody forms Analysis request forms (this may be same as chain-of-custody) Lab Sample Identification Numbers Communication Records Copy of the complete final report sent to client

After the log-in period, the Laboratory Manager/Director administers the file until all testing and QC are complete. Once all the results are entered into the LIMS system, the report is printed using one of a variety of formats available through our LIMS system. After completion of the final report the results are reviewed and signed by the Laboratory Manager/Director. The report is then faxed or emailed to the appropriate client contact(s), scanned into our client report file and copied for our records. We retain a file copy of all reports and QC. The file copy is set aside so the project can be invoiced. An invoice is generated in the VLP LIMS system and then reviewed by the Lab Manager/Director. It is then returned to data management for copying and mailing. The invoices are later transferred from the VLP LIMS system to Peachtree Accounting Software.

The original client file is then archived in the short term client files for approximately one year after which it is moved to the long term storage area.

11.3 Sample Tracking

Insuring that data generated is properly attributed to specific samples requires documentation of sample tracking. Upon receipt of samples, Sample Control marks each container with the Spectra Lab I.D. number and begins the LIMS system sample log in process which includes the lab I.D. number, client, date, time, and any comments.

Samples are logged in and out of Sample Control by individual analysts using a Sample Check Out/In Log Book which contains the sample project, sample #'s, analyst initials, date/time logged out, and date/time logged in, and any notes that may apply.

During the analysis of samples, a variety of laboratory notebooks, sample prep notebooks, and instrument bench sheets are used to track the sample's data. Notebooks and bench sheets are generally specific to certain laboratory groups or specific instruments. These documents are maintained and reviewed as appropriate.

11.4 Standard Logbooks

Complete information concerning preparation of standards is kept on file in laboratory notebooks or in bound standard prep logbooks specific to a certain group of tests. Standard prep books contain information such as the compound name, manufacturer, lot number, original concentrations, aliquot volumes, final concentrations, preparer's initials, date, storage conditions, etc.

11.5 Instrument and Maintenance Logbooks

Information concerning the routine and non-routine maintenance/repair, calibration, and use of instruments are kept with the instrument. Information such as the analyst, date, repaired by, type of repair performed, etc. are kept in maintenance logbooks. Daily calibrations, standardization, sample injections, and QC runs are recorded in instrument logbooks and/or daily data files.

11.6 Electronic Data and Programs

A variety of instruments used at Spectra Laboratories employ sophisticated data acquisition, retrieval, and manipulation programs. Both raw data and final client ready results may be present on electronic storage media. Copies of all procedures, programs, raw data, integration files, calibration files, and analytical results will be kept on file in labeled, secured areas.

11.7 Hard copy data

Chromatograms, integration results, and other data printed or drawn onto paper will be stored by test in the laboratory raw data file area. Generally, a file folder is kept each day, or week, which contains the paper data in chronological order labeled with the instrument/method number, analyst initials, date, etc. Raw paper data is kept for five years.

11.8 Other

Other documentation is also present in the lab. Quality control information such as surrogate recovery control charts, tabulations of samples which indicate when duplicates or matrix spikes are required (every 10 or 15th sample), etc. are also present.

12. DATA VALIDATION

12.1 Purpose and Scope

This section explains the need for data validation and the methods of data validation which will be employed by the laboratory. Data validation can be accomplished by several methods and can be manual or computerized.

Data validation is the process in which data is checked, accepted, or rejected based on a set of criteria. Validation is performed to insure that the data generated accurately reflects the true values and to isolate spurious values which may not have been atomically rejected.

12.2 General

Validation of data involves many aspects of the data generation process. It requires review by all individuals involved with a particular sample, instrument, or QA/QC program. Data validation involves the following:

- 1. Sample collection, receipt, and in-lab sample control Samples must have been collected and delivered to the facility in the appropriate containers with appropriate preservative, at the proper temperatures, and within prescribed holding times, etc. Sample Control validates the sample upon receipt and tracks it through analytical testing to insure proper storage, handling, etc.
- 2. Analytical methodologies and analysts Methodology was discussed earlier in this manual. The individual analyst plays an important role in determining the validity of data as it is generated. Instrument performance, QC criteria, standard responses, reagent blank analysis, matrix spikes and duplicates all influence the determination that client data is valid. Each method SOP has specified criteria for determining validity of the experiment. Data values which appear to be above or below normal values expected for the sample matrix or project will be investigated.
- 3. Laboratory Manager/Director Their function is to audit the documentation created/maintained by the individual analysts and groups concerning instruments, methods, finished data reported to clients, specific project requirements, and all QC results. They are charged with double checking that all experiment QC has been met and that spurious results have been investigated and corrected as required. They also submit non-conformance reports to the QA Manager and schedule repeat analysis, instrument repair, etc. The Laboratory Manager/Director also reviews data management procedures implemented to assure accuracy in client report transcriptions.

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- 4. QA Officer The QA Manager reviews and revises those conditions by which the validity of the data is judged. These include reviewing warning and control limits for matrix spike recoveries, surrogate recoveries, and Relative Percent Deviation (RPD), that analysts determine through in house control charts. The QA Manager insures current test methods and SOPs are being employed.
- 5. Office Manager and Administrative Staff Administrative personnel are responsible for maintaining data validity through control measures designed to eliminate all typing or transcription errors, to provide reports which contain all required information in a clear and concise manner, and to provide reports which meet all the validity requirements of the client's project and of the lab.

13. NON-CONFORMANCE, CUSTOMER CONCERNS, AND AUDITS

13.1 Purpose and Scope

This section sets forth the procedures and responsibilities for handling experiments in which QC indicates deviations from established norms, customer concerns/complaints, and negative audit results. This section applies to all technical complaints regardless of the source.

13.2 Experimental Non-conformance

Due to the complex nature of many of the experiments and the high level of quality control being carried out, deviations may occur from established norms. Deviations may be due to gradual changes in the hardware from the initial conditions, such as electron multiplier response lowering due to gradual contamination of the surfaces, or there may be deviations due to changes in standard solutions, matrix effects of samples which may also influence surrogate recoveries, etc.

When deviations occur, the analyst and Laboratory Manager/Director will evaluate the system and the data to warrant continuing the experiment and using data generated. All deviations are recorded on a Non-Conformance Report which lists the nature of the deviation, analyst, method, samples involved, probable cause, and corrective action taken if required. The report is submitted to the Lab Manager and the QA Manager for approval. Data will not be submitted to the client prior to this review and approval.

13.3 Customer Concerns and Complaints

All technical complaints, negative comments or suggestions from customers, or other sources outside the laboratory will be handled by the Office Manager or Laboratory Manager/Director. In each case, they will advise the individuals concerned as to the nature of the complaint. Additionally, they will initiate corrective action measures when necessary. Upon completion of corrective action and the finding of a solution to the problem, they will advise the customer accordingly. Communication records will be kept on all customer concerns or complaints.

13.4 Negative Audit Reports

In the case of corrective action taken to satisfy the comments or suggestions of outside auditors from accrediting organizations, an in depth investigation of the problem area will be undertaken. Evaluations of the equipment, standard/sample prep, analyst training, etc. will be documented. A detailed explanation will be given of measures taken to prevent recurrence of problems causing the negative comments. These reports will be filed in the QA/QC file. Additional audit samples may be requested for repeat analysis, or if none can be obtained from the original source, the QA Manager will obtain from an alternate source or create an audit sample of known concentration. This sample will be blended and submitted for analysis with results kept on file with the entire audit report.

14. SUBCONTRACTING

14.1 Purpose and Scope

This section describes the requirements for the control of the quality of work imposed upon outside laboratories doing analytical or testing tasks which are beyond the capabilities of the laboratory. This section applies to outside laboratories doing analytical or testing work on a contract basis.

14.2 Quality Assurance in Contract Laboratories

Each contract laboratory, which this laboratory employs for providing testing services, chemical analyses, or calibration services, will maintain its own internal quality assurance system. The capability of the contractor to maintain a high level of quality of work will be taken into consideration as a part of the contract evaluation process and will be weighed heavily in that process.

The quality assurance of the contract lab must meet all of Spectra Laboratories requirements for sample control, methodology, quality control, instrumentation, and technical expertise.

15. PERSONNEL QUALIFICATIONS AND TRAINING

15.1 Purpose and Scope

The purpose of this section is to set forth the training methods, evaluation, and qualification procedure used in the laboratory. All personnel involved in any function affecting data quality (sample receipt, analysis, testing, data reduction, and quality control and assurance), will have sufficient training and technical expertise to generate complete, high quality data.

The Laboratory Manager/Director is responsible for seeing that the required training is made available to these personnel and that records are maintained on each person reflecting satisfactory completion of training programs or qualification tests.

15.2 Qualifications

The laboratory evaluates all prospective job applicants for scientific knowledge and professionalism. Minimum scientific requirements for specific job categories are given in the standard operating procedure manual. These follow the guidelines given for skill ratings and requirements in the "Handbook of Analytical Quality Control in Water and Wastewater Laboratories" published by the EPA (document EPA-600/4-79-019, Chapter 9) and the EPA Contract Laboratory Program (CLP) Statement of Work (document OLM01.0, Section III).

15.3 Continuing Education Opportunities

In addition to prior work and educational experience, Spectra Laboratories actively encourages its employees to expand and refine their job skills and knowledge through participation in a variety of company paid programs. Time off is given to attend seminars and training sessions put on by instrument manufacturers, regulatory agencies, professional business and scientific organizations, etc.

15.4 In-House Training Methods

On-the-job training is provided to all analysts by the Laboratory Manager/Director or experienced analyst for all test procedures. The analyst will be given sufficient time during the training process to interact extensively with the experienced trainer in order to understand the theoretical principles of the procedure and to observe the experiment being conducted in an unhurried, controlled manner. All aspects of the test will be covered from sample collection, QA/QC, calculations, reporting formats, etc.

Next, the analyst will perform the operation under the direct supervision of the experienced analyst. The analyst then performs the experiment independently with limited supervision. Finally, the analyst is required to perform an initial demonstration of proficiency (IDP).

Training will be evaluated in terms of the level of knowledge and skill achieved by the operator using the following checklist:

- 1. Sample Preservation and Containers
- 2. Sample Prep
- 3. Interferences in Sample Matrices
- 4. Standard Prep, Storage, Stability
- 5. Instrument Conditions
- 6. Running Analysis
- 7. Data Reduction/Calculation
- 8. QA/QC Requirements and Limits

A written test following training may be given in order to assess the effectiveness of the training effort. The instructor may give a pre-training test in order to determine the level of knowledge prevailing prior to the start of the training course. Post-training tests also provide the instructor with information on training areas which need improvement.

In addition, the Laboratory Manager/Director reserves the responsibility of performing on-thespot audits (both verbal checks and physical technique checks) of analyst's knowledge, skill, and performance at any time after initial training.

16. MICROBIOLOGY

16.1 Purpose and Scope

This section sets forth the procedures and responsibilities for testing source and finished drinking waters for microbial testing. Primarily, total coliform and E. coli testing are performed using ONPG-MUG chromogenic substrate procedures. The complete method is detailed in Spectra Standard Operating Procedure titled "Total/Fecal Coliform (P/A) and Most Probable Number (MPN) Testing in Water" (SOP Bacteria-SM9223).

16.2 Sampling Procedures

Clients are responsible for proper sampling. However, complete sampling instructions, as well as sterile containers will be provided to all clients upon request. State of Washington Department of Health Microbial Analysis Forms will be filled out for each sample submitted for analysis. Samples are to be refrigerated from the moment of sampling, and testing must be initiated within 24-30 hours of sampling.

16.3 Sample Handling and Tracking

Samples, upon receipt at the lab, are checked for proper sampling, temperature, proper sample information (DOH source numbers, system I.D., date, time sampled, etc.), and other parameters which insure the acceptability of the sample. Clients will be informed immediately of any rejected samples and the reason for the rejection. Acceptable samples are assigned Spectra lab numbers using the lab-wide information management system (VLP LIMS) and also DOH lab numbers. Samples are logged into the microbial testing logbook and the proper analytical procedures initiated.

16.4 Facilities, Equipment, and Methodologies

Spectra maintains a bench space area designated only for microbial testing in the central testing laboratory. All equipment will meet with DOH specifications and will have passed inspection. Incubators are checked twice daily for temperature accuracy and stability. Records are kept for each incubator. Thermometers are NIST traceable.

Sterile water is obtained commercially. Sterile pipets and other supplies are either purchased from equipment suppliers such as VWR, Baxter, etc., or are sterilized in house.

The particular methodology Spectra Laboratories currently employs is based on chromogenic substrate technology and pre-packaged supplies are purchased from Idexx Corporation, or other reputable suppliers. SOP "Total/Fecal Coliform (P/A) and Most Probable Number (MPN) Testing in Water" details the specific analytical procedures used.

16.5 Data Reduction, Validation, and Quality Control

Chromogenic substrate technology is based on color and fluorescence differences between samples and known control solutions. Refer to the SOP for complete information on interpreting data for total coliform, fecal coliform, and most probable number.

The sterility of the containers given to clients is checked with each new batch of containers by analyzing sterile water using the new lot of containers. No positive results for total or fecal coliform are acceptable. Positive controls are run at least every six months or when new lots of substrate are received. Positive controls consist of spiking sterile lab water with Escherichia coli, Klebsiella Pneumoniae, and Pseudomonas Aeruginosa active cultures. Color and fluorescence development is compared to a known control supplied by Idexx Corporation or by the specific kit manufacturer.

Blanks are run every time a new lot is opened or a new reagent box is opened.

Spectra Laboratories will participate in appropriate Water Supply Performance Evaluation studies twice per year. If QC checks fail, the cause of the failure will be investigated, and new performance samples will be obtained. A variety of suppliers, such as Environmental Resource Associates, supply QC samples outside of the six month federal WS time frame.

Sample results are recorded in appropriate logbooks which are kept for a minimum of five years. Results are submitted to the client and to the appropriate State of Washington Drinking Water Office serving the county in which the water supply is located. State of Washington Water Bacteriological Analysis Forms are used.

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ORGANIZATION CHART

Spectra Laboratories, LLC



Parameter	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
Acid Number (TAN)	ASTM D-974	Oil	2oz	2oz Plastic	None Required	None	
Acidity	EPA 305.1	Liquid	100ml	250ml HDPE	Cool 4° C	14 Days	
Alcohol (Ethanol Isopropyl		Liquid	80ml	2-VOA Vials	HCL, Cool 4º C	14 Dave	
Methanol)	GC-FID	Solid	100g	4oz CWM	Cool 4º C	14 Days	
Alkalinity	EPA 310.1 or SM 2320B	Liquid	100ml	250ml HDPE	Cool 4° C	14 Days	
Ammonia	EPA 350.3	Liquid	200ml	250ml HDPE	Cool 4º C	28 Days	
Antifreeze, % In coolant sample	ASTM D-287	Liquid	500ml	500ml HDPE	None Required	None	
Antifreeze Pkg.	Various	Liquid	500ml	500ml HDPE	None Required	None	
Arsenic and Lead in Soil King County Protocol	Sieve/EPA 6010B	Soil	4oz	4oz CWM	Cool 4º C	6 Months	
Ash	ASTM D-482	Liquid	25g	8oz CWM	None Required	None	
Ash-Sulfated	ASTM D-874	Liquid	25g	8oz CWM	None Required	None	
Bacteria in fuel	Culture	Liquid	10ml	2oz Plastic	None Required	None	
Base Number (TBN)	ASTM D-4739	Oil	2oz	2oz Plastic	None Required	None	
Bicarbonate	SM 2320B	Liquid	100ml	250ml HDPE	None Required	None	
BIS (2-Ethylhexyl)Phalate	EPA 625	H20	1 Liter	(2)1 Liter Amber	Cool 4º C	7 days to ext 14 days	
	EPA 624/8260	Liquid	40ml Vial	2-VOA Vials	HCL, Cool 4º C	>	
BTEX	FDA 0000	Solid	100 g	4 oz CWM	Cool 4º C	14 Days	
	EPA 8260	Soil	4oz	4oz CWM/Soil Kit	Methanol & Cool 4º C		
BOD (Biochemical Oxygen Demand)	SM 5210B or EPA 405.1	Liquid	1 Liter	1Liter HDPE	Cool 4º C	48 Hours	
B S & W (Bottom Sediment & Water)	ASTM D-2709	Petroleum	50ml	2oz Plastic	None Required	None	
BTU-Estimated	ASTM D-4868	Petroleum	500ml	500ml HDPE	None Required	None	
Carbon, Conradson	ASTM D-189	Petroleum	25g	2oz Plastic	None Required	None	
Carbon Dioxide	SM 4500-CO2 C	Water	500ml	500ml HDPE	None Required	Analyze ASAP	
Cation Exchange	SW 846 9081	Soil	100g	4oz CWM	Cool 4° C	Analyze ASAP	
Cetane Index	ASTM D-4737	Liquid	500ml	500ml HDPE	None Required	None	
Chlorinated Pesticides	EPA 608/8081	Liquid	2 Liter	(2) 1 Liter Amber	Cool 4° C	7 Days/40 Days	
Server a second and a second	12°04 di Distrivisionen 1855-1855-19	Solid	30 g	8oz CWM		Extracted	
Chlorinated Phenols	EPA 625/8270	Liquid	2 Liter	(2) 1 Liter Amber	Cool 4° C	7 Days/40 Days	
	ļ	Solid	30 g	8oz CWM		Extracted	
Chlorinated Solvent Scan	EPA 624	Liquid	40ml Vial	2-VOA Vials	HCL, Cool 4º C	14 Davs	
	EPA 8260	Soil	4oz	4oz CWM	Cool 4º C		
Chloride	EPA 325.3 or	Liguid	50ml	250ml HDPE	Cool 4° C	28 Davs	
	SM 4500-CL-C	Soil	100g	4oz CWM		LV Buyo	

Para	meter	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
Chlorine, Tot	tal Residual	SM 4500-CL-G	Liquid	200ml	1 Liter Amber	Cool 4º C & Dark	Analyze ASAP	
Cloud Point	-thomason	ASTM D-2500	Petroleum	50ml	2oz Plastic	None Required	None	
COD (Chemical Oxyg	en Demand)	EPA 410.4 or SM 5220-D	Liquid	50ml	250ml HDPE	Cool 4º C	28 Days	
Color (platinur	n-cobalt)	SM 2120B	Liquid	50ml	250ml HDPE	Cool 4° C	48 Hours	
Conductivity	9 	SM 2510B EPA 120.1	Liquid	100ml	250ml HDPE	Cool 4°C	28 Days	
Conradson (Carbon	ASTM D-189	Petroleum	2oz	2oz Plastic	None Required	None	
Corrosion Co	opper Strip	ASTM D-130	Petroleum	2oz	2oz Plastic	None Required	None	
Corrosivity (r		EPA 1110	Liquid	25ml	250ml HDPE	Cool 4º C	Analyze ASAP	
			Solid	10g	4oz CWM			
Cresols		EPA 625	Liquid	2000ml	(2) 1 Ltr Amber	Cool 4° C	7 Days Ext/40 Days	
		EPA 8270	Solid	30g	8oz CWM		Extracted	
	Amonghio	SM 4500 CN C	Liquid	500ml	500ml HDPE	NaOH Cool 4º C		
	Amenable	SIM 4500 CIN-G	Solid	4oz	4oz CWM	Cool 4º C		
	Boostivo	EPA SW846	Liquid	500ml	500ml HDPE	NaOH Cool 4º C	14 Days	
Overside	Reactive	Chapter 7	Solid	4oz	4oz CWM	Cool 4º C		
Cyanide	Total	SM 4500 CN E	Liquid	500ml	500ml HDPE	NaOH Cool 4º C		
	TOLAI	SIM 4500 CIN-E	Solid	4oz	4oz CWM	Cool 4º C		
	Weak Acid	SM 4500 CN I	Liquid	500ml	500ml HDPE	NaOH Cool 4º C		
	Dissociable	SIM 4500 CIN-I	Solid	4oz	4oz CWM	Cool 4º C		
Diesel (NWTF	PH-D)	NWTPH-D	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4°C	7 days unpres. 14 days pres.	
			Solid	10g	4oz CWM	Cool 4º C	14 Days	
Diesel Fuel F	Package	Various	Fuel	500ml	500ml HDPE	None Required	None	
Distillation		ASTM D-86	Liquid	100ml	250ml HDPE	None Required	None	
	Bacteria	SM9223 P/A		100mi	Bacteria Bottle	Na2S2O3 Cool	30 hrs	
1	Nitrate	SM 4500NO3E			250ml HDPE			
Drinking Water	Primary	Various	Drinking Water	1250ml	1-250mi HNO ₃ , 1-500mi NaOH, 1-500mi Non Pres.	Cool 4º C	48 hrs	
	Primary + Secondary			1750ml	1-250mi HNO ₃ , 1-500mi NaOH, 2-500mi Non Pres.			
			Liquid	80ml	2-VOA Vials	HCL, Cool 4º C		
EDB/EDC		EPA 8011 GC/ECD	Solid	100g	4oz CWM/Soil Kit	Methanol & Cool 4º C	14 Days	
EOX (Extractable Org	ganic Halides)	EPA 9023	Soil/Solid	10g	4oz CWM	HCL, Cool 4º C	28 Days	
Engine Oil	Basic Advanced	Various	Oil	2oz	2oz Plastic	None Required	None	

Parameter	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
Ethanol	EPA 8260	Gasoline	2oz	2oz Plastic	None Required	14 Days	
		Liquid	2oz	2oz Plastic		hlana	
Ethylene/Propylene Glycol	GC-FID	Soil	4oz	4oz CWM	2000 4° C	None	
COC	ASTM D-92	Oil					
		Liquid/Oil	250ml	250ml HDPE			
Flash Point PMCC	ASTM D-93	Soil	2oz	4oz CWM	None Required	None	
тсс	ASTM D-56	Oil	250ml	250ml HDPE			
Fluoride	EPA 340.2 SM 4500-F C	Liquid	300ml	500ml HDPE	Cool 4° C	28 Days	
Formoldohyda	NCASI	Liquid	100ml	1 Liter Amber	Cool 4º C	7 Dave	
romaidenyde	CI/WP-98.01	Solid	25g	8oz CWM	None Required	/ Days	
Free Liquids	CIM 946 0005	Liquid	100ml	1 Liter Amber	None Required	Mono	
(Paint Filter Test)	544 040 9095	Solid	100g	8oz CWM		INOTIC	
Freeze Point	ASTM D-2386	Liquid	500ml	500ml HDPE	None Required	None	
		Liquid	80ml	2-VOA Vials	HCL, Cool 4º C		
Gasoline	NWTPH-G	Solid	100g	4oz CWM/Soil Kit	Methanol & Cool 4º C	14 Days	
Gas to Oil Ratio (2-cycle)	UV-VIS	Petroleum	50ml	2oz Plastic	None Required	None	
Glycerine Total & Free	ASTM D-6584	Biodiesel	2oz	2oz Plastic	None Required	None	
Glycol, Ethylene/Propylene	GC-FID	Liquid	2oz	2oz Plastic	Cool 4º C	None	
		Soll	40Z	40Z CVVM			
	ASTM D-2982	Liquid	1qt. Gas, 2	oz Mix, 20z Oil	None Required	None	
Gravity	ASTM D-287	Liquid	200ml	250ml HDPE	None Required	None	
Hardness	EPA 200.7	Liquid	100ml	250ml HDPE	HNO ₃	6 Months	
HCID	NWTPH-HCID	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4º C	7 Days	
		Solid	10 g	4oz CWM	Cool 4° C		
HEM	EPA 1664	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4º C	28 Days	
HEM-SGT	EPA 1664	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4º C	28 Days	
HOC (Halogenated Organic	EPA 9023/9076	Liquid	250ml	250ml HDPE	HCI, Cool 4º C	28 Davs	
Compounds)		Solid	10g	4oz CWM	None Required		
Hexavalent Chromium	SM 3500-CR-D	Liquid	200ml	250ml HDPE	Cool 4º C	24 Hrs	
	SW 846 7196A	Solid	100g	4oz CWM		30 Days	
Ignitability (PMCC)	ASTM D-93	Liquid	4oz	4oz CWM	None Required	None	
Ignitability of Solids	EPA 1030	Solid	4oz	4oz CWM	None Required	None	
Infrared Scan	FTIR	Inquire	Inquire	Inquire	Inquire	Inquire	
Infrared (Microscopic)	FTIR - Micro	Inquire	Inquire	Inquire	Inquire	Inquire	
Lead in Paint	EPA 6010B	Paint Chips	20g	4oz CWM	None Required	6 Months	
Pub. Water Lead and Systems	Pb - SM 3113B	Drinking	1000ml	1 Liter HDPE	None Required	6 Monthe	
Copper Schools	Cu - EPA 200.7	Water	250ml	250ml HDPE			

Para	meter	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
Moreupy by C	old Vapor	EPA 245.1	Liquid	100ml	250ml HDPE	HNO ₃	28 Davs	
wercury by C		EPA 7470/7471	Soil	20g	4oz CWM	None Required	20 Days	
		EPA 200.7	Liquid	100ml	250ml HDPE	HNO ₃		
		EPA 6010/7000	Solid	20g	4oz CWM	None Required		
Metala	ICDIME	EPA 200.8	Liquid	100ml	250ml HDPE	HNO ₃	6 Monthe	
Metals	ICP/IVIS	EPA 6010/7000	Solid	20g	4oz CWM		O WORUS	
	DCP	AES 0029	Petroleum	2oz	2oz Plastic	None Required		
Metals	Total	EPA 3020/3050	p/o	nla	n /2		n/a	
Digestion	TCLP	EPA 1311	IVa	IVA	IVA	IVA	IVG	
Matala Cast		EPA 200.8	Liquid	100ml	250ml HDPE	HNO ₃	6 Months	
Metals Scan		EPA 6010/7000	Solid	20g	4oz CWM	None Required		
Neutralizatio	n Number	ASTM D-974	Petroleum	2oz	2oz Plastic	None Required	None	
		SM 4500NO3E	Liquid	100ml	250ml HDPE	Cool 49 C	49hm	
NITIATE (NO ₃)		EPA 300A	Solid	70-100 g	4oz CWM	C0014° C	401115	
N 194-14	~	SM 4500NO2B	Liquid	50ml	250ml HDPE	0.00148-0	40hm	
		EPA 354.1	Solid	70-100 g	4oz CWM	C001 4° C	40115	
	Dx	NWTPH-Dx	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4º C	7 days unpres. 14 days pres.	
			Solid	100g	4oz CWM	Cool 4° C		
	•		Liquid	80mi	(2) 40ml Vials	HCL, Cool 4º C	14 Davs	
NWTPH-	Gx	NWTPH-Gx	Solid	100g	4oz CWM/Soil Kit	Methanol & Cool 4º C		
	HCID	NWTPH-HCID	Liquid	1 Liter	1 Liter Amber	HCL, Cool 4º C	7 days unpres. 14 days pres.	
			Solid	100g	4oz CWM	Cool 4º C	14 Days	
Oxygen, Diss	solved	EPA 360.1	Liquid	300ml	1 Liter Amber	Cool 4° C	Analyze ASAP	
Organochlori	ne Pesticides	SW846 8081B	Liquid	1 Liter	1 Liter Amber	Cool 4º C	7 Days Ext/40 Days	
	W/PCB's		Solid	100 g	8oz CWM		Extracted	
Orthophosph	ate	SM 4500-P C	Liquid	50ml	250ml HDPE	Cool 4° C	48 Hours	
PAH		EPA 625/8270	Liquid	1 Liter	1 Liter Amber	Cool 4° C	7 Days Ext/40 Days Extracted	
Doint Filtor T	oet	SIM/846 0005	Liquid	100ml	1 Liter Amber	None Required	None	
	Col	34640 9093	Solid	100g	8oz CWM		HONE	
Particle	Water	LASER	Water	500ml	500ml HDPE	None Required	None	
Size and Dist.	Oil	ISO NAS	Oil	200ml	250ml HDPE		None	

Para	meter	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
	Transf. Oil		Transf. Oil	4.0-	Den Diestie	Nega Deguined		
DODIA	Used Oil	SW846 8082A /	Used Oil	102	Zoz Plastic	None Required	7 Days Ext/40	
PCB'S		EPA 608	Water	1000ml	1 Liter Amber	0	Extracted	
	vvater/Soli		Soil	100g	4oz CWM	C0014° C		
		EPA 604	Liquid	1000ml	2 Liter Amber		7 Days Ext/40	
Pentachiorop	nenoi	SW 846 8270C	Soil	5g	4oz CWM	C0014° C	Days Extracted	
Pentane Inso	lubles	ASTM D893	Product	2oz	2oz Plastic	None Required	None	
PeroxideNun	NDER (CK TAT)	ASTM E-299-90	Petroleum	1 00ml	4oz CWM	None Required	None	
Pesticides (O	rganochlorine)	EPA 608/8081GC	Liquid	1 Liter	1 Liter Amber	Cool 4º C	7 Days Ext/40 Days	
	W/PCB's		Solid	30g	8oz CWM		Extracted	
рH		EPA 150.1	Liquid	100ml	250ml HDPE	Cool 4º C	Analyze ASAP	
	1	SW 846 9045	Solid	4oz	4oz CWM			
Phenol (total)		FPA 420 1	Liquid	1000ml	1 Liter Amber	H2SO4, Cool 4º C	28 Days	
			Solid	30 g	8oz CWM	None Required	20 Days	
Dhanala		CINI 946 9270C	Liquid	1 Liter	1 Liter Amber	H2SO4, Cool 4º	7 Days Ext/40	
Phenois		SVV 040 02/UC	Solid	30g	8oz CWM	с	Extracted	
Phosphorus,	Total	SW 846-6010B	Liquid	100ml	250ml HDPE	H2SO4, Cool 4º C	28 Days	
Pour Point		ASTM D-97	Liquid	50ml	2oz Plastic	None Required	None	
Promulene/Et	bylene Glycol	CC-FID	Liquid	2oz	2oz Plastic		None	
r iopylerie/Lt		00-11D	Soil	4oz	4oz CWM		NOTE	
RVP, Reid V Pressure	apor	ASTM D-323	Petroleum	1000ml	(2) 1 Liter Amber	Cool 4°C	Analyze ASAP	
Salinity		SM 2520B	Liquid	100ml	250ml HDPE	Cool 4° C	28 Days	
Sediment by	Extraction	ASTM D-473	Petroleum	200ml	4oz CWM	None Required	None	
Semi-Volatile	98	EPA 625/8270	Liquid	(2) 1000ml	(2) 1 Liter Amber	Cool 4º C	7 Days Ext/40 Days	
			Solid	30g	8oz CWM		Extracted	
	Total	SM 2540 B	Liquid	100ml	500ml HDPE			
	1	SM 2540 G	Solid	4oz	4oz CWM		7 Days	
Solids Total	Dissolved	SM 2540 C		100ml	500ml HDPE	Cool 4º C		
	Settleable	SM 2540 F	Liquid	1000ml	1 Liter HDPE		48hrs	
	Volatila	SM 2540 D	Lidava	500ml	500ml HDPE		7 Davs	
	Organics	SM 2540 G		100ml				
Sulfate		EPA 375.4	Liquid	100ml	250ml HDPE	Cool 4° C	28 Days	
Sulfide		SM 4500-S2-F	Liquid	250ml	500ml HDPE	Cool 4º C	7 Davs	
	3		Solid	25-100g	8oz CWM		/ Days	
Sulfide (reaction	ve)	SW 846 Charter 7	Liquid	250ml	1 Liter Amber	Cool 4º C	Analyze ASAP	
		Gaa Gaa Chapter /	Solid	10g	4oz AWM			

Para	mətər	Method	Matrix	Sample Volume	Container Size	Preservative	Holding Time	
Sulfite		SM 4500-SO3-B	Liquid	50ml	250ml HDPE	Cool 4º C	Analyze ASAP	
		ASTM D-3120	Petroleum	2oz	2oz Plastic	1		
Sulfur		SMR46 6010D	Liquid	100ml	250ml HDPE	None Required	None	
		3440 00 10B	Solid	20g	4oz CWM			
Surfactants (MBAS)	SM 5540C	Liquid	250ml	500ml HDPE	Cool 4° C	48hrs	
	Metals RCRA 8	Various						
	Volatile Organics	624/8260C						
TCLP	Semi- Volatile Org.	625/8270D	Solid	200g	8oz C <mark>W</mark> M	Cool 4º C	14 Days	
	Pesticides	608/8081B		Jon 3				
	Herbicides with Semi- Volatiles	EPA 8270 GC/MS						
	Complete Parameters	Various						
TCLP Extractions	Bottle Zero Headspace	SW846 1311	n/a	n/a	n/a	n/a	n/a	
TKN		SM 4500-NLC	Liquid	500ml	1 Liter HDPE	Cool 4º C	28 Dave	
(Total Kjeldahl N	litrogen)		Solid	4oz	4oz CWM	00014 0	20 Days	
Total Organic	Carbon	SM5310B SW846 9060	Liquid	25ml	1 Liter Amber	HCL, Cool 4° C	28 Days	
	5 GUIDOIT	EPA 415.1	Solid	10g	4oz CWM	Cool 4° C	20 0 4,0	
Total Organie	C	SW 846 9076 or 9020 mod	Liquid	250ml	250ml HDPE	Cool 4º C		
Halogens/To (TOX)	tal Halogens	SW 846 9076 SW 846 9020 (mod)	Solid	10g	4oz CWM	None Required	28 Days	
Turbidity		EPA 180.1	Liquid	100ml	250ml HDPE	Cool 4° C	48hrs	
Viscosity Kin	ematic	ASTM D-445	Petroleum	2oz	2oz Plastic	None Required	None	
Volatile Orga	nic	EDA 004/0000	Liquid	80ml	2-VOA Vials	HCL, Cool 4º C	44 D	
Compounds	n, ng mananifik di	EPA 624/8260	Solid	100g	4oz CWM/Soil Kit	Methanol & Cool 4º C	14 Days	
Waste/Used	Oil Pkg.	Various	Petroleum	250ml	8oz CWM	None Required	None	
Water by Dis	tillation	ASTM D-95	Petroleum	100ml	250ml Plastic	None Required	None	
Water by Ka	rl Fischer	ASTM D-304	Petroleum	2oz	2oz Plastic	None Required	None	

Spectra Laboratories Sample Receiving Checklist

Client Spectra Project # 2013				
Project Name			_	
Received Date:Received T	'ime:	By	i i i i	
Shipped via: UPS USPS FEDEX Ha	and Delivered Othe	r		
Tracking Number				
Papers/Cooler:				
Type of shipping container: Cooler Box	None Other			
Cooler Temperature°C	Sample Temperature		w.	_°C
Custody papers included?		. Yes	No	
Were custody papers properly filled out (ink,	signed, etc)?	. Yes	No	N/A
Custody Seals:				
Were custody seals on outside of samples/con	tainers?	Yes	No	
Intact?		Yes	No	N/A
Custody seal info (date/name/label)				
LOGIN:				
Were Papers/Bottle labels legible?	•••••••••••••••••••••••	Yes.	No	N/A
Did all bottle labels and tags agree with custo	dy papers?	Yes	No	N/A
Did all sample containers arrive in good cond	ition (unbroken, etc)	.Yes	No	
Was sufficient amount of sample sent for the	tests indicated?	.Yes	No	N/A
Were the bottles provided correct for the analy	yses requested?	.Yes	No	
Were VOA vials free of air bubbles?		.Yes	No	N/A
Was correct preservation added to samples?	•••••	Yes	No	N/A
If no, Sample Control added pa	reservative to the follo	wing:		

Sample Number	Reagent	Analyte	

Explain any discrepancies:__

Initials:

Word Users/sample management/sample management/sample check in doc

CHAIN of CUSTODY

SPECTRA Laboratories PAGE of STANDARD RUSH 2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com CLIENT: ADDRESS: **HYDROCARBONS** PROJECT: **ORGANICS** METALS OTHER CONTACT: NUMBER OF CONTAINERS TOTAL METALS (SPECIFY) TCLP METALS (SPECIFY) 8260 CHLOR SOLVENTS **FOTAL** METALS RCRA8 **TCLP METALS RCRA 8** PHONE: FAX: 8270/625 SEMI VOA Prefer FAX (SPECIFY) 1664 HEM (O&G) e-MAIL: BTEX/WMTPH-G or e-MAIL 664 SGT-HEM 8270 PAH/PNA NWTPH-HCID 8260/624 VOA 8082/608 PCB FLASH POINT pH 9040/9045 TX/TOX/EOX NWTPH-D_x TURBIDITY D-H4TWN **PURCHASE ORDER #:** SOLDS (BTEX BOD DATE TIME MATRIX SAMPLE ID SAMPLED SAMPLED 2 Page 39 5 6 7 8 9 10 Appendix Page 1 of 1 SPECIAL INSTRUCTIONS/COMMENTS: SIGNATURE PRINTED NAME COMPANY TIME DATE RELINQUISHED BY RECEIVED BY **RELINQUISHED BY** RECEIVED BY Payment Terms: Net 30 days. Past due accounts subject to 11/2% per month interest. Customer agrees to pay all costs of collection including reasonable **RETURN SAMPLES** DISPOSE SAMPLES attorney's fees and all other costs of collection regardless of whether sult is filed in Pierce Co., WA venue. Spectra Laboratories, LLC

(Shipping Fee Applies)

SPECTRA LABORATORIES INSTRUMENTATION As of January 2013

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Volatiles: Agilent 5975-C MSD with 7890 A gas chromatograph. EST 8100 water and soil auto sampler. EST Encon – Purge & Trap Concentrator. Agilent Chemstation data system with NIST 05a compound library.

Semi-Volatiles: Agilent 5975 MSD with 6890 N gas chromatograph. Agilent 7683-B auto sampler. Split-splitless injector. Agilent Chemstation data system with NIST 05 compound library.

GAS CHROMATOGRAPHY

Agilent 6890N (SN 10641078) gas chromatograph with dual G2397A electron capture detectors (SN's U10730 and U10731). Split/Splitless capillary injection system with Agilent 7683B injection tower. EZChrom Elite software version 3.1.7.

Agilent 6890N (SN CN10704021) gas chromatograph with dual Flame Ionization Detectors. Dual Split/Splitless capillary injection system with two Agilent 7683B injection towers. EZChrom Elite software version 3.1.7.

Agilent 6890N (SN CN10521016) gas chromatograph with dual Flame Ionization Detectors. One Split/Splitless capillary injection system and one liquid nitrogen cooled on column injection system. Agilent 7683B injection tower. EZChrom Elite software version 3.1.7.

METALS

Agilent ICP-MS 7500 CX (SN JP51202450)

Perkin Elmer ICP Optima 2000 DV (SN 93052110127)

Buck 410 Cold Vapor Mercury Analyzer

(Two) Environmental Express Hot Block Digestion System

MICROBIOLOGY

Napco Model 320 Incubator

Thermolyne Type Incubator 142300

Equatherm Coliform Bath

APPENDIX E

INORGANIC AND GENERAL CHEMISTRY Systea EasyChem Plus Discrete Analyzer (Automated Colorimetry) Shimadzu TOC-VCSN - SSM-ZM-186A Shimadzu Solid Sample Module - SSM-ZM-187C HACH DR2500 Visible Spectrophotometer Thermo ECS 1200 (SN 2006.0575) – Halogen/Sulfur Analyzer Hach Model 45600-00 Chemical Oxygen Demand Reactor EM Aquastar C2000 Karl Fischer Automatic Coulometric Titrator VWR Symphony - SB80PD (SN 001345) DO/pH Multimeter Orbeco-Hellige Direct Reading Turbidimeter Model 865-10 Hach Sension3 (SN 09020C 230688) pH Meter Orion 290A Multimeter with various ion selective probes

ENGINE OIL AND FUEL ANALYSIS

Nicolet FTIR (Fourier Transform Infrared) Oil Analyzer Spectrex LASER Particle Counter with computer control Complete Reid Vapor Pressure Apparatus ASTM-D323 Pensky-Martens Closed Cup Flash Point Tester Cleveland Open Cup Flash Point Tester Eitzen 0-2000 SUS Visgage Beckman pH Meter

APPENDIX E

MISCELLANEOUS INSTRUMENTATION

Zymark Turbovap II Concentrator System

Branson 5510 Sonication Bath

ABC Laboratories Gel Permeation Chromatograph Model SP-1000

Various Mettler and Sartorius analytical and pan balances.

Associated Design & Manufacturing Model 3745-ZHE Zero Headspace Extractors

Bucci K-355 Distillation Unit

ESS Multistation Cyanide Distillation Unit

Bucci Semi Micro TKN Digester

VWR - 1156D Heater/Chiller Programmable Circulation Bath

DATA MANAGEMENT

MS Small Business Server 2008

LIMS system - BayCom - Visual LabPro - Enterprise Version 7.0, together with VLP.Net Version 2.0

Workstations - Windows 7.0 Pro, Microsoft Office 2010, and other industry standard programs are used.

DMSI Lubriscan - Oil Conditioning & Monitoring Software



June 4, 2021

Appendix C-5

Sampling Plan



1. Sampling Grid Protocol

Sampling Grid Design

Each hexagonal sampling grid is designed in accordance with EPA guidelines (EPA-560/5-85-026, August 1985 and EPA-560/5- 86-017, May 1986). A hexagonal sampling grid based on equilateral triangles minimizes the variance of estimates throughout the grid.

The smallest hexagonal grid has 7 points, the next has 19 points, and the largest has 37 points, as shown in Figures C5-1 through C5-3. To select the proper hexagonal grid, the distance between adjacent points, "s", must be determined.

The distance "s" is chosen to minimize the area to be sampled and should not exceed 15 ft (maximum radius "r" equals 50 ft). The values of "s" so chosen, together with the number of sampling points and the radius of smallest circle certain to be sampled are shown in Table 1. For example, the grid spacing for a circle of a radius of 4 feet for the 7-point design is "s" = (0.87)(4) = 3.48 feet. For a given size circle, the more points on the grid, the smaller the residual contamination area which can be detected with a given probability.

Number of Points	Distance Between Adjacent Points, S (Feet)	Radius of Smallest Circle Certain to be Sampled
7	0.87r	0.5r
19	0.48r	0.28r
37	0.3r	0.19r

Table 1. Parameters of Hexagonal Sampling Designs for Sampling a Circle of Radius, R (Feet)

The recommended number of samples per area is given in Table 2. Even so, it is important to note that not all samples collected will be analyzed individually.

In addition to the grids defined above, it is expected that modified grids will be necessary. In practice, various obstacles such as structural supports of buildings, or various equipment may be encountered in laying out the sampling grid. Appropriate samples should be collected at these locations as well.

Table 2	. Recommended	Number	of	Samp	les
	. necconnicilaca	Number	01	Jump	-C-5

Sampling Area (FT ²)	Radius of Sampling Circle (FT)	Number of Samples
<50	<u><</u> 4	7
51-380	>4 to 11	19
>380	>11	37



The outer boundary of the contaminated area is assumed to be 4 feet from the center (C) of the spill site.



y 0 $-\Box$ 10∟ 10 Х The outer boundary of the contaminated area is assumed to be 10 feet from the center (C) of the spill site.





PLOT TIME: 108/2020 12:37 PM MOD TIME: 10/8/2020 12:37 PM USER: Kelley Begley DWG: P:/Stericycle/Kent/CAD/Figures/2020-10/TSCA App/2020-10 STRCL-004-02 TSCA KentFacil 37-Pt Samp-Fig C5-3.dw



DRAFT October 8, 2020

If the obstacle encountered undergoes regular cleaning and/or painting, or is an exterior surface subject to weathering effects, it may be appropriate to exclude the sample location because no PCB residual should be present.

Wipe sampling is appropriate for impervious surfaces such as metal siding and metal equipment. Concrete surfaces will be sampled by chipping or drilling and collecting the dust. Asphalt surfaces will be chipped to collect samples. Porous surfaces such as wood will be cored to collect samples. Soil samples will be collected using aluminum or stainless scoops.

Sampling Grid Layout

The layout of a hexagonal sampling grid requires several steps. These steps are:

- i) Determine the boundaries of the suspected area of contamination;
- ii) Determine the center and radius of the sampling circle;
- iii) Determine the number of grid sample points necessary;
- iv) Define the distance between adjacent points;
- v) Layout the sampling locations on the site; and
- vi) Diagram/Photograph the sampling grid layout.

In the event of irregularly shaped areas, the following approach will be used:

- i) Find the longest dimension, Ll, of the area. Determine the midpoint, P, of L1.
- ii) Find a second dimension, L2, through P perpendicular to L1.
- iii) The midpoint, C, of L2 is the required center.
- iv) The distance from C to the extremes of L1 is the required radius, r.

Figure 4 shows examples of the procedure for several irregular shapes. Even if the center determined is slightly off, the sampling will not be adversely affected.

After the center and radius are found, the appropriate number of sampling points will be determined (Refer to Table 2). At this point, the physical layout of the grid may begin.

The methods for laying out the sample points of the hexagonal grid is described below. Figure 2 illustrates this procedure.

Define "s" to be the distance between adjacent points and "u" to be the distance between successive rows of the design. The distances "s" and "u" are given in terms of the sampling radius, "r", in Table 3 below for the given number of samples defined by the radius rule and listed in Table 2.



DRAFT October 8, 2020

Sample Grid Size	Distance, S, Between Adjacent Sample Points	Distance, U, Between Successive Rows
7	0.87r	0.75r
19	0.48r	0.42r
37	0.30r	0.26r

Table 3. Geometric Parameters of Hexagonal Grid Designs for Sampling Radius, R (Feet)

To layout a sampling grid once "s" and "u" have been determined, complete the following procedures:

- i) Determine a diameter of the sampling circle. The orientations of the diameter (e.g., eastwest) should be chosen to maximize sampling coverage both inside and outside of the area.
- Place the center point of the hexagonal design at the center (C) of the sampling circle (pt. 4, 10, or 19 of a 7 pt., 19 pt., or 37 pt. grid, respectively). Lay out the middle row of the design along the diameter with the successive points a distance, "s", apart.
- iii) To lay the next row, use a tape measure and attach the end of the tape to the marker at the end of the center row. Taking a length of tape equal to 2 "s" units, hold the other end of the tape at the next marker in along the center row. Holding the length of tape (2"s") at its center (at the point equal to 1 "s" unit), draw the tape taut horizontally and locate the first sample point in the next row. This method will be used to locate the sample points for the entire second row. This procedure is illustrated on Figure 2.
- iv) To locate the sampling points in the third row, and on subsequent rows, hold one end of a tape measure 2 "s" units in length on a marker in the first row. By extending the tape across an adjacent sampling point in the second row (1 "s" unit in distance), the other end of the 2 "s" unit length tape will be positioned on the sampling point in the third row. This procedure is illustrated on Figure 2.

Each sampling point will be identified with a numbered marker and the center point of each grid will be uniquely identified with colored marker. The end point on the center row (point 7, 19, or 37 depending on grid size) will also be flagged with a different colored marker so that the grid orientation can be discerned in photographic documentation.

Sample Identification Procedures

Each sample point will be assigned a unique alpha-numeric identification (ID) number. The sample ID will be based on the following items:

- The name of the facility from which the sample is being collected.
- The specific grid from which the sample is being collected.
- The "point-size" of the grid from which the sample is being collected.
- The location of the sample within the grid.


Each sample ID code will be prefixed with a "V" to indicate a verification grid sample. The facility ID three letter code will follow the "V" designation. Following the facility code will be a grid designation. The grids at each site will be designated by consecutively assigning a letter of the alphabet (beginning with the letter "A"). After the grid designation will be a grid size identification. This will consist of the number of points in the grid (7, 19, or 37). Finally, the grid point number preceded by the letter "P" will designate the actual sampling point within the grid.

As an example of the sample identification procedures, consider the following ID:

V-KF-B-37-PIO

This sample was collected from sampling point 10 in a 37- point sampling grid. The 37-point grid was the second grid laid out at the facility and was thus labeled as the "B" grid. The facility code "KF" represents the Kent Facility and the "V" indicates this was a final verification sample. In this manner, all samples may be uniquely identified and located on site sketches and will not be confused with previous analytical results.

In order for this codification to function properly, the sampling points in a typical grid must be consistently numbered. The number of the center point will depend on which grid size is being deployed. The center points for each size are as follows:

7 pt. grid - pt. 4 19 pt. grid - pt. 10 37 pt. grid - pt. 19

The numbering sequences for 7-point, 19-point, and 37-point, full grids are illustrated in Figures 1, 2, and 3 respectively.

As an added measure of control, the center sampling point and the end point of the center row will be identified by colored markers. The end points to be marked are points 7, 19 or 37 depending on grid size. These points will be marked with a different color than the center point. Any deviations from the above numbering schemes will be at the discretion of the project manager and will be accurately noted in the field log books.

After all sample points have been marked, a photograph of the grid will be taken and a sketch made. A sign bearing the specific grid designation (e.g. V-KF-B-37) will be placed conspicuously within the grid layout prior to photographic documentation. This will ensure that all grids are positively identified and that, if necessary, the sampling grid may be reproduced. The center marker of all grids may be left in place to further aid reproduction.

The sign placed within the grid for photographic documentation will also specify the values of "s" and "r", as well as the date and any other pertinent information.



2. Sample Collection

Presampling Requirements

All sampling glassware will be new, clean, 8 oz. safety- coated glass jars with Teflon-lined lids. All sample bottles will be discarded after use. To verify that the glassware is below the detection limit for PCBs, statistical sampling of at least 1 percent of the sample bottles from each lot will be performed (bottle blanks).

Prior to being used for any sampling event, sampling equipment (other than disposable sampling equipment) will be cleaned using the cleaning processes described below (with the exceptions presented in subsequent sections):

- Washing with non-phosphatic detergent wash, such as Liquinox;
- Rinsing with deionized (DI) or distilled water; Rinsing with acetone;
- Rinsing with hexane.

The verification procedures for glassware are not applicable for sampling equipment. Sampling equipment required to be cleaned is any equipment or protective gear that may come into contact with the sample matrix (e.g., sample scoops, grid markers, etc.).

Field Sampling Techniques

i) Precautions

During any field sampling event, the sampling personnel will wear the appropriate personal protective equipment. At a minimum, this will include tyvek type suits, gloves, boots, hardhats, and safety glasses. Should site conditions dictate, the equipment may also include respirators with organic/HEPA/dust cartridges. The project leader or the Health and' Safety representative will make the final decision on the level of personal protective equipment necessary for a given location. A "tailgate" safety meeting will be conducted prior to all on-site activities.

All sampling equipment (e.g., scoops, markers, hammers, etc.) will be prevented from contacting any surface which may be contaminated with PCBs. When not in use, equipment will be placed on a plastic sheet, in a polyethylene bucket or carried in tool belts. Should any sampling equipment inadvertently come into contact with surfaces, the equipment will not be used until it has been decontaminated.

Precautions will be taken to prevent the spread of contamination by excessive foot traffic. Personnel will minimize the number of trips into any sampling grid and, if possible, remain in each grid until all sampling activities for that grid are completed. Where feasible, sampling will be conducted by a single person per grid.

ii) Hard Surface Sampling

Samples of hard surfaces can be taken by wipe sampling. Wipe samples can be taken of any smooth surface which is relatively nonporous (such as metal equipment surfaces).



Wipe samples will be taken by first applying a suitable solvent (such as hexane or iso-octane) to a piece of filter paper (e.g., Whatman 10 ashless or Whatman 50 smear tabs), or a cotton gauze pad. The moistened filter paper or gauze pad will then be held with a pair of stainless steel force s or rubber gloves and rubbed thoroughly over a 100 cm area (delineated by a template) of the sample surface. The filter or pad will be placed in a glass sample bottle, and the bottle will be capped. All samples will be stored and shipped according to the procedures outlined in this Sampling Plan (see Sample Custody).

The outer gloves worn when taking wipe samples and any wiping cloth will be discarded into a plastic bag and handled as potentially PCB-contaminated material. The wipe sample results will be used to determine if the discarded material is contaminated.

iii) Surface Soil Sampling

Surface soil samples will be collected using an aluminum or stainless steel scoop. Prior to obtaining a sample, surface debris and loose material will be removed from the area to be sampled. Care will be taken to minimize dust which may be created by the removal of these items. Samples will be collected according to procedures outlined in the 40 CFR Subart G - Spill Cleanup Policy.

Each sample will be taken 1 cm beneath the surface in a 10 cm X 10 cm area. One or more scoops will be taken at each sample location. If more than one scoop is obtained, they will be placed in a stainless steel, tempered glass, or aluminum container and thoroughly mixed. The samples may be sieved through a 1/4 or 3/8 inch sieve at the laboratory prior to analysis. The sieving serves the purpose of (1) removing non-soil debris (rocks, sticks), (2) size reduction, and (3) promoting sample homogeneity. Random portions of the sample in the container will be used to fill one or more glass bottles and the bottle will be capped. All samples will be stored and shipped at 4 degrees centigrade according to shipping procedures.

iv) Split Samples

Split samples may be obtained for verification samples collected. Splitting protocol will be as follows:

- The Kent Facility will provide all sample bottles for collecting split samples.
- An observer will be present when split samples are obtained or composited.
- The split sample results will not invalidate the Kent Facility results when the quality control criteria described herein are achieved.
- For soil samples, the split sample will be taken from the same mixture in the same container as the original sample is taken.

v) Duplicate Samples

Duplicate samples will be collected of the verification samples at a frequency no less than once per ten samples taken (10%). The duplicate samples will be collected, stored and shipped in accordance with the procedures for all other verification samples.



In order to achieve at least a ten percent collection rate, duplicate samples will be collected from each grid. When possible, the duplicate samples will be collected from predetermined sampling locations. The specific sample locations and frequencies are presented in Table 4.

Sample Grid Size	Duplicate Sample Location(s)	Frequency (%) (Min of 10%)
7	No. 1	14.3
19	Nos. 1, 11	10.5
37	Nos. 1, 11, 31, 37	10.8

vi) Background Samples

Surface soil background samples will be collected in the field (offsite where feasible) using the soil sampling equipment. Where possible, samples will be collected upgradient in a direction not impacted by site surface drainage. Several background soil samples will be collected and analyzed individually.

vii) Field Blanks, Equipment Blanks, and Bottle Blanks

Field Blanks: A field blank of each source of deionized (or distilled) water used for each decontamination event during verification sampling will be collected and analyzed.

Field blanks for solvents will be obtained from each source of hexane. A solvent field blank will be obtained in the field by wetting clean wiping material with solvent and placing the wiping material in a sample bottle.

Equipment Blanks: Equipment blanks for verification sampling will be obtained after each decontamination event. The final piece of sampling equipment undergoing decontamination will be wipe sampled in general accordance with the wipe sample procedures described in Sample Collection. The final piece was chosen because it is more likely to exhibit residual contamination, if any. This exercise will verify that the sampling equipment has been properly decontaminated.

Bottle Blanks: Bottle blanks will be collected from 1 percent of the bottles used. A bottle blank constitutes an empty bottle which is analyzed for signs of prior contamination.

All background samples, field blanks, and equipment blanks will be stored and shipped according to the shipping procedures described in Sample Custody.

viii) Composite Samples

Samples from the same type matrix may be composited for analysis. Compositing will be done either by equal volume or equal weight.



The number of individual samples which can be composited is limited by the characterization level and the analytical quantization limit. See the Analytical Laboratory QA/QC, for compositing strategies.

Disposition of Sampling Waste

All sampling wastes, including excess sample materials, disposable items (e.g., rubber gloves, disposable wipes), and decontamination solutions, shall be disposed of as PCB waste as required.

Documentation of Field Sampling

In order to assure that the field sampling effort has been adequately documented, the documents described below will be prepared.

i) Documentation and Records

The Kent Facility is responsible for preparing and maintaining complete records of the field sampling activities. The following written records will be maintained:

- Sample codes.
- Field log book (including equipment preparation logging).
- Annotated maps (to show sample locations). Chain-of-custody forms.

ii) Sample ID

Each sample when collected will be assigned a unique sample ID and the sample container labeled accordingly. The sample code will contain information traceable to the site and location at which the sample was collected. This code will be used for all reference to that particular sample. The selected sample ID protocols are described under "Sample Identification Procedures" earlier in this Sampling Plan.

iii) Field Log Book

The Kent Facility will maintain a field log book (or books) which contain all information pertinent to the field sampling program and the equipment preparation efforts. The log books will be bound and entries made in ink. The project leaders will review field log entries daily and will indicate so by initialing each page of entries.

At a minimum, each log book will include the following entries:

- Facility Name. Location of site.
- Date(s) of sample collection. Time(s) of sample collection.
- Type(s) of samples taken and sample identification numbers.
- Number of samples taken.
- Description of sampling methodology (referencing this Sampling Plan).



- Field observations and personnel interviews. Summary of equipment preparation procedures. Name of FST member.
- Cross-reference of sample identification numbers to grid sample points (shown on annotated sketches).

iv) Sample Location Record

Site sketches will be used to record key site conditions and to show approximate (scaled, not surveyed) sampling points.

Non-Grid Sample Identification Procedures

Previously described were several sample types which are not readily amenable to the sample ID procedures. Specifically, those samples which are not uniquely collected from discrete grid sample points. This section will define the sample ID protocols for those samples.

i) Wipe Samples

Wipe samples will be assigned the letter corresponding to the grid ID. The grid size designation will be "WP". A wipe sample at the Kent Facility (KF) of equipment D would be designated as:

V-KF-D-WP-1

A detailed narrative description, as well as site sketch will be entered into the field log book(s).

ii) Field Blanks

Field blanks will be assigned a letter corresponding to the next grid for which the sampling equipment will be used following decontamination. The grid size designation will be "FB". The field blank from the source of deionized water used to decontaminate sampling equipment that will be used to sample grid A at the Kent Facility is designated as:

V-KF-A-FB-1

A narrative description will be entered into the field log book(s).

iii) Background Samples and Perimeter Samples

Background and Perimeter Samples are taken outside the facility boundary. Background and Perimeter Samples will be assigned a letter as if they were grids. All background samples will have the same letter designation. The grid size designation will be "BG". The first background sample from the Kent Facility {KF} which has been assigned the grid code "C" is designated as:

V-KF-C-BG-1

The first perimeter sample from the Kent Facility (KF) which has been assigned the grid code "D" is designated as:

V-KF-D-PE-1



When assigning letter "grid" codes, use the next available letter that has not been assigned to a grid.

A detailed narrative description, as well as a site sketch will be entered into the field log book(s).

iv) Equipment Blanks

Equipment blanks will be assigned a letter corresponding to the next grid for which the sampling equipment will be used following decontamination. The grid size designation will be "EB". The equipment blank from the source of deionized water used to decontaminate sampling equipment that will be used to sample grid B is designated as:

V-KF-B-EB-1

A narrative description will be entered into the field log book(s).

v) Bottle Blanks

Bottle Blanks will be assigned a letter corresponding to the grid for which the bottles will be used. The grid size designation will be "BB". The bottle blank for Kent Facility (KF) grid A is designated as:

V-KF-A-BB-1

A narrative description will be entered into the field log book(s).

vi) Duplicate Samples

Duplicate Samples will be identified by the sample ID of the point being sampled with the addition of the letter "D" for duplicate. A duplicate sample taken at point number 11 of a 19-point grid (19) at the Kent Facility (KF), which has been assigned the grid code[.] "G", will be identified as:

V-KF-G-19-P11D

In a similar manner, all duplicate sample ID's will be defined by appending a "D" to the end of the sample location number.

vii) Composite Soil Samples

When the Kent Facility project manager determines that compositing is necessary, the laboratory will be provided with written authorization via use of the Chain of Custody form to composite field samples. Composite sample ID numbers will be assigned by specifying the grid from which the samples were collected (e.g. V-KF-B-37) and appending the alpha- numeric code "CMP#". The"#" symbol will be replaced with consecutive numerals. For example, the third composite sample at the Kent Facility from grid "B" would be identified as:

V-KF-B-37-CMP3



viii) Backfill

All sources of backfill will be sampled and identified by the grid they are to be used to backfill. For example, if grid "B" is being backfilled, the sample would be identified as:

V-KF-B-BF-1

ix) Additional Identification Procedures

When a situation is encountered which does not fit into any of the above categories, the project manager shall assign an appropriate unique grid nomenclature to identify those samples. In addition to detailed narrative descriptions and site sketches, photographs will be taken of sample locations.

3. Sample Custody

Labeling

Upon collection of each sample, the sample bottle will be immediately labeled. The Kent Facility may, at the discretion of the project manager, label the sample bottles prior to the collection of the sample. The sample labels will, at a minimum, display the following:

- Sample ID.
- Sample Date.
- Sample Time (military).
- Sampler's Initials.

Sample Preservation and Shipment

Sample packing and shipping procedures are based on USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations (49 CFR). All samples in labeled bottles will be segregated according to the specific grid from which they were collected. Each sample bottle will be plastic coated. The cooler used to ship samples will contain about two inches of shock absorbent packing material placed at the bottom of the cooler. The samples will be placed on the packing material. Another 1-2 inches of packing material will be placed on top of the samples, taking care to ensure that voids between the samples are filled with the packing material. The procedure will be repeated until the bottles and packing material occupy approximately 75 percent of the volume of the cooler. Sealed bags of ice will be placed into the remaining cooler volume to keep the samples at 4°C.

The necessary paperwork and documentation (Chain of Custody forms) will be sealed in watertight bags or containers and will be placed into the cooler. The cooler lid and drain will be thoroughly secured with duct tape or equivalent prior to shipment. Samples will be delivered to the laboratory within 96 hours, but typically within 48 hours of collection. Samples may be securely stored onsite for up to 48 hours before shipment, if sampling occurs over weekends or holidays.



Chain of Custody

Each sample collected will be identified on a uniquely numbered Chain-of-Custody (COC) form. The COC will include, at a minimum, the following:

- Project location.
- Sampler(s) name.
- Sample identification numbers.
- Sample date and time (military).
- Sample type and description (e.g., surface soil, sediment, surface water or wipe).
- Analyses requested.
- Special handling and storage requirements.

Subsequent personnel receiving the samples will enter the following information on the form:

- Name of the person receiving the samples.
- Date and time of receipt.
- Laboratory sample numbers (when received by the laboratory).
- The contracted laboratory will dispose of all used samples in accordance with applicable regulations.



4. Decontamination Procedures

All sampling equipment will be decontaminated prior to the commencement of any sampling event. This may actually be accomplished by decontaminating the sampling equipment after each use. Sampling equipment is defined as any equipment or protective gear that may come into contact with the sample matrix (e.g., sample scoops, grid markers, etc.).

Whenever possible, personal protection equipment will be disposable in nature and no decontamination will be performed. For non-expendable equipment, the following decontamination procedures will be observed:

- A polyethylene bucket will be filled with potable water to a depth of approximately 6 inches (about 1 1/2 gallons). Several grams of non-phosphatic detergent (i.e. Liquinox) will be added to produce a soap solution.
- ii) A second polyethylene bucket will also be filled with potable water to a depth of approximately 6 inches.
- iii) A one-half liter teflon wash bottle will be filled with reagent grade acetone.
- iv) A one-half liter teflon wash bottle will be filled with reagent grade hexane.
- v) The sampling equipment will be immersed into the Liquinox solution, agitated and brushed for several seconds.
- vi) Upon removal from the Liquinox solution, the equipment will be immersed in a potable water rinse bucket and agitated to remove the remaining Liquinox solution.
- vii) At this point, the equipment should be free of visible soil or other residues. Should visible residues remain, steps (v) and (vi) will be repeated.
- viii) After visible residues are completely removed, the equipment will be rinsed in deionized
 (DI) water (or commercial grade distilled water). A polyethylene carboy of DI or distilled
 water will be elevated over an empty polyethylene bucket. The spigot will be opened and
 the equipment will be passed under the free flowing stream of water.
- ix) The equipment will be rinsed with acetone by squeezing a sufficient amount of the solvent from the wash bottle. The waste acetone will be collected in a polyethylene bucket.
- x) Following the acetone rinse, a second solvent rinse, using hexane, will be performed. The technique will be equivalent to that described in step (ix) above. The waste hexane will be collected in the same container as the acetone.
- xi) The equipment will then be allowed to air dry.
- xii) All equipment decontaminated in the above manner will be immediately placed into designated "clean" storage containers.
- xiii) The equipment blank will be collected at this time during verification sampling only.
- All waste water will be assumed to be PCB contaminated. It will be containerized, labeled as PCBs, and secured on-site pending analytical results. All waste solvents will be containerized, labeled as PCBs and flammable, and treated as ignitable hazardous waste.



With the exception of boots and hard hats, personal protective equipment (PPE) generally will not be decontaminated; rather, it will be bagged or containerized, marked as PCBs, and secured on-site pending the results of the facility's soil sample analyses.

5. Analytical Laboratory QA/QC

The QA/QC program for the analyses of samples will generally follow the requirements under the Kent Facility Quality Assurance Project Plan (QAPP), part of the current RCRA Part B Permit. Third-party contract-laboratories used by the Kent Facility are responsible for adherence to their own QAPP and to the quality control procedures as specified in each analytical method performed. The current main third-party laboratory utilized by the facility is Spectra, their QAPP is included as Appendix C-4. PCBs will be analyzed by method 8082a for soil and water.

Compositing Strategies

This section presents suggested strategies for compositing samples taken from sites which are sampled using the grid sampling methods described above. All composite samples will be prepared by the analytical laboratory and only upon the specific direction of the project manager or his designee. The strategies for forming composites are as follows:

- Composite only samples of the same type (i.e., all soil or all water). Since the composite must be thoroughly mixed to ensure homogeneity, certain types of samples such as asphalt, wipe samples, wood samples and other hard-to-mix matrices should not be composited.
- ii) Do not form a composite with more than 5 samples, since in some situations compositing a greater number of samples may lead to such low PCB levels in the composite that the recommended analytical method approaches its limit of detection and becomes less reliable.
- iii) For grid samples, if possible, composite only interior grid samples together and only exterior grid samples together. For exterior samples, it is best not to composite and run the samples singularly if time-allows. This decision must be made by the project manager. Do not composite verification samples designated for splits or duplicates.
- As much as possible, try to form composites of equal size. For example, if 37 soil samples are taken; then 8 composites could be formed using three 4 samples composites and five 5 sample composites.
- v) To the extent possible, composite adjacent samples. If contamination is present, it is likely that high PCB levels will be found in some samples taken close together.
- vi) In all cases where a composite sample exhibits PCB levels above allowable limits, a determination of which sample(s) exceeded the allowable limit will be made by running samples singularly.

The applicability of compositing is potentially limited by the size of the individual specimens and by the performance of the analytical method at low PCB levels. First, the individual specimens must be large enough so that the composite can be formed while leaving enough material for individual analyses if



needed. This Sampling Plan has been designed such that the adequacy of specimen sizes will not be a problem. The second limiting factor is the analytical method. Down to approximately 2 ppm, the performance of the stipulated analytical methods should not degrade markedly. Therefore, not more than about 5 specimens should be composited at a time. This will ensure that PCB levels of greater than 10 ppm in individual samples will be detected.

In all cases where a composite sample exhibits PCB levels above allowable limits, a determination of which sample(s) exceeded the allowable limit will be made by running samples singularly.

6. Hot Spot Pursuit

In the event sample points fail the verification analysis, further sampling, decontamination, excavation (if required), and verification will be performed until the desired clean- up level is reached. Grid extension and remediation strategies are described below.

Grid Extension

Interior Hot Spots: Grid points which exceed the clean-up level and fall inside the grid sampling area (interior points) will be decontaminated or excavated (if required). Boundaries of interior decontamination or excavation limits will be set as the nearest clean grid points surrounding the hot spot. If the interior hot spot is not surrounded by grid points, then the nearest edge of the grid will used as the boundary. The point will be decontaminated or excavated (if required) and resampled until it meets the clean-up standard. The resampled point will be designated as follows:

V-KF-B-37-P35-1(first resampling of interior point 35, etc.)

For interior hot spots which are excavated to depths exceeding 6 ft deep, the excavation should be treated as a new grid so that adequate sampling of excavation walls and floor is accomplished. The grid size should be determined by the measurements of the excavation perimeter at the top of the excavation, and the standard grid size determination procedures should be followed. The new grid should be designated as follows:

V-KF-BI-37

Exterior Hot Spots: Exterior or halo points are those points which, although are part of a grid, fall outside the defined sampling area (surface level). A "hot" grid point may fall outside the grid sampling area (exterior point) but be surrounded by clean grid points, i.e, boundaries are defined. If this is the case, then the hot grid point should be treated like an interior hot spot and decontaminated or excavated (if required) out to the next clean grid points and then resampled. Repeat this procedure until it meets the clean-up standard. These samples will be labeled as follows:

V-KF-B-37-PIS-I (first resampling of exterior point 18 surrounded by clean points)

For exterior grid points which exceed the clean-up standard and for which no boundaries are defined, investigative boundary samples will be collected to identify the extent of contamination. The



contaminated area will be decontaminated or excavated (if required) to the new boundaries and treated as a new grid. The grid size should be calculated graphically as for the original grid and designated as follows:

V-KF-BI-37 (new grid resulting from grid extension on grid B)

If sampling of boundaries to locate the clean boundaries becomes extensive, then a new source of contamination has probably been detected. A new letter designation should be assigned to the grid, and the area should be treated as a new grid.



June 4, 2021

Appendix C-6

Specifications for Concrete Epoxy Coating



PRODUCT DATA SHEET

CHEMTREAD[®] SERIES 239

PRODUCT PROFILE				
GENERIC DESCRIPTION	Modified Novolac Polyamine H	Epoxy		
COMMON USAGE	A chemical resistant, multi-purpose novolac epoxy coating that can be used as a primer, broadcast, slurry/broadcast, mortar, grout coat, and topcoat. Excellent application properties with good flow and self-leveling characteristics. Protects concrete surfaces from impact, abrasion and mild chemicals.			
COLORS	Clear or pigmented. Can be fa colors. Contact your Themeer r extended exposure to UV and heaters that emit carbon dioxid blush, possibly affecting adhes certain acids. As a result, day	ctory or field-tinted (Series 820 epresentative for additional info artificial lighting. Lack of ventil de and carbon monoxide during ion of subsequent topcoats. Ca arker colors are recommend	Field Tint) in 16 StrataShield co ormation. Note: Epoxies chalk ation, incomplete mixing, misc g application and initial stages ution: Novolacs will stain w ed.	olors and certain custom and yellow with age, atalyzation or the use of of curing may cause amine rith extended exposure to
COATING SYSTEM				
SURFACER/FILLER/PATCHER	Series 206, 215. Note: A repair more extensive repairs and ad	r kit of 201, with Part C fumed s ditional information, contact yo	silica, is available for small pate ur Tnemec representative or Tr	ching/surfacing repairs. For nemec Technical Services.
PRIMERS TOPCOATS	Self-priming or Series 201, 208 Series 239, 252SC, 282, 286. No 239 prior to the finish coat app	, 241 ote: Drier mixes, typically used blication.	for power trowel application,	should be grouted with Series
SURFACE PREPARATION				
	Prepare surfaces by method su	uitable for exposure and service	Refer to the appropriate prim	er data sheet for specific
	recommendations. When self p	priming:		er data sheet for specific
CONCRETE	Allow new poured-in-place co with ASTM F 1869 "Standard T Anhydrous Calcium Chloride" hour period), F 2170 "Standard humidity should not exceed 8 Sheet Method" (no moisture p related problems particularly v vapor barrier cannot be confin Alkali Silica Reaction (ASR) is s	ncrete to cure a minimum of 2? 'est Method for Measuring Mois (moisture vapor transmission sl 1 Test Method for Determining)%), or D 4263 "Standard Test M resent). Note: The testing listec (with existing concrete slabs. Thi med or concrete contamination suspected.	8 days at 75°F (24°C). Verify co ture Vapor Emission Rate of Cc nould not exceed three pounds Relative Humidity in Concrete Aethod for Indicating Moisture above cannot guarantee avoic is is especially true if the use of from oils, chemical spills, unre	ncrete dryness in accordance oncrete Subfloor Using per 1,000 square feet in a 24 using in situ Probes" (relative in Concrete by the Plastic dance of future moisture f an under slab moisture eacted silicates, chlorides or
	Prepare concrete surfaces in a Technical Guidelines. Abrasive curing compounds, hardeners, profile. Large cracks, voids an For moisture content exceedin substituted for the primer. Refe	coordance with NACE No. 6/SS blast, shot-blast, water jet or n sealers and other contaminant d other surface imperfections sl g 3 lbs per 1,000 sq ft or relativ er to the Series 208 or 241 prod	PC-SP13 Joint Surface Preparati techanically abrade concrete su and to provide a minimum IC tould be filled with a recomme e humidity in excess of 80%, S uct data sheet for more inform	on Standards and ICRI Irfaces to remove laitance, IRI-CSP 3 or greater surface Inded filler or surfacer. Note: Irries 208 or 241 may be ation.
ALL SURFACES	Must be clean, dry and free of	oil, grease and other contamin	ants.	
TECHNICAL DATA				
VOLUME SOLIDS	100% (mixed)			
RECOMMENDED DFT	Primer: 6.0 to 12.0 (150-305 r Broadcast: 1/16" to 1/8" (Dot Mortar: Suggested 1/4" (Minii Grout Coat: 8.0 to 16.0 mils (Intermediate or Topcoat: 8.1	nicrons) per coat. uble broadcast or slurry broadca num of 1/8", Maximum of 1") 203 to 406 microns) 0 to 16.0 mils (203 to 406 micro	nst required to achieve 1/8")	
CURING TIME	Temperature	To Topcoat/Broadcast	To Place in Service	Full Cure
	75°F (24°C)	12 to 24 hours	24 hours	5 days
	Note: If more than 24 hours h topcoating. Note: There is no Note: 24 hour cure provides f is required for certain severe c Curing time varies with surface	ave elapsed between coats, the maximum recoat time if aggreg or traffic, secondary containmer hemical exposures. Contact you temperature air movement h	coated surface must be mecha ate has been broadcast to refus nt and certain mild chemical ex ur Tnemec representative or Tn umidity and film thickness	inically abraded before sal into the preceding coat. sposures. Up to five days cure nemec Technical Services.
VOLATILE ORGANIC COMPOUNDS	Unthinned: 0.013 lbs/gallon (Thinned 5% (No. 2 Thinner	1.5 grams/litre) • 0.47 lbs/gallon (56 grams/litre)	e)	
HAPS	Unthinned: 0.0 lbs/gal solids Thinned 5% (No. 2 Thinner): 0.37 lbs/gal solids		
THEORETICAL COVERAGE	1,604 mil sq ft/gal (39.4 m²/L at 25 microns). See APPLICATION for coverage rates.			
NUMBER OF COMPONENTS	Liquids–Two: Part A and Part I Field Colorant–One: (optional) Note: Aggregate for mortar ap supplier.	B (2 parts A to 1 part B by volu) (Series 820) plications (S239-0301C) is avail	me) able from Tnemec or can be po	urchased from an approved

PRODUCT DATA SHEET

CHEMTREAD® | SERIES 239

Error Large Kit 2-55 gallon drums 1-55 gallon mild 1-55 gallon drum 1-16 gallons Small Kit 2-1 gallon cars 1-15 gallon mild 3 gallons Broadcest Application: For broadcest or shurt/broadcast applications purchase chan, dry, baggel AD (2045) medb) quiter applications: The agreement is calculated at one-full pound per ty (124 [kg/m]) per 1/0 ¹⁰ broadcest application or one pound per sq ft (4 kg/m]) for a 1/8 ¹⁰ double broadcast. Additional aggregate is required to accound and the origin pound application or to make corong marker. work of additional specification or transfer corong marker. State of a mount collectuated from There is packaged in the origin answar collectuated from There is packaged in the transfer corong marker. Ballon when maked or a 6.5 to 1-3/00 to 1/00 kg/m. State 13 broadcest application of the origin origin of the ori	PACKAGING		PART A	PART B	Yield (mixed)
Large Kit 2-5 gallon pails 1-5 gallon pail 1-5 gallon pails Broadcast Applications: For broadcast or demy/broadcast pplications purchase clean. dr). Sugged 4.0 (00/50 med): a pair of a 1/6 dollared aggregate is required to accommodate for was a proceed equal. The aggregate is calculated at one half pound per sq (1-4.8 gyr/m) per 1/16 aud/ss applications: The aggregate is calculated at one half pound per sq (1-4.8 gyr/m) per 1/16 broadcast applications in pound per sq (1-4.8 gyr/m) per 1/16 broadcast applications in pound per sq (1-4.8 gyr/m) per 1/16 broadcast applications in pound per sq (1-4.8 gyr/m) per 1/16 broadcast applications applications: The aggregate is calculated to result and by weight. Part C moting aggregate purchased from There is packaged in 50 hr Jago. Mortar Application: The Part C moting aggregate (S20 900) is based on a monital amount calculated of 0-900 hr Jago. Subact TabPSND Mortar Application: Colorants are available in quart and gallon considered in mated of a close on a per sq (1-4.8 gyr) of a 1.8 g/ 0-900 hr Color to the st (1-4.0 gyr) of a close of close close close close of a close of a close of a close of a close of close clo		Extra Large Kit	2-55 gallon drums	1-55 gallon drum	165 gallons
Statul Rit 2-1 gallon cams 1-1 gallon cam 3 gallons Brodestart Applications: The superstation statutes cana, day, Anged 44 (0,400 mesh) Applications: The superstations (0,400 mesh) Print Shot, silica statul or approved equal theme: ChronaQuartz or approved equal can be substatued for decontre- ion point per sp 16 (3,8,8,919) for a 1/0° Guide brockest. Additional aggregate is required to 600 Bis- gallon when inteed or a 6.5 to 1-90 to 1 (nock to resin) ratio by weight. Part C motar aggregate (529) 4000 is based on a nonindiares from Theme: (1) for Strasshide or colors and certain custom colors: Colorants should be added at 40.2, 6 8.0, per gallon of mixed clear lequids for intermediate or base costs and up to 8.8, per gallon of finish cease. Note: Color consistency may vary based on anne of colorant used. SUDAGE TREFAILOR 9.30 to 0.25 bis (0.22 ± 11 kg) (Parts A & B mixed) Marinum 50° (10°C) Maximum 90° (20°C) Marinum 50° (10°C) Maximum 90° (20°C) SUBAGE TREFAILOR N/A RUMINE SUBAL N/A RUMINE SUBAL N/A RUMINE SUBAL N/A RUMINE SUBAL Defore containe chemical ingregione which are considered hazardous. Read container label warning and Materi is dynamical ingregione which are considered hazardous. Read container label warning and Materi is dynamical ingregione which are considered hazardous. Read container label warning and Materi is dynamical ingregione which are considered hazardous. Read container label warning and Materi is dynamical inft		Large Kit	2-5 gallon pails	1-5 gallon pail	15 gallons
RT WERKT RE ADDICATION: For broadcast or shurry/broadcast applications purchase clean, dry, baged 4.0 (0.93) mesh) Phirs Note, Shics sand or approved equal, Theme: ChromaQuarty or approved equal, theme: ChromaQuarty is required to accommodate for was more than the set of the		Small Kit	2-1 gallon cans	1-1 gallon can	3 gallons
NETWEGHT PE 64.001 9:30 ± 0.25 lbs (4.22 ± 11 kg) (20 arts A & B mixed) STORAGE TRAPEAURE Minimum SOF (10°C) Minimum SOF (10°C) Minimum SOF (10°C) SIGE TLAPPANURE Minimum SOF (10°C) SIGE TLAPPANURE Minimum SOF (10°C) SIGE TLA IZ months at recommended storage temperature. N/A This product contains chemical ingredients which are considered hazardous. Read container label warning and Materia Safety Data Sheet for important health and safety information prior to the use of this product. RECOMMENTION Rece out of the reach of children. PUICATION Primer: f: 6-12.0 dy milds (150-305 microns): 60-12.0 wet mils (150-305 microns): 134-267 sq ft/gal (122-24.3 m ²) Broadcast Application: The mixed liquids (Part A and B) are spread at a rate of 80 proximately 120 milds (150 microns) ver. The aggregate is then broadcast in to the liquid outil a uniformly dy appear is obtained. Safe horadcast layer will result in a thickness of approximately 120 milds (150 microns) ver. The aggregate theored application of the indocustley 2 milds (23 mild) Note: Drier mixes typically used for power trowed application shuld be grouted prior for finals coating. Allow for sult in thickness of 10° S (3.2 mild) Note: Allow 10 dy milds (20 to 16 dy milds (20 to 20 to (ft/gal (9.3 mild))		Broadcast Application: For Flint Shot, silica sand or appr quartz applications. The aggn one pound per sq ft (4.8 kg/r or loss during application or Mortar Application: The Pa gallon when mixed or a 6.5 t is packaged in 50 lb. bags. Colorsant: Series 820 field ap colors and certain custom col intermediate or base coats an of colorant used.	broadcast or slurry/broadcast a oved equal. Themec ChromaQu egate is calculated at one-half pp m ²) for a 1/8" double broadcast. to make coving material. rt C mortar aggregate (\$239-030 o 1–9.0 to 1 (rock to resin) ratio plied colorants are available in o ors. Colorants should be added d up to 8 oz. per gallon for finis	pplications purchase clean, dry lartz or approved equal can be ound per sq ft (2.4 kg/m ²) per Additional aggregate is require 1) is based on a nominal amou by weight. Part C mortar aggre quart and gallon containers fron at 4 oz. to 8 oz. per gallon of r sh coats. Note: Color consisten	, bagged 4.0 (30/50 mesh) substituted for decorative 1/16" broadcast application d to accommodate for was nt calculated at 60-80 lbs. p gate purchased from Tnen n Tnemec in 16 StrataShielen inxed clear liquids for cy may vary based on amo
STORAGE TEMPSAURE Minimum 50°F (10°C) Maximum 90°F (3°C) Material should be stored at temperatures between 70°F and 90°F (21°C and 32°C) for at least 48 hours prior to use. CDry) Continuous 300°F (14°C) INTERPATURE RESISTANC (Dry) Continuous 300°F (14°C) Intermittent 525°F (16°C). SIEU UF 12 months at recommended storage temperature. FLAR HOIT. This product contains chemical ingredients which are considered hazardous. Read container label warning and Materia SaFFY Data Sheet for important health and safety information prior to the use of this product. REVENTION Effort on the reach of children. PUCATION Primer: 60:12.0 dry mile (150:30° microns) 60:12.0 wet mile (150:30° microns) 134:426° cg f/gal (122:245 m²) Primer: 60:12.0 dry mile (150:30° microns) 60:12.0 wet mile (150:30° microns) 134:426° cg f/gal (122:245 m²) Primer: 60:12.0 dry mile (150:30° microns) 140:426° cg f/gal (122:245 m²) Primer: 60:12.0 dry mile (150:30° microns) 140:426° cg f/gal (122:245 m²) Primer: 60:12.0 dry mile (150:30° microns) 140:426° cg f/gal (122:245 m²) Primer: 60:12.0 dry mile (150:40° miles and b) are spread at a true of 90 to 140 mile aniformly dry appear Material Application: The mixed liquide (Part A and B) and aggregate (Part O) are spread at a rate of a minorman or above maximum recommended dry film thicknesses are approximately 124 Note: Application: The mixed liquide (Part A and B) and aggregate (Part O) are spread at a rate	NET WEIGHT PER GALLON	9.30 ± 0.25 lbs (4.22 ± .11 kg	g) (Parts A & B mixed)		
ENPERATINE (Dry) Continuous 300°F (14°C) Intermittent 325°F (163°C) SHEF UF 12 months at recommended storage temperature. PARN MORT This product contains chemical ingredients which are considered hazardous. Read container label warning and Materia Safety Data Sheet for important health and safety information prior to the use of this product. NEMENDER Before commencing, obtain and thoroughly read the StrataShield Installation and Application Guide for floors. Primer: 60.12.0 dry mils (150.305 microns) 6.0.12.0 wer mils (150.305 microns) 142.407 sq fr/gal (122.24.3 m³) Broadcast Application: The mixed liquids (Part A and B) are spread at a rate of 80 sq fr (24 mor) erg gallon or approximately 20 mils (150.305 microns). Net rub first boadcast la cures, the excess aggregate must be removed and a second application repeated to obtain an approximately 235 sq ft per galion at a thickness or 1/4° hased on a 6.5 to 1 – 90 to 1 cock to respirate at a rate of approximately 235 sq ft per galion at a thickness or 1/4° hased on a 6.5 to 1 – 90 to 1 cock to respirate at a rate of approximately 1.00 (100°C). Note: Ther mixes thypically used (for power trovel application should be grouted prior do finis doating, allow for surfirregularities. Fill thickness is rounded to the nearest 0.5 mill or 5° microns) 100-201 sq. ft/gal (9.3. mill (9.3. to 16.0 dry mills (203 to 406 microns) 80 to 16.0 wer mills (203 to 406 microns) 100-201 sq. ft/gal (9.3. mill (9.3. to 16.0 dry mills (203 to 406 microns) 80 to 16.0 wer mills (203 to 406 microns) 100-201 sq. ft/gal (9.3. mill (9.3. to 16.0 dry mills (203 to 406 microns) 100-201 sq. ft/gal (9.3. mill (10.3. to 16.0 dry mills (203 to 406 microns) 80 to 16.0 wer mills (STORAGE TEMPERATURE	Minimum 50°F (10°C) Max Material should be stored at t	timum 90°F (32°C) emperatures between 70°F and	90°F (21°C and 32°C) for at lea	st 48 hours prior to use.
SHE LUE 12 months at recommended storage temperature. FLASH FOINT-SETA N/A HSLINE SAFET This product contains chemical ingredients which are considered hazardous. Read container label warning and Materia Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children. PLICATION Endote commencing, obtain and thoroughly read the StrataShield Installation and Application Guide for floors. Primer: 6.0-12.0 dty mils (150-305 microns) 6.0-12.0 wet mils (150-305 microns) 134-267 sq ft/gal (12.2-24.3 m ²) Broadcast Application: The mixed liquids (Part A and B) are spread at a rate of 80 sq ft (7.4 m ²) per gallon or approximately 20 mils (150 microns) 104-107 (1.6 mm). After the first broadcast I a cures, the excess aggregate must be removed and a second application repeated to to bian an approximately 20 mills (150 microns) 106-107 (2.0 mm). The mixed liquids (Part A and B) and gagregate (Part D) (1.0 f unit). After the first broadcast I a cures, the excess aggregate must be removed and a 6.5 to 19 00 to 1 rock to resin rate of approximately 2.15 (3.2 mm). MS staft Application: The mixed liquids (Part A and B) and gagregate (Part D) or 10 microns) 100-201 sq, ft/gal (9.3 microns) 10.0 to 1 rock to resin rate of microns) 100-201 sq, ft/gal (9.3 microns) 10.0 to 10 dt to resin rate of microns) 100-201 sq, ft/gal (9.3 microns) 100-201 sd,	TEMPERATURE RESISTANCE	(Dry) Continuous 300°F (1499	°C) Intermittent 325°F (163°C)	
FLASH FOINT - SEA N/A HEALTH & SUFETY This product contains chemical ingredients which are considered hazardous. Read container label warning and Materia Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children. PUICATION COVERAGE RATES Before commencing, obtain and thoroughly read the StrataShield Installation and Application Guide for floors. Primer: 60-12.0 dty mils (150-305 microns) 6.0-12.0 wet mils (150-305 microns) 134-267 sq ft/gal (12.2-24.3 m ³) Broadcast Application: The mixed liquids (Part A and B) are spread at a rate of 80 aff (7.4 m ³) per gallon or approximately 20 mils (510 microns) wet. The aggregate is then broadcast in the liquid until a uniformly dry appear is obtained. Each broadcast ary priteinal result in a thickness of approximately 1/16 (1.6 mm). After the first broadcast lar urits broadcast lar urits by appears in so the removed and a second application repeated to obtain an approximately 2.2 St sq if per gallon at a linkness of 1/4° based on a 6.5 to 1 – 90 to 1 rock to resin ratio by weight. Mortar Application: The mixed liquids (Part A and B) and aggregate OPart C) are spread at a rate of approximately 2.2 St sq if per gallon at a linkness of 1/4° based on a 6.5 to 1 – 90 to 1 rock to resin ratio by weight. Mirregularities. Flim thickness is rounded to the nearest 0.5 mill or 5.0 micross. Polylication of coating below minimum or above maximum recommended dry lim thicknesses may adversely affect coating beformance. Grout coat: 8.0 to 16.0 dry mils (203 to 406 microns) 8.0 to 16.0 wet mils (203 to 406 microns) 100-201 sq. ft/gal (0.3 m ²). MIXING Use a vari	SHELF LIFE	12 months at recommended s	storage temperature.		
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PRODUCT DATA SHEET

CHEMTREAD® | SERIES 239

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June 4, 2021

Appendix D-1

Closure Costs from the RCRA Permit

SECTION I

CLOSURE PLAN AND CLOSURE COST ESTIMATES

SECTION I. CLOSURE PLAN AND CLOSURE COST ESTIMATES

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SECTION I. CLOSURE PLAN AND CLOSURE COST ESTIMATES

WAC 173-303-806(4)(a)(xiii), 610

I1. CLOSURE PLAN

WAC 173-303-806(4)(a)(xiii), 610(3)

Burlington Environmental, LLC is the legal owner of the facility and is a wholly-owned subsidiary of PSC Environmental Services, LLC which is a wholly-owned subsidiary of Stericycle Environmental Solutions, Inc., hereafter referred to as "Stericycle".

This closure plan describes the procedures that will be followed to close the dangerous waste (DW) management units at the Stericycle-Kent Facility. Closure activities will be performed in accordance with requirements in WAC 173-303-806, -610, -630 and -640 and 40 CFR 264 Subparts G and H. This closure cost estimate for activities under this closure plan will be updated as necessary as new DW management units are constructed, or when DW management units are closed. This document will also be updated when regulations or regulatory guidance dictates new closure requirements that may affect the cost of closing the facility.

I1.1. Facility Description

Facility Operator

Stericycle-Kent Facility 20245 77th Avenue South Kent, Washington 98032 Phone (253) 872-8030 EPA ID No. WAD 991281767

Facility Owner

Burlington Environmental, LLC 18000 72nd Avenue S., Suite 201 Kent, Washington 98032 Phone (425) 227-0311

The Kent Facility is located on a 6.25 acre site at 20245 77th Avenue South in Kent, King County, Washington. Waste management units are shown on Figure I1-1, Kent Facility Site Plan.

The facility receives a broad range of DWs for management, and utilizes the following waste management options:

• Solvent Recycling (off-site

- Alternative Fuel Blending (off-site)
- Water Treatment
- Incineration (off-site)
- Landfill (off-site)
- Stabilization (off-site)

The facility's waste management units and corresponding capacities are discussed in Section I1.3, Maximum Waste Inventory. DW management units and operations are discussed in detail in Section D, Process Information.

I1.2. Closure Performance Standards

WAC 173-303-610(2)(a)(i)-(iii), (2)(b), (6)

Closure activities at the Stericycle-Kent Facility are designed to meet Federal and State closure performance standards. The closure activities will accomplish the following performance standards identified in WAC 173-303-610(2)(a), -(2)(b), (6):

- Minimize the need for further maintenance;
- Control, minimize, or eliminate to the extent necessary to protect human health and the environment, post-closure escape of DW, dangerous constituents, leachate, contaminated run-off, or DW decomposition products to the ground, surface water, ground water, or atmosphere; and
- Return the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous DW activity.

Where removal or decontamination of DW management units, equipment, DWs or residues, or other materials is done, the removal or decontamination will assure that the levels of DW or DW residues do not exceed:

 For soils, ground water, surface water, and air, the numeric cleanup levels calculated using unrestricted exposure assumptions according to the Model Toxics Control Act regulations (WAC 173-340). Primarily, these will be numeric cleanup levels calculated according to MTCA Method B, although MTCA Method A may be used as appropriate; and 2) For structures, equipment, bases, liners, etc. clean closure standards shall be set by the department on a case by case basis in accordance with the closure performance standards (WAC 173-303-610(2)(a)(ii)) and in a manner that minimizes or eliminates post-closure escape of DW constituents.

Generally, these standards will be met by removing all regulated waste from the facility and by decontaminating or removing all contaminated equipment, containment system components, structures, and soil. Decontamination of tanks and secondary containment structures will achieve a "clean debris surface" using an appropriate treatment method in Table 1 of 40 CFR 268.45 (Alternative Treatment Standards for Hazardous Debris).

Concrete secondary containment structures will not be decontaminated according to the alternative treatment standards for hazardous debris outlined in Table 1 of 40 CFR 268.45. Stericycle will instead use a site-specific alternative treatment method for equivalent technology under the requirements of 40 CFR 268.42(b) that is protective of human health and the environment and consistent with federal, state, and local requirements. Concrete secondary containment structures will be decontaminated by high-pressure washing with water. Concrete chip samples will be collected from all secondary containment pads and analyzed to confirm that no residual contamination is present. Details describing the procedures are outlined in Section 11.5.2, Decontamination Procedures, and Section 11.5.3, Sampling and Analysis.

Additional closure requirements, policies, and procedures that must be followed include:

- A copy of the approved Closure Plan, and subsequent authorized amendments, will be maintained at the facility until closure is complete and certified.
- Changes in facility plans, operations or scheduling may result in an amended Closure Plan. Amended versions will be submitted to the Washington Department of Ecology ("Ecology") with a written request for a change to the approved Closure Plan.
- Stericycle will notify Ecology in writing at least 45 days prior to the date final or partial closure is expected to begin, and at least seven days prior to any closure performance sampling. Sampling will not be required for a partial closure due to a routine tank replacement.
- At least eight weeks in advance of scheduled collection of samples to support final or partial closure, Stericycle will submit a sampling and analysis plan, including the

operating record entries of cracks and eroded portions of concrete, if applicable, (Section 11.5.2.1), to Ecology that will describe the specific locations of all soil and concrete samples to be taken and provide a detailed quality assurance project plan. Certain relevant information needed to develop the sampling and analysis plan, including current analytical procedures and facility operating history, will not be available until this time. The detailed sampling and analysis plan will be subject to Ecology review and approval prior to initiation of sampling activities.

- Sequential closure of the DW management units will be followed for closing the entire facility. Refer to Section I1.4, Closure Schedule, for the timing of these activities and Section I1.5, Closure Activities, for a description of the closure procedures for individual waste management units.
- All DWs within the facility and DW management units will be processed in the same manner as they would be under normal operating circumstances. DWs and process residues will continue to be segregated and stored according to their compatibility.
- Stericycle intends to use trained employees for closing the various units. However, facility closure cost estimates are based on third party costs (refer to Appendices I-1 and I-2).
- During partial or final closure, all the required daily, weekly, and monthly inspections in Section F of the permit application will be performed for each waste management unit or area until removal of dangerous waste is complete from that individual unit or area according to procedures in this closure plan.
- At all times during closure activities, the required and applicable standard operating procedures for proper waste management, worker health and safety, site security will be followed.
- All mobile or fixed equipment that has been used to process or handle DWs will be cleaned, decontaminated and re-used or salvaged, or if necessary disposed of off-site at a RCRA-permitted facility.
- The requirements of the U.S. Department of Transportation (USDOT) 49 CFR will be followed for transporting any wastes or other equipment or materials off-site.
- An independent qualified registered professional engineer will monitor all closure activities to ensure they are conducted in accordance with the approved closure plan. Closure activities to be monitored by the independent engineer include tank system decontamination, secondary containment decontamination, soil sampling and

analysis, and any related soil excavation and off-site removal following sampling and analysis. The independent engineer will visit the facility at least weekly for approximately three hours. These inspections will be part of the facility's operating record.

 Stericycle will submit to Ecology certification that the final or partial closure of the facility has been conducted in accordance with the specifications of the approved closure plan. This certification will be signed by Stericycle and by an independent, qualified registered professional engineer. Within 60 days of closure of each DW management unit and within 60 days of completion of final or partial closure, Stericycle will submit to Ecology by registered mail, certification that the DW management unit or facility, as applicable, has been closed in accordance with the specifications of the approved closure plan. The certification will be signed by Stericycle and by an independent, qualified registered professional engineer. Stericycle will make the following certification:

I certify under of penalty of the law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Activities of the independent qualified registered engineer shall include, but not be limited to, field observation and review of records of the following:

1. Sampling procedures;

2. Locations of concrete and soil sampling to ensure locations were as specified in the sampling and analysis plan;

3. Sample labeling and handling, including chain of custody procedures;

4. Tank decontamination procedures to ensure that the closure plan requirements for decontamination and rinsate management were followed and tanks were adequately cleaned; and

5. Procedures to achieve a "clean debris surface" were as specified in Table 1 of 40 CFR 268.45 for metal.

6. Waste, wastewaters and debris were properly contained, treated, and/or transported off site.

Documentation supporting the final or partial closure certification will be provided to Ecology on request. Ecology requires the following documentation and information to support a clean closure certification:

- 1. All field notes and photographs related to closure activities.
- 2. A description of any minor deviations from the approved closure plan and justification for these deviations.
- 3. Documentation of the final disposition of all DWs and DW residues, including contaminated media, debris and all treatment residuals.
- 4. All laboratory and/or field data, including sampling procedures, sampling locations, chain of custody procedures, quality assurance/quality control data, for all samples and measurements, including samples and measurements taken to determine background conditions and/or to determine background conditions and/or to determine background
- 5. A summary report, which itemizes the data reviewed by the independent, qualified registered professional engineer and tabulates the analytical results of samples taken to determine and confirm clean closure.
- 6. A description of what the unit looks like at completion of closure, including a description of what parts of the former unit, if any, remain after closure.
- I1.3. Maximum Waste Inventory

WAC 173-303-610(3)(a) (ii) & (iii)

The maximum waste inventory includes all DW management units and is based on the current S01 capacity (containers), and S02 capacity (tanks) listed in Section A2.0, Part A Form 3.

Units that are used for waste processing only (e.g., drum crusher, baler, etc.), and non-DW tanks are not included in the maximum waste inventory. The maximum waste inventory at the time of closure plan approval is provided in Appendix I-2.

I1.4. Closure Schedule

WAC 173-303-610(3)(a)(vii), (4)(b)

This section discusses the anticipated closure schedule for the final closure of the facility. Stericycle will notify Ecology in writing at least 45 days prior to the date final or partial closure is expected to begin, and at least seven days prior to any closure performance sampling. At that time, Stericycle will provide a draft Sampling and Analysis Plan for Ecology review.

Sequential closure within the container storage areas and the DW tank system will include all areas listed in Table I1-3. Figure I1-1 shows the container storage areas and tank areas listed in Table I1-3 with DW tanks 9A, 9B and 9C clearly labeled, as well as the area of the former stabilization tanks T5305 and T5306. Table I1-1, Closure Schedule, presents the anticipated time required to complete each closure step.

I1.5. Closure Activities

WAC 173-303-610(3)(a)(i),(iv) & (v), 630(10), and 640(5)

This section describes closure activities for the DW management units at the facility. Section I1.5.1, describes the inventory elimination procedures, Section I1.5.2 describes the decontamination procedures, and Section I1.5.3 describes the sampling and analysis procedures. Stericycle has provided costs for soil sampling and analysis; however, if soil and/or groundwater contamination from past practices is present, it may be addressed separately under a RCRA corrective action or post-closure activities.

Stericycle will close the facility sequentially to allow for use of the various waste management units during inventory elimination and decontamination. After receiving the final volume of waste into the facility, the container inventory will be eliminated first through on-site treatment and off-site disposal or shipped directly off-site for treatment and disposal. Empty containers will be salvaged, reconditioned, or disposed at an off-site RCRA-permitted facility.

Inventory elimination and decontamination of the non-DW wastewater treatment tanks is not included in this closure plan. A separate closure plan addresses the used oil processing facility at Kent. That closure plan was dated October 28, 2007, was revised by PSC-Kent letter dated December 07, 2007 and was approved by Ecology letter dated January 10, 2008.

Stericycle intends to utilize the DW wastewater treatment system (tanks 9A, 9B, and 9C) and the non-DW wastewater treatment system for treatment of wastewaters and rinsate generated from closure activities. However, DW wastewaters and rinsate from these activities may only be treated in the DW tanks. Therefore, the final or partial closure of the DW tanks will occur after all container inventory has been completed and the majority of the site-wide containment area decontamination and confirmation sampling and analysis has been completed.

If the containment areas cannot be successfully decontaminated, they may require removal and disposal at an off-site RCRA-permitted facility. An alternate procedure will be to break up the containment areas prior to any decontamination and dispose of them at an off-site RCRA-permitted facility. To avoid disturbance of sub-concrete soil or fill and volatilization of organics from these media, sampling beneath the containment structures will take place prior to breakup, removal and off-site disposal if necessary. Additionally, the sampling and analysis plan will specify a concrete pad sampling protocol to ensure the concrete meets land disposal restriction requirements. If the concrete fails to meet land disposal restriction requirements, it will be macroencapsulated for disposal.

After the containment areas have been decontaminated or removed, soils will be sampled and analyzed for contaminants as described in Section 11.5.3, Sampling and Analysis.

I1.5.1. Inventory Elimination

WAC 173-303-610(3)(a)(iv)

The DW inventory processed during closure will be managed in the same manner as they would be under normal operating circumstances. However, closure costs reflect the cost associated with sending all inventory off-site for treatment and/or disposal. The elimination scenarios are described in detail in Appendix I-2. Remaining treatment chemicals will be sold for beneficial re-use, or will be transported for use at another Stericycle facility.

I1.5.2. <u>Decontamination Procedures</u>

WAC 173-303-610(2)(b), (3)(a)(v), (5)

This section describes the decontamination procedures to be used for closure activities at the facility. The decontamination policies and/or requirements listed below are based on federal and state regulations, Ecology and USEPA closure guidance manuals, and Stericycle company policies and standard operating procedures. The decontamination policies and/or requirements are designed to ensure that all federal and state requirements for decontamination during closure will be met. Decontamination procedures to be used during closure activities are as follows:

- All equipment, including mobile equipment and earth moving equipment, which has come in contact with DW constituents during closure activities, will be decontaminated before use outside the contaminated area or removed from the site.
- During closure, contaminated equipment, containment system components, structures, and soils will be decontaminated for salvage or beneficial use, or disposed at an off-site RCRA-permitted facility in accordance with the results of waste designation.
- Any residues generated during decontamination activities will be handled in accordance with all applicable requirements of WAC 173-303-170 through 173-303-230. Decontamination rinsate will be appropriately treated on site or shipped off site for treatment and disposal.
- Tanks will be decontaminated to achieve a "clean debris surface" in accordance with Table 1 of 40 CFR 268.45 or may be cut up, macroencapsulated and disposed of in a permitted hazardous waste landfill.
- Piping and ancillary equipment may be decontaminated to achieve a "clean debris surface" in accordance with Table 1 of 40 CFR 268.45 or may be macroencapsulated and disposed of in a permitted hazardous waste landfill.
- Concrete secondary containment will be decontaminated by high-pressure washing and sampled. After analysis, if the concrete contamination is determined to be below the applicable MTCA Standards; and the containment is also determined by Ecology to not impede the progress of subsurface sampling, analysis, and cleanup of soils or groundwater, then it may be left in place. If the concrete secondary containment is

above the applicable MTCA Standards, or is determined by Ecology to impede the cleanup process, then it must be removed and properly disposed off site.

During the final decontamination stage, a small temporary decontamination area (approximately 10 by 20 feet) may be established on site once all containment areas have been decontaminated. This area will be constructed of Visqueen or an equivalent protective material, and will be used for decontamination of sampling equipment, personal protective equipment, and other miscellaneous small equipment used during decontamination and sampling efforts.

After the final high-pressure washing has been completed and decontamination rinsate collected, the Visqueen or equivalent material and rinsate will be removed for off-site treatment and disposal at an approved/permitted RCRA facility.

Appendix I-2 present cost estimates for the decontamination and/or disposal activities described below.

I1.5.2.1. Decontamination of Containment Pads

The decontamination procedures discussed in this section cover all containment surfaces including, but not limited to, the check-in areas, container staging, processing, and storage areas, the loading/unloading pads, the treatment areas, and the tank system pads. These procedures also apply to the sump systems throughout the facility. Table I1-3 provide a summary of container management units to be decontaminated, including surface area, number of sumps, and maximum inventory.

The containment surfaces will be inspected for cracks or gaps prior to decontamination to determine possible bias soil sampling locations. Cracks, determined to be non-surface drying in nature, will be temporarily sealed prior to decontamination. Stericycle will maintain a record of the location and dimension of all cracks or other openings identified during closure because these areas are considered to have a higher potential for allowing releases of DW from the closing unit and may require more focused sampling and analysis during closure. The records will be kept in the operating record. Stericycle will investigate and evaluate all cracks and other openings. Those cracks or openings that penetrate through the concrete pad will be investigated with subslab soil sampling and

analysis during closure to determine if releases of DW or DW constituents have occurred at or from the closing unit.

The containment pads then will be decontaminated by high-pressure washing. Following the high-pressure washing concrete chip samples will be taken and analyzed to determine whether clean closure has been achieved and whether the alternative treatment method for equivalent technology under the requirements of 40 CFR 268.42(b) has been met. Rinsate will be designated per WAC 173-303-070, and managed accordingly.

I1.5.2.2. Decontamination of Tank Systems

The decontamination procedures discussed in this section will be used for the DW tanks. Table I1-4 provide a summary of the DW tanks to be decontaminated, including type and volume of waste stored, internal tank surface area, and concrete containment surface area.

Decontamination will be achieved using a hydroblasting/waterwashing method following guidelines described in USEPA document 600/2-85/028 "Guide for Decontaminating Building, Structures and Equipment at Superfund Sites". Hydroblasting will achieve a "clean debris surface" as defined in the treatment standards for hazardous debris in Table 1 of 40 CFR 268.45. Verification will be made by an independent, qualified, registered professional engineer.

Rinsate and cleaning residue from all washings will be designated per WAC 173-303-070, and managed accordingly. All rinsate will be removed by a vacuum truck or equivalent means. Incompatible rinsate and cleaning residues will not be commingled. The collected rinsate will be treated appropriately on-site, or when necessary, sent offsite for treatment and disposal at a RCRA-permitted facility.

Decontaminated tanks may be re-used, sold for re-use, or scrapped. Decontaminated tanks may also be left in place on the containment pad unless removal of concrete or soil under the containment system becomes necessary, either under closure or Part 2 (Corrective Action) of Kent's DW management permit. As an alternative to decontamination and leaving tanks in place, tanks may be decontaminated and scrapped.

Decontaminated tanks to be scrapped will be rendered unusable prior to leaving the facility. This will be accomplished by cutting the tanks in half, or by cutting the ends off of the tanks. Prior to removal of decontaminated tanks, written proof of decontamination will be obtained from the independent qualified registered professional engineer monitoring closure activities.

As an alternative to tank decontamination, tanks may be rinsed once and disposed as hazardous waste at an off-site RCRA-permitted facility.

I1.5.2.3. Decontamination / Disposal of Ancillary Equipment

Ancillary equipment includes piping, valves, flanges and soft hoses. Decontamination of this equipment is limited to rinsing of the equipment followed by macroencapsulation and disposal at an off-site RCRA permitted facility. The piping associated with the DW tanks consists of 300 feet of 3" metal pipe. The piping, with all valves and flanges, will be cut into three-foot lengths prior to macroencapsulation. Approximately 100 cuts will be required; labor hours required for this task equate to one hour. Disposal costs for piping and ancillary equipment is based on the volume of debris generated, which is assumed to be less than 20 yards.

I1.5.2.4. Decontamination of Pumps and Forklifts

Before transport off-site or use elsewhere on site, all pumps and forklifts used for closure will be decontaminated via scraping and rinsing with high pressure water, steam, or a caustic type industrial cleaning solution until no visible evidence of contamination is present. This activity may be performed in a specific decontamination staging area with adequate containment. All rinsate from pump and forklift decontamination will be collected and treated appropriately at the facility or, when necessary, sent off-site to a RCRA-permitted facility.

ITEM	Number
forklifts	3
pumps	3

I1.5.2.5. Decontamination of Miscellaneous Equipment

Other equipment used in closure activities (including sampling equipment, PPE, shovels, Visqueen, and cleaning and decontamination equipment) will be disposed as hazardous

waste debris at an off-site RCRA-permitted facility. This material will be placed in the same 20-yard roll-off box as the cut up piping.

I1.5.3. Sampling and Analysis

WAC 173-303-610(3)(a)(v), (5)

This section generally describes the sampling and analysis procedures to be used for closure activities at the facility. At least eight (8) weeks in advance of scheduled collection of samples to support final or partial closure, Stericycle will submit a sampling and analysis plan to Ecology for review and approval. The plan will include the following:

- Statement of purpose and objectives of data collection;
- Organization and responsibility for sampling and analysis activities;
- Project schedule;
- Detailed procedures for sample collection and handling;
- Identity of chemical constituents that will be quantified;
- Analytical techniques and procedures consistent with this closure plan and Chapter 173-303 WAC, modified, if necessary, to meet data quality objectives;
- Specific sampling locations and a unique identification number for all random and bias soil samples that were selected in accordance with this closure plan;
- Procedures for personnel and equipment decontamination;
- Procedures for management of waste materials generated by sampling activities;
- Protocols for sample labeling and chain of custody;
- Detection or quantification limits sufficiently low to determine compliance with clean closure standards;
- Description and number of quality assurance and quality control samples, including blanks, spikes, and duplicates;
- Complete quality control and quality assurance procedures;
- Provisions for splitting samples with Ecology, when appropriate;
- Confirmational sampling to demonstrate clean closure;
- Procedures for reporting results; including:
 - Selection of an Ecology accredited laboratory to perform analysis
 - Identification and justification of parameters to be sampled and analyzed

- Physical and chemical properties of the materials to be sampled
- Data validation procedures, where appropriate
- Other information specified in this closure plan.

Ecology may require additional investigation after Stericycle implements the approved sampling and analysis plan if Ecology determines that the plan has not adequately demonstrated whether clean closure has been achieved. Additional sampling and analysis may be required for the following reasons:

- 1. Specialized sample collection or analytical techniques are required to ensure adequate quantification limits for chemicals of concern;
- 2. Results indicate additional constituents should be analyzed at certain locations;
- 3. Results indicate additional sampling is required at certain locations of the facility; and
- 4. Other reasons, as determined by Ecology, indicate the sampling and analysis plan has not adequately demonstrated whether clean closure has been achieved.

If the value from a soil sample analysis is above the clean closure level for any constituent, then the area represented by the sample will be considered to be above the standard for clean closure and Stericycle shall propose additional actions. Ecology will determine whether the additional actions proposed are adequate. If Ecology determines actions proposed by Stericycle are not adequate, Ecology will specify additional actions to be taken. Examples of additional actions include, but are not limited to:

- 1. Removing or remediating soil that has contamination above the clean up level followed by confirmational sampling to ensure clean closure standards are met.
- 2. Reanalyzing soils of the entire area represented by the sample that has contamination above the clean up levels using other samples taken within the area and approved statistical methods. Approved statistical methods include the upper 95% confidence interval about the mean for sample data. If this parameter is lower than the MTCA soil level for the constituent in question, no
single sample level is greater than two times the soil clean closure level, and less than 10% of all samples are above the clean closure levels; then the area will be considered to meet the clean closure standards for that constituent. Samples included in the statistical analysis must be randomly selected and the distribution of their concentrations must fit a lognormal or normal distribution;

3. Establishing post closure care or incorporation of similar requirements into the facility CAP for the areas not able to attain clean closure standards.

In the case where hazardous substances may have migrated to the unit from another, unrelated source, clean closure of individual units may occur provided:

- 1. All DWs, constituents and waste residues which originated from the unit or waste management activities associated with the unit are removed to appropriate clean closure levels; and
- 2. Stericycle demonstrates to Ecology's satisfaction that the remaining contamination did not emanate from the closing unit and was not in any way caused by waste management activities at the closing unit.

Stericycle's obligations for closure at any given unit are fulfilled when Ecology accepts a unit specific clean closure certification. If contamination remains at the clean-closed unit in concentrations above appropriate MTCA clean up levels, the unit is subject to additional remediation under post closure or Part 2 (Corrective Action) of Kent's DW management permit.

I1.5.3.1. Containment Pad Sampling and Analysis

All concrete secondary containment pads will be sampled and analyzed to confirm that no residual contamination is present by analysis of concrete chips taken from secondary containment areas. The purpose of the concrete chip sampling and analysis is to identify areas where additional decontamination may be necessary. Random and bias samples will be collected by chipping the surface concrete and/or coating of each secondary containment system. Samples will be collected using either concrete coring equipment, rotohammer, or chisel. Sample collection, documentation, and handling will be in accordance with standard procedures described in SW-846.

Concrete chips from all sumps in secondary containment areas will be sampled as biased sampling locations, since the sumps would be the most likely location for collection and longer-term residence of any contaminants. Locations of cracks or stains in the secondary containment system also will be priority locations for biased concrete chip sampling. Visual observation of past repair locations and repair records maintained as part of the facility's operating log will be used to determine selective locations for bias soil sampling during closure. Additional samples are included for this purpose.

Random sample locations will be selected in accordance with procedures described in "Test Methods for Evaluating Solid Waste", SW-846, U.S. Environmental Protection Agency, November 1986. Random sampling locations within five feet of the biased sampling locations will be reassigned to another randomly selected location.

To select random sample locations, a grid pattern is superimposed over the respective containment areas listed in Tables I1-3, and I1-4 and shown on Figure I1-1. Each container storage cell, loading area, and tank system are counted as a grid system for selecting random sampling locations. Samples from each of the areas listed in Tables I1-3 and I1-4 will be taken. The grid system will determine where each sample is to be taken. One random sample is taken for every 3,000 square feet of surface area in the unit, and sample numbers are rounded up (e.g., <3,000 sf = one random sample; 3,350 sf = 2 random samples, etc.).

Prior to sampling containment pads, the numeric cleanup levels for soil calculated using residential or unrestricted exposure assumptions according to the MTCA regulations will be compared to the PQLs existing at the time of closure for the constituents to be analyzed.

Analytical results from chip samples taken during unit closure will be compared to MTCA Method B cleanup levels to determine whether clean closure has been achieved for the secondary containment. Ecology will be provided with all analytical results and included in discussions to determine when closure has been successfully completed.

If the analytical result from a concrete chip sample is above the clean closure level for any constituent, then the area represented by the sample will be considered above the standard for clean closure and Stericycle will propose additional actions to Ecology. Ecology will determine whether the additional actions are appropriate. If Ecology determines the actions proposed by Stericycle are not adequate, then Ecology will specify additional actions to be taken.

Stericycle will use approved analytical methods capable of achieving quantification limits that are adequate for demonstrating whether compliance with clean closure standards defined in this closure plan and MTCA is met. For example, the following methods, or approved methods that replace them, shall be used:

- SW-846 Method 8260 for volatile organic constituents;
- SW-846 Method 8270 for semi-volatile organic constituents; and
- SW-846 6010C for metals.

Concrete chip sampling is summarized in Table I1-2, Concrete and Soil Sampling and Analysis Summary.

I1.5.3.2. Soil Sampling and Analysis

The soil underlying secondary containment pads will be sampled and analyzed to confirm that no residual contamination is present. The purpose of soil sampling and analysis is to determine if clean closure is achieved. It is also needed to identify areas where post closure or additional corrective action under Part 2 (Corrective Action) of Kent's DW permit may be necessary as a result of past practices and to support such activity.

Random and bias samples will be collected at a depth of up to 15 feet below the soil surface (or the water table, whichever is shallower), through holes bored in the overlying containment systems. Samples will be collected one at the surface of the boring and then at three-foot intervals. Sample collection, documentation, and handling will be in

accordance with standard procedures described in SW-846. Table I1-2 describes soil sampling locations and analysis.

In addition to current dangerous waste management units, the Kent facility has non-DW tank systems previously used for DW management. These include former DW Wastewater Tanks T-1, T-2, T-3, T6A, T6B, T-8, T-10 and T-5603, and former DW Stabilization Tanks T-5305 and T-5306. Above ground portions of these tank systems (including the tanks, ancillary equipment, and their concrete secondary containment areas) were clean closed and then converted to non-DW activities. However, soils and ground water below these systems have not been clean closed, and they are still subject to requirements in this closure plan. To close, soil sampling is required beneath these areas to a depth of 15 feet or the water table, whichever is shallower. One sample will be taken at the surface and then at 3-foot intervals as specified in Table I1-2. If soil or groundwater beneath these areas do not meet closure performance standards in Section 11.2 at the time of final closure, additional action will be required through ongoing corrective action and post-closure permitting.

Soils beneath all sumps in secondary containment areas will be sampled as biased sampling locations, since the sumps would be the most likely location for collection and longer-term residence of any contaminants. Locations of cracks or stains in the secondary containment system and known spills or releases also will be priority locations for biased sampling. Visual observation of past repair locations and repair records maintained as part of the facility's operating log will be used to determine selective locations for bias soil sampling during closure. Additional samples are included for this purpose.

Random sample locations will be selected in accordance with procedures described in <u>Test Methods for Evaluating Solid Waste</u>, SW-846, U.S. Environmental Protection Agency, November 1986, and subsequent updates. Random sampling locations within five feet of the biased sampling locations will be reassigned to another randomly selected location.

To select random sample locations, a grid pattern is superimposed over the respective containment areas. Each container storage cell, loading area, and tank system are counted as a grid for selecting random sampling locations.

Analytical results from soil samples taken during unit closure will be compared to MTCA Method B cleanup levels to determine whether contamination is present in soils under DW management units. Ecology will be provided with all analytical results in order for Ecology to determine when closure has been successfully completed.

Stericycle will use approved analytical methods capable of achieving quantification limits that are adequate for demonstrating whether compliance with clean closure standards defined in this closure plan and MTCA is met. For example, the following methods, or approved methods that replace them, shall be used:

- SW-846 Method 8260 for volatile organic constituents;
- SW-846 Method 8270 for semi-volatile organic constituents; and
- SW-846 6010C for metals.

Soil sampling is summarized in Table I1-2.

I2. POST-CLOSURE PLAN

WAC 173-303-610(8)(a), -650(6)(b) and (6)(c)(i)(B), -655(6)(b), (8)(c), -660(9)(b) and (9)(c)(i)(B)

Stericycle has not operated DW disposal units at the Kent Facility. At the time of closure of the tank systems (partial or full closure), the soils underneath the secondary containment will be investigated. Contaminated soils may be removed as part of closure to achieve clean closure or be addressed under Part 2 (Corrective Action) of Kent's DW management permit.

It is expected that the corrective action mechanism to address contamination in soil and groundwater for all but the soils under concrete pads and secondary containment will be completed prior to final closure of the facility. Financial Assurance and cost estimates for corrective action are included in Part 2 (Corrective Action) of Kent's DW management permit. Should ongoing corrective action measures not fully address soil and groundwater contamination, a post-closure permit could be required.

I3. CLOSURE COST ESTIMATES

WAC 173-303-806(4)(a)(xv), 620(3)

I3.1. Regulatory Requirements

- Stericycle will prepare a closure cost estimate for activities included in this closure plan in accordance with 40 CFR 264.142(a) and WAC 173-303-610(1)(d) and -620(3)(a);
- Stericycle will adjust the closure cost estimate for inflation in accordance with 40 CFR 264.142(b) and WAC 173-303-620(3)(c);
- Stericycle will revise the closure cost estimate as necessary in accordance with 40 CFR 264.142(c) and WAC 173-303-620(3)(b); and
- Stericycle will maintain at the facility a copy of the most current cost estimate in accordance with 40 CFR 264.142(d) and WAC 173-303-620(3)(d).

Detailed cost estimates for closing the facility at maximum waste inventory are provided in Appendix I-2.

I3.2. Unit Costs for Closure Activities

Unit costs for closure activities, and specific information regarding the assumptions and procedures used to develop them, are provided in Appendix I-1.

I3.3. Inventory Elimination Costs

The costs associated with eliminating the remaining waste inventory at final or partial facility closure are presented in Appendix I-2. Cost estimates are based on maximum waste inventory, and are broken down by specific inventory elimination scenarios.

I3.4. Facility Decontamination Costs

The closure costs for decontamination of facility equipment, waste management units, and rinsate management are included in Appendix I-2. Tanks and equipment will be salvaged to the extent possible. However, salvage value has not been incorporated into the closure cost estimate.

I3.5. Sampling and Analytical Costs

Detailed cost estimates for sampling and analytical procedures are included in Appendix I-2.

I4. POST-CLOSURE COST ESTIMATE REQUIREMENTS

WAC 173-303-806(4)(xvi), 620(5)

Stericycle has not operated DW disposal units at the Kent Facility. At the time of closure of the tank systems (partial or full closure), the soils underneath the secondary containment will be investigated. If contaminants in the soils fail to meet the MTCA Standards set forth in the CAP, then the cleanup of these soils will be incorporated into a re-opened CAP. The areas incorporated into the legal mechanism for the CAP will not be subject to the contingent post-closure care cost estimate requirements of 40 CFR 264.197(c)(3) and (5).

It is expected that corrective action will be completed prior to final closure of the facility. Therefore, post-closure cost estimates are not provided. Financial Assurance and cost estimates for corrective action are included in Part 2 (Corrective Action) of Kent's DW management permit. Should ongoing corrective action measures not fully address soil and groundwater contamination, a post-closure permit could be required.

15. NOTICE IN DEED REQUIREMENTS AND SURVEY PLAT REQUIREMENTS

WAC 173-303-806(4)(a)(xiv), 610(7)(d), (8), (10) & (11)

If procedures in this closure plan fail to demonstrate clean closure is achieved at final closure, a notice in deed regarding restrictions on the use of land used to manage DWs will be required for all areas left with contaminated soils and groundwater in the subsurface. Similarly, a survey plat indicating the location of landfill cells or other areas with DW disposed in soil or groundwater remaining on site will be required. If applicable clean-up standards, including the MTCA clean-up standards of WAC 173-340, are not met, a notice will be made in the property deed in compliance with WAC 173-340-440(a).

I6. FINANCIAL ASSURANCE MECHANISM

WAC 173-303-806(4)(a)(xv) and (xvi), 620(4) and (6)

Stericycle will demonstrate continuous compliance with 40 CFR 264.143 by providing documentation of financial assurance, as required by 40 CFR 264.151, in at least the

amount of the current cost estimate. Wording of the mechanisms will be modified in accordance with WAC 173-303-620(10). A copy of the current financial assurance mechanism is provided in Appendix I-3. Changes in the financial assurance mechanism must be approved by the Director or their designee pursuant to 40 CFR 264.143.

I7. LIABILITY REQUIREMENTS

WAC 173-303-806(4)(a)(xvii), 620(8) and (9)

Stericycle will demonstrate continuous compliance with the requirements of 40 CFR 264.147(a) to have and maintain liability coverage for sudden accidental occurrences in the amount of at least \$1 million per occurrence, with an annual aggregate of at least \$2 million, exclusive of legal defense costs. A copy of the required documentation is provided in Appendix I-4.

Stericycle shall comply with 40 CFR 264.148, whenever necessary.

LIST OF TABLES

Table I1-1	Closure Schedule
Table I1-2	Concrete and Soil Sampling and Analysis Summary
Table I1-3	Container Storage / Staging Units Summary
Table I1-4	Tank Units Summary
Table I3-1	Cost Estimates for Closure at Maximum Waste Inventory

<u>CLOSURE STEP</u>	EST. TIME REQUIRED	EST. COMP. DATE
Inventory elimination	6 weeks	Week 6
Container storage area decontaminatior	u 4 weeks	Week 10
Tank systems decontamination	2 weeks	Week 12
Soil sampling/analysis	6 weeks	Week 18

TABLE 11-2. CONCRETE AND SOIL SAMPLING AND ANALYSIS SUMMAR
--

AREA	DESCRIPTION	ANALYTES (2)
**South Check-In Area	5 bias	VOCs, SVOCs, total metals, PCBs pesticides, cyanides, sulfides, pH
	3 random	same
**North CSA	8 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	2 random	same
**South CSA	6 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	2 random	same
**Lab Pack CSA	2 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	1 random	same
**Central Process Area	2 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	1 random	same
**Solidification Process Area	2 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	1 random	same
**Lab Pack Area	2 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH
	1 random	same
TSCA/DW Area	2 bias	VOCs, SVOCs, total metals, PCBs,
	1 random	pesticides, cyanides, sulfides, pH same
North Truck Load/Unload Area	2 bias	VOCs, SVOCs, total metals, PCBs,
		pesticides, cyanides, sulfides, pH
	1 random	same
**Dangerous Wastewater Area ⁽³⁾	9 bias	VOCs, SVOCs, total metals, PCBs,
	12 random	same

Stabilization Tank Area ⁽⁴⁾		6 bias	VOCs, SVOCs, total metals, PCBs, pesticides, cyanides, sulfides, pH		
		9 random		S	same ⁽⁵⁾
# of bias concrete samples	40	# of	bias soil samples	46	
# of random concrete samples	25	<u># of</u>	random soil samples	34	
TOTAL CONCRETE SAMPLES:	65	тот	AL SOIL SAMPLES:	80	

Notes:

- (1) One soil and one concrete sample will be taken at each identified bias and random sample location, except as noted. One additional bias sample is required for each unit to address potential cracks in containment or spill/release. One random sample is taken for every 3,000 square feet of surface area in the unit, and sample numbers are rounded up (e.g., <3,000 sf = one random sample; 3,350 sf = 2 random samples, etc.).</p>
- (2) Includes analysis for constituents that may be present in waste streams at levels too low for inclusion as a DW characteristic, but high enough to be of interest when evaluating whether the closure performance standard has been met. Additional constituents may be analyzed if results indicate the need for supplementary investigation.
- (3) The Dangerous Wastewater Area includes the area where Tanks 9A, 9B, and 9C are currently located; it also includes the subsurface below former Tanks T-1, T-2, T-3, T6A, T6B, T-8, T-10 and T-5603 where cleanup of the below-ground portions of the facility were transferred to final closure of the facility. Soil sampling in the Dangerous Wastewater Area will be to a depth of 15' or the water table, whichever is shallower. One sample will be taken at the surface and then at 3-foot intervals.
- (4) Soil samples only. In 2011, Tanks 5305 and 5306 were decontaminated and removed from RCRA service through a partial closure. However, soil sampling in this area was deferred until final facility closure. Soil sampling in the Stabilization Tank Area will be to a depth of 15' or the water table, whichever is shallower. One sample will be taken at the surface and then at 3-foot intervals.
- (5) If sampling and analysis of concrete and soils indicate that results are above the MTCA Standards set for the site in the agreed order for corrective action, then removal may be required by Ecology. In this event, the concrete and soils will be designated for off-site treatment and/or disposal.
- **As these units will remain in service as Moderate Risk Waste units after relocation of operations to Stericycle-Tacoma, destructive concrete chip and soil sampling will not be conducted until final facility closure. These units will be decontaminated with a high pressure wash procedure.

Tank	In	side	Tank Body Cone Working		Inside	Tank			
Number	Diar	meter	Hei	ight	Height		Volume	Surface Area	Contents
	ft	in	ft	in	ft	in	gallons	sq ft	
T9A	12	0	16	0	0	0	12,700	641	ww storage
T9B	10	6	18	0	2	0	11,400	670	ww treatment
T9C	9	0	20	0	0	0	9000	593	ww storage/discharge
Total DW tanks internal surface area 1,904 sq ft									
(DW tanks	(DW tanks)								

Total DW tank working volume (S02)

(the maximum overall tank storage volume for purposes of estimating closure cost assurance)

33,100 gal

TABLE I3-1 COST ESTIMATES FOR CLOSURE AT MAXIMUM WASTE INVENTORY

COST (2011 \$)
\$63,625
\$40,183
\$123,250
\$13,060
\$240,118
\$48,024
\$288,142
\$312,058
\$316,115
\$322,437
\$329,853
\$335,790

LIST OF FIGURES

Figure I1-1 Kent Facility Site Plan



	Dangerous Waste Units Closure Status				
	Unit	Status			
1	South Check-in Area	Inactive/Closing			
2	North CSA	Inactive/Closing			
3	South CSA	Inactive/Closing			
4	Lab Pack CSA	Inactive/Closing			
5	Central Process Area	Inactive/Closing			
6	Solidification Process Area	Inactive/Closing			
7	Lab Pack Area	Inactive/Closing			
8	TSCA/DW Area	Active			
9	North Truck Load/Unload Area	Active			
10	Dangerous Wastewater Area	Inactive/Closing			
11	Stabilization Tank area	Inactive/Closing			

←N-<

ò	30	60
	FEET	

dtb	DES.:	PROJECT NO.:
CHKD:	APPD:	
		FIGURE NO.:
DATE: 8/6/15	REV.:	1-1

APPENDIX I-1

UNIT COSTS AND ASSUMPTIONS

APPENDIX I-1 UNIT COSTS AND ASSUMPTIONS

The unit costs associated with closure of the facility are based on the following assumptions and procedures:

- The unit costs for all closure activities are based on the cost of hiring a third party to close the facility. A third party is someone other than the parent or subsidiary of the owner or operator. However, it is intended that trained site personnel will be used to conduct closure activities to the greatest extent possible in order to maintain continuity of facility operation.
- Unit costs were obtained, where possible, from actual operating costs and experience, and contractor estimates. Other sources used include Ecology's Closure Cost Estimating Tool (CCET) Version 1.3 (August 2009) and prevailing wages rates are provided by Washington Dept. of Labor and Industries (see notes following Unit Cost table below.
- Supplies and equipment will be salvaged to the extent possible. However, salvage value has not been incorporated into the closure cost estimate. On-site equipment will be used where possible to close the facility. Outside contractor's equipment will be used as necessary.
- Cost for decontaminating sampling equipment between samples is considered to be negligible.

APPENDIX I-1 UNIT COSTS FOR CLOSURE ACTIVITIES

ITEM DESCRIPTION	2010 UNIT COST	SOURCE
Operator labor	\$50/hr	WA Dept. of L&I ¹
Drum consolidation into bulk container	\$5.00/drum	Operating exp. and L&I
Consolidation of bulk material into drums	\$40/drum	Operating exp. And L&I
Truck loading (drums)	\$2.50/drum	Operating exp. and L&I
Truck loading (bulk)	5,000 gal/hr = \$0.01/gal	Operating exp. and L&I
Drum transport by truck	\$1,200-\$2,500/80 drums	Operating experience ²
Transferring bulk trucks to rail	\$250/5,000 gal	Operating experience
Bulk liquid transport by truck	\$1,200-\$2,500/5,000 gal	Operating experience
Bulk solid transport by truck	\$1,900/roll-off or \$99/ton	Operating experience
Bulk liquid transport by rail	\$10,000/22,000 gal	Ecology (BNSF)
Empty drum crushing	\$4.17/drum	Operating experience
Empty crushed drum transport (non DW b	oy rail) \$900/43,000 lbs	Operating experience
Empty crushed drum disposal (non-DW la	andfill) \$18.50/ton	Operating experience
DW Fuel (bulk liquids) treat/disposal	\$0.11/gal	Operating experience
DW Fuel (drummed solids) treat/disposal	\$70/drum	Operating experience
Incineration (bulk liquids) treat/disposal	\$1.60/gal	Operating experience
Incineration (drummed solids) treat/dispos	sal \$189/drum	Operating experience
Incineration (drummed oxidizers/react.) tr	eat/disposal \$650/drum	Operating experience
Stabilization (bulk liquids) treat/disposal	\$0.89/gal	Operating experience
Stabilization (bulk solids) treat/disposal	\$93.50/ton	Operating experience
Direct landfill disposal (DW)	\$64.13/ton	Operating experience
Aqueous treatment (bulk liquids)	\$1.23/gal	Operating experience
Corrosives treatment (bulk liquids)	\$1.23/gal	Operating experience
Pumps & piping decontamination	\$152/pump	Operating experience
High-pressure washing (tanks, concrete a	and equip.) \$1.25/sq ft	CCET ³
Rinsate generated from high-pressure wa	shing 4 gals/sq ft	CCET ⁴
Equipment decontamination (forklift)	\$85/forklift	CCET⁵
Soil and concrete sample collection and a	analytical \$850/sample	Operating experience ⁶
Personal Protective Equipment	\$140 or \$365/person	Operating experience
Professional Engineer	\$100/hour	CCET ⁷
Macroencapsulation of debris	\$152/cubic yard	Operating Experience

Notes:

- Prevailing wages rates provided by Washington Dept. of Labor and Industries website at <u>https://fortress.wa.gov/Ini/wagelookup/PrvWageLookUp.aspx</u> (\$41/hour, adjusted \$49.20/hr to include O&P at 10% each, rounded up).
- 2) Operating experience means that these costs are based on current standard pricing from third-party vendors.
- 3) WA Department of Ecology Closure Cost Estimating Tool (CCET) Version 1.3 August 2009. Cost calculated for high pressure washing by applying 0.027 hours/ft² work rate x \$46/hr for labor and equipment costs = \$1.24 / sq ft. Apply inflation factor of 1.01 (2009\$ to 2010\$) = 1.25 / sq ft.
- 4) Rinsate generation rate from Ecology Closure Cost Estimating Tool (CCET) Version 1.3 August 2009 (tab TS-10A line 7).
- 5) CCET assumes one unit per hour is cleaned (at \$41/hr) = total cost of \$84 / forklift (Tab CS-7C). Apply inflation factor of 1.01 (2009\$ to 2010\$) = \$85 / forklift.
- 6) Sample collection (\$34) plus analytical (\$800) = \$834 in 2009\$; apply inflation factor of 1.01 (2009\$ to 2010\$) = \$842 / sample (round up to \$850 to reflect higher labor rates).

⁷⁾ CCET Unit Cost tab.

APPENDIX I-2

CLOSURE COST CALCULATIONS FOR MAXIMUM WASTE INVENTORY

The costs for treating, disposing off site, and transporting the remaining inventory after wastes are no longer accepted at the facility are included in this appendix. Inventory elimination cost estimates are based on the maximum waste inventory. It is assumed that all inventory will be sent off-site for treatment and/or disposal.

Unit costs for transportation and off-site disposal used for estimating inventory elimination costs are based on current standard pricing from third-party vendors.

Appendix I-2

Closure Cost Calculations for Maximum Waste Inventory

A. Maximum Waste Inventory Elimination Costs

Inventory elimination costs are based according to the treatment/disposal method applicable to a given waste. Selection of off-site treatment/disposal scenarios (and associated volumes) is based on facility operating experience.

Off-site Treatment / Disposal Method	Drums*	Tanks**
A1. DW Fuel (liquids)	20	0
A2. DW Fuel (solids)	0	0
A3. Incineration (liquids)	30	0
A4. Incineration (solids)	30	0
A5. Incineration (oxidizers/reactives)	0	0
A6. Stabilization (liquids)	0	0
A7. Stabilization (solids)	0	0
A8. Direct landfill	100	0
A9. Aqueous treatment	0	33,100
A10. Corrosives treatment	0	0
TOTAL	180	33,100

* 55-gallon drums; total is based on SO1 in Part A;

typical mix of wate types based on segregation requirements and operating experien

** In gallons; total is based on S02 in Part A (working volume in Table D2-2).

A. Inventory Elimination Costs

A1. Dangerous Waste Fuel (liquids)

Material in containers will be pumped into trucks and transferred to railcars for off-site treatment/disposal as DW fuel. Waste transport cost is based on a 1,500 mile trip. Empty drums will be crushed on-site and sent off-site via bulk railcar for disposal at Subtitle D landfill. Transportation cost includes approx. \$2,500 decon charge per railcar.

quantity:

20 drums = 1,100 gal

unit costs:

\$5.00 /drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr)
\$4.17 /drum - empty drum crushing (12 drums/hour at \$50/hr)
\$1.05 /drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)
\$0.46 /drum - empty crushed drum disposal (\$18.50/ton at 50 lb/drum)
\$10.68 total unit cost per drum
\$0.05 /gal - transferring from tanker trucks to railcars (\$250/5,000 gal)
\$0.45 /gal - railcar transport to TSDF (\$10,000 / 22,000 gal)
\$0.11 /gal - off-site disposal of liquid DW fuel
\$0.61 total unit cost per gallon of bulked liquids

inventory elimination calculation:

20 drums x	\$10.68 / drum =		\$214
1,100 gal x	\$0.61 / gal =		\$671
		A1 subtotal	\$885

A2. Dangerous Waste Fuel (solids)

Material will be shipped off-site in drums for treatment/disposal as DW fuel. Waste transport cost is based on a 1,500 mile trip.

quantity:

0 drums = 0 gal

unit costs:

\$2.50 /drum - load drums onto truck (20 drum/hr at \$50/hr)

\$31.25 /drum - truck transport to treatment/disposal facility (\$2500 / 80 drums)

<u>\$70.00</u> /drum - off-site treatment/disposal (dangerous waste fuel solids)

\$103.75 total unit cost per drum

inventory elimination calculation:

0 drums x \$103.75 / drum =

A2 subtotal \$0

\$0

A3. Incineration (liquids)

Material in containers will be pumped into trucks and transferred to railcars for off-site incineration as DW. Waste transport cost is based on a 1,500 mile trip. Empty drums will be crushed on-site and sent off-site for Subtitle D land disposal. Transportation cost includes approx. \$2,500 decon charge per railcar.

quantity:

30 drums = 1,650 gal

unit costs:

\$5.00	/drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr)
\$4.17	/drum - empty drum crushing (12 drums/hour at \$50/hr)
\$1.05	/drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)
<u> \$0.46</u>	/drum - empty crushed drum disposal (\$18.50/ton at 50 lb/drum)
\$10.68	total unit cost per drum
\$0.05	/gal - transferring from tanker trucks to railcars (\$250/5,000 gal)
\$0.45	/gal - railcar transport to TSDF (\$10,000 / 22,000 gal)
<u>\$1.60</u>	/gal - off-site disposal (incineration of bulk liquids)
\$2.10	total unit cost per gallon of bulked liquids

inventory elimination calculation:

30 drums x	\$10.68 / drum =	=		\$320
1,650 gal x	\$2.10 / gal	=		\$3,465
			<u>A3 subtotal</u>	\$3,785

A4. Incineration (solids)

Material will be shipped off-site in drums as DW for treatment/disposal by incineration. Waste transport cost is based on a 1,500 mile trip.

quantity:

30 drums = 1,650 gal

unit costs:

\$2.50 /drum - load drums onto truck (20 drum/hr at \$50/hr)

\$31.25 /drum - truck transport to treatment/disposal facility (\$2500 / 80 drums)

\$189.00 /drum - off-site treatment/disposal (incineration of solids)

\$222.75 total unit cost per drum

inventory elimination calculation:

30 drums x	\$222.75 / drum =		\$6,683
		A4 subtotal	\$6,683

A5. Incineration (oxidizers/reactives)

Material will be shipped off-site in drums for treatment/disposal by incineration as DW. Waste transport cost is based on a 1,500 mile trip.

quantity:

0 drums = 0 gal

unit costs:

\$2.50 /drum - load drums onto truck (20 drum/hr at \$50/hr)
\$31.25 /drum - truck transport to treatment/disposal facility (\$2500 / 80 drums)
\$650.00 /drum - off-site treatment/disposal (incineration of oxidizers/reactives)
\$683.75 total unit cost per drum

inventory elimination calculation:

0 drums x \$683.75 / drum =

<u>A5 subtotal</u>

\$0 \$0

A6. Stabilization (liquids)

Material in containers will be pumped into bulk truckloads for off-site treatment/disposal by stabilization as DW. Waste transport cost is based on a 500 mile trip. Empty drums will be crushed on-site and sent off-site for Subtitle D land disposal.

quantity:

0 drums = 0 gal

unit costs:

\$5.00 \$4.17	/drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr) /drum - empty drum crushing (12 drums/hour at \$50/hr)
\$1.05	/drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)
<u>\$0.46</u> \$10.68	total unit cost per drum
\$0.24	/gal - bulk truck transport to TSDF (\$1,200/5,000 gal)
<u>\$0.89</u>	/gal - off-site treatment/disposal (stabilization of liquids)
\$1.13	total unit cost per gallon of bulked liquids

inventory elimination calculation:

0 drums x	\$10.68 / drum	=		\$0	
0 gal x	\$1.13 / gal	=		\$0	
			A6 subtotal	\$0	-

A7. Stabilization (solids)

Material in containers will be consolidated into bulk truckloads for off-site treatment/disposal by stabilization as DW. Waste transport cost is based on a 500 mile trip. Empty drums will be crushed on-site and sent off-site for Subtitle D land disposal.

quantity:

0 drums =	0 gal	
0 CY =	0 gal (I CY = 202 gallons)	
	0 gal total =	0 tons (at 9 lb/gal)

unit costs:

\$5.00 /drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr)
\$4.17 /drum - empty drum crushing (12 drums/hour at \$50/hr)
\$1.05 /drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)
\$0.46 /drum - empty crushed drum disposal (\$18.50/ton at 50 lb/drum)
\$10.68 total unit cost per drum

\$0.24 /gal - bulk truck transport to TSDF (\$1,200/5,000 gal) \$93.50 / ton (at 9 lb/gal) - off-site treatment/disposal (stabilization of solids)

inventory elimination calculation:

0 drums x	\$10.68	/ drum	=		\$0
0 gal x	\$0.24	/ gal	=		\$0
0 tons x	\$93.50	/ ton	=		\$0
				<u>A7 subtotal</u>	\$0

A8. <u>Direct landfill</u> Material in containers will be consolidated into bulk truckloads as DW for off-site Subtitle C land disposal. Waste transport cost is based on a 500 mile trip. Empty containers will be crushed on-site and sent off-site for Subtitle D land disposal.

quantity:

100 drums = 5,500 gal =

unit costs:

\$5.00 /drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr)

\$4.17 /drum - empty drum crushing (12 drums/hour at \$50/hr)

\$1.05 /drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)

25 tons (at 9 lb/gal)

<u>\$0.46</u> /drum - empty crushed drum disposal (\$18.50/ton at 50 lb/drum)

\$10.68 total unit cost per drum

46

\$99.00 / ton (at §	9 lb/gal) - bulk transport to landfill	
<u>\$64.13</u> / ton (at 9) lb/gal) - off-site disposal (direct landfill)	
\$163.13	total cost per ton	
inventory elimination calcu	<u>ulation:</u>	
100 drums x	\$10.68 / drum =	\$1,068
25 tons x	\$163.13 ton =	\$4,078
	<u>A8 subtotal</u>	\$5,146

A9. Aqueous treatment

Material in containers and tanks will be pumped into bulk truckloads for off-site treatment/disposal as DW. Waste transport cost is based on a 1,500 mile trip. Empty drums will be crushed on-site and sent off-site for Subtitle D land disposal.

quantity:

0 drums =	0 gal
vol. in tanks =	<u>33,100</u> gal
	33,100 gal total

unit costs:

\$5.00 /drum - drum pump-up to bulk truck (10 drums/hr at \$50/hr)

\$4.17 /drum - empty drum crushing (12 drums/hour at \$50/hr)

\$1.05 /drum - empty crushed drum transport to landfill (\$900/43,000 lb; 50 lb/drum)

\$0.46 /drum - empty crushed drum disposal (\$18.50/ton at 50 lb/drum)

\$10.68 total unit cost per drum

0.010 / \$ gal - loading material from tanks to bulk truck (5,000 gal/hr at \$50/hr)

\$0.50 /gal - truck transport to treatment/disposal facility (\$2,500/5,000 gal)

\$1.23 /gal - off-site treatment/disposal (aqueous treatment)

\$1.73 total unit cost per gallon of bulked liquids

inventory elimination calculation:

0 drums x	\$10.68	/ drum	=		\$0
33,100 gal x	\$0.010	/ gal	=		\$331
33,100 gal x	\$1.73	/ gal	=		\$57,263
				A9 subtotal	\$57.594

A10. Corrosives treatment

Material in containers will be pumped into bulk truckloads for off-site treatment/disposal as DW. Waste transport cost is based on a 1,500 mile trip. Empty drums will be crushed on-site and sent off-site for Subtitle D land disposal.

quantity:

quantity	<u>.</u>			
	0 drums =	0 gal		
<u>unit cos</u> t	ts:			
	\$5.00 /drum - dr	um pump-up to bul	k truck (10 drums/hr at \$50/hr)	
	\$4.17 /drum - en	npty drum crushing	(12 drums/hour at \$50/hr)	
	\$1.05 /drum - en	npty crushed drum	transport to landfill (\$900/43,000	0 lb; 50 lb/drum)
	<u>\$0.46</u> /drum - en	npty crushed drum	disposal (\$18.50/ton at 50 lb/dru	um)
	\$10.68	total unit cost per	drum	
	\$0.50 /gal - truck	transport to treatm	nent/disposal facility (\$2,500/5,0	00 gal)
	<u>\$1.23</u> /gal - off-si	ite treatment/dispos	sal (corrosives treatment)	
	\$1.73	total unit cost per	gallon of bulked liquids	
inventor	y elimination calcul	lation:		
	0 drums x	\$10.68 / drum	=	\$0
	0 gal x	\$1.73 / gal	=	\$0
			A10 subtotal	\$0

TOTAL MAXIMUM WASTE INVENTORY ELIMINATION COSTS \$63,625

B. Facility Decontamination / Equipment Disposal Costs

B1. <u>Concrete Secondary Containment Decontamination</u> (high pressure washing)

Rinsate generated is 4 gal/sq ft (CCET and EPA guidance). Rinsate will be pumped to storage tanks, then placed into bulk tankers for off-site treatment/disposal as DW.

unit costs:

\$1.25 / sq ft - labor/equip for high pressure wash (40 sq ft/hr at \$50/hr)

0.010 / \$ gal - loading material from tanks to bulk truck (5,000 gal/hr at \$50/hr)

\$1.23 / gal (aqueous treatment)

surface area:

1,653 sq ft total container units concrete surface area (see Table I1-3)

<u>1,940</u> sq ft DW tank system concrete surface area (see Table I1-4)

3,593 sq ft total concrete to be decontaminated

rinsate quantity:

3,593 x 4 gal/sq ft = 14,372 gal

cost calculation:

3,593 sq ft x	\$1.25 / sq ft =	\$4,491
14,372 gal x	0.010 \$ / gal =	\$144
14,372 gals x	\$1.23 / gal =	\$17,678
	<u>B1 subtotal</u>	\$22,313

B2. Tank Decontamination

Rinsate generated is 4 gal/sq ft (CCET and EPA guidance). Rinsate will be pumped to storage tanks, then placed into bulk tankers for off-site treatment/disposal as DW.

unit costs:

\$1.25 / sq ft - labor/equip for high pressure wash (40 sq ft/hr at \$50/hr)

0.010 / \$ gal - loading material from tanks to bulk truck (5,000 gal/hr at \$50/hr)

\$1.23 / gal (aqueous treatment)

surface area:

1,904 sq ft (based on DW tank internal dimensions as shown in Table I1-4) rinsate quantity:

 $1,904 \ge 4$ gal/sq ft =
 7,616 gal

 cost calculation: $1,904 \le q$ ft $\ge 1.25 / sq$ ft =
 \$2,380

 $7,616 \le q$ ft $\ge 0.010 \$ / gal =$ \$76

 $7,616 \ gals$ \$1.23 / gal = \$76

 $82 \ subtotal$ \$11,824

B3. Pump Decontamination / Misc. Equipment Disposal Pumps are flushed. Piping is cut into three foot lengths, and placed with miscellaneous items (e.g., shovels, PPE, sampling equipment) in a 200-CY roll-off box for transport off-site for macroencapsulation at a RCRA Subtitle C landfill.

quantity:

3	pumps
1	20-CY roll-off box
1	labor hours for cutting piping
unit costs:	
\$152.00	/ pump - labor equipment and rinsate disposal
\$1,900.00	/ roll-off box (bulk transport to landfill)
\$50.00	/ hour labor
\$152.00	/ CY macroencapsulation of debris
cost calculati	on:

cost ca

3 pumps x	\$152	/ pump =	\$456
1 roll-off x	\$1,900	/ roll-off trans. =	\$1,900
20 CY x	\$152	/ CY macro. =	\$3,040
1 hours x	\$50	/ hour labor =	\$50
		<u>B3 subtotal</u>	\$5,446

B4. Heavy Equipment Decontamination Forklifts will be decontaminated with a high pressure wash. Rinsate handling costs are assumed to be negligible and are incorporated into tank/equipment rinsate disposal costs.

quantity:

3 forklifts

unit costs:

\$200.00 / forklift - labor and equipment for forklift decon

cost calculation:

3 units x	\$200 / unit =	\$600
	<u>B5 subtotal</u>	\$600

TOTAL DECON. & EQUIPMENT DISPOSAL COSTS \$40,183

C. Sampling and Analytical Costs

C1. <u>Soil and Concrete Sampling and Analysis</u> (See Table I1-2)

unit costs:

\$850.00 / sample (labor for sample collection; analytical)

<u>quantity:</u>

τ.

65 concrete samples<u>80 soil samples</u>145 total samples

cost calculation:

145 samples x	\$850 / sample =	\$123,250
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TOTAL SAMPLING AND ANALYTICAL COSTS \$123,250

D. Miscellaneous Costs

D1. Personal Protective Equipment (PPE)

Assume 10 workers will need basic PPE including total body overalls, gloves, goggles, respirator (half-mask), and hard hat at a cost of \$140 per worker. Assume 4 workers will need PPE sufficient for confined space entries (normal PPE plus SCBA).

unit costs:

\$140.00 / worker (basic)
\$365.00 / worker (confined space)

cost calculation:

10 workers	x \$140	/worker =	(basic)	\$1,400
4 workers	x \$365	/worker =	(confined)	\$1,460
		D1 subtotal		\$2,860

D2. Engineering Certification

unit costs:

\$100.00 / hour - rate for independent P.E.

quantity:

102 hours (3 hrs/visit, 1 visit/wk for 30 weeks; + 12 hrs final review)

cost calculation:

102 hours x	\$100 / hour =	\$10,200

\$13,060

TOTAL MISCELLANEOUS COSTS

APPENDIX I-3

FINANCIAL ASSURANCE FOR CLOSURE

---Refer to Appendix I-3i (Interim) for current closure financial assurance info. This appendix will be updated to reflect revised costs after relocation to Tacoma is complete.

APPENDIX I-4

CERTIFICATE OF LIABILITY INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RICHTS U-OWN THE CERTIFICATE HOLDER. CERTIFICATE DOES NOT AFRICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORS BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORS BERNERNATT: If the certificate holder is an ADDITIONAL INSURED, the policy(ise) must be endersed. If SUBROATION IS WARDED, exting the terms and conditions of the policy, certific policies may require an endorsement. A statement on this certificate does not conferrights to certificate holder in linu of such endorsement(s). SUBCESS Service intervention bolders is an ADDITIONAL INSURED, the policy(ise) must be endersed. If SUBROATION IS WARDED, the certificate holder in linu of such endorsement(s). SUBCESS Service intervention bolders are and construction of the certificate does not conferrights to certificate holder in linu of such endorsement(s). SUBCESS Service intervention bolders are and the certificate does not conferrights to an Example in unit of such endorsement(s). SUBCESS Service intervention bolders are and the certificate does not conferrights to Service intervention bolders are and the certificate does not conferrights to service in the certificate holder in linu of such endorsement(s). Service intervention bolders are and the certificate does not conferrights to Service in the certificate holder in linu of such endorsement(s). Service in the certificate holder in linu of such endorsement(s). Service in the certificate holders is an ADDITION of API (SERVICE IN LINU API (SERVICE IN	THE CENTRICATE IS SUBD AS A MATTER OF INFORMATION ONLY AND CONFERS NO RICHTS UPON THE CENTRICATE HOLDER. THE FOLCE EXERCISE. A VALUE AND THE CENTRICATE HOLDER. EXERTIFICATE OF INSURANCE COSS NOT CONSTITUTE A CONTRACT SETURD OR ALTER THE COVERAGE AFFORDED STITUEF ALCONTRACT SETURD OR ALTER THE COVERAGE AFFORDED STUDENCE. THE FOLLING. IMPORTANT: If the cantificate holder is an ADDITIONAL INSURED. The policy(is) must be endorseed. If SUBRIGATION INSURERIS, AUTHORIZ THE CANTER AND THE CENTRICATE HOLDER. IMPORTANT: If the cantificate holder is an ADDITIONAL INSURED. The policy(is) must be endorseed. If SUBRIGATION INSURERIS, AUTHORIZ THE CANTER AND THE CENTRICATE HOLDER. IMPORTANT: If the cantificate holder is an ADDITIONAL INSURED. The policy(is) must be endorseed. If SUBRIGATION INSURED. The policy(is) must be endorseed. If SUBRIGATION INSURED. The policy(is) must be endorseed. If SUBRIGATION INSURED. THE INSURED CONTROL INSURE AND INSUR AND INSURE AND INSUR	ACORD CE	ERTIF	FICATE OF LIABIL	ITY INS	URANC	:Е [0ATE 060	(NM/DD/YYY) 4/2015
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ADDITIONAL DEMARKS SCHEDURE

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ADDITIONAL REMARKS		BFFEG IIVE MAIN:	
THIS ADDITIONAL REMARKS FORM IS A SCHEDUL	E TO ACORD FORM,		
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Named insulted Includes:			
21st Century Environmental Management of Nevada, LLC, a Nevada limi 21st Century Environmental Management, Inc., a Delaware conscious	led lability company		
21st Century Environmental Management, LLC of Rhode Island, a Rhode	Island limited liability company		
21st Century Environmental Management of California, LP, a California II	mited partnership		
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Chemical Pollution Control of Florida, LLC. a Florida imited liability compa	зту		
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General Environmental Management of Rencho Cordova, LLC, a Californ	is limited liability company		
Luntz Acquisition (Delaware), LLC, a Delaware limited liability company			
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Philip Holdings, LLC, a Delaware limited liability company			
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CERTIFICATE OF LIABILITY INSURANCE

Page 1 of 2

DATE (MM/DD/YYYY
04/01/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER. IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s). PRODUCER Willis Towers Watson Northeast, Inc. c/o 25 Century Blvd P.O. Box 305191 CONTACT Willis Towers Watson Certificate Center PHONE (AC. No. Ext): 1-877-945-7378 FAX (AUC, No): 1-888-467-2378 INSURED Clean Earth Environmental Solutions, Inc. 350 Poplar Church Road Camp Hill, PA 17011 INSURER C: Indemnity Insurance Company 0f North Ameri 19489 226277 THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURE AGONED AND EAR OF ROTH POLICY PERIOD INSURER E: INSURER E: SUBJECT TO HILD ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.
REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER. IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy (ies) must have ADDITIONAL INSURED provisions or be endorsed if SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement or this certificate does not confer rights to the certificate holder in lieu of such endorsement(s). PRODUCER Willis Towers Watson Northeast, Inc. CONTACT Willis Towers Watson Certificate Center PHONE (C. No. Ext): 1-877-945-7378 FAX (AC, No. Ext): 1-888-467-2378 C/o 26 Century Blvd FAX (AC, No. Ext): 1-877-945-7378 FAX (AC, No. Ext): 1-888-467-2378 PHOME INSURERS). Certificates@willis.com INSURERS): Certificates@willis.com Nashville, TN 372305191 USA INSURERS: Certificates@willis.com INSURERS: Certificates@willis.com INSURED INSURERS: Certificate Company 22667 Clean Earth Environmental Solutions, Inc. INSURER B: American Guarantee and Liability Insurance 26247 Stopplar Church Road INSURER D: Allied World Assurance Company of North Ameri 43575 Camp Hill, PA 17011 INSURER B: Merican Guarantee and Liability Insurance 19489 INSURER E: INSURER E: INSURER E: INSURER E: INSURER E: INS
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X COMMERCIAL GENERAL LIABILITY
A MED EXP (Apy one percent) \$ 100,0
HDO G71449294 06/30/2020 06/30/2021 PERSONAL & ADV INJURY \$ 5,000,0
GENI'L AGGREGATE LIMIT APPLIES PER: GENERAL AGGREGATE \$ 5,000,0
POLICY PRO- LOC PRODUCTS - COMP/OP AGG \$ 5,000,0
OTHER: \$
AUTOMOBILE LIABILITY \$ 5,000,0
X ANY AUTO BODILY INJURY (Per person) \$
A OWNED SCHEDULED AUTOS
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B X UMBRELLA LIAB X OCCUR EACH OCCURRENCE \$ 10,000,0 EXCESS LIAB OCCUR
WORKERS COMPENSATION
C ANYPROPRIETOR/PARTNER/EXECUTIVE
OFFICER/MEMBEREXCLUDED? No N/A WLR C67455782 06/30/2020 06/30/2021 Late 1000000000000000000000000000000000000
If yes, describe under DESCRIPTION OF OPERATIONS below E.L. DISEASE - POLICY LIMIT \$ 3,000,0
A Excess Workers Compensation WCU C67455824 06/30/2020 06/30/2021 See Page 2
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
SEE ATTACHED
SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
AUTHORIZED REPRESENTATIVE
Evidence of Coverage
© 1988-2016 ACORD CORPORATION. All rights reserve

ACORD 25 (2016/03)

AGENCY CUSTOMER ID:

LOC #:



ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

	ADDITIONAL		KNS SCHEDULE	
AGENCY Willis Towers Watson Northeast, 1	Inc.		NAMED INSURED Clean Earth Environmental Solutions, Inc.	
			Camp Hill PA 17011	
See Page 1				
		10.0005		
See Page 1	N/	AIC CODE		
See rage 1		se raye i	EFFECTIVE DATE: See Page 1	
ADDITIONAL REMARKS				
THIS ADDITIONAL REMARKS FORM IS	A SCHEDULE TO ACOR	D FORM,	T	
FORM NUMBER:23 FORM T	TLE: <u>Certificate of L</u>	lability	Insurance	
Excess Workers Compensation: Part One: Statutory				
Part Two: Bodily Injury by Accident, Each Bodily Injury by Disease, Polic Bodily Injury by Disease, Each	n Accident: \$3,000,00 cy Limit: \$3,000,000 Employee: \$3,000,000	00 0		
Coverage for Contractual Liabil Waste Pro is included as Additi	lity is provided unde ional Insured under G	er Genera General L	l Liability policy. iability per Endt Harsco AI Form 17.	
INSURER AFFORDING COVERAGE: All POLICY NUMBER: 0312-3010 EF	Lied World Assurance FF DATE: 04/06/2020	Company EXP D	US Inc ATE: 06/30/2021	NAIC#: 19489
TYPE OF INSURANCE.	LIMIT DESCRIPTION.		T.TMTT AMOIINT	
Contractor's Pollution/Prof.	Per Incident:		\$10,000,000	
	Aggregate:		\$10,000,000	
	9909-00-		+=0,000,000	

Clean Earth Environmental Solutions, Inc.
Harsco Corporation
PSC Environmental Services LLC
Clean Earth Specialty Waste Solutions, Inc.
Luntz Acquisition (Delaware), LLC
21st Century Environmental Management of Nevada, LLC
21st Century Environmental Management, LLC of Rhode
Island
Chemical Pollution Control of Florida, LLC
Chemical Pollution Control, LLC of New York
Northland Environmental, LLC
General Environmental Management of Rancho Cordova LLC
Burlington Environmental, LLC
Solvent Recovery, LLC
PSC Recovery Systems, LLC
Republic Environmental Systems (Pennsylvania), LLC
Republic Environmental Systems (Transportation Group),
LLC
Republic Environmental Recycling (New Jersey), Inc.
Nortru, LLC
Allworth, LLC
Rho-Chem, LLC
Chemical Reclamation Services, LLC
Philip Reclamation Services, Houston, LLC

ADDTIONAL INSURED - FORM 17

Named Insured Harsco Corporation			Endorsement Number 3	
Policy Symbol HDO	Policy Number G71449294	Policy Period 06/30/2020 TO 06/30/2021	Effective Date of Endorsement	
Issued By (Name of Insurance Company) ACE American Insurance Company				

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

THIS ENDORSEMENT MODIFIES INSURANCE PROVIDED UNDER THE FOLLOWING:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
Any organization with whom you have agreed under written contract, executed prior to loss, to include as an additional insured with the specific terms set forth in this endorsement. Such insureds will be reported to us on a quarterly basis. Failure to report any specific additional insured will not invalidate coverage hereunder provided the insured has endeavored to report all additional insureds to the best of their knowledge.	All locations where you are performing work for such additional insured

- A. SECTION II WHO IS AN INSURED is amended to include as an additional insured the persons or organizations shown in the schedule, for loss occurring after the date the written contract was executed, but only with respect to liabilities for "bodily injury" or "property damage" caused, in whole or in part, by "your work" performed for the additional insured and performed pursuant to the written contract.
- B. With respect to the insurance afforded to the additional insured, the insurance provided hereunder shall be limited by and not inconsistent with the indemnification obligations as set forth in the written contract.
- C. Notwithstanding anything to the contrary contained herein or in paragraph B. above, this endorsement is not intended to, and all parties hereby agree, that in no way shall it be construed as providing coverage greater than provided under the terms of the policy.



June 4, 2021

Appendix E-1

Financial Assurance Mechanism



March 4, 2020

CERTIFIED MAIL 7018 0680 0000 9428 6982

Michelle Mullin PCB Program Contact US EPA Region 10 1200 Sixth Avenue, Suite 155 Seattle, WA 98101

Re: TSCA Closure Bond Increase Rider for Burlington Environmental, LLC Kent Facility (WAD991281767)

Dear Ms. Mullin:

Enclosed is the original Increase Rider to surety bond #K09223642 issued on behalf of the Burlington Environmental, LLC Kent facility, providing financial assurance for closure of the commercial PCB storage facility operating under TSCA interim approval.

Please note that the bond amount has been increased from \$126,248 to \$128,520, reflecting a 2020 inflation factor of 1.018.

Thank you for your attention to this matter, and please call me at (206) 715-1974 if you need additional information.

Sincerely,

Klaupaa

Katey Potter Permit Compliance Manager

Enclosure

SURETY RIDER

To be attac	ched to and form a part of	
Bond No.	K09223642	
dated	May 8, 2015	
effective	(MONTH-DAY-YEAR)	
executed by	Burlington Environmental, LLC	, as Principal,
	(PRINCIPAL)	
and by	Westchester Fire Insurance Company, as Surety,	
ត		
in favor of	U.S. Environmental Protection Agency	
in conside	eration of the mutual agreements herein contained the Principal and the Surety hereby consent to chang	Jing
The Bond A	mount from:	
One Hundr	red Twenty-six Thousand Two Hundred Forty-eight & 00/100 (\$126,248.00)	
To:		
One Hundr	red Twenty-eight Thousand Five Hundred Twenty & 00/100 (\$128,520.00)	
Nothing he	erein contained shall vary, alter or extend any provision or condition of this bond except as herein expres	ssly stated.
This rider is effective	March 26, 2020	
	(MONTH-DAY-YEAR)	
Signed and	d Sealed February 26, 2020	
	(MONTH-DAY-YEAR)	
	Burlington Environmental, LLC (PRINCIPAL)	
B	y:	
	(PRINCIPAL)	
	Westchester Fire Insurance Company	
	(SURPETY)	
By	y: Dello Contractor Contractor	
	Aaton D. Ghinn, Allomey in Fact	

CHUBB'

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint James A. Cuthbertson, Aaron D. Griffin, John K. Johnson, Daniel Machado and Ann Mullins of Chicago, Illinois ------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 3rd day of January, 2020.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary



Atrada

Stephen M. Haney, Vice President



STATE OF NEW JERSEY County of Hunterdon

SS

On this **3rd** day of **January**, **2020** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, WIGILANT INSURANCE COMPANY, NUCLANT INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



KATHERINE J. ADELAAR NOTARY PUBLIC OF NEW JERSEY No. 2316665 Commission Expires July 16, 2024

Hut Alden Notary Public

CERTIFICATION

Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December II, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorneyin-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments;
- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this



February 26, 2020 Dawn m. Chlores

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT: Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com



March 4, 2020

CERTIFIED MAIL 7018 0680 0000 9428 6999

Joanna Richards WA Department of Ecology Hazardous Waste and Toxics Reduction P.O. Box 47600 Olympia, WA 98504

Re: Surety Rider for Burlington Environmental, LLC Kent Facility (WAD991281767)

Dear Ms. Richards:

Enclosed is the original Surety Rider to bond #K0922371A providing financial assurance for closure of dangerous waste activities at the Burlington Environmental, LLC (Stericycle) Kent facility. Please note that the bond amount has increased from \$329,853 to \$335,790, reflecting a 2020 inflation factor of 1.018.

An updated Table I3-1 is also provided. Please place copies of Table I3-1 (Section I), and the cover letter and Surety Rider (Appendix I-3) in the permit binders maintained by Ecology.

Thank you for your attention to this matter, and please call me at (206) 715-1974 if you need additional information.

Sincerely,

Katyaatu

Katey Potter Permit Compliance Manager

Enclosure

cc (via email): Andy Rippert, Ecology SWRO Mark Furnish, Ecology HQ SURETY RIDER

To be attac	hed to and form a part of		
Bond No.	K0922371A		
dated effective	May 11, 2015		
	(MONTH-DAY-YEAR)		
executed by	Burlington Environmental, LLC		, as Principal, -
and bu	(PHINCIPAL)	as Curretu	
and by		, as Surety,	
in favor of	Washington Department of Ecology		
in conside	(OBLIGEE)	and the Surety bereby consent to changing	
	auon of the mutual agreements herein contained the Philipan	and the Surety hereby consent to changing	
The Bolia A	nount nom.		
Three Hune	tred Twenty-nine Thousand Eight Hundred Fifty-three & 00/100 (\$329	1,853.00)	
То:			
Three Hune	red Thirty-five Thousand Seven Hundred Ninety & 00/100 (\$335,790	.00)	
Nothing he	rein contained shall vary, alter or extend any provision or condi	tion of this bond except as herein expressly state	ed.
This rider	March 26, 2020		
is effective	(MONTH-DAY-YEAR)		
Signed and	Sealed February 26, 2020		
	(MONTH-DAY-YEAR)		
	Burlington Environmental, LLC (PRINCIPAL)		
B			
	(PRINCIPAL)	~	
	Westchester Fire Insurance Company		
В	Adate Sum	\sim	
<u> </u>	Aaron D. Griffin, Attorney in Fact		

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CHUBB'

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint James A. Cuthbertson, Aaron D. Griffin, John K. Johnson, Daniel Machado and Ann Mullins of Chicago, Illinois ------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 3rd day of January, 2020.

Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary



STATE OF NEW JERSEY County of Hunterdon

SS.

Atte M Hu Stephen M. Haney, Vice President



On this **3rd** day of **January**, **2020** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, NUMERANCE COMPANY, AND ACE AMERICAN INSURANCE COMPANY, NEITCHESTER FIRE INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and the oroporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.

Notarial Seal



KATHERINE J. ADELAAR NOTARY PUBLIC OF NEW JERSEY No. 2316685 Commission Expires July 16, 2024

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CERTIFICATION Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into in the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
 - (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, to the extent that such action is authorized by the grant of powers provided for in such person's written appointment as such attorney-in-fact.
 - (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorneyin-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
 - (4) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing to any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company's seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
 - (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, DAWN M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- (ii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this



February 26, 2020 Dawn M. Chloros

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT: Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com

TABLE I3-1 COST ESTIMATES FOR CLOSURE AT MAXIMUM WASTE INVENTORY

ITEM DESCRIPTION (detail provided in Appendix I-2)	COST (2011 \$)
A. Maximum Waste Inventory Elimination	\$63,625
B. Facility Decontamination / Equipment Disposal	\$40,183
C. Soil and Concrete Sampling and Analysis	\$123,250
D. Miscellaneous (P.E. certification, PPE)	\$13,060
SUBTOTAL	\$240,118
Contingency (20%)	\$48,024
TOTAL CLOSURE COST ESTIMATE (2011 \$)	\$288,142
Update with 1.083 inflation factor (2016 \$)	\$312,058
Update with 1.013 inflation factor (2017 \$)	\$316,115
Update with 1.020 inflation factor (2018 \$)	\$322,437
Update with 1.023 inflation factor (2019 \$)	\$329,853
Update with 1.018 inflation factor (2020 \$)	\$335,790

CleanEarth.

June 4, 2021

CERTIFED MAIL 7019 2970 0001 8708 2616

Ms. Michelle Mullin US EPA Region 10 PCB Program 1200 Sixth Avenue, Suite 155 Seattle, WA 98101

RE: Burlington Environmental, LLC Kent Facility (WAD991281767) Closure Bond Increase per EPA Request (K09223642)

Dear Ms. Mullin:

Enclosed is the original Surety Rider to Bond #K09223642 increasing financial assurance for closure of commercial PCB storage activities at the Burlington Environmental, LLC Kent Facility.

Please note, the bond amount has been increased from \$130,062 to \$152,062, per the request made by EPA on May 12, 2021.

If you have any questions or need additional information, please contact me at (206) 715-1974 or via email at <u>kpotter@harsco.com</u>.

Sincerely,

Katey Potter

Katey Potter Permitting Compliance Manager

- Enclosure: Surety Rider (Bond #K09223642)
- cc (via email): Megan Swick, Kent Facility Brett Feldhahn, US EPA Region 10

To be attac	and to and form a part of	
TO DE allac		
Bond No.	(09223642	
dated effective	May 8, 2015 (MONTH-DAY-YEAR)	
executed by	Burlington Environmental, LLC (PRINCIPAL)	, as Principal,
and by	Westchester Fire Insurance Company (SURETY)	, as Surety,
in favor of	U.S. Environmental Protection Agency (OBLIGEE)	
in considera	ation of the mutual agreements herein contained the Principal and the Surety hereby consent to changing	
The Bond /	Amount:	
From: One	e Hundred Thirty Thousand Sixty-Two and 00/100 Dollars (\$130,062.00)	
To: One	Hundred Fifty-Two Thousand Sixty-Two and 00/100 Dollars (\$152,062.00)	
Nothing her	ein contained shall vary, alter or extend any provision or condition of this bond except as herein expressly st	ated.
This rider is	effective May 20, 2021	
Signed and	(MONTH-DAY-YEAR) Sealed May 20 2021	
Ū	(MONTH-DAY-YEAR)	
	Burlington Environmental, LLC	
By	Same Ann	
	(PRINCIPAL) Samuel Romaniusty	
	Westchester Fire Insurance Company	
	(SURETY)	
By:	Kristen D. Pedrick Atterney in East	
	Kisten D. (Feulick, Allomey-III-Fact	

CHUBB.

Power of Attorney

Federal Insurance Company | Vigilant Insurance Company | Pacific Indemnity Company

Westchester Fire Insurance Company | ACE American Insurance Company

Know All by These Presents, that FEDERAL INSURANCE COMPANY, an Indiana corporation, VIGILANT INSURANCE COMPANY, a New York corporation, PACIFIC INDEMNITY COMPANY, a Wisconsin corporation, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY corporations of the Commonwealth of Pennsylvania, do each hereby constitute and appoint Kristen D. Pedrick and Robert N. Striewig Jr. of Mechanicsburg, Pennsylvania

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY have each executed and attested these presents and affixed their corporate seals on this 15th day of January, 2020.

Dawx m. Chlores

Dawn M. Chloros, Assistant Secretary

Atrante

Stephen M. Haney, Vice President



STATE OF NEW JERSEY County of Hunterdon

SS.

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On this **15th** day of **January, 2020** before me, a Notary Public of New Jersey, personally came Dawn M. Chloros and Stephen M. Haney, to me known to be Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY, the companies which executed the foregoing Power of Attorney, and the said Dawn M. Chloros and Stephen M. Haney, being by me duly sworn, severally and each for herself and himself did depose and say that they are Assistant Secretary and Vice President, respectively, of FEDERAL INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY, and ACE AMERICAN INSURANCE COMPANY, MESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY and the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of said Companies; and that their signatures as such officers were duly affixed and subscribed by like authority.





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CERTIFICATION Resolutions adopted by the Boards of Directors of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY on August 30, 2016; WESTCHESTER FIRE INSURANCE COMPANY on December 11, 2006; and ACE AMERICAN INSURANCE COMPANY on March 20, 2009:

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- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorneyin-fact of the Company with full power and authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
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- (5) The signature of any officer or other person executing any Written Commitment or appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested."

I, Dawn M. Chloros, Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, PACIFIC INDEMNITY COMPANY, WESTCHESTER FIRE INSURANCE COMPANY and ACE AMERICAN INSURANCE COMPANY (the "Companies") do hereby certify that

- (i) the foregoing Resolutions adopted by the Board of Directors of the Companies are true, correct and in full force and effect,
- i) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Whitehouse Station, NJ, this 🛛 🏠



Ay 20, 2031 Down m. Chlores

Dawn M. Chloros, Assistant Secretary

IN THE EVENT YOU WISH TO VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT: Telephone (908) 903-3493 Fax (908) 903-3656 e-mail: surety@chubb.com