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November 9, 2017

Brooks Stanfield, On-Scene Coordinator
United States Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Re: Final Trip Report for Treoil Industries Bio-refinery Assessment and Emergency Response Site Contract Number EP-S7-13-07, Technical Direction Document Numbers 17-01-0012 and 17-03-0003

Dear Mr. Stanfield:

Enclosed please find the Final Trip Report for Treoil Industries Bio-refinery Assessment and Emergency Removal Site located in Ferndale, Whatcom County, Washington. If you have any question regarding this submittal, please call David Burford or me at (206) 624-9537.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Brad Martin
START-IV Team Leader

cc: David Burford, START-IV Project Manager, E & E, Seattle, WA

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FINAL TRIP REPORT

Treoil Industries Bio-refinery Assessment and Emergency Removal Site
Ferndale, Washington
TDD: 17-01-0012 & 17-03-0003

Prepared for

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Prepared by

Ecology and Environment, Inc.
720 Third Avenue, Suite 1700
Seattle, Washington 98104

November 2017

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1. PLACE VISITED

Site Name	Treoil Industries Bio-refinery Assessment and Emergency Response Site
Owner/Responsible Party Name	Campbell Land Corporation
Location	Ferndale, Whatcom County, Washington
SSID	10PZ/Z0ES
CERCLIS ID	WAH000050091
Latitude	48.8789186
Longitude	-122.7107528
Dates of Trip	March 13 to April 7 (Phase I) & July 24 to August 4, 2017 (Phase II)

2. PURPOSE

The United States Environmental Protection Agency (EPA) has tasked Ecology and Environment, Inc. (E & E), under Superfund Technical Assessment and Response Team (START) contract number EP-S7-13-07, Technical Direction Document numbers 17-03-0003 and 17-01-0012 to support an EPA-led emergency removal action at the Treoil Industries Bio-refinery site located near Ferndale, Whatcom County, Washington.

EPA support was requested from Washington State Department of Ecology (Ecology) to assess the site after Ecology had performed a series of site visits to investigate concerns about improper storage or abandonment of potentially hazardous chemicals and oil. This report covers multiple phases of fieldwork that occurred from March 13 to April 7, 2017 (Phase I) and from July 24 through August 4, 2017 (Phase II).

START personnel were tasked with recording site conditions through logbook entries, photographic documentation, assessing and inventorying chemical containers, and conducting hazard categorization of unknown chemical containers. Following the document are several attachments associated with START tasks:

- Attachment A – Photographs taken from the Treoil Industries Bio-refinery site
- Attachment B – Chemical Inventory and Field Screening Results
- Attachment C – Sample results
- Attachment D – Analytical results and data validation for samples taken from the site
- Attachment E – Report by the Emergency Rapid Response Services (ERRS) contractor tasked with the removal of all the hazardous materials at the site and creation of the tank inventory
- Attachment F – Waste Manifest summary
- Attachment G – Cultural/Historical Assessment report from Phase II

START activities for the emergency assessment and removal action were performed in accordance with a site-specific sampling plan which included standard operating procedures and methods followed by START during field activities and in accordance with the site-specific data management plan (2017a).

3. PERSONS INVOLVED

Agency	Contact Persons	Phone Number
EPA	Brooks Stanfield	206-553-4423
	Jeffrey Fowlow	206-553-2751
START	David Burford	206-624-9537
	Valeriy Bizyayev	206-624-9537
	Renee Nordeen	206-624-9537
	Erin Cafferty	206-624-9537
	Alan Jensen	206-624-9537
ERRS	Jerry Wade	360-882-0594
	Anthony Bahnick	206-445-4556
Washington Department of Ecology	Mindy Collins	360-594-6411
	Stephanie Barney	360-715-5233
Whatcom County Health Department	Bill Angel	360-676-6770

4. BACKGROUND

4.1. Site Description

The site is located on an industrial bio-refinery property in the northwest portion of Whatcom County, approximately five miles northwest of the City of Ferndale, Washington, eight miles south of the US-Canadian border, and four miles north of the Lummi Nation Reservation (Figure 1). The bio-refinery operations were conducted on an approximately 3.5 acre footprint of a 34-acre parcel. The developed portion of the property is surrounded by wetlands and other woodland/meadow habitat. A Burlington Northern Santa Fe Railway line borders the property to the east and south. Approximately half a mile to the west is a small industrial gas facility and the BP Cherry Point petroleum refinery. An area of low-density residential land use is located approximately 0.2 miles east of the site. An estimated 120 people reside within a 1-mile radius of the site.

Due to a high water table in the area, there is significant surface water on the site and in adjacent wetlands, especially during winter months. Surface water, particularly during rain events, flows generally southwesterly toward a wetland and a ditch. The ditch runs parallel with a railroad track on the southern property boundary, flowing west along the rail line and Aldergrove Road approximately one mile before turning south on Gulf Road. The ditch then connects with another wetland, and an unnamed stream, before traveling approximately 1 mile and discharging into the Strait of Georgia (Figure 1). This area of the Strait of Georgia is home to numerous species of ecological and economic importance. These include the federally listed threatened Marbled murrelet (*Brachyramphus marmoratus*), Streaked Horned lark (*Eremophila alpestris strigata*), Yellow-Billed cuckoo (*Coccyzus americanus*), Brown pelican (*Pelecanus occidentalis*) and the Bull trout (*Salvelinus confluentus*). In addition, the Strait of Georgia provides critical habitat for the federally listed endangered Killer whale (*Orcinus orca*) (DOC 2006). Sport fishing, commercial fishing, and tribal subsistence fishing and shellfish harvesting are known to occur in the Strait of Georgia. The Cherry Point Aquatic Reserve, designated by the state in 2006, is also located on the Strait of Georgia near the site. This reserve provides habitat for nesting birds and native fish, and marine mammals are known to frequent the area. Finally, the site is

located in an area where there are several pre-contact and historical archeological sites associated with past tribal village sites that were common in the area (Tso 2017).

Site features are depicted on Figure 2. The site consists of two primary warehouse buildings: a larger 6,400 square foot warehouse oriented east to west and designated as Warehouse A during response operations; and a smaller 3,600 square foot warehouse oriented north to south and designated as Warehouse B. There are three separate tank farms within secondary containment (A, B and C). First, a larger north-south oriented tank farm previously used for tall oil process, which holds nine large tanks with a combined storage capacity of nearly 450,000 gallons. Second, a smaller east-west oriented tank farm previously used for biodiesel production, which consists of two tanks with a combined storage capacity of almost 13,000 gallons. The third is a small containment located adjacent and to the south of the large containment. There is also a distillation tower and additional tank farm structures and piping to the east of the large secondary containment. Also on the property are three shipping containers (Conex boxes) used for storage, two mobile home structures, two former lab trailers and numerous pieces of abandoned heavy equipment. In addition, there are 33 aboveground storage tanks (ASTs), outside of secondary containment and scattered throughout the property, with a combined storage capacity of 553,000 gallons. Additional information on the tanks and contents are provided below in Section 5.4.2.

4.2. Regulatory History

The Treoil Industries Bio-refinery site has been the focus of numerous environmental inspections and compliance concerns since the late 1980s. Ecology issued a Notice of Violation to facility operators for “the discharge of spilled material to a drainage ditch that eventually leads to the Strait of Georgia.” This spill occurred in October of 1991. The spill was described at that time as "pine oil" in Ecology's documents, but later has been referred to as "tall oil," a byproduct of kraft processes and is used commercially as a component of rubber products, inks, adhesives, and as an emulsifier for asphalt. The facility operators were not aware of the approximately 1,000-gallon spill and had to be alerted by an adjacent facility. In Ecology's Notice of Violation, it was noted this was the second instance in which this facility had spilled oil but failed to report the spill to the State, as required by state law. During this event, it was also discovered that the facility was discharging industrial wastewater to the same ditch without a National Pollutant Discharge Elimination System (NPDES) permit (Stanfield 2017).

In 2000, the EPA conducted a Removal Site Evaluation (RSE) to determine potential threats of discharge of oil to waters of the United States. EPA's Removal Site Evaluation report (E & E 2000) referenced Ecology's files showing "many years of poor housekeeping" at the site. At that time, the On-Scene Coordinator (OSC) conducting the RSE was led to believe that the tall oil in ASTs (aboveground storage tanks) was solidified and immobile. Based on this information, the OSC determined there was not a threat of discharge of oil to waters of the United States. Despite this determination, in the final report the OSC outlined several suggested actions at the site including:

- Removal and disposal of the remaining drums and contents;
- Removal of the sludge and water inside the secondary containment area;
- Removal of sandblast grit and rosin material left uncontained at various locations throughout the site;
- Removal of chemical containers inside all buildings for disposal at a hazardous materials landfill or through the Industrial Materials Exchange Program when applicable; and,

- Excavation in the areas of other stained soils until analytical results indicate contamination below the appropriate Model Toxics Control Act cleanup level.

In 2014, Ecology received a formal complaint about the site, which was followed up by several inspections by Whatcom County Health Department and Ecology's Hazardous Waste and Water Quality programs (Angel 2014). On September 23, 2015, Ecology issued an Amended Order (Order Number 12892) to comply with State Dangerous Waste regulations (Iyer 2015). Numerous concerns reported during the several inspections included:

- Black oily residue visible under fresh gravel that was recently placed on the entire length of driveways on the property;
- Large quantities of oily residue released to the surface of the ground outside of the secondary containment structures;
- A large (10 feet by 10 feet by 4 feet) pit located outside of the western property fence line heavily impacted by a black oily substance;
- An oily substance was present in the secondary containment structures floating on at least one foot of water;
- Uncertainty regarding the integrity of tanks, pipes, and secondary containment;
- Numerous containers of chemicals that were being inappropriately stored and/or poorly managed; and
- Numerous totes with unknown liquids with no secondary containment and/or that were inappropriately stored.

In the year and a half following the issuance of Ecology's Order Number 12892 (Stanfield 2017), state program officials became concerned by the lack of effort exhibited by the property owner to comply with the order. On January 20, 2017 after a significant rain event, EPA and START personnel mobilized to the area and mapped the potential contamination pathway from the site to waters of the United States (the site was not accessed for this effort). On February 15, 2017, EPA met with Ecology and Whatcom County Health Department to determine EPA's ability to evaluate and address potential threats of discharge of oil to waters of the United States as well as any potential releases of hazardous substances to the environment. On March 8, 2017, the EPA received photo documentation of a field visit that had been conducted by Ecology two days prior. This outlined a deterioration of many of the same safety and environmental conditions observed previously on the property. These included, but were not limited to: hazardous substances that had released from containers, improper storage and labeling of chemical containers, oil being stored within failing secondary containment or no containment at all, and a complete lack of site security (Collins 2017).

In the time since EPA's 2000 assessment, no tall oil processing activities were known to have occurred. Therefore, the presence of oily substances in 2015, described above, and the presence of thousands of gallons of liquid phase tall oil in 2017, described below, suggests that the information provided to the EPA at the time of the 2000 assessment may have been inaccurate.

Based on the site’s history and recent visits by regulatory agencies, EPA determined that an emergency RSE should be conducted at the site. EPA began the emergency RSE on March 13, 2017. More detail on the emergency RSE and subsequent removal action are provided in the following sections.

5. ACTIVITIES

5.1. General Site Overview

Two mobilizations occurred as part of the emergency removal site evaluation and removal action; these were subsequently designated as Phase I and Phase II. Phase I occurred from March 13 – April 7, 2017 and focused on oil and hazardous substance assessment and removal. Phase I assessment activities included identifying and documenting oil and hazardous wastes via chemical container assessments, chemical screening, AST assessments, asbestos surveys, and limited soil analysis. Phase I removal activities include chemical container disposal, oil removal from ASTs and other tanks, and limited removal of contaminated soil. EPA also further documented the potential oil flow pathway from the site to waters of the United States. Due to weather conditions and accessibility of some ASTs on the site, some assessment and removal activities could not be completed during Phase I. As such, EPA determined that a second mobilization (Phase II) would take place at the site later in the year. On June 20, 2017 and in preparation for Phase II, EPA conducted a site walk, which included another AST inventory. Phase II occurred from July 23 to August 3, 2017 and was focused on removing the remaining oil removal from ASTs.

The following sections provide more detail on site activities.

5.2. 2017 Emergency Removal Site Evaluation

EPA, START, ERRS, Ecology, and the Whatcom County Health Department arrived on site on March 13th, 2017 to meet with a designated representative for the property owner[1] and conduct an emergency RSE. The goals of the RSE were to determine if uncontrolled hazardous substances were present on the site and/or if there was a threat of discharge of oil to the waterways of the United States. During the RSE, START documented the presence of numerous suspected hazardous substances in several hundred containers in Warehouse A, Warehouse B, a Conex storage container, and scattered elsewhere throughout the site. Many containers were found to be structurally unsound, open and/or otherwise stored improperly. Material that appeared to be asbestos containing material (ACM) was documented. Additionally, mobile oil-based substances were discovered in tanks, totes, and drums in Warehouse A, Warehouse B, and ASTs both inside and outside of secondary containment.

Evidence of chemical releases, threats of release, improper storage and labeling of containers, as well as failing or lack of secondary containment for the ASTs were documented. Investigation of the surrounding wetlands confirmed overland water flow that provided a nexus between the site and the aforementioned ditch previously confirmed to connect to the Strait of Georgia.

Based on the above findings, EPA determined that immediate emergency removal action was warranted to mitigate both oil discharge and hazardous substance release.

5.3. Hazardous Substance Assessment and Removal Activities

Hazard substance assessment and removal activities focused on chemicals stored in containers and tanks as well as asbestos containing materials. The chemical container assessment consisted of

[1] Site access was obtained verbally from the property owner.

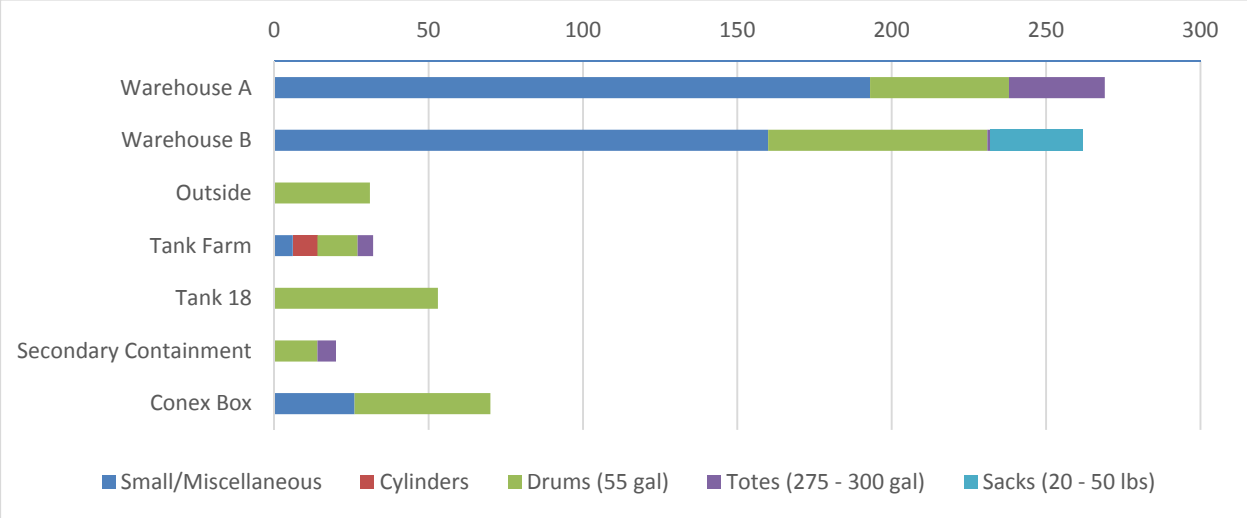
documenting chemical containers and screening unknown chemicals for hazards. If chemicals were deemed hazardous substances, then they would be subject to removal for off-site disposal. The ACM assessment and removal was initiated primarily to establish safer work zones for site workers, but was expanded as ACM was discovered in other areas on site.

More information on hazardous substance assessment and removal activities can be found in the following sections.

5.3.1. Chemical Container Assessment

During the RSE, suspected hazardous chemical containers were discovered in many areas throughout the site (Chart 1), thus it was a priority to determine if the contents of the containers exhibited hazardous characteristics either via visual assessment of the container or field screening. To assess for the presence of hazardous substances, site workers set up a system to document and process the containers. START first documented and inventoried all chemical containers in an inventory on mobile data collection devices. Containers were assigned a unique container identifier based on the location found and the type of container. Information recorded about each container included, a photo, size, estimated quantity, condition, labels and other useful information. These containers were then moved to a staging area location for further assessment. Oil container wastes were staged in Warehouse A and chemical containers were staged in Warehouse B. Once staged in the appropriate warehouse, containers were subject to additional assessment to determine if the contents were oil and/or hazardous substances.

Chart 1 - Container Type by Location Found on Site



These assessments typically involved at minimum, a visual inspection of the containers, and in the case of unknown chemicals, hazard categorization. Containers with manufacturer labels that appeared to match the contents and did not appear to have been tampered with were compared with Safety Data Sheets or other available reference information. These items were generally not subject to additional screening via hazard categorization and staged in the appropriate waste stream for disposal. Containers with illegible labels or no markings were segregated and sampled for further screening via hazard categorization (Section 5.3.2).

Over the course of the Phase I, 735 hazardous substance and oil containers were inventoried (including 315 with unknown contents). Table 1 provides a summary of the container discovery location and Department of Transportation (DOT) hazard class rating. An estimated 18,000 gallons of oil and hazardous substances were discovered in containers (Table 2).

During the course of the container assessment, several containers were assessed that were believed to be part of either the tall oil or the biodiesel process. These items were documented in the same manner as other chemicals, but were processed separately (Section 5.4.3).

Several items fell into the category of household hazardous waste. These items (motor oil, additives, etc.) were in their original containers, and are available to purchase by the public. These items were processed and inventoried, but were not disposed of and left on site.

Table 1 - Numbers of Containers by DOT Hazard Class by Location

Location DOT Hazard Class	**Quantity by Location** Quantity by Hazard Class
WA - Warehouse A	**269**
2 - Compressed Gases	3
3 – Flammable and Combustible Liquids	120
4 – Flammable & Spontaneously Combustible Solids	7
5 – Oxidizers & Organic Peroxides	4
6 – Poisonous/Toxic Materials	1
8 – Corrosive Materials	21
9 – Miscellaneous Hazardous Materials	96
DOT Not Regulated	17
WB - Warehouse B	**262**
3 – Flammable and Combustible Liquids	58
5 – Oxidizers & Organic Peroxides	4
6 – Poisonous/Toxic Materials	7
8 – Corrosive Materials	49
9 – Miscellaneous Hazardous Materials	134
DOT Not Regulated	10
OA - Outside Warehouse A	**31**
3 – Flammable and Combustible Liquids	26
9 – Miscellaneous Hazardous Materials	5

Location DOT Hazard Class	**Quantity by Location** Quantity by Hazard Class
TF - Tank Farm Outside of Secondary Containment	**32**
2 - Compressed Gases	8
3 – Flammable and Combustible Liquids	15
8 – Corrosive Materials	7
9 – Miscellaneous Hazardous Materials	1
DOT Not Regulated	1
T18 – Tank 18	**53**
3 – Flammable and Combustible Liquids	53
SCC – Tank Farm Within Secondary Containment	**20**
3 – Flammable and Combustible Liquids	7
9 – Miscellaneous Hazardous Materials	8
Unknown	5
CX - Conex Box	**70**
3 – Flammable and Combustible Liquids	34
4 – Flammable & Spontaneously Combustible Solids	3
5 – Oxidizers & Organic Peroxides	1
8 – Corrosive Materials	3
9 – Miscellaneous Hazardous Materials	29
Total	**737**

Table 2 - Estimated Quantities of Chemicals/Wastes Found on Site

Primary DOT Hazard Class	**Gal**	**qt**	**pt**	**lbs**	**oz.**	**L**	**mL**	**kg**	**g**
2 - Compressed Gases				250*					
3 – Flammable and Combustible Liquids	11963	5		40	152	3	2223		
4 – Flammable & Spontaneously Combustible Solids	210	1		1					
5 – Oxidizers & Organic Peroxides	60			77		1			
6 – Poisonous/Toxic Materials	68			5					
8 – Corrosive Materials	670	3	1	960	93	1	500	356	
9 – Miscellaneous Hazardous Materials	5311	4	1	2212	187	907	2058	61	915
DOT Not Regulated	17		1	94	70		200		750
Total	**18304**	**11**	**2**	**3389**	**502**	**911**	**4980**	**416**	**1665**

* Total Weight of Cylinders and Contents

5.3.2. Hazard Categorization

START utilized the First Step[2] hazard categorization method to assign a DOT hazard class (or classes) to the unknown chemicals. The results of these tests were documented and provided to ERRS to ensure that unknown chemicals entered the appropriate waste stream. In addition to hazard categorization,

[2] First Step Hazard Categorization is a series of field tests that may include visual observations and recording characteristics of water presence/absence, explosivity, corrosivity, oxidizers, and flammability of solid and liquid materials, or other analyses.

START used the FirstDefender RM and TruDefender FTX instrumentation to provide confirmation on select samples. A field portable X-Ray Fluorescence (XRF) instrument was used to field screen bulk solids to determine potential toxicity hazards from soils and metals. Due to the mixed hazards present on the site, hazard categorization was also performed on several waste products from tall oil or biodiesel operations. This helped further characterize the oil products to meet disposal criteria. Results of the analysis are provided in Attachment B.

Of the 315 total hazard categorization tests conducted, 165 chemicals were deemed hazardous substances, with the remaining 150 containers designated as oil materials[3]. All 315 tests indicated the materials exhibited characteristics of Resource Conservation and Recovery Act (RCRA) hazardous waste and thus met the criteria for DOT hazard class assignments. The contents of the containers included five of the nine DOT hazard classes (Table 3 and Table 4). Field analysis via presumptive identification instruments and XRF also indicated the following chemicals at the site: arsenic, lead, sulfuric acid, potassium hydroxide, sodium hydroxide, ammonium chloride, formaldehyde, cupric sulfate, paradichlorobenzene, triethanolamine, glycol ether, xylene, toluene, and other chemicals.

Table 3 - Hazardous Substance First Step Analyses

Primary DOT Hazard Class	Secondary DOT Hazard Class	Total Analyses
3 – Flammable and Combustible Liquids		46
3 – Flammable and Combustible Liquids	8A – Acidic Corrosive Materials	1
3 – Flammable and Combustible Liquids	8B – Basic Corrosive Materials	2
4.1 – Flammable Solids		8
5.1 – Oxidizers		1
5.2 – Organic Peroxides		2
8A – Acidic Corrosive Materials		14
8B – Basic Corrosive Materials		26
8B – Basic Corrosive Materials	5.1 – Oxidizers	1
9 – Miscellaneous Hazardous Materials		64
	Total	165

Table 4 - Oil Material First Step Analyses

Primary DOT Hazard Class	Secondary DOT Hazard Class	Total Analyses
3 – Flammable and Combustible Liquids		138
3 – Flammable and Combustible Liquids	8A – Acidic Corrosive Materials	1
8A – Acidic Corrosive Materials		1
8B – Basic Corrosive Materials		1
9 – Miscellaneous Hazardous Materials		9
	Total	150

A field portable XRF instrument was used to field screen bulk solids to determine potential toxicity hazards from metals in Drums from Warehouse B and the surrounding area. While most drums did not show elevated hazards, several contained high levels of lead and arsenic. These drums were segregated for off-site disposal. The material in the drums and totes that did not contain lead at concentrations

[3] Oil materials were broadly defined as wastes/products derived from the tall oil or Biodiesel processes.

above the disposal criteria[4] were used for sludge solidification activities (Section 5.4.3). The results of the XRF analysis are provided in Attachment B. Empty 55-gallon drums were staged outside of Warehouse A to be crushed and disposed of as solid waste.

A Conex box was discovered west of Warehouse B along the fence line that appeared to be completely filled with trash. Upon closer inspection, it was discovered that behind the waste was numerous other chemical containers. The front of the Conex box contained mostly solid waste and 16 small containers of chemicals. The solid waste material was removed and placed in a roll-off box for disposal. Four of the 16 containers were analyzed for hazard categorization as a representative sample of the contents. Behind the solid waste and small containers were 44 drums, densely stacked. These drums were introduced into the inventory/hazard categorization process.

5.3.3. Asbestos Containing Materials Assessment and Removal

During the emergency RSE, site workers documented several areas of the facility with materials that were suspected of containing friable asbestos. START provided an AHERA (Asbestos Hazard Emergency Response Act) asbestos inspector who flagged these locations for sampling. Suspect ACM materials were selected based on likely work operation locations and concern over activities and worker exposures in those locations. Suspect ACM for sampling was identified in tank farm piping, a drum in Warehouse A, and piping and drums in Warehouse B. Sample locations, descriptions, and results of the ACM removal efforts are provided in Attachment C and described briefly below. Site locations where no removal work was anticipated was not assessed for ACM. Results are summarized in Attachment C. Data validation memoranda are provided in Attachment D.

Fifteen samples (one from Warehouse A, six from Warehouse B, and eight from Tank Farm B & C) were collected. The samples were submitted to an off-site fixed laboratory for asbestos analysis by polarized light microscopy.[5] Six of the fifteen sample results indicated that chrysotile and amosite asbestos was present at the site. One sample from the Tank Farm (17030003) contained 60% chrysotile. One sample (17030006) collected from a 5-gallon bucket in Warehouse B contained 75% chrysotile. One sample (17030007) collected from pipe wrap in Warehouse B contained 90% chrysotile in one layer and 98% amosite in the other layer. One sample (17030008) collected from a pipe gasket in Warehouse B contained 75% chrysotile.

Two drums from Warehouse B that initially appeared to contain sandy material were analyzed with the XRF and in the process of moving the drums to the staging area, it was discovered they were much lighter than the other drums. Upon closer investigation, both of these drums had plastic sheeting under approximately 8 inches of sandy material. Under the sheeting, a fibrous material that had the visible appearance of ACM was discovered. Samples of the suspect ACM (17030024, 17030025) were collected from each drum and submitted for off-site fixed laboratory analysis for asbestos by PLM. Sample results indicated the materials in both drums were ACM (15% amosite and 7% chrysotile in both samples).

All of the suspected ACM discovered at the site was flagged and removable material was staged in an unused room in Warehouse B for disposal by a certified asbestos contractor. This included material identified during the RSE, in addition to ACM discovered during the course of removal.[6] ERRS estimated

[4] 250 ppm lead, MTCA (Model Toxics Control Act) Unrestricted Land Use
[5] PLM, EPA Method 600/R-93-116
[6] The aforementioned drums from Warehouse B and several large polypropylene bulk bags filled with what appeared to be demolition debris.

that a total of approximately 8 cubic yards of ACM was disposed of during the removal action. ACM is still present on site in pipe insulation, gaskets and in areas that were not accessed during site work (e.g. processing area and distillation tower piping). ACM that was positively identified and deemed not removable was flagged and wrapped in plastic sheeting to secure it.

5.4. Oil Assessment and Removal Activities

Oil assessment and removal activities at the site can be broadly categorized into the following:

- Containment migration pathway assessment;
- Above ground storage tank assessment and removal;
- Sludge solidification and disposal, and;
- Phase II tank assessment and removal.

The majority of the activities listed above took place in Phase I, but due to weather and accessibility issued encountered during the spring mobilization (Phase I) some activities were delayed until the summer mobilization (Phase II). More detail on oil assessment and removal activities is provided below.

5.4.1. Contaminant Migration Pathway Assessment

Upon arrival at the site on March 13, 2017, one START member and one Ecology representative began documenting potential flow pathways from the site to the drainage ditches to the west and south of the site (Figure 2). Three discrete pathways to the ditch west of the site were documented and mapped. One pathway to the south ditch was mapped. All of the pathways flow through the wetlands located west and south of the site prior to entering the drainage ditch. The northern-most pathway runs along the north side of the fence line to the drainage ditch to the west. The two other pathways each lead from a sump on the western side of the fence line directly through the wetland to the drainage ditch. The southerly pathway meanders through the wetland prior to entering the drainage ditch that runs parallel to the train tracks. Finally, sheet flow could potentially flow southeast and enter the drainage ditch on the eastern portion of the site. This drainage ditch follows the curve of the site to the southwest, flowing west along the rail line and Aldergrove Road approximately one mile before turning south on Gulf Road. The ditch then connects with another wetland, and an unnamed stream, before traveling approximately 1 mile and discharging into the Strait of Georgia (Figure 1). This assessment confirmed overland water flow that provided a nexus between the site and the Strait of Georgia, waters of the United States.

5.4.2. Above Ground Storage Tank Assessment and Removal

EPA conducted assessments and removal of 13 ASTs and other oil storage containers throughout the two phases of the emergency removal action. The majority of the assessment and removal activities took place during Phase I. Weather and accessibility issues prevented an assessment and removal from taking place on 5 ASTs located to the north of the site. Due to these issues, EPA determined that a second mobilization would (Phase II) take place during the summer months. More information on AST assessment and removal activities in the respective phases is provided below.

5.4.2.1. Phase I AST Assessment and Removal Activities

An initial AST inventory and assessment was performed by ERRS (Attachment E) during the RSE. ERRS assessed each tank and recorded dimensions and took photographs. Estimates were made about how full each tank was, and from these metrics, volume estimates were calculated. Tanks were generally

found to contain either pumpable[7] waste (oil and/or water), solidified materials or residue, or were found empty. Fifty ASTs were identified with an initial total estimate of 20,000 gallons of pumpable product/waste (Figure 3). The predominant product/waste identified in the tanks was tall oil, a dark, viscous oily substance that smelled vaguely of pitch or pine. A few exceptions were found including T-18 and T-50, which contained drums and oily sacks of resin, respectively. Glycerin crude was identified in tanks T-25 and T-26 in a section of the facility that was most recently used for biodiesel production. These tanks were located within partially flooded secondary containment.

During the initial assessment, 35 tanks were located outside of secondary containment and 15 tanks were located inside three distinct secondary containment areas (Chart 1). Pumpable oil was only found in tanks with no secondary containment. Crude glycerin product was discovered in two tanks inside secondary containment.

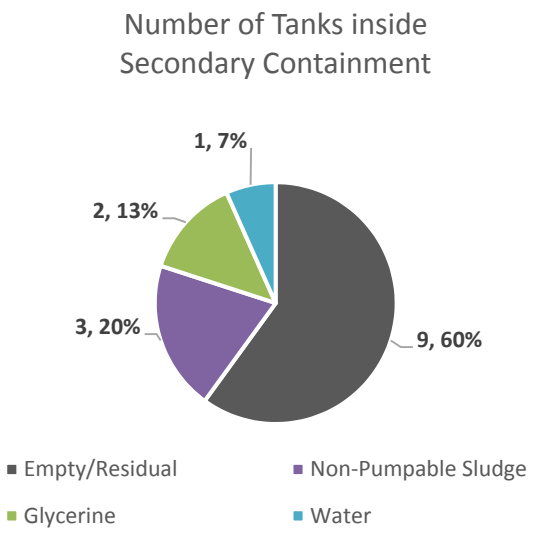
Of the 35 tanks outside of secondary containment:

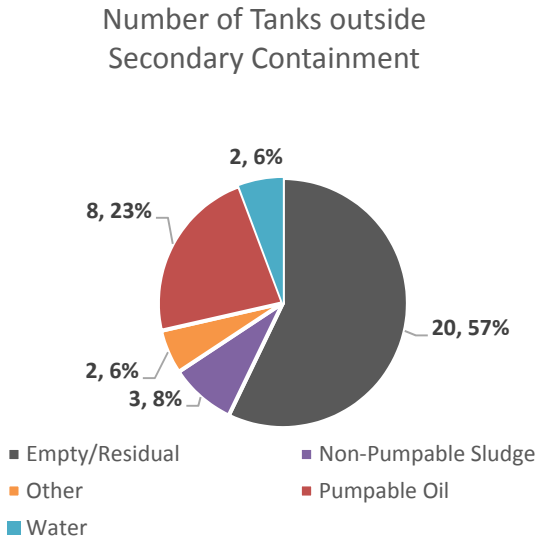
- Nine tanks with capacities of over 24,000 gallons each had pumpable material inside. The quantity of material per tank varied, ranging from first assessment estimates of 192 to 3,470 gallons pumpable material.
- Two tanks (T-18 and T-50) contained drums and oily sacks of resin.
- Twenty-four tanks were empty.

Of the 15 tanks inside secondary containment:

- Two tanks had crude glycerin product, and
- Thirteen tanks were either empty, did not have pumpable material, or did not present a significant threat of discharge.

Chart 2 - Initial Contents in ASTs.





[7] Pumpable was defined by site managers as "contents that can be removed through mechanical means (pumping), and that could be potentially mobilized if a release were to occur"

To remove AST contents, ERRS utilized vacuum trucks and hoses to directly remove wastes from tanks. Tanks that had contents removed by these methods were Tanks 1 - 3, 11 - 15, and Tank 20. During Phase II, sludge boxes and high-suction vacuum trucks were utilized to access contents that were not movable with the traditional vacuum trucks from each of these tanks. These contents were solidified at the disposal facility. Vacuum trucks were also used to remove decanted wastes from totes.

Over the course of Phase I, rainwater began filling in Tank Farm B secondary containment and it eventually began discharging water to the ground. ERRS pumped the water into Tank Farm C secondary containment which was deemed adequate to hold overflow of Tank Farm B secondary containment, although the water refilled quickly, potentially due to other underground mechanisms that equalized the levels in the containment. An investigation into underground connections between the secondary containments did not occur during these operations.

During the assessment, one large tank (T-18) was discovered to contain stacked rows of 55-gallon drums in a mixture of oily waste and rainwater. The tank was cut open and ERRS removed 58 drums from the interior. The drums themselves were discovered with punctures, not sealed, and coated in tall oil residue and sludge. ERRS scraped off the residue, crushed and disposed of the drums in the solid waste stream. Once empty and cleaned, the tank itself was dismantled and removed as scrap metal.

Tanks 11 through 15 were located towards the back of the property on a bed of crushed rock, with no secondary containment and a total of 14,000 gallons of pumpable oil. During assessment in Phase I, it was noted that the ground in the area was saturated with water from recent rains. Attempts to access the tanks with a boom lift proved difficult as the ground became muddy and the lift tended to sink. Additional observations of sludge that remained in tanks had the potential to be remobilized (and thus pumpable) as temperatures increased, drove the EPA decision that a Phase II mobilization in the summer months would be the best approach to address these two issues. This would limit activities disturbing wetlands while increasing ability to remove all threats of discharge with dryer and hotter conditions.

5.4.2.2. Phase II Tank Assessment and Removal

On June 20, 2017 EPA, START, and ERRS conducted a site visit to prepare for Phase II of the project. When site activities had ceased in the spring, it was estimated that there was still 20,000 gallons of tall oil product remaining. After re-measurement, this estimate doubled for pumpable tall oil (approximately 40,000 gallons). This was attributed to materials that were initially deemed sludges or solids were becoming pumpable with an increase in temperatures (Figure 4).

On July 24, 2017 EPA, START, and ERRS remobilized to the site for Phase II of removal activities to target product remaining in nine ASTs. START was tasked with providing field support, documentation, conducting air monitoring, and assisting Ecology with sampling residual tall oil product that would remain at the site after removal activities concluded.

START utilized VIPER telemetry stations to monitor for particulates and Volatile Organic Compounds (VOCs) during this phase of operations. This was performed by using three DustTrak particulate monitors and an AreaRAE 5-gas instrument. Monitoring was performed for worker health and safety due to the warmer temperatures and increased volatility of the product. No significant exceedances were noted over permissible exposure limits (PEL) and site particulate action level of 50µg/m3 (action level based on Lead PEL).

During Phase II re-assessment, Tank T-20 was discovered to have an additional 20,000 gallons of product than previously estimated, due to a crust that concealed the contents below. The crust was not punctured during previous assessments, but it was during this phase, likely due to the warmer temperatures. The contents were pumped into a vacuum truck and disposed of as high-water content tall oil.

From the targeted nine tanks, EPA was able to remove an estimated 72,000 gallons of tall oil product during Phase II into vacuum trucks and sludge boxes. The final estimate is greater than initial (20,000 gallons) and interim (40,000 gallons) estimate because of changing properties of the oil and additional discoveries (T-20). There is still an estimated 100,000 gallons of waste on site. This waste is heavy, non-pumpable, and not considered an immediate threat of release. Before demobilization, all tanks were inspected, secured, and boom for potential spills was left in place (Figure 5).

5.4.3. Sludge Solidification and Disposal

During Phase I, twenty-seven totes[8] were discovered in Warehouse A that contained what appeared to be waste from the tall oil process. The contents varied in composition from pumpable oil to sludges. These wastes were sampled as part of the hazard categorization process, and deemed oil materials.

In order to integrate the pumpable product/waste from totes into the same waste stream as the ASTs, the contents were decanted and consolidated. After decanting, several totes still contained residual materials ranging from sludges to resins.

Sludges and solids were combined with absorbent materials in Warehouse A. Once they were thoroughly mixed and solidified, they were added to the solid waste disposal stream and disposed of as such. ERRS estimated that a total of 185 cubic yards of this material was disposed of. The decanted contents were disposed of with other tall oil waste products and pumped into vacuum trucks (estimated 5,200 gallons of decanted material and liquid).

5.5. Soil Assessment and Removal

EPA tasked START with assessing soil that may have been impacted by previous releases of oils or chemicals. START assessed the footprint of the property during Phase I and identified areas where visible staining was present. These discoveries indicated determined that oil or chemicals that may have already been released to the environment and are delineated on Figure 6. These areas were not disturbed during Phase I site activities in accordance with the Lummi Tribe and other cultural considerations (see section 7 for further details). Based on these factors, EPA concluded a more comprehensive soil investigation may be warranted in the future, but that the investigation would not be part of the emergency removal action already in progress. Recommendations for future soil investigations were provided to Ecology (Section 8). Among the pathways covered in the recommendations were impacted soil (around and under tanks outside of containment), the potential impact sludge in secondary containment may have on groundwater, and contaminated trench sediments.

[8] Totes ranged in size from 275 – 300 gallons

During Phase I, START staff discovered a single east to west oriented floor trench in both Warehouse A and in Warehouse B. The trenches had exposed sediments in them. At EPA's direction, START collected one sample from each of the trenches for analysis[9] at an off-site laboratory. Based on the sample results, the Warehouse B trench sample (17030023) met or exceeded MTCA criteria for lead and met Resource Conservation and Recovery Act (RCRA) criteria for hazardous waste. The Warehouse B sediments were removed and placed in a high-lead drum for off-site disposal at an approved facility. The Warehouse A trench sample (17030022) exceeded MTCA action levels but did not meet criteria for RCRA hazardous waste. As such, these sediments were disposed with the solid waste stream. The full results of these samples is available in Attachment B.

During Phase II operations, Tank T-50 was discovered to be leaking oily contents. This tank was not documented to be actively leaking during Phase I. Several visible holes in the bottom of the tank were discovered and had leaked product, which affected an area of approximately 2,000 square feet. EPA directed ERRS to conduct an excavation of the contaminated soil beneath the tank. In consideration of cultural and historical interests of the site, EPA tasked START with contracting a cultural specialist to monitor excavation activities (see Section 7 for further details). A wetland construction permit was also filed with the Whatcom County Department of Planning and Development for excavation of soil.

An estimated 125 tons of oily soil was removed from the vicinity of T-50. The soil was excavated to a depth of 6 - 18 inches depending on whether visual oil was present. The extent of excavation was determined by visual observations of contamination and was considered complete when no visual contamination was observed. No confirmation samples were collected. Areas excavated or disturbed were hydro seeded with a wetland prairie mix made to match the natural vegetation of the area.

6. WASTE AND DISPOSAL

During the course of removal activities, EPA tasked START and ERRS to coordinate waste stream sampling and analytical results to develop waste stream profiles. Because of this coordination, EPA removed 6,750 gallons of glycerin, 83,600 gallons of liquid tall oil waste, and 275 tons of soil and debris during Phases I and II. Hazardous chemicals were removed from the site in 35 drums, 9 cylinders and 8 cubic yards of ACM waste.

More detail on waste stream analysis and disposal is provided in the following sections.

6.1. Waste Stream Analysis

START sampled several waste streams during the course of site activities to support ERRS and provide transportation and disposal (T&D) facilities with profiles for waste streams. Nine samples were collected from secondary containments, selected tanks (1, 3, 18 and 20), decanted tote materials, and warehouse trenches. These samples were sent to an offsite lab for the purpose of characterization for disposal. The primary waste streams characterized through analysis were products in ASTs, water in ASTs, water in secondary containment, products in decanted totes, and sediments from trenches in each warehouse (Table 5). Analytical results are available in Attachment C. Data Validation Memoranda are available in Attachment D.

[9] NWTPH-Dx, PCBs, Metals ,TCLP Metals, VOCs, SVOCs

Table 5 - Waste Stream Profile Analyses

Location	SCC01	SCB01	T1	T18	DM01	T3	T20	TR01	TR02
Location Description	Secondary Containment		Tank 1	Tank 18	Decanted Tote Material	Tank 3	Tank 20	Warehouse A	Warehouse B
Sample Type	Water				Product			Trench Sediments	
Oil & Grease					X	X	X		
Total Chlorine					X	X	X		
Heat of Combustion					X	X	X		
BS&W					X	X	X		
Ignitability					X	X	X		
NWTPH-Dx								X	X
PCBs	X	X	X	X	X	X	X	X	X
Metals	X	X	X	X	X	X	X	X	X
TCLP Metals								X	X
VOCs	X	X	X	X	X	X	X	X	X
SVOCs	X	X	X	X	X	X	X	X	X

Acronyms: BS&W- Basic Sediment and Water, NWTPH-Dx- Northwest Total Petroleum Hydrocarbons- Diesel Range, PCBs- Polychlorinated Biphenyls, TCLP- Toxicity Characteristic Leaching Procedure, VOC- Volatile Organic Compound, SVOC- Semi-volatile Organic Compound.

6.2. Waste Summary

Eight waste streams were created as a result of site removal activities. These waste streams included oil wastes, glycerin, wastewater, oily solids, lab packs, impacted sediments, oily soil and other miscellaneous solid wastes.

During Phase I, 16,460 lbs. of waste was removed from site in labpacks, overpacks, or cylinders (total 35 drums and 9 cylinders). This hazardous waste varied from compressed gasses, corrosives, oxidizers, high lead waste, and toxic waste. The main waste streams for oil-related waste were tall oil product, high water content tall oil product, and solidified tall oil product/debris. An estimated 11,600 gallons of decanted tall oil product from totes/drums and product from T-2 and T-3 were pumped by vacuum truck. An additional 6,750 gallons of glycerin transported were off site to be recycled. Solidified tall oil waste and debris totaling 185 cubic yards was placed in into lined roll off bins for transportation off site by ERRS. Water in secondary containment was left in place, as it was deemed not to pose a threat and if pumped down would refill again.

Additional materials were removed off site and transported for recycling. An individual identified by the property owner as the site representative, and who was familiar with biodiesel operations, was able to assist with identifying several totes of product that contained material of beneficial reuse. Totes were identified that contained glycerin, methanol, and/or oil/tall oil. The contents of tanks T-25 and T-26 (4,600 gallons of glycerin crude and vegetable oil) were removed by Whole Energy Corporation and taken to their facility for proper disposal. The totes were removed on April 17 and 18, 2017 and taken to the same facility.

Phase II removed a total of 125 tons of tall oil debris and soil was transported off site with 72,000 gallons of tall oil.

Attachment F contains a summary table for all waste manifests provided to START[10].

7. CULTURAL/HISTORICAL ASSESSMENT

In accordance with the National Historic Preservation Act, EPA communicated with representatives from the Washington State Historic Preservation Officer (SHPO) and the Lummi Nation Tribal Historic Preservation Officer (THPO) to gather information about potential cultural or historic resources on the site. EPA followed up with the Lummi Nation to determine if there were any concerns with work operations in areas of tribal interest. Representatives from the Lummi Nation toured the site on March 20, 2017. Through these mechanisms, EPA learned that the Cherry Point area was historically home to many pre-contact village sites and encountering cultural artifacts buried in soil was possible. Because of these interactions, EPA determined they would not assess or remove soils prior to an archeological assessment being performed.

Due to the discovery of the leaking Tank 50 during Phase II of response operations, EPA decided to excavate the impacted soil. In accordance with the above agreement with the THPO, EPA directed START to provide an archeological assessment/cultural monitor. START contracted an archeologist from Applied Archeological Research Inc. (AAR) to oversee the excavation. This excavation occurred on July 31, 2017. AAR did not observe any evidence of artifacts or archaeological resources during the excavation. On this basis, AAR concluded that the soil excavation had no adverse effect on cultural resources. AAR prepared and submitted a cultural resource monitoring report to START and EPA (Attachment G). This report was then submitted to the Washington State Historic Preservation Office and the Lummi Nation Cultural Department.

8. FUTURE SITE WORK RECOMMENDATIONS

EPA communicated recommendations for future site characterization to Ecology via a Sampling Strategy Memorandum (E & E 2017b) outlining impacted soils (Figure 6) and suggesting potential sample locations. Below is a summary of the recommendations.

Analyses:
Based on sites historic uses, suggested analyses for all soil samples include SVOCs, Target Analyte List (TAL) metals, and diesel and heavy oil total petroleum hydrocarbons.

Stained Soil:
Six areas of stained soil and one area of sandblast grit were identified in March 2017. An additional area of stained soil in the northern portion of the site was discovered in July 2017. It was recommended that additional assessment be conducted prior to sample collection activities to ascertain if there are stained areas that were not previously documented. The number of samples should be based on the overall size of the area of stained soil, with at least one sample collected from each area. The depth of potential

[10] Waste manifests for solid wastes in Phase I and vacuum trucks in Phase II were not available.

contamination is not known; however, if subsurface soil samples are anticipated, members of the Lummi Nation and SHPO should be consulted prior to digging any soils at the site.

Wetlands/Drainage Ditch:
Wetlands are present surrounding the site and along the preferential water pathway from the site to the Georgia Strait. As previously noted, a spill at the site impacted the drainage ditch to the south, extending all the way to Gulf Road. The potential impacts of contamination from the site to the drainage ditch has not been investigated. Samples of sediment and/or surface water should be collected to determine if contamination has impacted the drainage ditch. Also noted were pathways for contamination to migrate west of the site into a wetland, before discharging into the drainage ditch. Sediment and/or surface water samples are recommended to be collected from the wetlands adjacent to the site, the drainage pathways to the unnamed stream to the west of the site, as well as the drainage ditch to the south of the site, to determine if contamination has migrated.

Sumps:
Three sumps are located immediately adjacent to the site outside of the western fence line. Anecdotal information suggests the origin of the sumps are somewhere on the site. Where appropriate, surface water and surface soil samples from each of the three sumps should be collected. If possible, digging down to various depths to help understand the extent of impact is also recommended.

Secondary Containment:
There are three secondary containments on the site, two of which have stagnant water and residual material on the bottom. Water samples along with samples of sludge material should be analyzed for containments of concern from each containment. The smallest secondary containment is seasonally affected and it may not be feasible to grab samples. If the opportunity is present, samples should be collected.

Groundwater:
It is recommended that at least four to eight groundwater samples be taken and assessed for contaminants. Groundwater impacts could have been derived from the numerous stained soil areas, communication between secondary containment and groundwater, or unknown historical releases. Generally, groundwater flows towards the southwest. Determining groundwater flow may be necessary to characterize contamination leaving the site.

Other Sampling Guidelines:
Background samples and locations will need to be considered carefully since the area resides in a heavy industrial area. Ground water samples should be taken near the northeastern side of the property to account for potential impact from the railways, and surface soil/sediment samples should be taken outside the property or in an area less likely to contain site containments. A water well sample from 4300 Aldergrove can be used for a potential background if access to railways is not possible.

9. SUMMARY AND CONCLUSIONS

EPA conducted emergency removal actions at the Treoil Industries site in two phases in 2017. EPA, with the assistance of START and ERRS contractors, completed a chemical inventory and assessment, hazard categorization activities, segregation and consolidation of waste streams, loading of liquid waste into vacuum trucks and packaging of various chemical wastes into lab-packs or over-packs as appropriate. Overall, 785 containers of varying sizes were inventoried, assessed and processed, of which 413 containers were assigned a hazard class by hazard categorization (315 total samples were processed by First Step hazard categorization). Additionally, 50 ASTs were assessed, of which 10 had contents that were removed. Two tanks were removed entirely.

In total, 6,750 gallons of glycerin, 83,600 gallons of liquid tall oil waste, and 275 tons of soil and debris were removed from the site. Hazardous chemicals were removed from the site in 35 drums, 9 cylinders and 8 cubic yards of ACM waste.

EPA worked closely with Ecology, Whatcom County and Lummi Nation representatives to ensure materials were removed safely and in accordance with applicable regulations and cultural considerations. Recommendations for future site characterization were provided to Ecology.

No additional EPA activities at the Treoil site are anticipated at this time.

10.REFERENCES

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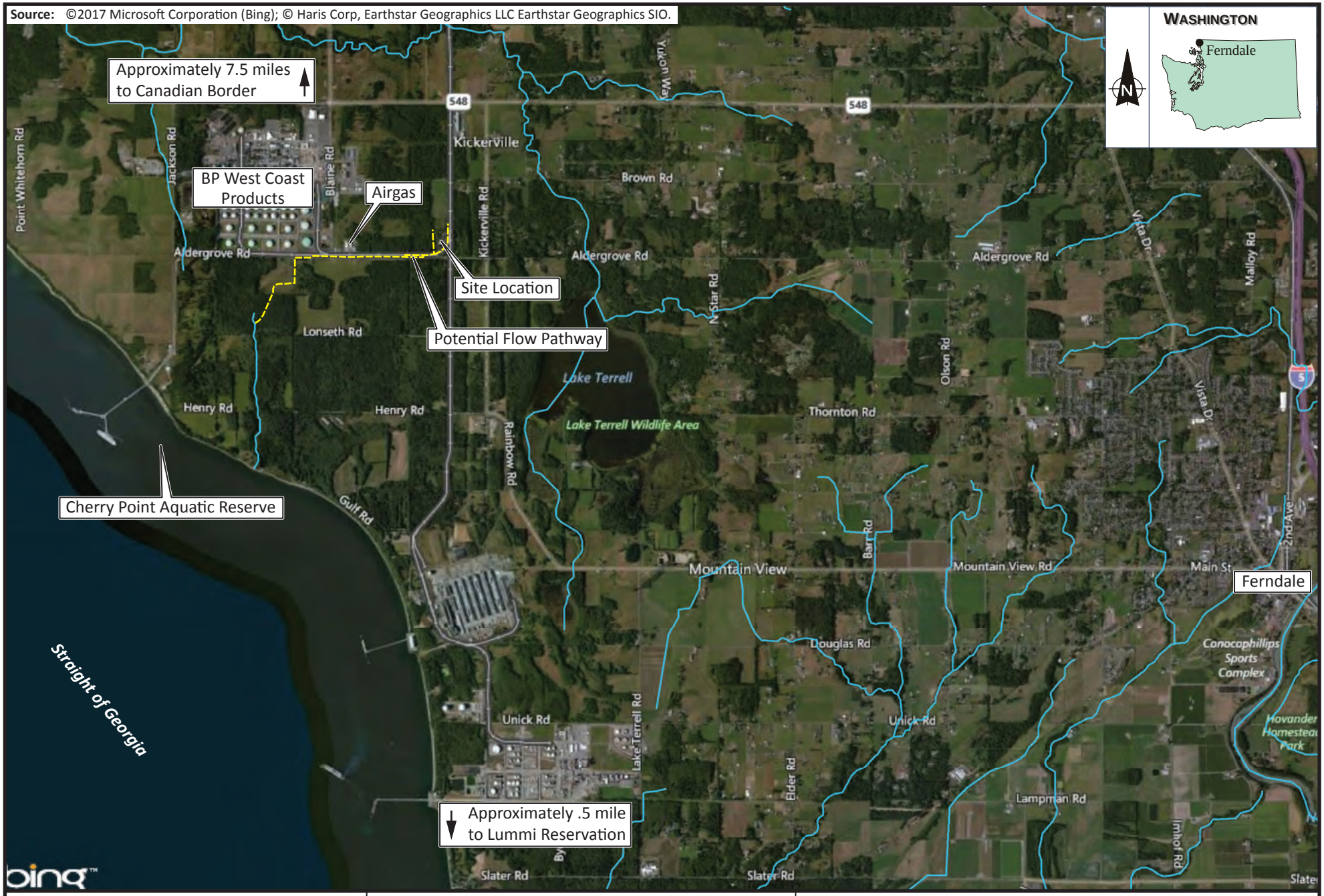

ecology and environment, inc. Global Environmental Specialists Seattle, Washington	TREOIL INDUSTRIES Ferndale, Washington	Figure 1 SITE LOCATION MAP		
	0 1 2 Approximate Scale in Miles	Date: 9/6/17	Drawn by: AES	10:START IV\17010012 & 17030003\fig 1

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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community.

Key:
- Secondary Containment
- Drainage

N

Former Lab Trailers

WETLAND

Secondary Containment C

Distillation Tower

Conex

Warehouse B

Secondary Containment B

Secondary Containment A

Warehouse A

Residential

Residential

Equipment Conex Containers

WETLAND

Aldergrove Road

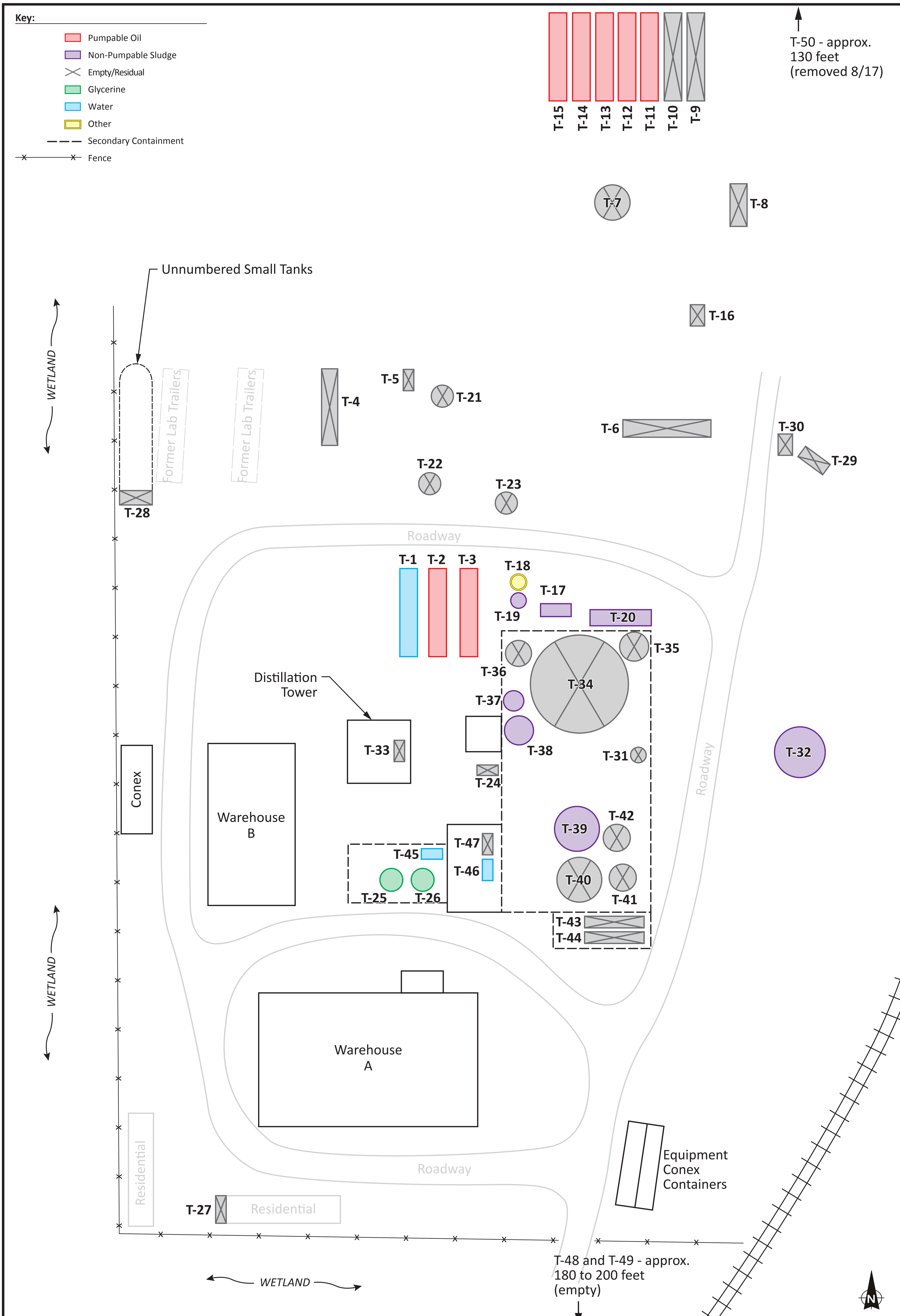
ecology and environment, inc.
Global Environmental Specialists
Seattle, Washington

TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington

0 100 200
Approximate Scale in Feet

Figure 2
SITE LAYOUT

Date:	Drawn by:	
10/26/17	AES	10:START IV\17030003\fig 2


Key:
Pumpable Oil
Non-Pumpable Sludge
Empty/Residual
Glycerine
Water
Other
Secondary Containment
Fence
T-15
T-14
T-13
T-12
T-11
T-10
T-9
T-50 - approx.
130 feet
(removed 8/17)
T-7
T-8
Unnumbered Small Tanks
T-16
WETLAND
Former Lab Trailers
Former Lab Trailers
T-4
T-5
T-21
T-6
T-30
T-29
T-22
T-23
T-28
Roadway
T-1
T-2
T-3
T-18
T-17
T-19
T-20
T-35
T-36
T-34
Distillation
Tower
T-37
T-38
T-33
T-31
T-32
Conex
Warehouse
B
T-24
Roadway
T-42
T-39
T-47
T-45
T-46
T-40
T-25
T-26
T-41
T-43
T-44
WETLAND
Warehouse
A
Roadway
Equipment
Conex
Containers
Residential
T-27
Residential
T-48 and T-49 - approx.
180 to 200 feet
(empty)
WETLAND
N

ecology and environment, inc.
Global Environmental Specialists
Seattle, Washington

TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington

0 50 100
Approximate Scale in Feet

Figure 3
INITIAL TANK DISPOSITION

Date:	Drawn by:	
9/5/17	AES	10:START IV\17030003\fig 3

Key:

- Pumpable Oil
- Non-Pumpable Sludge
- Empty/Residual
- Glycerine
- Water
- Other
- Secondary Containment
- Fence
- Boom

T-15 T-14 T-13 T-12 T-11 T-10 T-9

T-50 - approx. 130 feet (soil)

T-7 T-8

Unnumbered Small Tanks

T-16

WETLAND

Former Lab Trailers

Former Lab Trailers

T-4 T-5 T-21

T-6

T-30 T-29

T-22 T-23

T-28

Roadway

T-1 T-2 T-3 T-18 *(removed)* T-17 T-19 T-20

T-35 T-36 T-34 T-37 T-38 T-31

Distillation Tower

T-33 T-24

T-32

Roadway

Conex

Warehouse B

T-39 T-42 T-47 T-45 T-46 T-40 T-41 T-25 T-26

T-43 T-44

WETLAND

Warehouse A

Residential

Roadway

Equipment Conex Containers

T-27 Residential

T-48 and T-49 - approx. 180 to 200 feet (empty)

WETLAND

N

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Global Environmental Specialists
Seattle, Washington

TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington

0 50 100
Approximate Scale in Feet

Figure 4
POST PHASE I TANK ASSESSMENT

Date:	Drawn by:	
9/5/17	AES	10:START IV\17030003\fig 4

Key:

- Pumpable Oil
- Non-Pumpable Sludge
- Empty/Residual
- Glycerine
- Water
- Other
- Secondary Containment
- Fence
- Boom

T-50
(removed 8/17)

T-15 T-14 T-13 T-12 T-11 T-10 T-9

T-7

T-8

Unnumbered Small Tanks

WETLAND

Former Lab Trailers

Former Lab Trailers

T-16

T-4

T-5

T-21

T-6

T-30

T-29

T-22

T-23

T-28

Roadway

T-1 T-2 T-3

T-18 *(removed 4/3)*

T-17

T-19

T-20

T-35

T-36

T-34

Distillation Tower

T-37

T-38

T-33

T-31

T-24

T-32

Roadway

Conex

Warehouse B

T-39

T-42

T-47

T-45

T-46

T-40

T-41

T-25

T-26

T-43

T-44

WETLAND

Warehouse A

N

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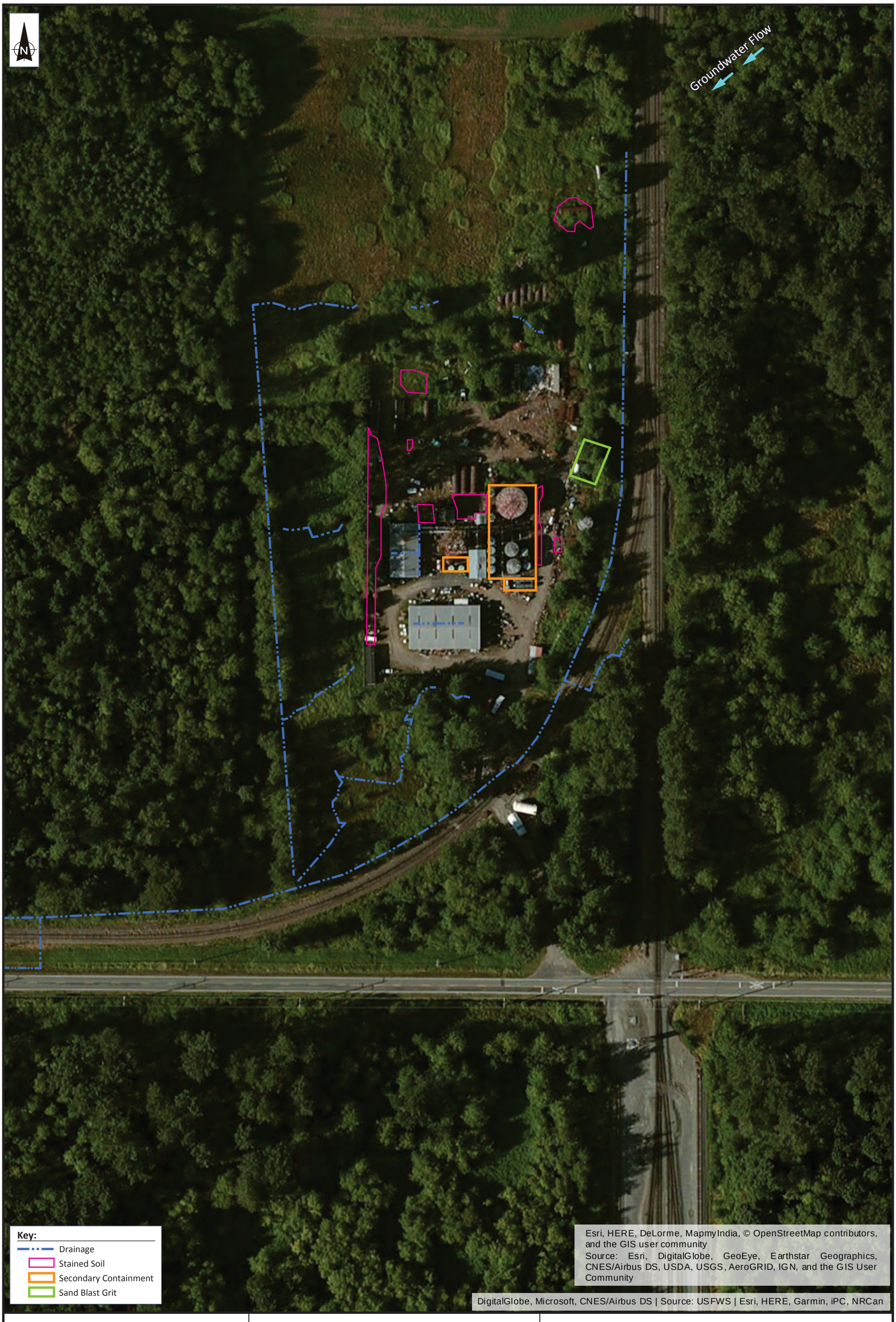
Seattle, Washington

TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington

Figure 5
FINAL TANK DISPOSITION AS OF 08/07/17

0 50 100
Approximate Scale in Feet

Date:	Drawn by:	
9/28/17	AES	10:START IV\17030003\fig 5



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TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington

0 200 400
Approximate Scale in Feet

Figure 6
IMPACTS TO SOIL

Date:	Drawn by:	
9/5/17	AES	10:START IV\17030003\fig 6

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ATTACHMENT A

Photographic Documentation

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Photo 1 Drums with unknown contents on a pallet inside Warehouse A.

Direction: *Down* *Date: 3/13/17* *Time: 13:29* *Taken by: EC*

Photo 2 Trench running west to east in Warehouse A.

Direction: *West* *Date: 3/13/17* *Time: 13:38* *Taken by: EC*

Photo 3 Drums on the north side of the Conex Box.

Direction: *Northwest* *Date: 3/13/17* *Time: 14:20* *Taken by: VB*

Photo 4 START assessing an unknown cylinder in Tank Farm.

Direction: *North* *Date: 3/13/17* *Time: 14:35* *Taken by: EC*

Photo 5 Totes and drums stacked in Warehouse A.

Direction: *North* *Date: 3/13/17* *Time: 14:37* *Taken by: VB*

Photo 6 Initial assessment of unknown and uncontained powders.

Direction: *South* *Date: 3/13/17* *Time: 16:16* *Taken by: EC*

Photo 7 Stained soil.

Direction: Down *Date: 3/13/17* *Time: 13:41* *Taken by: DB*

Photo 8 Ponded water with sheen around Tank T-2.

Direction: Down *Date: 3/13/17* *Time: 13:42* *Taken by: DB*

Photo 9 Sheen on water.

Direction: Down Date: 3/17/17 Time: 09:08 Taken by: DB

Photo 10 Impacted soil around Warehouse B and tanks T-1, T-2, and T-3.

Direction: North Date: 4/4/17 Time: 15:57 Taken by: VB

Photo 11 START Inventories chemicals found on site.

Direction: South Date: 3/14/17 Time: 11:30 Taken by: DB

Photo 12 Pipe insulation in Warehouse B.

Direction: Down Date: 3/17/17 Time: 08:59 Taken by: DB

Photo 13 Containers and drums at front of Conex Box.

Direction: South Date: 3/20/17 Time: 13:46 Taken by: DB

Photo 14 ERRS puts hazardous chemicals into lab packs for disposal.

Direction: *Down* *Date: 3/25/17* *Time: 08:27* *Taken by: EC*

Photo 15 Drums staged in the Conex Box on west side of Warehouse B.

Direction: *South* *Date: 3/29/17* *Time: 12:35* *Taken by: RN*

Photo 16 Final condition of Conex Box.

Direction: *South* *Date: 3/29/17* *Time: 12:35* *Taken by: VB*

Photo 17 Warehouse B segregation room after removal of ACM.

Direction: East *Date: 4/5/17* *Time: 17:05* *Taken by: DB*

Photo 18 Removal of sediments from trench.

Direction: Down *Date: 4/6/17* *Time: 12:22* *Taken by: DB*

Photo 19 Empty trench in Warehouse A.

Direction: Down *Date: 4/6/17* *Time: 15:32* *Taken by: DB*

Photo 20 Staged drums of unknown contents in Warehouse A.

Direction: *Northeast* *Date: 3/14/17* *Time: 12:22* *Taken by: DB*

Photo 21 Stacked totes in Warehouse A.

Direction: *West* *Date: 3/14/17* *Time: 12:22* *Taken by: DB*

Photo 22 Stacked totes in Warehouse A. Note top tote is on its side.

Direction: *Southwest* *Date: 3/14/17* *Time: 14:07* *Taken by: DB*

Photo 23 Hole in tote that leaked in Warehouse A.

Direction: *Down* *Date: 3/14/17* *Time: 17:14* *Taken by: DB*

Photo 24 Water in Secondary Containment B that requires removal prior to pumping crude glycerine from tanks.

Direction: *East* *Date: 3/15/17* *Time: 13:34* *Taken by: DB*

Photo 26 Tote being loaded for off-site transportation.

Direction: *Northwest* *Date: 3/17/17* *Time: 14:02* *Taken by: DB*

Photo 25 START collecting a sample from a drum of unknown contents from Warehouse B.

Direction: *North* *Date: 3/16/17* *Time: 10:37* *Taken by: DB*

Photo 27 Fully loaded truck of Tank Farm totes.

Direction: *Southwest* *Date: 3/17/17* *Time: 14:25* *Taken by: DB*

Photo 28 Location of surface water sample SCC01 collected from Secondary Containment C.

Direction: *Southwest* *Date: 3/20/17* *Time: 09:32* *Taken by: RN*

Photo 29 Location of surface water sample SCB01 collected from Secondary Containment B.

Direction: *Down* *Date: 3/20/17* *Time: 09:36* *Taken by: VB*

Photo 30 Location of sediment sample TR01 collected from Warehouse A.

Direction: *Down* *Date: 3/21/17* *Time: 09:42* *Taken by: DB*

Photo 31 Pumping of water from Secondary Containment B into Secondary Containment C.

Direction: *North* *Date: 3/22/17* *Time: 08:56* *Taken by: DB*

Photo 32 Loading a tote of crude glycerine into a Whole Energy vehicle.

Direction: *East* *Date: 3/23/17* *Time: 09:18* *Taken by: DB*

Photo 33 ERRS cutting tank for removal of drums.

Direction: *South* *Date: 3/27/17* *Time: 10:20* *Taken by: EC*

Photo 34 ERRS removing a section of sidewall from Tank T-18.

Direction: South Date: 3/29/17 Time: 12:35 Taken by: EC

Photo 35 Staged drums from tank T-18 in Warehouse A.

Direction: North Date: 3/29/17 Time: 12:35 Taken by: VB

Photo 36 ERRS removing drums from Tank T-18.

Direction: South Date: 3/29/17 Time: 12:35 Taken by: RN

Photo 37 Sludge solidification activities in Warehouse A.

Direction: East Date: 4/3/17 Time: 09:49 Taken by: VB

Photo 38 Oil is pumped into Vacuum Truck for disposal.

Direction: *North* *Date: 4/3/17* *Time: 10:35* *Taken by: DB*

Photo 39 ERRS monitors oil removed from AST.

Direction: *North* *Date: 4/3/17* *Time: 13:23* *Taken by: DB*

Photo 40 Final solidification of contents in Tank T-18.

Direction: *Down* *Date: 4/4/17* *Time: 07:57* *Taken by: DB*

Photo 41 ERRS removing water from sump on north side of Warehouse B.

Direction: *Down* *Date: 4/4/17* *Time: 14:35* *Taken by: VB*

Photo 42 Sludge solidification activities in Warehouse A.

Direction: North Date: 4/5/17 Time: 13:24 Taken by: VB

Photo 43 Final demolition of Tank T-18.

Direction: Northeast Date: 4/5/17 Time: 17:38 Taken by: DB

Photo 44 Vacuum Truck ready to depart site with removed oil.

Direction: South Date: 4/7/17 Time: 11:22 Taken by: DB

Photo 45 Final disposition of Warehouse A after removal of all OPA and CERCLA related materials.

Direction: Northwest Date: 4/7/17 Time: 14:11 Taken by: DB

Photo 46 Path/road leading to northern tanks when first arrived on site.

Direction: North Date: 7/24/17 Time: 08:10 Taken by: VB

Photo 47 ERRS pumping tall oil from Tank 2.

Direction: North Date: 7/24/17 Time: 12:42 Taken by: VB

Photo 48 Visible oil pool under Tank 50.

Direction: South Date: 7/25/17 Time: 16:15 Taken by: VB

Photo 49 Stock pile of contents of Tank 50.

Direction: *North* *Date: 7/28/17* *Time: 17:56* *Taken by: VB*

Photo 50 Soil underneath Tank 50 after removal of tank.

Direction: *East* *Date: 7/28/17* *Time: 18:32* *Taken by: VB*

Photo 51 Oil pool west of tank.

Direction: East *Date: 7/31/17* *Time: 11:19* *Taken by: VB*

Photo 52 Weeps of oil from excavated soil walls.

Direction: North *Date: 7/31/17* *Time: 13:34* *Taken by: VB*

Photo 53 Oil pockets in soil from prolonged leaking from Tank 50.

Direction: *Northwest*	*Date: 7/31/17*	*Time: 14:12*	*Taken by: VB*

Photo 54 Post excavation of soil by ERRS.

Direction: *West*	*Date: 7/31/17*	*Time: 15:36*	*Taken by: VB*

Photo 55 Sludge box setup with super sucker attached.

Direction: *South*	*Date: 8/1/17*	*Time: 14:17*	*Taken by: VB*

Photo 56 Cutting of Tank 50.

Direction: South *Date: 8/2/17* *Time: 14:46* *Taken by: VB*

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ATTACHMENT B

Chemical Inventory and Field Screening Results

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Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
03/20/2017	CX001	Solid	5	Gal	9	25%	11.25	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX002	Congealed	5	Gal	1	100%	5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX003	Unknown	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX004	Solid	30	lbs	1	75%	22.5	lbs		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CX005	Liquid	5	Gal	1	100%	5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX006	Solid	15	Gal	1	100%	15	Gal		8A – Acidic Corrosive Materials	CX - Conex Box
03/20/2017	CX007	Solid	5	Gal	1	75%	3.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CX008	Unknown	5	Gal	1	100%	5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX009	Solid	5	Gal	1	75%	3.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CX010	Liquid	5	Gal	1	1%	0.05	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX011	Liquid	500	mL	1	100%	500	mL		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX012	Liquid	500	mL	1	100%	500	mL		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CX013	Solid	5	Gal	1	100%	5	Gal		8A – Acidic Corrosive Materials	CX - Conex Box
03/22/2017	CX014	Liquid	5	Gal	1	50%	2.5	Gal	Hydraulic oil	9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/22/2017	CX015	Liquid	5	Gal	1	75%	3.75	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CX016	Congealed	5	Gal	3	25%	3.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD001	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD002	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD003	Liquid	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD004	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD005	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD006	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD007	Solid	55	Gal	1	1%	0.55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD008	Solid	55	Gal	1	25%	13.75	Gal		5.1 – Oxidizers	CX - Conex Box
03/20/2017	CXD009	Liquid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD010	Solid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD011	Liquid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD012	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD013	Liquid	55	Gal	1	100%	55	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD014	Liquid	55	Gal	1	100%	55	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD015	Liquid	55	Gal	1	100%	55	Gal		8B – Basic Corrosive Materials	CX - Conex Box
03/20/2017	CXD016	Solid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD017	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD018	Solid	55	Gal	1	100%	55	Gal		4.1 – Flammable Solids	CX - Conex Box
03/20/2017	CXD019	Solid	55	Gal	1	100%	55	Gal	Blue grease	4.1 – Flammable Solids	CX - Conex Box
03/20/2017	CXD020	solid	55	Gal	1	100%	55	Gal		4.1 – Flammable Solids	CX - Conex Box
03/20/2017	CXD021	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD022	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD023	Liquid	55	Gal	1	100%	55	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/20/2017	CXD024	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD025	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD026	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD027	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD028	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD029	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD030	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD031	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/20/2017	CXD032	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/22/2017	CXD033	Liquid	55	Gal	1	60%	33	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/22/2017	CXD034	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD035	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD036	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD037	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD038	Liquid	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD039	Liquid	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD040	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD041	Sludge	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD042	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	CX - Conex Box
03/22/2017	CXD043	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/22/2017	CXD044	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	CX - Conex Box
03/15/2017	OAD001	Sludge	55	Gal	1	0%	0	Gal	Dust binder	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD002	Liquid	55	Gal	1	0%	0	Gal	Paint thinner	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD003	Sludge	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD004	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD005	Sludge	55	Gal	1	0%	0	Gal	Dust binder	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD006	Liquid	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD007	Sludge	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD008	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD009	Sludge	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD010	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD011	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD012	Sludge	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD013	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD014	Sludge	55	Gal	1	50%	27.5	Gal	Dust binder	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD015	Sludge	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD016	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD017	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD018	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD019	Sludge	55	Gal	1	0%	0	Gal	Dust binder	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD020	Liquid	55	Gal	1	0%	0	Gal	Dust binder	3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD021	Liquid	55	Gal	1	100%	55	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD022	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD023	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD024	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	OA - Outside Warehouse A
03/15/2017	OAD025	Solid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	OA - Outside Warehouse A
03/15/2017	OAD026	Congealed	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	OA - Outside Warehouse A
03/15/2017	OAD027	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD028	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/15/2017	OAD029	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	OA - Outside Warehouse A
03/16/2017	OAD030	Liquid	40	Gal	1	90%	36	Gal		9 – Miscellaneous Hazardous Materials	OA - Outside Warehouse A
03/16/2017	OAD031	Liquid	40	Gal	1	90%	36	Gal		9 – Miscellaneous Hazardous Materials	OA - Outside Warehouse A
04/03/2017	SCC-D1	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
04/03/2017	SCC-D10	Liquid	55	Gal	1		0	Gal		Unknown	SCC - Secondary Containment C
04/03/2017	SCC-D11	Liquid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D12	Liquid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D13	Liquid	55	Gal	1		0	Gal		Unknown	SCC - Secondary Containment C
04/03/2017	SCC-D14	Liquid	55	Gal	1		0	Gal		Unknown	SCC - Secondary Containment C
04/03/2017	SCC-D2	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
04/03/2017	SCC-D3	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
04/03/2017	SCC-D4	Congealed	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D5	Liquid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D6	Liquid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D7	Congealed	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	SCC-D8	Liquid	55	Gal	1		0	Gal		Unknown	SCC - Secondary Containment C
04/03/2017	SCC-D9	Liquid	55	Gal	1		0	Gal		Unknown	SCC - Secondary Containment C
03/29/2017	SCCT01	Liquid	300	Gal	1	90%	270	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
03/29/2017	SCCT02	Liquid	300	Gal	1	90%	270	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
03/29/2017	SCCT03	Solid	300	Gal	1	75%	225	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C

Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
04/03/2017	SCC-T1	Liquid	325	Gal	1	100%	325	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
04/03/2017	SCC-T2	Liquid	275	Gal	1	100%	275	Gal		3 – Flammable and Combustible Liquids	SCC - Secondary Containment C
04/03/2017	SCC-T3	Congealed	275	Gal	1	75%	206.25	Gal		9 – Miscellaneous Hazardous Materials	SCC - Secondary Containment C
04/03/2017	T18-1	Sludge	55	Gal	53	50%	1457.5	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TF001	Liquid	5	Gal	1	90%	4.5	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TF002	Liquid	1	Gal	1	25%	0.25	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TF003	Liquid	1	Gal	1	25%	0.25	Gal	Antifreeze	DOT Not Regulated	TF - Tank Farm
03/15/2017	TF004	Liquid	32	oz.	1	75%	24	oz	Diesel oil supplement	3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TF005	Congealed	5	Gal	1	25%	1.25	Gal	MSN cure & seal	3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TF006	Solid	25	kg	1	100%	25	kg	Potassium hydroxide flakes 90%	8B – Basic Corrosive Materials	TF - Tank Farm
03/15/2017	TFC001	Gas	125	L	1	0%	0	L		2 - Compressed Gases	TF - Tank Farm
03/15/2017	TFC002	Gas			2	0%	0			2 - Compressed Gases	TF - Tank Farm
03/15/2017	TFC003	Gas	5	Gal	5	0%	0	Gal		2 - Compressed Gases	TF - Tank Farm
03/15/2017	TFD001	Liquid	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFD002	Liquid	40	Gal	1	75%	30	Gal		8B – Basic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD003	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFD004	Liquid	55	Gal	1	100%	55	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFD005	Liquid	55	Gal	1	0%	0	Gal		8A – Acidic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD006	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFD007	Liquid	55	Gal	1	90%	49.5	Gal		8B – Basic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD008	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	TF - Tank Farm
03/15/2017	TFD009	Liquid	55	Gal	1	100%	55	Gal		8B – Basic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD010	Liquid	55	Gal	1	50%	27.5	Gal		8B – Basic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD011	Liquid	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFD012	Liquid	55	Gal	1	0%	0	Gal		8A – Acidic Corrosive Materials	TF - Tank Farm
03/15/2017	TFD013	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFT01	Liquid	275	Gal	1	100%	275	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFT02	Liquid	275	Gal	1	100%	275	Gal	UN 1830; sulfuric acid 66	3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFT03	Liquid	330	Gal	1	50%	165	Gal	UN 1824: liquid caustic soda	3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFT04	Sludge	275	Gal	1	50%	137.5	Gal		3 – Flammable and Combustible Liquids	TF - Tank Farm
03/15/2017	TFT05	Liquid	330	Gal	1	50%	165	Gal	UN 1824; liquid caustic soda 50%	3 – Flammable and Combustible Liquids	TF - Tank Farm
03/14/2017	WA001	Solid	1	L	1	50%	0.5	L	Calcium acetate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA002	Solid	1	L	1	90%	0.9	L	Sodium lignosulfate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA003	Liquid	500	L	1	90%	450	L	Mazawet 77 Nomionic surfactant	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA004	Solid	500	L	1	90%	450	L		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA005	Liquid	500	mL	1	75%	375	mL	Calsoft L-40 liquid 40% sodium sulfonate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA006	Liquid	500	mL	1	25%	125	mL	Thymol blue	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA007	Liquid	500	mL	1	99%	495	mL		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA008	Liquid	750	mL	1	50%	375	mL	Hand - plexiglass wax	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA009	Liquid	0.5	L	1	75%	0.375	L	Potassium dichromate sulfuric acid	5.1 – Oxidizers - 6.1 – Poisonous/Toxic Materials	WA - Warehouse A
03/14/2017	WA010	Congealed	500	mL	1	75%	375	mL	Flo-Mo Low Foam	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA011	Solid	1	Gal	1	50%	0.5	Gal	Maleic anhydride	8A – Acidic Corrosive Materials - 6.1 – Poisonous/Toxic Materials	WA - Warehouse A
03/14/2017	WA012	Solid	1	L	1	10%	0.1	L		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA013	Liquid	16	oz.	1	75%	12	oz.		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA014	Solid	1	L	1	90%	0.9	L	Sodium lignosulfate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA015	Sludge	1	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA016	Liquid	1	Gal	1	25%	0.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA017	Sludge	1	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA018	Liquid	1	Gal	1	90%	0.9	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA019	Solid	1	Gal	1	50%	0.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA020	Sludge	50	mL	1	75%	37.5	mL	Hand -calcium 2 ethylhexandate ismmandate	3 – Flammable and Combustible Liquids - 8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WA021	Unknown	1	oz.	1	0%	0	oz.	Iron oxide black dispersion	4.2 – Spontaneously Combustible	WA - Warehouse A
03/14/2017	WA022	Solid	250	g	1	90%	225	g		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA023	Solid	1	L	1	10%	0.1	L	Hand - Zn 8-20 mesh	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA024	Solid	45.4	kg	1	50%	22.7	kg	Sodium hydroxide	8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WA025	Solid	0.5	lbs	1	25%	0.125	Pounds	Trimellitic anhydride	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA026	Solid	2.27	kg	1	75%	1.7025	kg	Ammonium chloride	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA027	Solid	1	oz.	1	0%	0	oz.	Carbon black dispersion	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA028	Solid	1	oz.	1	0%	0	oz.	#252 black pigment dispersion	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA029	Solid	1	L	1	75%	0.75	L		5.1 – Oxidizers	WA - Warehouse A
03/14/2017	WA030	Sludge	1	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA031	Solid	100	lbs	1	0%	0	lbs	Calcium hypochlorite	5.1 – Oxidizers - 8B – Basic Corrosive Materials - 6.1 – Poisonous/Toxic Materials	WA - Warehouse A
03/14/2017	WA032	Solid	16	oz.	1	99%	15.84	oz.	Benzoic acid	8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA033	Solid	16	oz.	1	90%	14.4	oz.		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA034	Solid	16	oz.	1	90%	14.4	oz.	Benzoic acid	8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA035	Solid	500	mL	1	90%	450	mL	Petro dispersant	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA036	Liquid	500	mL	1	60%	300	mL	Armie 181-6A	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA037	Liquid	500	mL	1	50%	250	mL	Calcium hydroxide solution	8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WA038	Liquid	16	oz.	1	25%	4	oz.	Formaldehyde solution	3 – Flammable and Combustible Liquids - 8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA039	Liquid	500	mL	1	99%	495	mL	Nuocure CK90%	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA040	Solid	500	g	2	75%	750	g	Amomonium Thiosulfate (crystal)	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA041	Liquid	18	oz.	1	50%	9	oz.	Formaldehyde solution	3 – Flammable and Combustible Liquids - 8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA042	Liquid	500	mL	1	10%	50	mL	Eriochrome black T Solution	3 – Flammable and Combustible Liquids - 6.1 – Poisonous/Toxic Materials	WA - Warehouse A
03/14/2017	WA043	Liquid	100	mL	1	100%	100	mL	Nuocure CK 10% catalyst	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA044	Solid	500	mL	1	10%	50	mL	Methyl red solution 0.1%	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA045	Liquid	1	lbs	1	50%	0.5	lb	Potassium phosphate dibasic powder	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA046	Sludge	50	mL	2	90%	90	mL	Nuocure zirconium catalyst 12%	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA047	Solid	1	lbs	1	90%	0.9	lb		4.1 – Flammable Solids	WA - Warehouse A
03/14/2017	WA048	Solid	1	lbs	1	25%	0.25	lb	Cupric sulfate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA049	Solid	500	g	1	25%	125	g	1-Dodecanol CH3(CH2)11OH	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA050	Solid	453.6	g	1	75%	340.2	g	Magnesium Sulfate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA051	Solid	24	oz.	1	75%	18	oz.	Paradichlorbenzene	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA052	Solid	250	mL	1	25%	62.5	mL	Hand - Fe _____	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA053	Solid	250	g	1	90%	225	g	Hangar Granules	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA054A	Liquid	100	mL	1	100%	100	mL	Nuocure cobalt 10%	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA055	Liquid	1	Gal	1	75%	0.75	Gal		8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA056	Liquid	1	L	1	75%	0.75	L		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA057	Liquid	1	Gal	1	90%	0.9	Gal	Nu-film-17	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA058	Liquid	10	Gal	1	75%	7.5	Gal	Glycol ether EE acetate	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA059	Liquid	5	Gal	1	10%	0.5	Gal	Xylene	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA060	Liquid	5	Gal	1	10%	0.5	Gal	Thinner ?	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA061	Liquid	10	Gal	1	90%	9	Gal	Hand -trethanolamine 85	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA062	Liquid	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA063	Liquid	5	Gal	1	10%	0.5	Gal	AW32 Hydraulic oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA064	Solid	50	lbs	2	75%	75	lbs	Phthalic anyhdride	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA065	Solid	50	lbs	1	75%	37.5	lbs	Econometrics 50 TC	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA066	Liquid	5	Gal	1	25%	1.25	Gal	Gasoline can	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA067	Gas	5	Gal	1	0%	0	Gal		2 - Compressed Gases	WA - Warehouse A
03/14/2017	WA068	Liquid	5	Gal	1	25%	1.25	Gal	80W-90 Gear oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA069	Solid	5	Gal	1	50%	2.5	Gal	Hy-Tran Ultra	DOT Not Regulated	WA - Warehouse A

Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
03/14/2017	WA070	Liquid	1	Gal	1	25%	0.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA071	Sludge	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA072	Solid	5	Gal	1	50%	2.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA073	Liquid	5	Gal	2	90%	9	Gal	Chevron RPM universal gear lubricant SAE 80w-90	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA074	Liquid	5	Gal	1	90%	4.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA075	Sludge	1	Gal	1	50%	0.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA076	Liquid	2	Gal	1	90%	1.8	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA077	Liquid	5	Gal	1	25%	1.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA078	Liquid	5	Gal	1	90%	4.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA079	Sludge	1	Gal	1	50%	0.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA080	Liquid	1	Gal	2	90%	1.8	Gal		8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA081	Liquid	32	oz.	1	90%	28.8	oz.	NAPA Premium Gear Oil	DOT Not Regulated	WA - Warehouse A
03/14/2017	WA082	Congealed	1	Gal	7	50%	3.5	Gal	Enamel paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA083	Liquid	1	Gal	1	75%	0.75	Gal	Red primer	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA084	Liquid	1	Gal	1	75%	0.75	Gal	Roof repair	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA085	Liquid	1	qt	1	75%	0.75	Qt	Enamel paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA086	Liquid	1	qt	1	75%	0.75	Qt	Paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA087	Solid	1	L	1	90%	0.9	L	Water proof coating	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA088	Liquid	1	qt	1	50%	0.5	Qt		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA089	Liquid	1	Gal	1	99%	0.99	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA090	Sludge	1	Gal	1	100%	1	Gal	Hand - stone containers Missoula C.T.O sample	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA091	Liquid	5	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA092	Liquid	1.25	Gal	1	50%	0.625	Gal	10W-30 motor oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA093	Liquid	1	Gal	1	25%	0.25	Gal	Ospho	8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA094	Solid	1	qt	1	90%	0.9	Qt		8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WA095	Liquid	1	qt	1	50%	0.5	Qt	Gear oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA096	Liquid	5	Gal	1	90%	4.5	Gal	Corn oil 3/6/13	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA097	Liquid	2	Gal	1	50%	1	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA098	Liquid	1	qt	1	50%	0.5	Qt	2-cycle engine oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA099	Solid	25	lbs	1	75%	18.75	lbs		8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WA100	Liquid	1	Gal	1	90%	0.9	Gal		8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA101	Liquid	1	Gal	1	90%	0.9	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA102	Liquid	32	oz.	3	75%	72	oz.	Brake fluid	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA103	Liquid	1	qt	3	50%	1.5	Qt	Motor oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA104	Liquid	1	qt	1	50%	0.5	Qt	Degreaser	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA105	Liquid	1	Gal	4	99%	3.96	Gal	Delo 100	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA106	Solid	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA107	Liquid	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA108	Liquid	5	Gal	1	75%	3.75	Gal	Paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA109	Sludge	5	Gal	1	50%	2.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WA110	Solid	5	Gal	1	50%	2.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WA111	Liquid	5	Gal	1	50%	2.5	Gal		8A – Acidic Corrosive Materials	WA - Warehouse A
03/14/2017	WA112	Gas	5	Gal	2	50%	5	Gal	Propane	2 - Compressed Gases	WA - Warehouse A
03/14/2017	WA113	Solid	50	lbs	1	100%	50	lbs	Vitro grit	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA114	Sludge	1	Gal	1	90%	0.9	Gal	Crude tall oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WA115	Liquid	1	Gal	5	50%	2.5	Gal	Enamel paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA116	Liquid	1	Gal	1	75%	0.75	Gal	Industrial enamel deep tint base	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA117	Liquid	1	Gal	1	75%	0.75	Gal	High heat resin	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA118	Liquid	1	Gal	5	50%	2.5	Gal	Gear oil & thread cutting oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WA119	Solid	1	qt	1	50%	0.5	qt	Lecithin capsules	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA120	Liquid	1	L	1	75%	0.75	L		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA121	Solid	5	lbs	1	60%	3	lbs	Calcium fluoride	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA122	Solid	0.5	Gal	1	0%	0	Gal		4.1 – Flammable Solids	WA - Warehouse A
03/15/2017	WA123	Liquid	0.5	pt	2	50%	0.5	pt	Cements	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA124	Solid	16	oz.	1	25%	4	oz		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA125	Congealed	1	Gal	1	99%	0.99	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WA126	Congealed	1	qt	1	75%	0.75	qt	Enamel paint	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA127	Liquid	8	oz.	1	50%	4	oz		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WA128	Liquid	42	oz.	1	25%	10.5	oz		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA129	Solid	2	lbs	1	60%	1.2	lbs	Potassium carbonate	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA130	Liquid	2	L	1	75%	1.5	L		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WA131	Liquid	500	mL	1	50%	250	mL	HCl standard	8A – Acidic Corrosive Materials	WA - Warehouse A
03/15/2017	WA132	Gas	12	oz.	1	90%	10.8	oz	Fill seal	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA133	Gas	15	oz.	1	50%	7.5	oz	Insulating enamel	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WA134	Solid	14.5	oz.	1	100%	14.5	oz	Plasti Dip	DOT Not Regulated	WA - Warehouse A
03/15/2017	WA135	Solid	2	lbs	1	99%	1.98	lbs	Copper metal	DOT Not Regulated	WA - Warehouse A
03/16/2017	WA136	Solid	50	oz.	1	60%	30	oz	Hand - CaO hydrated lime	8B – Basic Corrosive Materials	WA - Warehouse A
03/16/2017	WA137	Solid	12	oz.	1	99%	11.88	oz	Hand - trisodium phosphate T.S.P.	8B – Basic Corrosive Materials	WA - Warehouse A
03/16/2017	WA138	Solid	1	L	1	75%	0.75	L	Hand - Fluor-spar	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA139	Solid	1	L	1	99%	0.99	L	Hand - potassium carbonate	8B – Basic Corrosive Materials	WA - Warehouse A
03/16/2017	WA140	Solid	4	oz.	1	25%	1	oz	Blue chalk	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA141	Solid	1	oz.	1	90%	0.9	oz	Hand - potassium hydroxide	8B – Basic Corrosive Materials	WA - Warehouse A
03/16/2017	WA142	Solid	2	oz.	1	99%	1.98	oz	Hand CuO cupric oxide black	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA143	Solid	8	oz.	1	50%	4	oz	Hand - Cu powder	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA144	Congealed	1	Gal	1	1%	0.01	Gal	Wood glue	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA145	Liquid	1	Gal	1	25%	0.25	Gal	Hand - Mold release agent	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/16/2017	WA146	Solid	2	Gal	1	50%	1	Gal	Hand - zircon sand	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/16/2017	WA147	Solid	2	Gal	2	90%	3.6	Gal	Silica sand	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/18/2017	WA148	Sludge	1	qt	1	50%	0.5	qt		4.1 – Flammable Solids	WA - Warehouse A
03/18/2017	WA149	Liquid	13	oz.	1	50%	6.5	oz	Hammer tone enamel	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/18/2017	WA150	Liquid	1	Gal	1	90%	0.9	Gal	Cresylic acid	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/18/2017	WA151	Liquid	1	Gal	1	75%	0.75	Gal	Hand - mold release reagent	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/18/2017	WA152	Liquid	16	oz.	1	50%	8	oz	Aluminum cutting fluid	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/18/2017	WA153	Solid	5	lbs	1	99%	4.95	lbs	Copper sulfate	6.1 – Poisonous/Toxic Materials	WA - Warehouse A
03/18/2017	WA154	Solid	64	oz.	1	99%	63.36	oz	Hand - copper sulfate	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/18/2017	WA155	Solid	5	Gal	3	90%	13.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/18/2017	WA156	Solid	5	Gal	1	75%	3.75	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/20/2017	WA157	solid	5	Gal	1	90%	4.5	Gal		5.2 – Organic Peroxides	WA - Warehouse A
03/20/2017	WA158	Liquid	5	Gal	1	99%	4.95	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/20/2017	WA159	Liquid	5	Gal	1	25%	1.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/20/2017	WA160	Liquid	5	Gal	1	25%	1.25	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/20/2017	WA161	Solid	5	Gal	1	75%	3.75	Gal		4.1 – Flammable Solids	WA - Warehouse A
03/20/2017	WA162	Liquid	5	Gal	1	25%	1.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD01	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD02	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD03	Liquid	55	Gal	1	90%	49.5	Gal	4-stroke outboard oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD04	Liquid	55	Gal	1	25%	13.75	Gal		8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WAD05	Solid	55	Gal	3	99%	163.35	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD06	Liquid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD07	Congealed	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD08	Liquid	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD09	Solid	55	Gal	1	50%	27.5	Gal		4.1 – Flammable Solids	WA - Warehouse A
03/14/2017	WAD10	Liquid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD11	Solid	45	Gal	1	50%	22.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD12	Liquid	55	Gal	1	50%	27.5	Gal	4-Stroke outboard oil	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD13	Liquid	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A

Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
03/14/2017	WAD14	Sludge	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD15	Sludge	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD16	Solid	55	Gal	1	25%	13.75	Gal		4.1 – Flammable Solids	WA - Warehouse A
03/14/2017	WAD17	Liquid	55	Gal	1	25%	13.75	Gal	Super D-3 SAE 15W-40	8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WAD18	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD19	Liquid	55	Gal	1	75%	41.25	Gal		8B – Basic Corrosive Materials	WA - Warehouse A
03/14/2017	WAD20	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD21	Solid	55	Gal	1	100%	55	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD22	Solid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD23	Liquid	55	Gal	1	50%	27.5	Gal	NA	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD24	Sludge	55	Gal	1	25%	13.75	Gal	NA	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD25	Liquid	55	Gal	1	90%	49.5	Gal	NA	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD26	Solid	55	Gal	1	100%	55	Gal	NA	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD27	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD28	Sludge	55	Gal	1	99%	54.45	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD29	Sludge	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAD30	Sludge	55	Gal	1	25%	13.75	Gal	NA	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD31	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAD32	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAD33	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WAD34	Liquid	55	Gal	1	50%	27.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAD35	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WAD36	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/15/2017	WAD37	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/16/2017	WAD38	Liquid	2	Gal	1	60%	1.2	Gal	Toluene	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/16/2017	WAD39	Liquid	5	Gal	1	25%	1.25	Gal	Ether	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/17/2017	WAD40	Liquid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/17/2017	WAD41	Sludge	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/17/2017	WAD42	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/17/2017	WAD43	Liquid	55	Gal	1	75%	41.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT01	Liquid	275	Gal	1	90%	247.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAT02	Liquid	275	Gal	1	10%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAT03	Liquid	275	Gal	1	99%	272.25	Gal	UN1789 Cisco 20b	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAT04	Liquid	275	Gal	1	50%	137.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT05	Liquid	330	Gal	1	50%	165	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT06	Liquid	330	Gal	1	99%	326.7	Gal	UN 1789; Cisco 20-B	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT07	Liquid	330	Gal	1	90%	297	Gal	S-500 CF	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAT08	Liquid	330	Gal	1	75%	247.5	Gal	UN1824; Liquid caustic soda 50%	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT09	Liquid	330	Gal	1	75%	247.5	Gal	S-500 CF	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT10	Liquid	275	Gal	1	99%	272.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT11	Sludge	275	Gal	1	99%	272.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT12	Liquid	275	Gal	1	99%	272.25	Gal	UN 1830; sulfuric acid 66	9 – Miscellaneous Hazardous Materials	WA - Warehouse A
03/14/2017	WAT13	Liquid	275	Gal	1	25%	68.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT14	Liquid	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT15	Sludge	275	Gal	1	99%	272.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT16	Sludge	275	Gal	1	99%	272.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT17	Liquid	275	Gal	1	25%	68.75	Gal	S-500 CF	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WAT18	Liquid	275	Gal	1	25%	68.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT19	Sludge	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT20	Liquid	275	Gal	1	50%	137.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT21	Liquid	275	Gal	1	25%	68.75	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT22	Liquid	275	Gal	1	75%	206.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT23	Liquid	275	Gal	1	50%	137.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT24	Sludge	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT25	Sludge	275	Gal	1	75%	206.25	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT26	Liquid	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT27	Liquid	275	Gal	1	50%	137.5	Gal	UN1830: sulfuric acid 66	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT28	Liquid	275	Gal	1	50%	137.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT29	Liquid	275	Gal	1	25%	68.75	Gal	UN 1830: sulfuric acid 66	3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT30	Sludge	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/15/2017	WAT31	Sludge	275	Gal	1	90%	247.5	Gal		3 – Flammable and Combustible Liquids	WA - Warehouse A
03/14/2017	WB001	Solid	1	lbs	5	100%	5	lb	Anhydrous Calcium Sulfate	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/14/2017	WB002	Liquid	1	L	1	25%	0.25	L	Jim Beam Kentucky Straight bourbon whiskey	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB003	Liquid	1	Gal	1	75%	0.75	Gal		8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB004	Liquid	1	Gal	1	90%	0.9	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB005	Solid	1	Gal	2	50%	1	Gal	Hand - ALC DRYER	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB006	Liquid	1	Gal	1	75%	0.75	Gal	Hand - hot bath oil	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB007	solid	1	Gal	1	50%	0.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB008	Liquid	1	Gal	1	10%	0.1	Gal	Hand - 50% isopropyl 50% toluol	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB009	Solid	5	lbs	1	25%	1.25	Pounds	Unclear label	8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB010	Liquid	1	Gal	1	90%	0.9	Gal	Concrete clean & lighten	8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB011	Liquid	1	Gal	1	10%	0.1	Gal	Acetone	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB012	Liquid	1	Gal	1	50%	0.5	Gal	Acetone - scratched out methanol written	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB013	Liquid	0.5	Gal	1	50%	0.25	Gal	Dow Corning 710 fluid	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB014	Solid	0.25	lbs	1	10%	0.025	Pounds	Silver sulfate	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB015	Solid	0.25	lbs	1	50%	0.125	Pounds	Strontium chloride	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB016	Liquid	0.5	Gal	1	75%	0.375	Gal	Hand - DI	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB017	Liquid	1	L	1	90%	0.9	L	Hand - starch indicator	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB018	Solid	1	oz.	1	100%	1	oz.	Active hopcalite	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB019	Liquid	16	oz.	1	75%	12	oz.	Hand - citric acid	8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB020	Solid	16	oz.	1	10%	1.6	oz.		8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB021	Solid	1	L	1	25%	0.25	L	Zinc metal	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB022	Liquid	1	L	1	25%	0.25	L	Potassium hydroxide	8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB023	Liquid	16	oz.	1	99%	15.84	oz.	Dow 200 fluid	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB024	Solid	16	oz.	1	1%	0.16	oz.		8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB025	Liquid	12	oz.	1	99%	11.88	oz.	Hand - solvent	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB026	Liquid	1	L	1	50%	0.5	L		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB027	Liquid	5	oz.	1	50%	2.5	oz.		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB028	Solid	16	oz.	1	99%	15.84	oz.		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB029	Liquid	8	oz.	1	99%	7.92	oz.		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB030	Solid	0.5	qt	1	99%	0.495	Qt		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB031	Liquid	1	pt	1	90%	0.9	Pint	Hardness buffer	8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB032	Solid	2.5	kg	1	75%	1.875	kg	Potassium hydroxide	8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB033	Solid	2.5	kg	1	50%	1.25	kg	Sodium sulfate anhydrous	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB034	Solid	16	oz.	1	99%	15.84	oz.	Dextrose powder	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB035	Solid	5	lbs	1	50%	2.5	Pounds	Lead dioxide	5.1 – Oxidizers	WB - Warehouse B
03/15/2017	WB036	Liquid	5	oz.	1	60%	3	oz.	Hand _ conducting standard	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB037	Liquid	16	oz.	1	99%	15.84	oz.		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB038	Liquid	1	pt	1	99%	0.99	Pint		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB039	Liquid	1	qt	1	100%	1	Qt		8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB040	Liquid	2	oz.	1	50%	1	oz.	Phenolphthalein indicator	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB041	Solid	1	Gal	1	60%	0.6	Gal	#51 yellow	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB042	Solid	1	Gal	1	60%	0.6	Gal	#680 yellow	DOT Not Regulated	WB - Warehouse B
03/15/2017	WB043	Liquid	5	oz.	1	90%	4.5	oz.		8B – Basic Corrosive Materials	WB - Warehouse B
03/15/2017	WB044	Liquid	2	oz.	1	90%	1.8	oz.		8A – Acidic Corrosive Materials	WB - Warehouse B
03/15/2017	WB045	Solid	1	Gal	1	100%	1	Gal	Hand ball bearings	9 – Miscellaneous Hazardous Materials	WB - Warehouse B

Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
03/15/2017	WB046	Liquid	1	Gal	1	100%	1	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/15/2017	WB047	Liquid	1	Gal	1	100%	1	Gal	Paint	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/15/2017	WB048	Liquid	1	Gal	1	100%	1	Gal		DOT Not Regulated	WB - Warehouse B
03/16/2017	WB049	Liquid	5	Gal	1	50%	2.5	Gal	Versacote	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB050	Solid	50	lbs	15	100%	750	lbs	Solar salt	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB051	Unknown	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB052	Solid	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB053	Unknown	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB054	Unknown	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB055	Unknown	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB056	Unknown	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB057	Solid	5	Gal	1	100%	5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB058	Liquid	1	Gal	1	50%	0.5	Gal	Paint	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB059	Liquid	1	Gal	1	50%	0.5	Gal	Paint	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB060	Liquid	1	Gal	1	10%	0.1	Gal		DOT Not Regulated	WB - Warehouse B
03/16/2017	WB061	Solid	1	qt	1	60%	0.6	qt	Hand - Lime CaO	8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WB062	Liquid	1	qt	1	50%	0.5	qt	Isobutane	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB063	Liquid	1	qt	1	60%	0.6	qt	Hand flexricin P-6	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB064	Solid	1	Gal	1	50%	0.5	Gal	Litharge	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/16/2017	WB065	Solid	1	Gal	1	60%	0.6	Gal	Crystalamber & Monterey sands	DOT Not Regulated	WB - Warehouse B
03/16/2017	WB066	Solid	0.5	qt	1	50%	0.25	qt		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB067	Solid	10	lbs	1	90%	9	lbs		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB068	Liquid	5	Gal	1	90%	4.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB069	solid	5	Gal	1	90%	4.5	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WB070	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB071	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB072	Liquid	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB073	Liquid	5	Gal	1	60%	3	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB074	Liquid	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB075	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB076	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB077	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB078	Solid	5	Gal	1	60%	3	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB079	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB080	Sludge	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB081	Liquid	5	Gal	1	60%	3	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB082	Liquid	10	Gal	1	25%	2.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WB083	Liquid	5	Gal	1	60%	3	Gal	Confidence 10C	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WB084	Solid	25	kg	1	25%	6.25	kg		8B – Basic Corrosive Materials	WB - Warehouse B
03/23/2017	WB086	Solid	30	Gal	1	100%	30	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/24/2017	WB087	Solid	94	lbs	10	100%	940	lbs	Low iron Calcium-Aluminate Cement	8B – Basic Corrosive Materials	WB - Warehouse B
03/24/2017	WB088	Solid	25	kg	12	100%	300	kg	Borax 5 MOL	8B – Basic Corrosive Materials	WB - Warehouse B
03/24/2017	WB089	Solid	36	kg	1	99%	35.64	kg	Silica sand	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WB090	Solid	22	kg	1	100%	22	kg	Trisodium phosphate dodecahydrate	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/25/2017	WB091	Liquid	5	Gal	1	90%	4.5	Gal	Emery 912 Glycerine 96%CP/USP lot OG13G	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB092	Liquid	5	Gal	1	90%	4.5	Gal	GCO-10-LM lacteriostat and algacide	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/27/2017	WB093	Liquid	5	Gal	1	60%	3	Gal	Microbiocide CT	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/27/2017	WB094	Solid	5	Gal	1	75%	3.75	Gal	DR-112B highly alkaline compound	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/27/2017	WB095	Solid	5	Gal	1	90%	4.5	Gal		8A – Acidic Corrosive Materials	WB - Warehouse B
03/27/2017	WB096	Liquid	5	Gal	1	90%	4.5	Gal	____ BIOCIDE AW-15	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/27/2017	WB097	Liquid	5	Gal	1	90%	4.5	Gal	SKASOL 450	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB098	Liquid	5	Gal	1	90%	4.5	Gal	SKASOL 450	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB099	Liquid	5	Gal	1	90%	4.5	Gal	SKASOL 450	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB100	Sludge	2	Gal	1	25%	0.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB101	Liquid	5	Gal	1	50%	2.5	Gal	CHEMAX-480	6.1 – Poisonous/Toxic Materials	WB - Warehouse B
03/27/2017	WB102	Liquid	5	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB103	Liquid	5	Gal	1	75%	3.75	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB104	Unknown	5	Gal	1	25%	1.25	Gal	Premium vinyl composition tile adhesive 2057	DOT Not Regulated	WB - Warehouse B
03/27/2017	WB105	Liquid	5	Gal	1	75%	3.75	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB106	Liquid	5	Gal	1	99%	4.95	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB107	Liquid	5	Gal	1	90%	4.5	Gal	ChemMax Product 490 water treatment microbicide	8A – Acidic Corrosive Materials	WB - Warehouse B
03/27/2017	WB108	Liquid	5	Gal	1	90%	4.5	Gal	Eldorado chemical FD-103	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB109	Solid	50	lbs	1	99%	49.5	lbs	Ammonium nitrate fertilizer NA2072	5.1 – Oxidizers	WB - Warehouse B
03/27/2017	WB110	Solid	25	Gal	1	50%	12.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB111	Unknown	5	Gal	1	60%	3	Gal	Mascocure cure and seal	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB112	Liquid	5	Gal	1	90%	4.5	Gal	Styro-cote interior eggshell latex enamel	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB113	Liquid	44	lbs	1	90%	39.6	lbs	Territory NP-9	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB114	Solid	5	Gal	1	0%	0	Gal	Activated carbon	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB115	Liquid	2	Gal	1	90%	1.8	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB116	Liquid	5	Gal	1	90%	4.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB117	Solid	1	Gal	1	50%	0.5	Gal	Hand - 10 mole borax	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB118	Liquid	5	Gal	1	90%	4.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/27/2017	WB119	Liquid	5	Gal	1	25%	1.25	Gal	Chevron Rando HD ISO 46	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/27/2017	WB120	Liquid	5	Gal	1	25%	1.25	Gal	Latex satin	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
04/05/2017	WB121	Solid	50	lbs	1	50%	25	lbs	Potassium nitrate	5.1 – Oxidizers	WB - Warehouse B
03/16/2017	WBD001	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD002	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD003	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD004	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD005	Liquid	55	Gal	1	25%	13.75	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD006	Solid	55	Gal	1	60%	33	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD007	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD008	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD009	Solid	55	Gal	1	99%	54.45	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/14/2017	WBD01	Liquid	55	Gal	1	25%	13.75	Gal	ORTH-LAM RESIN	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD010	Liquid	55	Gal	1	50%	27.5	Gal	Syntrel 350	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD011	Liquid	55	Gal	1	90%	49.5	Gal		6.1 – Poisonous/Toxic Materials - 8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD012	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD013	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD014	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD015	Liquid	55	Gal	1	90%	49.5	Gal	Monoethanolamine	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD016	Liquid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD017	Liquid	55	Gal	1	90%	49.5	Gal	Ammonium sulfate	8A – Acidic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD018	Liquid	55	Gal	1	90%	49.5	Gal	Monoethanolamine	3 – Flammable and Combustible Liquids	WB - Warehouse B

Container Inventory

Date	Container ID	State	Container Size	Container Size Unit	Quantity	Percent Full	Estimated Amount	Container Size Unit	Original Label	Hazard Category	Location
03/16/2017	WBD019	Liquid	55	Gal	1	90%	49.5	Gal	Ammonium sulfate	8A – Acidic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD020	Liquid	55	Gal	1	90%	49.5	Gal	Aqua ammonia 28%	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD021	Liquid	55	Gal	1	90%	49.5	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD022	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD023	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD024	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD025	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD026	Liquid	55	Gal	1	90%	49.5	Gal	Ammonium hydroxide	8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD027	Solid	5	Gal	1	90%	4.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD028	Solid	5	Gal	1	90%	4.5	Gal	Byco versa-more 3 wb	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD029	Solid	20	Gal	1	90%	18	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD030	Liquid	20	Gal	1	90%	18	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD031	Liquid	20	Gal	1	90%	18	Gal	Plain light made in UK	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD032	Liquid	40	Gal	1	90%	36	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD033	Liquid	5	Gal	1	90%	4.5	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD034	Solid	55	Gal	1	90%	49.5	Gal	Orth-lam resin	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD035	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD036	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD037	Solid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD038	Liquid	55	Gal	1	75%	41.25	Gal		5.2 – Organic Peroxides	WB - Warehouse B
03/16/2017	WBD039	Liquid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD040	Solid	55	Gal	1	75%	41.25	Gal		8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD041	Liquid	5	Gal	1	90%	4.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD042	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD043	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD044	Liquid	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD045	Sludge	55	Gal	1	90%	49.5	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/16/2017	WBD046	Solid	40	Gal	1	90%	36	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD047	Solid	40	Gal	1	90%	36	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD048	Solid	20	Gal	1	90%	18	Gal	Formula 800	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD049	Solid	20	Gal	1	90%	18	Gal	Formula 700	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBD050	Liquid	55	Gal	1	90%	49.5	Gal	Formula 250-H	8B – Basic Corrosive Materials	WB - Warehouse B
03/16/2017	WBD051	Liquid	55	Gal	1	90%	49.5	Gal	Formula 250-H	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/18/2017	WBD052	Solid	55	Gal	1	90%	49.5	Gal	Rocks	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/18/2017	WBD053	Liquid	55	Gal	1	25%	13.75	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/18/2017	WBD054	Solid	20	Gal	1	75%	15	Gal	Calcium hypochlorite 65%	9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD055	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD056	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD057	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD058	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD059	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD060	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD061	Solid	55	Gal	1	50%	27.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD062	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD063	Liquid	55	Gal	1	0%	0	Gal		3 – Flammable and Combustible Liquids	WB - Warehouse B
03/24/2017	WBD064	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD065	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD066	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD067	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/24/2017	WBD068	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/25/2017	WBD069	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/25/2017	WBD070	Solid	55	Gal	1	90%	49.5	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/25/2017	WBD071	Solid	55	Gal	1	75%	41.25	Gal		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
03/16/2017	WBT001	Liquid	275	Gal	1	90%	247.5	Gal	Ecolab oxy-gard "M"	3 – Flammable and Combustible Liquids	WB - Warehouse B
03/18/2017	WBXXX	Solid	50	lbs	30	90%	1350	lbs		9 – Miscellaneous Hazardous Materials	WB - Warehouse B
Total					**737**						

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/22/17	14:22	VB	CX006	Solid		8A – Acidic Corrosive Materials	Granules	White	N/A	N/A	N/A	Soluble	1	No	N/A	Nonflammable		CERCLA
03/22/17	14:26	VB	CX007	Solid		9 – Miscellaneous Hazardous Materials	Crystals	Orange	N/A	N/A	N/A	Insoluble solids	7	No	N/A	>200°F	Combustible but not flammable.	CERCLA
03/22/17	9:26	VB	CX014	Liquid	Hydraulic oil	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	7	No	N/A	Nonflammable	Most likely water.	OPA
03/22/17	9:27	VB	CX015	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Like used motor oil.	OPA
03/21/17	10:39	VB	CXD001	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Miscible	N/A	No	N/A	100 - 140°F	Glue ish resin mix.	CERCLA
03/21/17	10:45	VB	CXD002	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Miscible	N/A	No	N/A	100 - 140°F	Glue-ish resin mix	CERCLA
03/21/17	13:48	VB	CXD003	Liquid		3 – Flammable and Combustible Liquids	N/A	Grey	Waterlike	Opaque	Yes	Miscible	7	No	N/A	100 - 140°F		OPA
03/21/17	13:51	VB	CXD004	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Clear	Yes	Insoluble and floats	5	No	N/A	100 - 140°F		OPA
03/21/17	13:55	VB	CXD005	Solid		9 – Miscellaneous Hazardous Materials	Sludge	Brown	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	140 - 200°F	Thick solid resin.	OPA
03/21/17	14:06	VB	CXD006	Solid		9 – Miscellaneous Hazardous Materials	Chunks	Brown	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable		CERCLA
03/21/17	14:11	VB	CXD007	Solid		9 – Miscellaneous Hazardous Materials	Chunks	Yellow	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Insulation	CERCLA
03/21/17	14:11	VB	CXD008	Solid		5.1 – Oxidizers	Chunks	White	N/A	N/A	N/A	Soluble	7	Weak Oxidizer	No	Nonflammable		CERCLA
03/21/17	14:17	VB	CXD009	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Waterlike	Translucent	Yes	Miscible	7	No	N/A	Nonflammable	Most likely rusty water	CERCLA
03/21/17	14:20	VB	CXD010	Solid		9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Insoluble solids	6	No	N/A	>200°F		CERCLA
03/21/17	14:26	VB	CXD011	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Black	Waterlike	Opaque	Yes	Miscible	7	No	N/A	Nonflammable	Likely rusty water	CERCLA
03/21/17	14:29	VB	CXD012	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Miscible	N/A	No	N/A	100 - 140°F	Glu-ish resin	CERCLA
03/21/17	14:29	VB	CXD013	Liquid		3 – Flammable and Combustible Liquids	N/A	Orange	Medium Oil	Clear	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/21/17	14:33	VB	CXD014	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Insoluble and floats	3	No	N/A	100 - 140°F	Product and water mixed/layered.	OPA
03/21/17	14:36	VB	CXD015	Liquid		8B – Basic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	14	No	N/A	Nonflammable		CERCLA
03/21/17	14:41	VB	CXD016	Solid		9 – Miscellaneous Hazardous Materials	Chunks	Blue	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	>200°F		CERCLA
03/21/17	14:46	VB	CXD017	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Yellow	Light Oil	Opaque	Yes	Soluble	11	No	N/A	>200°F		OPA
03/21/17	14:52	VB	CXD018	Solid		4.1 – Flammable Solids	Crystals	Clear	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	<100°F	Flammable.	CERCLA
03/21/17	14:59	VB	CXD019	Solid	Blue grease	4.1 – Flammable Solids	Crystals	Blue	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	<100°F	VOC reading on MRPro was 500ppm.	CERCLA
03/21/17	15:00	VB	CXD020	Solid		4.1 – Flammable Solids	Crystals	Blue	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	<100°F		CERCLA
03/21/17	15:01	VB	CXD023	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/22/17	9:28	VB	CXD037	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/22/17	12:35	VB	CXD040	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Thick oil.	OPA
03/22/17	12:41	VB	CXD041	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	Yes	Insoluble and floats	N/A	No	N/A	100 - 140°F	Thick dirt like sludge.	OPA
03/22/17	12:51	VB	CXD042	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Sparks when lit. Like oil.	OPA
03/22/17	12:56	VB	CXD044	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	4	No	N/A	Nonflammable	Most likely water.	OPA
03/22/17	13:00	VB	CXD044	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Resin floating in water.	OPA
03/16/17	11:47	VB	OAD001	Sludge	Dust binder	3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	12:11	VB	OAD002	Liquid	Paint thinner	3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F	Like motor oil.	OPA
03/16/17	12:07	VB	OAD003	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	12:16	VB	OAD004	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F	Like motor oil.	OPA
03/16/17	11:27	VB	OAD005	Sludge	Dust binder	3 – Flammable and Combustible Liquids	N/A	Yellow	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick sticky.	OPA
03/16/17	12:04	VB	OAD006	Liquid		3 – Flammable and Combustible Liquids	N/A	Yellow	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Light oil.	OPA
03/16/17	12:01	VB	OAD007	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	12:20	VB	OAD008	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/16/17	11:13	VB	OAD009	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/16/17	11:15	VB	OAD010	Liquid		3 – Flammable and Combustible Liquids	N/A	Green	Light Oil	Clear	Yes	Miscible	7	No	N/A	100 - 140°F	White residue and char, vapors ignite easily.	CERCLA
03/16/17	10:28	VB	OAD011	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and sinks	N/A	No	N/A	100 - 140°F	Tall oil?	OPA
03/16/17	10:22	VB	OAD012	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	10:17	VB	OAD013	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	Yes	Miscible	6	No	N/A	<100°F	Highly flammable! Clear flame, -OH.	CERCLA
03/16/17	10:09	VB	OAD014	Sludge	Dust binder	3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	140 - 200°F		OPA
03/16/17	11:02	VB	OAD015	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	11:00	VB	OAD016	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Like motor oil.	OPA
03/16/17	10:40	VB	OAD017	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Like motor oil.	OPA
03/16/17	10:34	VB	OAD018	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Miscible	N/A	No	N/A	>200°F	Like used motor oil, mix.	OPA
03/16/17	11:58	VB	OAD019	Sludge	Dust binder	3 – Flammable and Combustible Liquids	N/A	Yellow	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	13:12	VB	OAD020	Liquid	Dust binder	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/16/17	13:08	VB	OAD021	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/16/17	12:40	VB	OAD022	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Clear	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/16/17	12:37	VB	OAD023	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Motor oil.	OPA
03/16/17	12:31	VB	OAD024	Solid		9 – Miscellaneous Hazardous Materials	Granules	Black	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Mixed dirt.	CERCLA
03/16/17	11:52	VB	OAD027	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	Yes	Insoluble and floats	N/A	No	N/A	140 - 200°F	Dark oil.	OPA
03/16/17	11:55	VB	OAD028	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Like motor oil.	OPA
03/16/17	12:23	VB	OAD029	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Opaque	Yes	Insoluble and floats	7	No	N/A	140 - 200°F	Brown oil on water.	OPA
03/16/17	11:05	VB	OAD031	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	6	No	N/A	Nonflammable	Water.	CERCLA
03/16/17	11:10	VB	OAD031	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	7	No	N/A	Nonflammable	Water	CERCLA
03/18/17	10:30	EC	T1	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Waterlike	Translucent	Yes	Soluble	5	No	N/A	Nonflammable	Likely rusty water.	OPA
03/18/17	10:35	EC	T12	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Likely tall oil.	OPA
03/21/17	9:28	VB	T-20	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Likely raw product.	OPA
03/18/17	10:40	EC	T3	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Likely tall oil.	OPA
03/15/17	16:01	VB	TF002	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Motor oil likely	OPA
03/17/17	14:08	EC	TFD001	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/17/17	14:02	EC	TFD002	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Waterlike	Translucent	Yes	Miscible	14	No	N/A	Nonflammable		CERCLA
03/17/17	14:16	EC	TFD003	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	Yes	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil	OPA
03/17/17	14:18	EC	TFD004	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	Yes	Insoluble and floats	5	No	N/A	100 - 140°F	Oil	OPA
03/17/17	13:59	EC	TFD005	Liquid		8A – Acidic Corrosive Materials	N/A	Brown	Waterlike	Translucent	No	Miscible	1	No	N/A	Nonflammable	Dissolved pH paper.	CERCLA
03/17/17	14:13	EC	TFD006	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		CERCLA
03/17/17	13:51	EC	TFD007	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Waterlike	Translucent	No	Soluble	14	No	N/A	Nonflammable		CERCLA
03/17/17	13:43	EC	TFD009	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Waterlike	Translucent	No	Soluble	14	No	N/A	Nonflammable		OPA
03/17/17	13:48	EC	TFD010	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Waterlike	Opaque	No	Soluble	13	No	N/A	Nonflammable		CERCLA
03/17/17	14:11	EC	TFD011	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Wax like .	OPA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/17/17	13:53	EC	TFD012	Liquid		8A – Acidic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	1	No	N/A	Nonflammable		OPA
03/17/17	13:40	EC	TFD013	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	<100°F	Alcohol likely.	CERCLA
03/15/17	9:35	VB	TFT01	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	Yes	Miscible	3	No	N/A	100 - 140°F		OPA
03/15/17	9:46	VB	TFT02	Liquid	UN 1830;sulfuric acid 66	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	Yes	Miscible	3	No	N/A	100 - 140°F		OPA
03/15/17	9:53	VB	TFT03	Liquid	UN 1824: liquid caustic soda	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	Yes	Miscible	3	No	N/A	100 - 140°F		OPA
03/15/17	11:25	VB	TFT04	Sludge		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Sludge	Opaque	Yes	Insoluble and floats	5	No	N/A	100 - 140°F	Oil in water	OPA
03/15/17	11:31	VB	TFT05	Liquid	UN 1824; liquid caustic soda 50%	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	Yes	Soluble	3	No	N/A	140 - 200°F	Likely glycerin	OPA
03/15/17	11:46	VB	WA004	Solid		9 – Miscellaneous Hazardous Materials	Granules	Yellow	N/A	N/A	N/A	Soluble	3	No	N/A	Nonflammable	Calcium like residue when burned	CERCLA
03/15/17	12:06	VB	WA007	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	No	Insoluble and floats	7	No	N/A	<100°F	Lightly oil	OPA
03/15/17	12:10	VB	WA008	Liquid	Hand - plexiglass wax	3 – Flammable and Combustible Liquids	N/A	White	Waterlike	Opaque	Yes	Soluble	11	No	N/A	100 - 140°F	Likely glue	CERCLA
03/15/17	13:12	VB	WA012	Solid		9 – Miscellaneous Hazardous Materials	Granules	Clear	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable		CERCLA
03/15/17	12:59	VB	WA013	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Blue	Waterlike	Clear	Yes	Miscible	11	No	No	Nonflammable	Ammonia smell.	CERCLA
03/15/17	15:24	VB	WA015	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		CERCLA
03/15/17	15:26	VB	WA016	Liquid		3 – Flammable and Combustible Liquids	N/A	Grey	Sludge	Opaque	No	Soluble	N/A	No	N/A	140 - 200°F	Glue like	CERCLA
03/15/17	15:06	VB	WA017	Sludge		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Resin	CERCLA
03/15/17	16:10	VB	WA018	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Medium Oil	Opaque	Yes	Miscible	N/A	No	N/A	Nonflammable		CERCLA
03/15/17	16:31	VB	WA019	Solid		9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Soluble	4	No	N/A	Nonflammable		CERCLA
03/15/17	16:39	VB	WA020	Sludge	Hand -calcium 2 ethylhexandate ismmandate	3 – Flammable and Combustible Liquids 8B – Basic Corrosive Materials	N/A	Light Yellow	Sludge	Opaque	No	Soluble	13	No	N/A	Nonflammable		CERCLA
03/15/17	16:07	VB	WA022	Solid		9 – Miscellaneous Hazardous Materials	Granules	Clear	N/A	N/A	N/A	Soluble	4	No	N/A	Nonflammable		CERCLA
03/15/17	16:15	VB	WA023	Solid	Hand - Zn 8-20 mesh	9 – Miscellaneous Hazardous Materials	Flakes	Grey	N/A	N/A	No	Insoluble solids	N/A	N/A	N/A	Nonflammable	Zinc shavings likely	CERCLA
03/15/17	15:31	VB	WA030	Sludge		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	<100°F		CERCLA
03/15/17	16:44	VB	WA033	Solid		9 – Miscellaneous Hazardous Materials	Pellets	Black	N/A	N/A	No	Insoluble solids	N/A	No	N/A	Nonflammable		CERCLA
03/15/17	13:57	VB	WA045	Liquid	Potassium phosphate dibasic powder	9 – Miscellaneous Hazardous Materials	N/A	Clear	Light Oil	Clear	No	Miscible	N/A	No	N/A	Nonflammable	Left white residue, similar to salt solution. Solution clear and viscous.	CERCLA
03/17/17	16:39	EC	WA046	Sludge	Nuocure zirconium catalyst 12%	3 – Flammable and Combustible Liquids	N/A	Yellow	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	>200°F	Tal oil likely.	OPA
03/15/17	16:49	VB	WA047	Solid		4.1 – Flammable Solids	Granules	White	N/A	N/A	No	Soluble	7	No	N/A	>200°F		CERCLA
03/15/17	16:19	VB	WA052	Solid	Hand - Fe _____	9 – Miscellaneous Hazardous Materials	Powder	Brown	N/A	N/A	No	Soluble	N/A	No	N/A	Nonflammable		CERCLA
03/15/17	14:58	VB	WA055	Liquid		8A – Acidic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	2	No	N/A	Nonflammable	Acetic acid	CERCLA
03/15/17	13:40	VB	WA056	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Strong orange smell.	CERCLA
03/15/17	16:57	VB	WA070	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Waterlike	Translucent	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		CERCLA
03/17/17	15:34	EC	WA070	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F		CERCLA
03/15/17	14:51	VB	WA071	Sludge		3 – Flammable and Combustible Liquids	Chunks	Black	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		CERCLA
03/15/17	13:44	VB	WA072	Solid		9 – Miscellaneous Hazardous Materials	Chunks	Grey	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Concrete.	CERCLA
03/15/17	14:25	VB	WA074	Liquid		3 – Flammable and Combustible Liquids	N/A	Red	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		CERCLA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/15/17	14:29	VB	WA075	Sludge		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	>200°F	Wax in water likely	CERCLA
03/15/17	13:50	VB	WA078	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	>200°F		OPA
03/15/17	17:01	VB	WA079	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		OPA
03/15/17	17:11	VB	WA080	Liquid		8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	1	No	N/A	Nonflammable	biphasic	CERCLA
03/15/17	17:15	VB	WA080	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Light Oil	Clear	No	Insoluble and floats	N/A	No	N/A	<100°F	biphasic	CERCLA
03/15/17	16:59	VB	WA088	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Heavy Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		CERCLA
03/15/17	17:07	VB	WA089	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	5	No	N/A	<100°F		CERCLA
03/15/17	17:05	VB	WA090	Sludge	Hand - stone containers Missoula C.T.O sample	3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Tar sludge	OPA
03/15/17	14:06	VB	WA091	Liquid		3 – Flammable and Combustible Liquids	N/A	White	Heavy Oil	Opaque	No	Insoluble solids	N/A	No	N/A	100 - 140°F	Wax	CERCLA
03/15/17	16:37	VB	WA094	Solid		8B – Basic Corrosive Materials	Pellets	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/15/17	13:25	VB	WA097	Liquid		3 – Flammable and Combustible Liquids	N/A	Orange	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		CERCLA
03/15/17	15:36	VB	WA099	Solid		8B – Basic Corrosive Materials	Pellets	White	N/A	N/A	N/A	Soluble	13	No	N/A	Nonflammable		CERCLA
03/15/17	15:12	VB	WA100	Liquid		8A – Acidic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	2	No	N/A	Nonflammable	biphasic	CERCLA
03/15/17	15:21	VB	WA100	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	biphasic	CERCLA
03/15/17	17:21	VB	WA101	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	<100°F	Likely methanol.	CERCLA
03/15/17	16:05	VB	WA106	Solid		3 – Flammable and Combustible Liquids	Chunks	Grey	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	<100°F	Wax likely	CERCLA
03/15/17	14:47	VB	WA107	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Oil	OPA
03/15/17	16:24	VB	WA109	Sludge		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Sludge	Opaque	Yes	Insoluble and floats	N/A	No	N/A	>200°F	Animal fat possibly	CERCLA
03/15/17	14:42	VB	WA110	Solid		9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Soluble	N/A	No	N/A	Nonflammable	Silicon dioxide	CERCLA
03/15/17	15:43	VB	WA111	Liquid		8A – Acidic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Miscible	2	No	N/A	Nonflammable	Acetic acid likely	CERCLA
03/17/17	17:41	EC	WA114	Sludge	Crude tall oil	3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		OPA
03/16/17	17:39	VB	WA119	Solid	Lecithin capsules	9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Soluble	7	N/A	N/A	Nonflammable		CERCLA
03/18/17	8:20	EC	WA120	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	7	No	N/A	Nonflammable	Smells like pinesol floor cleaner.	CERCLA
03/18/17	9:42	EC	WA122	Solid		4.1 – Flammable Solids	Chunks	Silver	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	140 - 200°F	Silvery paint sludge high VOC	CERCLA
03/17/17	11:37	EC	WA124	Solid		9 – Miscellaneous Hazardous Materials	Flakes	White	N/A	N/A	N/A	Soluble	10	No	N/A	Nonflammable		CERCLA
03/17/17	17:04	EC	WA127	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil.	OPA
03/17/17	17:27	EC	WA128	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Likely water.	CERCLA
03/17/17	17:30	EC	WA130	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil.	OPA
03/17/17	13:27	EC	WA136	Solid	Hand - CaO hydrated lime	8B – Basic Corrosive Materials	Powder	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/18/17	10:07	EC	WA136	Solid	Hand - CaO hydrated lime	8B – Basic Corrosive Materials	Powder	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/18/17	9:37	EC	WA137	Solid	Hand - trisodium phosphate T.S.P.	8B – Basic Corrosive Materials	Granules	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/17/17	11:04	EC	WA138	Solid	Hand - Fluor-spar	9 – Miscellaneous Hazardous Materials	Granules	Brown	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable	Likely sand or silica.	CERCLA
03/17/17	11:18	EC	WA139	Solid	Hand - potassium carbonate	8B – Basic Corrosive Materials	Granules	White	N/A	N/A	N/A	Soluble	13	No	N/A	Nonflammable		CERCLA
03/17/17	11:31	EC	WA140	Solid	Blue chalk	9 – Miscellaneous Hazardous Materials	Powder	Blue	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Likely blue chalk.	CERCLA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/17/17	11:25	EC	WA141	Solid	Hand - potassium hydroxide	8B – Basic Corrosive Materials	Granules	White	N/A	N/A	No	Soluble	14	No	N/A	Nonflammable		CERCLA
03/18/17	10:04	EC	WA142	Solid	Hand CuO cupric oxide black	9 – Miscellaneous Hazardous Materials	Powder	Black	N/A	N/A	N/A	Soluble	N/A	No	N/A	Nonflammable	Superfine black powder.	CERCLA
03/18/17	10:21	EC	WA143	Solid	Hand - Cu powder	9 – Miscellaneous Hazardous Materials	Powder	Red	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable		CERCLA
03/17/17	11:48	EC	WA145	Liquid	Hand - Mold release agent	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	<100°F	Likely vegetable oil.	OPA
03/17/17	11:15	EC	WA146	Solid	Hand - zircon sand	9 – Miscellaneous Hazardous Materials	Granules	Brown	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable	Sand like.	CERCLA
03/17/17	13:07	EC	WA148	Sludge		4.1 – Flammable Solids	Chunks	Silver	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	>200°F	Silver metallic paint soft clumps.	CERCLA
03/17/17	17:17	EC	WA150	Liquid	Cresylic acid	3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and sinks	N/A	No	N/A	<100°F	Potentially carborator cleaner fluid.	OPA
03/17/17	12:57	EC	WA151	Liquid	Hand - mold release reagent	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	<100°F	Diesel likely.	OPA
03/17/17	12:59	EC	WA154	Solid	Hand - copper sulfate	9 – Miscellaneous Hazardous Materials	Crystals	Blue	N/A	N/A	N/A	Soluble	5	No	N/A	Nonflammable	Desiccant crystals possibly/ copper sulfate	CERCLA
03/17/17	13:22	EC	WA155	Solid		9 – Miscellaneous Hazardous Materials	Powder	Red	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable		CERCLA
03/18/17	15:07	VB	WA155	Liquid		8B – Basic Corrosive Materials 3 – Flammable and Combustible Liquids	N/A	White	Waterlike	Clear	Yes	Miscible	14	No	No	Nonflammable	Fat floating on water?	CERCLA
03/18/17	9:58	EC	WA156	Solid		9 – Miscellaneous Hazardous Materials	Powder	Red	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable		CERCLA
03/18/17	15:17	VB	WA156	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/18/17	15:20	VB	WA157	Solid		5.2 – Organic Peroxides	Pellets	White	N/A	N/A	N/A	Soluble	9	Weak Oxidizer	Yes	Nonflammable	Weird fluff stuff.	CERCLA
03/21/17	15:03	VB	WA157	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	<100°F		OPA
03/21/17	15:06	VB	WA158	Liquid		3 – Flammable and Combustible Liquids	N/A	Orange	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/17/17	14:31	EC	WAD02	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Insoluble and floats	4	No	N/A	100 - 140°F		OPA
03/17/17	14:36	EC	WAD02	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	5	No	N/A	100 - 140°F	Oil in alcohol possibly.	OPA
03/17/17	14:45	EC	WAD03	Liquid	4-stroke outboard oil	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	Yes	Insoluble and floats	5	No	N/A	<100°F	Alcohol and oil.	OPA
03/17/17	14:43	EC	WAD04	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Sludge	Opaque	Yes	Soluble	14	No	N/A	Nonflammable	Sediment in sample.	CERCLA
03/17/17	16:16	EC	WAD06	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	5	No	N/A	Nonflammable	Sweet smell.	CERCLA
03/17/17	15:30	EC	WAD08	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Used thick oil.	OPA
03/17/17	16:37	EC	WAD09	Solid		4.1 – Flammable Solids	Chunks	Brown	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	>200°F	Solid resin blocks.	CERCLA
03/17/17	16:21	EC	WAD10	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Waterlike	Opaque	Yes	Soluble	5	No	N/A	Nonflammable	Smells like fish.	CERCLA
03/17/17	15:36	EC	WAD11	Solid		9 – Miscellaneous Hazardous Materials	Powder	Brown	N/A	N/A	N/A	Soluble	N/A	No	N/A	Nonflammable	Silica possibly.	CERCLA
03/17/17	15:26	EC	WAD12	Liquid	4-Stroke outboard oil	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Waterlike	Translucent	Yes	Insoluble and floats	6	No	N/A	<100°F	Alcohol in oil possibly, mostly alcohol.	CERCLA
03/17/17	15:07	EC	WAD13	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil sweet nutty smell	OPA
03/17/17	14:52	EC	WAD14	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Oil	OPA
03/17/17	16:31	EC	WAD15	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	>200°F		CERCLA
03/17/17	15:24	EC	WAD16	Solid		4.1 – Flammable Solids	Chunks	Brown	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	140 - 200°F	Solid resin mixed with brick potentially.	CERCLA
03/17/17	15:41	EC	WAD17	Liquid	Super D-3 SAE 15W-40	8B – Basic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	No	Miscible	14	No	N/A	Nonflammable		CERCLA
03/17/17	16:12	EC	WAD19	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Waterlike	Opaque	No	Soluble	14	No	N/A	Nonflammable		CERCLA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/17/17	15:05	EC	WAD23	Liquid	NA	3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil.	OPA
03/17/17	15:54	EC	WAD24	Sludge	NA	3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Soluble	N/A	No	N/A	140 - 200°F		CERCLA
03/17/17	16:02	EC	WAD25	Liquid	NA	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	7	No	N/A	100 - 140°F	Oil.	OPA
03/17/17	16:09	EC	WAD27	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		OPA
03/17/17	15:19	EC	WAD28	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/17/17	14:58	EC	WAD29	Sludge		9 – Miscellaneous Hazardous Materials	N/A	Brown	Sludge	Opaque	Yes	Soluble	7	No	N/A	Nonflammable		CERCLA
03/17/17	15:16	EC	WAD30	Sludge	NA	3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Hard sludge like resin, weighted vapors.	CERCLA
03/17/17	14:24	EC	WAD31	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	Yes	Insoluble and floats	N/A	No	N/A	100 - 140°F	Dirty oil.	OPA
03/17/17	14:22	EC	WAD32	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Used motor oil likely.	OPA
03/17/17	15:59	EC	WAD34	Liquid		3 – Flammable and Combustible Liquids 8A – Acidic Corrosive Materials	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	1	No	N/A	<100°F	Acid layer below oil.	OPA
03/15/17	11:40	VB	WAD37	Sludge		3 – Flammable and Combustible Liquids	N/A	Grey	Sludge	Opaque	Yes	Soluble	4	No	N/A	140 - 200°F	Likely glue	CERCLA
03/17/17	16:27	EC	WAD40	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	7	No	N/A	Nonflammable	Likely water	CERCLA
03/17/17	14:56	EC	WAD41	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble and sinks	7	No	N/A	>200°F	Oily wax	OPA
03/17/17	15:09	EC	WAD42	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Burnt nutty smell. Oil.	OPA
03/17/17	14:49	EC	WAD43	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	<100°F	Dirty oil.	OPA
03/14/17	15:43	VB	WAT01	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Waterlike	Opaque	Yes	Soluble	7	No	N/A	Nonflammable	Oil like waste.	OPA
03/14/17	16:03	VB	WAT02	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	7	No	N/A	Nonflammable		OPA
03/14/17	16:13	VB	WAT03	Liquid	UN1789 Cisco 20b	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Translucent	Yes	Soluble	5	No	N/A	Nonflammable		OPA
03/14/17	16:23	VB	WAT04	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Opaque	Yes	Soluble	7	No	N/A	Nonflammable	Oil like	OPA
03/14/17	16:30	VB	WAT05	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	5	No	N/A	Nonflammable		OPA
03/14/17	16:39	VB	WAT05	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Insoluble and floats	7	No	N/A	100 - 140°F	Oil like	OPA
03/14/17	16:50	VB	WAT06	Liquid	UN 1789; Cisco 20-B	3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	100 - 140°F	Heavy oil like	OPA
03/14/17	16:57	VB	WAT07	Liquid	S-500 CF	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	5	No	N/A	Nonflammable		OPA
03/14/17	17:02	VB	WAT08	Liquid	UN1824; Liquid caustic soda 50%	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	<100°F	Likely methanol	CERCLA
03/14/17	17:07	VB	WAT09	Liquid	S-500 CF	3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	100 - 140°F		OPA
03/14/17	17:15	VB	WAT10	Liquid		3 – Flammable and Combustible Liquids	N/A	Yellow	Sludge	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil likely	OPA
03/14/17	17:33	VB	WAT11	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	100 - 140°F	Heavy oil	OPA
03/14/17	17:43	VB	WAT12	Liquid	UN 1830; sulfuric acid 66	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Water likely	CERCLA
03/14/17	17:15	VB	WAT13	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	Yes	Soluble	N/A	No	N/A	100 - 140°F	Heavy oil	OPA
03/14/17	17:48	VB	WAT14	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	<100°F		OPA
03/15/17	8:32	VB	WAT15	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble solids	N/A	No	N/A	>200°F		OPA
03/15/17	8:42	VB	WAT16	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble solids	N/A	No	N/A	>200°F		OPA
03/15/17	8:52	VB	WAT17	Liquid	S-500 CF	3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Translucent	No	Insoluble and floats	7	No	N/A	100 - 140°F		OPA
03/15/17	9:02	VB	WAT18	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	140 - 200°F		OPA
03/15/17	9:09	VB	WAT19	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble solids	N/A	No	N/A	140 - 200°F		OPA
03/15/17	9:21	VB	WAT20	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		OPA
03/15/17	10:09	VB	WAT21	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble solids	N/A	No	N/A	140 - 200°F		OPA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/15/17	10:16	VB	WAT22	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble solids	N/A	No	N/A	140 - 200°F		OPA
03/15/17	10:18	VB	WAT23	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Opaque	No	Miscible	5	No	N/A	140 - 200°F		OPA
03/15/17	10:26	VB	WAT24	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble solids	N/A	N/A	N/A	140 - 200°F		OPA
03/15/17	10:34	VB	WAT25	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble solids	N/A	N/A	N/A	140 - 200°F		OPA
03/15/17	10:37	VB	WAT26	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F		OPA
03/15/17	10:48	VB	WAT27	Liquid	UN1830: sulfuric acid 66	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	<100°F	Likely methanol	CERCLA
03/15/17	10:03	VB	WAT28	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Medium Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F		OPA
03/15/17	10:52	VB	WAT29	Liquid	UN 1830: sulfuric acid 66	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	5	No	N/A	100 - 140°F	Oil like	OPA
03/15/17	11:16	VB	WAT30	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Likely oil	OPA
03/15/17	11:19	VB	WAT31	Sludge		3 – Flammable and Combustible Liquids	N/A	Grey	Sludge	Opaque	Yes	Soluble	7	No	N/A	100 - 140°F	Looks like clay but flammable and turns to tar when heated- flammable vapors large flames	CERCLA
03/17/17	17:23	EC	WB002	Liquid	Jim Beam Kentucky Straight bourbon whiskey	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Miscible	7	No	N/A	<100°F	Alcohol.	CERCLA
03/17/17	11:50	EC	WB003	Liquid		8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	No	Miscible	1	Oxidizer	No	Nonflammable		CERCLA
03/17/17	17:06	EC	WB004	Liquid		8B – Basic Corrosive Materials 5.1 – Oxidizers	N/A	Clear	Waterlike	Clear	Yes	Soluble	14	Weak Oxidizer	No	Nonflammable		CERCLA
03/18/17	9:48	EC	WB005	Solid	Hand - ALC DRYER	9 – Miscellaneous Hazardous Materials	Pellets	Brown	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable	Looks like fertilizer pellets. Light brown balls.	CERCLA
03/18/17	9:31	EC	WB006	Liquid	Hand - hot bath oil	3 – Flammable and Combustible Liquids	N/A	Clear	Medium Oil	Clear	No	Insoluble and sinks	N/A	No	N/A	100 - 140°F		OPA
03/18/17	8:00	VB	WB007	Solid		3 – Flammable and Combustible Liquids 8A – Acidic Corrosive Materials	Flakes	Clear	N/A	N/A	N/A	Soluble	2	No	N/A	<100°F	Smells strong of acetic acid.	CERCLA
03/17/17	17:00	EC	WB008	Liquid	Hand - 50% isopropyl 50% toluol	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	No	Miscible	7	No	N/A	<100°F		CERCLA
03/18/17	10:11	EC	WB009	Solid	Unclear label	8B – Basic Corrosive Materials	Granules	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable	Possibly sodium phosphate.	CERCLA
03/16/17	17:38	VB	WB012	Liquid	Acetone - scratched out methanol written	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	N/A	Miscible	N/A	N/A	N/A	<100°F		CERCLA
03/17/17	17:39	EC	WB016	Liquid	Hand - DI	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Likely water.	CERCLA
03/17/17	17:35	EC	WB017	Liquid	Hand - starch indicator	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	4	No	N/A	Nonflammable		CERCLA
03/17/17	16:53	EC	WB019	Liquid	Hand - citric acid	8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	1	No	N/A	Nonflammable	Possibly citric acid.	CERCLA
03/18/17	10:15	EC	WB020	Solid		8A – Acidic Corrosive Materials	Granules	Brown	N/A	N/A	N/A	Soluble	2	No	N/A	Nonflammable		CERCLA
03/17/17	16:50	EC	WB024	Solid		8B – Basic Corrosive Materials	Flakes	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable	Likely caustic potash.	CERCLA
03/16/17	17:41	VB	WB025	Liquid	Hand - solvent	3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	N/A	Miscible	N/A	N/A	N/A	100 - 140°F		CERCLA
03/17/17	10:53	EC	WB026	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Likely water.	CERCLA
03/16/17	17:45	VB	WB027	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	N/A	Soluble	N/A	N/A	N/A	<100°F		CERCLA
03/18/17	10:09	EC	WB028	Solid		9 – Miscellaneous Hazardous Materials	Crystals	Green	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Likely desiccant salts.	CERCLA
03/17/17	10:51	EC	WB029	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Oil.	OPA
03/17/17	11:35	EC	WB030	Solid		3 – Flammable and Combustible Liquids	Chunks	White	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	100 - 140°F	Fiber glass resin likely.	CERCLA
03/17/17	10:52	EC	WB036	Liquid	Hand _ conducting standard	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Likely water.	CERCLA
03/17/17	8:24	VB	WB037	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F		OPA
03/18/17	9:55	EC	WB037	Solid		9 – Miscellaneous Hazardous Materials	Granules	Green	N/A	N/A	N/A	Insoluble solids	5	No	N/A	Nonflammable	Green and white desiccant salts.	CERCLA
03/17/17	16:48	EC	WB038	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Soluble	7	No	N/A	Nonflammable	Likely water.	CERCLA
03/17/17	11:41	EC	WB039	Liquid		8A – Acidic Corrosive Materials	N/A	Brown	Waterlike	Translucent	No	Miscible	1	No	N/A	Nonflammable	Strong acid.C	CERCLA
03/17/17	12:06	EC	WB043	Liquid		8B – Basic Corrosive Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	14	No	N/A	Nonflammable		CERCLA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/17/17	12:00	EC	WB044	Liquid		8A – Acidic Corrosive Materials	N/A	Light Yellow	Waterlike	Translucent	Yes	Soluble	1	No	N/A	Nonflammable		CERCLA
03/18/17	10:49	EC	WB046	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil likely.	OPA
03/16/17	13:31	VB	WB049	Liquid	Versacote	9 – Miscellaneous Hazardous Materials	N/A	White	Waterlike	Opaque	Yes	Miscible	7	No	N/A	Nonflammable	Milky soapy water.	CERCLA
03/16/17	10:45	VB	WB052	Solid		9 – Miscellaneous Hazardous Materials	Granules	Black	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Like dark sand.	CERCLA
03/16/17	10:53	VB	WB057	Solid		9 – Miscellaneous Hazardous Materials	Granules	Black	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	Black sand.	CERCLA
03/17/17	14:28	EC	WB061	Solid	Hand - Lime CaO	8B – Basic Corrosive Materials	Powder	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/17/17	10:54	EC	WB063	Liquid	Hand flexricin P-6	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Vegetable oil likely.	OPA
03/17/17	11:07	EC	WB066	Solid		9 – Miscellaneous Hazardous Materials	Crystals	Red	N/A	N/A	N/A	Insoluble solids	9	No	N/A	Nonflammable	Red powder brick color with white crystals.	CERCLA
03/17/17	8:52	VB	WB067	Solid		9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Soluble	5	No	N/A	Nonflammable	Did not ignite with match but vapors did ignite.	CERCLA
03/17/17	9:14	VB	WB068	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Sludge	Opaque	Yes	Insoluble and sinks	7	No	N/A	140 - 200°F	Thick resin and water. Heavily saturated with water.	CERCLA
03/17/17	8:17	VB	WB069	Solid		8B – Basic Corrosive Materials	Crystals	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable		CERCLA
03/17/17	9:02	VB	WB070	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	Yes	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin with water.	OPA
03/17/17	8:36	VB	WB071	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	>200°F	Thick residual resin.	OPA
03/17/17	9:42	VB	WB072	Liquid		3 – Flammable and Combustible Liquids	N/A	White	Waterlike	Opaque	Yes	Miscible	7	No	N/A	140 - 200°F	Like light mud.	OPA
03/17/17	9:26	VB	WB073	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Brown	Waterlike	Opaque	Yes	Miscible	7	No	N/A	Nonflammable	Dirty water.	CERCLA
03/17/17	10:45	VB	WB074	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	<100°F	Diesel like.	OPA
03/17/17	9:33	VB	WB075	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	>200°F	Thick resin.	OPA
03/17/17	10:47	EC	WB076	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	>200°F	Oil.	OPA
03/17/17	10:48	EC	WB077	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	>200°F	Tar.	OPA
03/17/17	10:48	EC	WB078	Solid		9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable	Calcium like powder.	CERCLA
03/17/17	8:45	VB	WB079	Sludge		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/17/17	10:38	VB	WB080	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	N/A	Insoluble and floats	N/A	No	N/A	140 - 200°F	Thick tar like.	OPA
03/17/17	10:42	VB	WB081	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Heavy oil.	OPA
03/17/17	8:39	VB	WB082	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Miscible	11	No	N/A	100 - 140°F	Like motor oil.	OPA
03/16/17	17:11	VB	WB083	Liquid	Confidence 10C	9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	10	No	N/A	Nonflammable		CERCLA
03/17/17	13:34	EC	WB084	Solid		8B – Basic Corrosive Materials	Flakes	White	N/A	N/A	N/A	Soluble	14	No	N/A	Nonflammable	Turns from solid to liquid when heated. Possibly caustic potash.	CERCLA
03/17/17	8:32	VB	WB085	Liquid		8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	2	No	N/A	Nonflammable	Smells like acetic acid.	CERCLA
03/18/17	14:28	VB	WBD001	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Opaque	Yes	Insoluble and floats	7	No	N/A	140 - 200°F		OPA
03/18/17	14:41	VB	WBD010	Liquid	Syntrel 350	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Opaque	Yes	Miscible	7	No	N/A	140 - 200°F		OPA
03/16/17	14:38	VB	WBD012	Liquid		3 – Flammable and Combustible Liquids	N/A	Grey	Waterlike	Opaque	Yes	Miscible	7	No	N/A	140 - 200°F	Heavy water with resin.	OPA
03/16/17	15:13	VB	WBD013	Sludge		3 – Flammable and Combustible Liquids	N/A	Grey	Sludge	Opaque	Yes	Miscible	N/A	No	N/A	140 - 200°F	Mud like.	OPA
03/16/17	11:43	VB	WBD014	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Miscible	N/A	No	N/A	>200°F	Thick oil.	OPA
03/16/17	16:05	VB	WBD015	Liquid	Monoethanolamine	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Diesel.	OPA
03/16/17	16:30	VB	WBD016	Liquid		9 – Miscellaneous Hazardous Materials	N/A	Clear	Waterlike	Clear	Yes	Miscible	7	No	N/A	Nonflammable	Water.	CERCLA
03/16/17	16:23	VB	WBD017	Liquid	Ammonium sulfate	8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	N/A	Miscible	2	N/A	N/A	Nonflammable	Strong nh3 smell. Label ammonium sulfate.	CERCLA
03/16/17	15:19	VB	WBD018	Liquid	Monoethanolamine	3 – Flammable and Combustible Liquids	N/A	Brown	Light Oil	Clear	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Diesel.	OPA
03/16/17	16:22	VB	WBD019	Liquid	Ammonium sulfate	8A – Acidic Corrosive Materials	N/A	Clear	Waterlike	Clear	N/A	Miscible	1	N/A	N/A	Nonflammable	Strong Nh3 smell. Label said Ammonium Sulfate.	CERCLA
03/16/17	15:04	VB	WBD020	Liquid	Aqua ammonia 28%	3 – Flammable and Combustible Liquids	N/A	Brown	Waterlike	Translucent	Yes	Miscible	7	No	N/A	140 - 200°F	Like motor oil color and constancy. High water content.	OPA

First Step Hazard Categorization Results

Date	Time	Analyst	Container ID	State	Label as Marked	Hazard	Solid Type	Color	Viscosity	Turbidity	Water	Solubility	pH	Oxidizer	Peroxide Test	Flammability	Other Comments	CERCLA/ OPA
03/16/17	14:21	VB	WBD021	Liquid		8B – Basic Corrosive Materials	N/A	Brown	Light Oil	Translucent	Yes	Miscible	11	No	N/A	Nonflammable	Dark liquid with high water content. NH3 sensor over range.	CERCLA
03/16/17	15:42	VB	WBD022	Liquid		3 – Flammable and Combustible Liquids	N/A	Light Yellow	Light Oil	Translucent	No	Miscible	10	No	N/A	140 - 200°F	Light oil.	OPA
03/16/17	16:52	VB	WBD023	Sludge		3 – Flammable and Combustible Liquids	N/A	White	Sludge	Opaque	Yes	Insoluble and floats	N/A	No	N/A	>200°F	White/yellow peanut butter constancy.	OPA
03/16/17	15:22	VB	WBD024	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Heavy Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	14:17	VB	WBD025	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F	Resin like tar.	OPA
03/16/17	16:28	VB	WBD026	Liquid	Ammonium hydroxide	8B – Basic Corrosive Materials	N/A	Clear	Waterlike	Clear	N/A	Miscible	13	N/A	N/A	Nonflammable	NH3 sensor alarm. Label ammonium hydroxide.	CERCLA
03/16/17	13:24	VB	WBD027	Solid		9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable		CERCLA
03/16/17	13:45	VB	WBD028	Solid	Byco versa-more 3 wb	9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable		CERCLA
03/16/17	13:15	VB	WBD029	Solid		8B – Basic Corrosive Materials	Granules	White	N/A	N/A	N/A	Soluble	14	No	No	Nonflammable	White.	CERCLA
03/16/17	14:01	VB	WBD030	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Less than Water	Clear	Yes	Miscible	6	No	N/A	<100°F	Methanol or alcohol.	CERCLA
03/16/17	14:06	VB	WBD031	Liquid	Plain light made in UK	3 – Flammable and Combustible Liquids	N/A	Light Yellow	Gel	Opaque	No	Insoluble and floats	N/A	No	N/A	140 - 200°F	Fatty.	OPA
03/16/17	16:45	VB	WBD032	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	Yes	Miscible	6	No	N/A	<100°F	Methanol.	CERCLA
03/16/17	13:46	VB	WBD033	Liquid		8B – Basic Corrosive Materials	N/A	Clear	Waterlike	Clear	N/A	Miscible	13	N/A	N/A	Nonflammable	Strong NH3 smell and NH3 sensor maxed when jar open. Did not test since confirmed and because of smell. Most likely ammonium hydroxide.	CERCLA
03/16/17	16:49	VB	WBD035	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Waterlike	Clear	No	Insoluble and floats	N/A	No	N/A	<100°F		CERCLA
03/16/17	16:42	VB	WBD036	Liquid		3 – Flammable and Combustible Liquids	N/A	Clear	Light Oil	Clear	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Diesel.	OPA
03/16/17	14:51	VB	WBD038	Liquid		5.2 – Organic Peroxides	N/A	Green	Waterlike	Clear	Yes	Miscible	1	Oxidizer	Yes	Nonflammable		CERCLA
03/16/17	17:27	VB	WBD040	Solid		8B – Basic Corrosive Materials	Chunks	White	N/A	N/A	N/A	Soluble	14	No	N/A	140 - 200°F	Pot ash.	CERCLA
03/17/17	8:28	VB	WBD041	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Sludge	Opaque	No	Insoluble and sinks	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/17/17	10:08	VB	WBD042	Liquid		3 – Flammable and Combustible Liquids	N/A	Black	Heavy Oil	Opaque	No	Miscible	N/A	No	N/A	140 - 200°F	Thick resin.	OPA
03/16/17	17:01	VB	WBD043	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Medium Oil	Translucent	No	Insoluble and floats	N/A	No	N/A	100 - 140°F	Tall oil.	OPA
03/16/17	17:18	VB	WBD044	Liquid		3 – Flammable and Combustible Liquids	N/A	White	Waterlike	Opaque	Yes	Miscible	3	No	N/A	140 - 200°F	Glue like.	CERCLA
03/17/17	10:25	VB	WBD045	Sludge		3 – Flammable and Combustible Liquids	N/A	Brown	Sludge	Opaque	Yes	Insoluble and sinks	5	No	N/A	100 - 140°F	Waxy watery brown sludge.	OPA
03/16/17	17:04	VB	WBD046	Solid		9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable	Melted to clear residue.	CERCLA
03/16/17	17:22	VB	WBD047	Solid		9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Soluble	10	No	N/A	Nonflammable		CERCLA
03/17/17	10:18	VB	WBD048	Solid	Formula 800	9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Insoluble solids	N/A	No	N/A	Nonflammable	White powder.	CERCLA
03/17/17	9:09	VB	WBD049	Solid	Formula 700	9 – Miscellaneous Hazardous Materials	Granules	White	N/A	N/A	N/A	Soluble	7	No	N/A	Nonflammable		CERCLA
03/17/17	10:44	VB	WBD050	Liquid	Formula 250-H	8B – Basic Corrosive Materials	N/A	Clear	Waterlike	Clear	No	Soluble	14	No	N/A	Nonflammable	Smells like fish.	CERCLA
03/17/17	10:29	VB	WBD053	Liquid		3 – Flammable and Combustible Liquids	N/A	Brown	Gel	Opaque	No	Soluble	N/A	No	N/A	100 - 140°F	Brown gel soluble but large chuck floats but flammable and tar forming.	OPA
03/17/17	10:34	VB	WBD054	Solid	Calcium hypochlorite 65%	9 – Miscellaneous Hazardous Materials	Powder	White	N/A	N/A	N/A	Insoluble solids	7	No	N/A	Nonflammable	Calcium like powder.	CERCLA
03/18/17	13:26	VB	WBT001	Liquid	Ecolab oxy-gard "M"	3 – Flammable and Combustible Liquids	N/A	White	Waterlike	Opaque	Yes	Miscible	N/A	No	N/A	140 - 200°F		OPA

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XRF Screening Results

Location ID	Sample Date	Sample Time	Arsenic (ppm)	Lead (ppm)
Blue Waste Bin	3/16/2017	12:41	**126**	**1254**
Clear Contractor Bag	3/16/2017	13:01	**7.2**	**83.1**
Clear Rubbermaid	3/16/2017	12:55	4 U	**68.5**
Garbage Can	3/16/2017	13:44	**12.3**	**31**
Green 50 Gal Rubbermaid	3/16/2017	13:02	**11.8**	**101**
Rodda Paint can	3/16/2017	12:46	**230**	**1356**
WAD09	3/16/2017	13:26	**11.2**	**37.3**
WAD11	3/16/2017	13:29	4.1 U	**52.8**
WAD20	3/16/2017	13:32	**16.7**	**120**
WAD21	3/16/2017	13:35	**42**	**309**
WAD22	3/16/2017	13:37	**13.9**	**62.7**
WAD26	3/16/2017	13:40	**12.6**	**102**
WAD360	3/16/2017	13:14	**21**	**258**
Waste Wrangler 1	3/16/2017	12:13	**32**	**394**
WBD002	3/16/2017	10:00	10 U	**486**
WBD003	3/16/2017	9:55	9 U	**403**
WBD004	3/16/2017	9:52	4.9 U	**122**
WBD006	3/16/2017	10:33	**21**	**606**
WBD007	3/16/2017	10:25	**7**	**198**
WBD008	3/16/2017	10:19	**30**	**734**
WBD009	3/16/2017	10:07	**26**	**971**
WBD055	3/24/2017	10:11	4 U	**56.9**
WBD056	3/24/2017	10:15	5.1 U	**101**
WBD057	3/24/2017	10:17	**21**	**144**
WBD058	3/24/2017	10:19	3.4 U	**37.5**
WBD059	3/25/2017	13:04	3.3 U	**40**
WBD060	3/25/2017	13:07	**12.1**	**114**
WBD061	3/25/2017	13:11	**41317**	**417231**
WBD062	3/25/2017	13:15	**39**	**265**
WBD064	3/25/2017	13:18	**8.6**	**130**
WBD065	3/25/2017	13:20	**5.9**	**52.8**
WBD066	3/25/2017	13:23	4.3 U	**61.7**
WBD067	3/25/2017	13:25	**6.2**	**98**
WBD068	3/25/2017	13:28	3.7 U	**50.1**
WBD069	3/25/2017	13:32	**7.7**	**53.4**
WBD070	3/25/2017	13:34	3.5 U	**42.9**
WBD071	3/25/2017	13:36	**18336**	**198747**
WBX001	3/16/2017	9:21	4.3 U	**71.2**
WBX002	3/16/2017	9:30	**14.2**	**127**
WBX003	3/16/2017	9:35	**4.5**	**69.9**
WBX004	3/16/2017	9:40	4.9 U	**56**
WBX005	3/16/2017	10:12	**14594**	**188798**
Wheel Barrow	3/16/2017	12:36	**54**	**1115**

Note: Bold type indicates the sample result exceeds the Reporting Limits..

Key:

ppm = parts per million

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

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ATTACHMENT C

Sample Summary Tables

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Water, Product, and Sediment Samples Analytical Results Summary

Sample Number	17030014	17030015	17030016	17030017	17030018	17030019	17030020	17030022	17030023
Location	SCC01	SCB01	T1	T18	DM01	T3	T20	TR01	TR02
Location Description	Secondary Containment		Tank 1	Tank 18	Decanted Tote Material	Tank 3	Tank 20	Warehouse A	Warehouse B
Sample Type	Water	Water	Water	Water	Product	Product	Product	Trench Sediments	
Oil & Grease					**mg/L**	**mg/L**	**mg/L**		
SGT-HEM (Oil & Grease)	NA	NA	NA	NA	40000 U	**57900**	**73600**	NA	NA
HEM (Oil & Grease)	NA	NA	NA	NA	**500000**	**167000**	**159000**	NA	NA
Total Chlorine					**µg/g**	**µg/g**	**µg/g**		
Chlorine	NA	NA	NA	NA	**160**	**130**	28 JQ	NA	NA
Total Halogens	NA	NA	NA	NA	**160**	**130**	28 JQ	NA	NA
Total Organic Chloride	NA	NA	NA	NA	**160**	**130**	28 JQ	NA	NA
Heat of Combusion					**BTU/lb**	**BTU/lb**	**BTU/lb**		
BTU	NA	NA	NA	NA	**4400 JK**	**20000 JK**	**18000 JK**	NA	NA
BS&W					**Percent**	**Percent**	**Percent**		
Percent Oil	NA	NA	NA	NA	**10**	**94**	**99**	NA	NA
Percent Solids	NA	NA	NA	NA	**6**	**1**	**1**	**50**	**53.5**
Percent Water	NA	NA	NA	NA	**84**	**5**	0	NA	NA
Ignitability					**˚ F**	**˚ F**	**˚ F**		
Flashpoint	NA	NA	NA	NA	**140**	**>212**	**>212**	NA	NA
PH	NA	NA	NA	NA	**4.5 JK**	**7.3 JK**	**4.5 JK**	NA	NA
NWTPH-Dx								**mg/kg**	**mg/kg**
Motor Oil (>C24-C36)	NA	NA	NA	NA	NA	NA	NA	**70000**	**23000 JK**
#2 Diesel (C10-C24)	NA	NA	NA	NA	NA	NA	NA	**18000 JK**	**74000 JK**
PCBs	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
PCB-1254	0.52 U	0.54 U	0.46 U	0.55 U	0.48 U	0.45 U	0.5 U	**0.2**	0.11 JQ
Metals	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
Arsenic	0.0032 JQ	0.0038 JQ	**0.062**	**0.0089**	2.6 U	2.9 U	2.8 U	**6.3**	38 JQ
Barium	0.0033 JQ	**0.012**	**0.037**	**0.012**	0.44 U	0.48 U	0.47 U	**130**	**120**
Cadmium	0.0005 JQ	0.00017 JQ	**0.0047**	0.002 U	0.87 U	0.95 U	0.95 U	1.8 U	18 U
Chromium	0.002 U	**0.0029**	**0.68**	**0.003**	1.1 U	**1.3**	**1.8**	**240**	**130**
Copper	0.0034 JQ	**0.014**	**0.2**	0.0043 JQ	**2.5**	2.4 U	2.4 U	**390**	**140**
Lead	**0.038**	**0.028**	**0.039**	**0.0046**	1.3 U	1.4 U	1.4 U	**310**	**3800**
Mercury	0.000048 JQ	0.00011 JQ	0.0068 JQ	0.00016 JQ	0.019 U	0.015 JQ	0.018 U	**0.11**	**0.83**
Nickel	0.015 U	0.0033 JQ	**0.99**	**0.053**	0.76 JQ	0.95 U	0.95 U	**190**	**120**
Selenium	0.005 U	0.005 U	**0.0085**	0.005 U	4.4 U	4.8 U	4.7 U	8.8 U	9 U
Zinc	**0.28**	**0.5**	**4.2**	**0.26**	**4.4**	1.6 JQ	1.9 U	**550**	**340**
TCLP Metals								**mg/L**	**mg/L**
Barium	NA	NA	NA	NA	NA	NA	NA	**0.48 JL**	**0.87 JL**
Cadmium	NA	NA	NA	NA	NA	NA	NA	0.02 U	**0.05**
Chromium	NA	NA	NA	NA	NA	NA	NA	**0.034**	0.01 JQ
Copper	NA	NA	NA	NA	NA	NA	NA	0.05 U	**0.12**
Lead	NA	NA	NA	NA	NA	NA	NA	**0.1**	**6.2**
Nickel	NA	NA	NA	NA	NA	NA	NA	**0.36**	**0.18**
Zinc	NA	NA	NA	NA	NA	NA	NA	**5.1**	**3.2**
VOCs	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
1,1,2,2-Tetrachloroethane	0.2 U	0.2 U	**8.5**	0.2 U	1900 U	2200 U	1900 U	9.7 U	8.3 U
1,1,2-Trichloroethane	0.2 U	0.2 U	**5.2**	0.2 U	1900 U	2200 U	1900 U	4.9 U	4.2 U
1,2,4-Trimethylbenzene	0.039 JQ	0.093 JQ	1.1 JQ	**1**	**23000**	3300 JQ	**4200**	**190**	0.87 JQ

Water, Product, and Sediment Samples Analytical Results Summary

Sample Number	17030014	17030015	17030016	17030017	17030018	17030019	17030020	17030022	17030023
Location	SCC01	SCB01	T1	T18	DM01	T3	T20	TR01	TR02
Location Description	Secondary Containment		Tank 1	Tank 18	Decanted Tote Material	Tank 3	Tank 20	Warehouse A	Warehouse B
Sample Type	Water	Water	Water	Water	Product	Product	Product	Trench Sediments	
1,3,5-Trimethylbenzene	0.5 U	0.5 U	10 U	0.5 U	**6700**	980 JQ	1200 JQ	44 JQ	10 UJL
2-Chlorotoluene	0.5 U	0.5 U	10 U	0.5 U	3900 U	4300 U	3800 U	**5.5 JH**	4.2 UJL
4-Chlorotoluene	0.3 U	0.3 U	6 U	0.3 U	3900 U	4300 U	3800 U	**21 JH**	4.2 UJL
4-Isopropyltoluene	0.3 U	0.3 U	6 U	**11**	1200 JQ	**7800**	3800 U	**49 JH**	4.2 UJL
Benzene	0.2 U	0.054 JQ	2.4 JQ	**3.9**	**27000**	2200 U	1900 U	**11 JH**	1.1 JQ
Chloroethane	R	R	R	R	39000 U	43000 U	38000 U	4.9 UJL	4.2 UJL
Chloromethane	0.3 U	0.3 U	**110**	0.062 JQ	9700 U	11000 U	9500 U	2.4 UJL	2.1 UJL
cis-1,2-Dichloroethene	0.2 U	0.2 U	4 U	0.2 U	3900 U	4300 U	3800 U	**13 JH**	4.2 U
Ethylbenzene	0.2 U	0.048 JQ	1.6 JQ	**1.3**	**8300**	4300 U	3800 U	**90 JH**	0.93 JQ
Isopropylbenzene	0.5 U	0.5 U	10 U	**0.5**	1500 JQ	4300 U	3800 U	**14 JH**	4.2 U
Methyl tert-butyl ether	0.2 U	0.2 U	**43**	0.2 U	3900 U	4300 U	3800 U	4.9 U	4.2 U
m-Xylene & p-Xylene	0.15 JQ	0.2 JQ	6.2 JQ	**3.1**	**34000**	22000 U	19000 U	230 JQ	4.2 U
Naphthalene	0.5 U	0.5 U	3 JQ	0.5 U	**170000**	2300 JQ	**61000**	**150 JH**	21 UJL
N-Propylbenzene	0.2 U	0.2 U	4 U	**0.39**	**4000**	1400 JQ	730 JQ	**65 JH**	4.2 UJL
o-Xylene	0.5 U	0.079 JQ	10 U	**1.4**	**15000**	4300 U	3800 U	**140**	4.2 U
sec-Butylbenzene	0.5 U	0.5 U	10 U	0.5 U	1200 JQ	1100 JQ	3800 U	**29 JH**	4.2 U
Styrene	0.5 U	0.5 U	10 U	0.5 U	**15000**	4300 U	3800 U	4.9 U	0.52 JQ
Tetrachloroethene	0.5 U	0.5 U	10 U	0.5 U	**910 JQ**	2200 U	1900 U	**27 JH**	4.2 U
Toluene	**0.26**	0.15 JQ	**8.7**	**7.2**	**49000**	16000 U	14000 U	**160 JH**	0.87 JQ
SVOCs	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Naphthalene	1.9 U	2 U	3.6 UJL	4.4 U	500 JQ	20000 U	**83000**	**1500**	160 U
1-Methylnaphthalene	0.29 U	0.31 U	0.54 UJL	0.65 U	490 JQ	29000 U	**93000**	**1600**	**370**
2,4-Dimethylphenol	1.8 JQ	10 U	18 UJL	22 U	3400 JQ	98000 U	**1500000**	730 U	810 U
2-Methylnaphthalene	0.97 U	0.13 JQ	1.8 UJL	2.2 U	570 JQ	20000 UJL	**200000**	**2800**	81 JQ
2-Methylphenol	**2**	2 U	3.6 UJL	**130**	6500 JQ	98000 U	**1100000**	730 U	810 U
3 & 4 Methylphenol	0.51 JQ	4.1 U	7.1 UJL	**300**	**20000**	200000 U	**2800000**	380 JQ	1600 U
Acenaphthylene	0.39 U	0.41 U	0.71 UJL	0.87 U	1800 U	20000 U	19000 U	**450**	42 JQ
Anthracene	0.19 U	0.2 U	0.36 UJL	0.44 U	1800 U	20000 U	**26000**	**430**	**1100**
Benzo_a_anthracene	0.29 U	0.31 U	0.54 UJL	0.65 U	1800 U	7500 JQ	19000 U	**1700**	**180**
Benzo_a_pyrene	0.19 U	0.2 U	3.6 U	4.4 U	3100 U	34000 U	33000 U	**1500**	**1100**
Benzo_b_fluoranthene	0.39 U	0.41 U	7.1 U	8.7 U	1800 U	20000 U	19000 U	**3700**	**330**
Benzo_g,h,i_perylene	0.29 U	0.31 U	5.4 U	6.5 U	3100 U	34000 U	33000 U	**830**	280 U
Benzo_k_fluoranthene	0.29 U	0.31 U	5.4 U	6.5 U	4900 U	54000 U	51000 U	**1300**	450 U
Benzyl alcohol	1.7 JQ	0.99 JQ	3.6 UJL	**4.9**	8900 U	98000 U	93000 U	730 U	810 U
Bis(2-ethylhexyl) phthalate	15 U	15 U	27 UJL	33 U	54000 U	560000 JQ	91000 JQ	**29000**	**33000**
Butyl benzyl phthalate	2.9 U	3.1 U	5.4 UJL	6.5 U	18000 U	200000 U	190000 U	**1700**	1600 U
Chrysene	0.19 U	0.2 U	0.36 UJL	0.44 U	2200 U	15000 JQ	23000 U	**1900**	**460**
Dibenz(a,h)anthracene	0.29 U	0.31 U	5.4 U	6.5 U	3600 U	39000 U	37000 U	**400**	330 U
Dibenzofuran	1.9 U	2 U	3.6 UJL	4.4 U	8900 U	98000 U	**170000**	230 JQ	810 U
Dimethyl phthalate	1.9 U	2 U	**9 JH**	4.4 U	8900 U	98000 U	93000 U	570 JQ	810 U
Fluoranthene	0.24 U	**3**	0.45 UJL	0.54 U	1800 U	20000 U	11000 JQ	**4100**	**330000**
Fluorene	**0.49**	0.21 JQ	0.54 UJL	0.65 U	1800 U	20000 U	**100000**	**540**	**250**
Indeno_1,2,3-cd_pyrene	0.29 U	0.31 U	5.4 U	6.5 U	3600 U	39000 U	37000 U	**910**	330 U

Water, Product, and Sediment Samples Analytical Results Summary

Sample Number	17030014	17030015	17030016	17030017	17030018	17030019	17030020	17030022	17030023
Location	SCC01	SCB01	T1	T18	DM01	T3	T20	TR01	TR02
Location Description	Secondary Containment		Tank 1	Tank 18	Decanted Tote Material	Tank 3	Tank 20	Warehouse A	Warehouse B
Sample Type	Water	Water	Water	Water	Product	Product	Product	Trench Sediments	
N-Nitrosodi-n-propylamine	**10**	R	3.6 UJL	R	R	R	R	730 UJL	810 UJL
Phenanthrene	0.39 U	0.41 U	0.71 UJL	0.87 U	1800 U	20000 U	**55000**	**1400**	**1300**
Phenol	1.8 JQ	3.1 U	5.4 UJL	**98**	**35000**	98000 U	**1800000**	730 U	**5300**
Pyrene	0.29 U	0.31 U	0.54 UJL	0.65 U	1800 U	20000 U	14000 JQ	**9000**	**5700**

Note: Bold type indicates the sample result exceeds the Reporting Limits..
Only those analytes with a detection above the method detection limit in at least one sample are displayed.

Key:

µg/g = micrograms per gram.
µg/kg = micrograms per kilogram.
µg/L = micrograms per liter.
BTU/lb = British Thermal Units per pound.
H = The sample result is biased high.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
K = The bias of the sample is not known.
L = The sample result is biased low.
mg/L = milligrams per liter.
Q = Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.
R = The data is rejected and unusable. The analyte may or may not be present in the sample.
U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ = The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met

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Asbestos Samples Results Summary

Sample Location	Sample Number/Station Location	Layer(s)	Result (%)	Sample Description
Tank Farm	17030001 – TS01	Off-White Fibrous Material	1 U	Pipe insulation, tan/grey, looks like concrete but crumbles and soft when wet or squished, friable mesh, papier Mache-like covering
		Yellow Non-Fibrous Material	1 U	
		Gray Non-Fibrous Material	1 U	
	17030002 – TS02	Off-White Fibrous Material	1 U	Similar to sample 17030001. In addition, fiberglass-like wrap present, long fibers, papier Mache-like external wrap has long fiber hatching.
		Yellow Non-Fibrous Material	1 U	
		Gray Non-Fibrous Material	1 U	
	17030003 – TS03	Dark Gray Fibrous Material	**60% Chrysotile**	Pipe gasket between exposed flange below large holding tanks
	17030004 – TS04	Yellow Non-Fibrous Material	1 U	Thermal System Insulation, tan, hardened around pipe, 1.5 inch thick, hard but condenses to dust between fingers, friable, aluminum sheathing exterior to material.
	17030005 – TS05	Off-White Fibrous Material	1 U	Thermal System Insulation, tank, 1.5 inch thick, hardened covering pipes, tank paper external covering, held together with metal wire, inside of holding tank.
	17030010 – TS10	White Coating	1 U	Mastic under holding tanks, white, soft mastic with course material mixed on white hatched fibers in yellow fibrous material.
		Yellow Fibrous Material	1 U	
	17030011 – TS11	White Coating	1 U	Field Duplicate of 17030010.
		Yellow Fibrous Material	1 U	
	17030012 – TS12	Black Roofing Shingle with Gray Pebbles	1 U	Roofing material, gray with black mastic found on tank farm floor.
		Black Roofing Tar	1 U	

Asbestos Samples Results Summary

Sample Location	Sample Number/Station Location	Layer(s)	Result (%)	Sample Description
Warehouse B	17030006 – TS06	Off-White Fibrous Material	**75% Chrysotile**	Drywall segments in 5 gallon bucket, 1 inch width.
	17030007 – TS07	White Woven Material	**90% Chrysotile**	Flexible pipe wrap, soft white woven "fireproof" wrap material, long white fibers.
		Light Gray Fibrous Material	**98% Amosite**	
	17030008 – TS08	Gray Fibrous Material	**75% Chrysotile**	Pipe gasket between flange, not exposed, gray, sample collected from rim.
	17030009 – TS09	White Fibrous Material	1 U	Thermal System Insulation, white cotton-like fibrous insulation next to pipe where sample 17030008 was collected, exposed, only material present.
		Black Semi-Fibrous Material	1 U	
	17030024 – WBD057	White Semi-Fibrous Material	**15% Amosite 7% Chrysotile**	From 55-gallon drums, white fibrous material that appeared similar to demolished gypsum wall board.
	17030025 – WBD056	White Semi-Fibrous Material	**15% Amosite 7% Chrysotile**	From 55-gallon drums, white fibrous material that appeared similar to demolished gypsum wall board.
Warehouse A	17030013 – TS13	Gray Fibrous Material	1 U	Drywall or hard foam board with small fibers throughout, gray, 1 inch thick.

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

ATTACHMENT D

Data Validation Memoranda

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response located in Ferndale, Washington, has been completed. Volatile Organic Compound (VOC) analysis (EPA Method 8260) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on March 21, 2017, were received at the laboratory on March 22, 2017, and were analyzed by March 23, 2017, therefore meeting QC criteria of less than 14 days between collection and analysis for soil samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Acceptable.**

All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) and/or correlation coefficients were within the QC limits.

4. **Continuing Calibration: Satisfactory.**

All RRFs were within the QC limits. All % differences were within the QC limits except low vinyl chloride, chloroethane, and chloromethane results. Associated sample quantitation limits were qualified as estimated quantitation limits with a low bias (UJL).

5. Blanks: Satisfactory.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except methylene chloride (0.32 ug/kg), m&p-xylene (0.99 ug/kg), and 1,2,4-trimethylbenzene (6.95 ug/kg); associated sample results less than five times the method blank results were qualified as not detected (U). There were no detections in the trip blank analyzed in another sample delivery group (sample 17030021) except vinyl chloride (0.091 ug/L) and naphthalene (0.14 ug/L); no qualifiers were required since associated sample results were either non-detects or the sample results were more than five times the blank results.

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except high dibromofluoromethane and 1,2-dichloro-ethane-d4 recoveries in sample 17030022. Associated positive results were qualified as estimated quantities with a high bias (JH).

7. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except the high 1,1,2-trichloroethane MSD recovery; associated positive results were qualified as estimated quantities with a high bias (JH).

8. Duplicate Analysis: Acceptable.

Spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits.

9. Internal Standards: Satisfactory.

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts except 1,4-dichlorobenzene-d4 with low recoveries in both samples; associated positive results were qualified as estimated quantities with a high bias (JH) and associated sample quantitation limits were qualified as estimated sample quantitation limits with a low bias (UJL).

11. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

12. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

13. Overall Assessment of Data for Use

There were a total of 120 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers. A total of 14 sample results were qualified as estimated quantities based on spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers or incorrect sample containers. No sample results were qualified as estimated quantities based on sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: methylene chloride, m&p-xylene, and 1,2,4-trimethylbenzene. The following potential contaminants of concern were detected in the trip blank: vinyl chloride, naphthalene.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C Analysis Batch: 580-241204 Instrument ID: SEA015
Prep Method: 5035 Prep Batch: 580-241225 Lab File ID: 03231711.D
Dilution: 1.0 Initial Weight/Volume: 4.112 g
Analysis Date: 03/23/2017 1517 Final Weight/Volume: 5 mL
Prep Date: 03/22/2017 1600

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Dichlorodifluoromethane		ND		1.2	4.9 U
Chloromethane		ND		0.34	2.4 UJL
Vinyl chloride		ND		0.73	4.9 UJL
Bromomethane		ND		0.51	2.4
Chloroethane		ND		0.49	4.9 UJL
Trichlorofluoromethane		ND		0.73	4.9
1,1-Dichloroethene		ND		1.2	12
Methylene Chloride		8.5	J B	0.58	36
trans-1,2-Dichloroethene		ND		0.97	4.9 U
1,1-Dichloroethane		ND		0.46	2.4
2,2-Dichloropropane		ND		2.2	12
cis-1,2-Dichloroethene		13	JH	0.73	4.9
Bromochloromethane		ND		0.61	4.9 U
Chloroform		ND		0.73	4.9
1,1,1-Trichloroethane		ND		0.73	4.9
Carbon tetrachloride		ND		0.73	4.9
1,1-Dichloropropene		ND		0.73	4.9
Benzene		11	JH	0.73	4.9
1,2-Dichloroethane		ND		0.36	2.4 U
Trichloroethene		1.2	J	0.73	4.9
1,2-Dichloropropane		ND		0.97	4.9 U
Dibromomethane		ND		0.41	2.4
Bromodichloromethane		ND		0.44	2.4
cis-1,3-Dichloropropene		ND		0.49	2.4
Toluene		160	JH	0.73	4.9
trans-1,3-Dichloropropene		ND		3.4	24 U
1,1,2-Trichloroethane		ND		0.61	4.9 U
Tetrachloroethene		27	JH	0.97	4.9
1,3-Dichloropropane		ND		0.56	4.9 U
Dibromochloromethane		ND		0.66	4.9
1,2-Dibromoethane		ND		0.49	2.4
Chlorobenzene		ND		0.97	4.9
Ethylbenzene		90	JH	0.97	4.9
1,1,1,2-Tetrachloroethane		ND		0.58	2.4 U
1,1,2,2-Tetrachloroethane		ND		2.2	9.7
Styrene		ND		0.49	4.9
Bromoform		ND		0.73	4.9
Isopropylbenzene		14	JH	0.49	4.9
Bromobenzene		ND		5.6	24 UJL
N-Propylbenzene		65	JH	0.78	4.9
1,2,3-Trichloropropane		ND		0.73	4.9 UJL
2-Chlorotoluene		5.5	JH	0.41	4.9
4-Chlorotoluene		21	JH	0.49	4.9
t-Butylbenzene		ND		0.49	4.9 U
sec-Butylbenzene		29	JH	0.61	4.9
1,3-Dichlorobenzene		ND		0.63	4.9 UJL

MW 3-30-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	580-241204	Instrument ID:	SEA015
Prep Method:	5035	Prep Batch:	580-241225	Lab File ID:	03231711.D
Dilution:	1.0			Initial Weight/Volume:	4.112 g
Analysis Date:	03/23/2017 1517			Final Weight/Volume:	5 mL
Prep Date:	03/22/2017 1600				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4-Isopropyltoluene		49 JH	*	0.97	4.9
1,4-Dichlorobenzene		ND	*	0.49	2.4 U JL
1,2-Dichlorobenzene		ND	*	0.75	4.9 JL
1,2-Dibromo-3-Chloropropane		ND	*	3.9	24
1,2,4-Trichlorobenzene		ND	*	0.97	4.9 JL
1,2,3-Trichlorobenzene		ND	*	1.5	7.3 JL
Hexachlorobutadiene		ND	*	1.5	7.3 JL
Naphthalene		150 JH	*	4.4	24
Methyl tert-butyl ether		ND	*	0.73	4.9 U

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	116		79 - 119
4-Bromofluorobenzene (Surr)	91		79 - 120
Dibromofluoromethane (Surr)	129	X	78 - 118
Trifluorotoluene (Surr)	75		52 - 152
1,2-Dichloroethane-d4 (Surr)	148	X	81 - 121

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	580-241338	Instrument ID:	SEA046
Prep Method:	5035	Prep Batch:	580-241328	Lab File ID:	C2417018.D
Dilution:	1.0			Initial Weight/Volume:	10.34 g
Analysis Date:	03/24/2017 1636			Final Weight/Volume:	10 mL
Prep Date:	03/24/2017 1316				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
m-Xylene & p-Xylene		230	J Q	95	590
o-Xylene		140		39	120
1,2,4-Trimethylbenzene		190	B W	18	120
n-Butylbenzene		~~ND~~ W		35	120 UJL
1,3,5-Trimethylbenzene		44	J Q	22	120

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	90		79 - 119
4-Bromofluorobenzene (Surr)	105		79 - 120
Dibromofluoromethane (Surr)	98		78 - 118
Trifluorotoluene (Surr)	109		52 - 152
1,2-Dichloroethane-d4 (Surr)	94		81 - 121

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	580-241204	Instrument ID:	SEA015
Prep Method:	5035	Prep Batch:	580-241225	Lab File ID:	03231712.D
Dilution:	1.0			Initial Weight/Volume:	4.479 g
Analysis Date:	03/23/2017 1627			Final Weight/Volume:	5 mL
Prep Date:	03/22/2017 1600				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Dichlorodifluoromethane		ND		1.0	4.2
Chloromethane		ND		0.29	2.1
Vinyl chloride		ND		0.63	4.2
Bromomethane		ND		0.44	2.1
Chloroethane		ND		0.42	4.2
Trichlorofluoromethane		ND		0.63	4.2
1,1-Dichloroethene		ND		1.0	10
Methylene Chloride		2.7	J B Q	0.50	31
trans-1,2-Dichloroethene		ND		0.83	4.2
1,1-Dichloroethane		ND		0.40	2.1
2,2-Dichloropropane		ND		1.9	10
cis-1,2-Dichloroethene		ND		0.63	4.2
Bromochloromethane		ND		0.52	4.2
Chloroform		ND		0.63	4.2
1,1,1-Trichloroethane		ND		0.63	4.2
Carbon tetrachloride		ND		0.63	4.2
1,1-Dichloropropene		ND		0.63	4.2
Benzene		1.1	J Q	0.63	4.2
1,2-Dichloroethane		ND		0.31	2.1
Trichloroethene		ND		0.63	4.2
1,2-Dichloropropane		ND		0.83	4.2
Dibromomethane		ND		0.35	2.1
Bromodichloromethane		ND		0.38	2.1
cis-1,3-Dichloropropene		ND		0.42	2.1
Toluene		0.87	J Q	0.63	4.2
trans-1,3-Dichloropropene		ND		2.9	21
1,1,2-Trichloroethane		ND		0.52	4.2
Tetrachloroethene		ND		0.83	4.2
1,3-Dichloropropane		ND		0.48	4.2
Dibromochloromethane		ND		0.56	4.2
1,2-Dibromoethane		ND		0.42	2.1
Chlorobenzene		ND		0.83	4.2
Ethylbenzene		0.93	J Q	0.83	4.2
1,1,1,2-Tetrachloroethane		ND		0.50	2.1
1,1,2,2-Tetrachloroethane		ND		1.9	8.3
m-Xylene & p-Xylene		3.5	J B Q	0.42	4.2
o-Xylene		ND		0.54	4.2
Styrene		0.52	J Q	0.42	4.2
Bromoform		ND		0.63	4.2
Isopropylbenzene		ND		0.42	4.2
Bromobenzene		ND		4.8	21
N-Propylbenzene		ND		0.67	4.2
1,2,3-Trichloropropane		ND		0.63	4.2
2-Chlorotoluene		ND		0.35	4.2
1,3,5-Trimethylbenzene		ND		0.35	10
4-Chlorotoluene		ND		0.42	4.2

MV 3-30-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	580-241204	Instrument ID:	SEA015
Prep Method:	5035	Prep Batch:	580-241225	Lab File ID:	03231712.D
Dilution:	1.0			Initial Weight/Volume:	4.479 g
Analysis Date:	03/23/2017 1627			Final Weight/Volume:	5 mL
Prep Date:	03/22/2017 1600				

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
t-Butylbenzene		ND		0.42	4.2
1,2,4-Trimethylbenzene		0.87	J	0.33	4.2
sec-Butylbenzene		ND		0.52	4.2
1,3-Dichlorobenzene		ND		0.54	4.2
4-Isopropyltoluene		ND		0.83	4.2
1,4-Dichlorobenzene		ND		0.42	2.1
n-Butylbenzene		ND		0.42	4.2
1,2-Dichlorobenzene		ND		0.65	4.2
1,2-Dibromo-3-Chloropropane		ND		3.3	21
1,2,4-Trichlorobenzene		ND		0.83	4.2
1,2,3-Trichlorobenzene		ND		1.3	6.3
Hexachlorobutadiene		ND		1.3	6.3
Naphthalene		ND		3.8	21
Methyl tert-butyl ether		ND		0.63	4.2

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	108		79 - 119
4-Bromofluorobenzene (Surr)	108		79 - 120
Dibromofluoromethane (Surr)	109		78 - 118
Trifluorotoluene (Surr)	91		52 - 152
1,2-Dichloroethane-d4 (Surr)	109		81 - 121

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington, has been completed. Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of 0°C to 6°C. The samples were collected on March 21, 2017, were extracted and analyzed by March 24, 2017, therefore meeting holding time criteria of less than 14 days between collection and extraction and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Satisfactory.

All average Relative Response Factors (RRFs) were within the QC limits except a low n-nitroso-di-n-propylamine recovery; associated sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) were within the QC limits.

4. Continuing Calibration: Satisfactory.

All RRFs were within the QC limits. All % differences were within the QC limits except nitrobenzene with a low recovery; associated positive results and sample quantitation limits were qualified as estimated quantities with a low bias (JL or UJL).

5. Blanks: Satisfactory.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except dimethyl phthalate (7.67 µg/kg). Associated sample results less than 5 times the blank contamination were qualified as not detected (U).

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except all SMCs with low recoveries in sample 17030023. No actions were taken as this analysis was performed at a 5-fold dilution and the laboratory indicated that there was evidence of matrix interference.

7. Matrix Spike (MS)/MS Duplicate (MSD) Analysis: Satisfactory.

MS and MSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except many high and low recovery outliers in the MS and MSD. No actions were taken based on the MS and MSD recovery outliers alone.

8. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except benzoic acid with a low recovery. Associated positive results and sample quantitation limits were qualified as estimated quantities with a low bias (JL or UJL).

9. Duplicate Analysis: Satisfactory.

Spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate and spike duplicate results were within QC limits except 4,6-dinitro-2-methylphenol, 4-nitroaniline, and 4-nitrophenol. No qualifiers were applied based on the duplicate outlier alone.

10. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

11. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

12. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

13. Overall Assessment of Data for Use

There were a total of 124 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers. A total of two sample results were qualified as estimated quantities (J) based on spike accuracy outliers. No sample results were rejected (R). No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected

in the laboratory blanks: dimethyl phthalate.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	23_032317a022.D
Dilution:	5.0			Initial Weight/Volume:	13.693 g
Analysis Date:	03/23/2017 2219			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		50	730
Bis(2-chloroethyl)ether		ND		110	730
2-Chlorophenol		ND		29	730
1,3-Dichlorobenzene		ND		35	370
1,4-Dichlorobenzene		ND		61	370
Benzyl alcohol		ND		110	730
1,2-Dichlorobenzene		ND		29	400
2-Methylphenol		ND		49	730
3 & 4 Methylphenol		380	J	110	1500
N-Nitrosodi-n-propylamine		ND		110	730
Hexachloroethane		ND		31	730
Nitrobenzene		ND		42	730
Isophorone		ND		37	730
2-Nitrophenol		ND		110	730
2,4-Dimethylphenol		ND		110	730
Benzoic acid		ND	F1	930	18000
Bis(2-chloroethoxy)methane		ND		37	730
2,4-Dichlorophenol		ND		110	730
1,2,4-Trichlorobenzene		ND		44	370
Naphthalene		1500		37	150
4-Chloroaniline		ND	F1	660	2200
Hexachlorobutadiene		ND		110	370
4-Chloro-3-methylphenol		ND		110	730
Hexachlorocyclopentadiene		ND	E1	190	730
2,4,6-Trichlorophenol		ND		110	1100
2,4,5-Trichlorophenol		ND		110	730
2-Chloronaphthalene		ND		37	150
2-Nitroaniline		ND		110	730
Dimethyl phthalate		570	J F1 B	37	730
Acenaphthylene		450		37	150
2,6-Dinitrotoluene		ND	F1	110	730
3-Nitroaniline		ND		290	730
Acenaphthene		ND		37	150
2,4-Dinitrophenol		ND	F1	1500	7300
4-Nitrophenol		ND	E1 F2	330	7300
Dibenzofuran		230	J	37	730
2,4-Dinitrotoluene		ND	E1	110	730
Diethyl phthalate		ND		440	1500
4-Chlorophenyl phenyl ether		ND		45	730
Fluorene		540		37	150
4-Nitroaniline		ND	F1 F2	150	730
4,6-Dinitro-2-methylphenol		ND	E1 E2	730	7300
N-Nitrosodiphenylamine		ND	E1	110	370
4-Bromophenyl phenyl ether		ND		57	730
Hexachlorobenzene		ND		37	370
Pentachlorophenol		ND	E1	660	1800

MW 33017

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	23_032317a022.D
Dilution:	5.0			Initial Weight/Volume:	13.693 g
Analysis Date:	03/23/2017 2219			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenanthrene		1400	F1	37	150
Anthracene		430		37	150
Di-n-butyl phthalate		~~ND~~	F1	370	3700 U
Fluoranthene		4100	F1	37	150
Pyrene		9000		37	150
Butyl benzyl phthalate		1700	F1	370	1500
3,3'-Dichlorobenzidine		~~ND~~	F1	220	1500 U
Benzo[a]anthracene		1700		37	150
Chrysene		1900	F1	37	180
Bis(2-ethylhexyl) phthalate		29000		370	4400
Di-n-octyl phthalate		3200	J F1 Q	120	3700
Benzo[a]pyrene		1500		95	260
Indeno[1,2,3-cd]pyrene		910	F1	37	290
Dibenz(a,h)anthracene		400	F1	88	290
Benzo[g,h,i]perylene		830	F1	110	260
Carbazole		~~ND~~		37	730 U
1-Methylnaphthalene		1600		37	220
Benzo[b]fluoranthene		3700	F1	37	150
Benzo[k]fluoranthene		1300		100	400
bis(chloroisopropyl) ether		~~ND~~		110	1800 U

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	100		65 - 125
Phenol-d5 (Surr)	89		69 - 118
Nitrobenzene-d5 (Surr)	95		66 - 120
2-Fluorobiphenyl	90		67 - 115
2,4,6-Tribromophenol (Surr)	92		59 - 128
Terphenyl-d14 (Surr)	99		78 - 136

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241313	Instrument ID:	TAC051
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	0324A007.D
Dilution:	5.0			Initial Weight/Volume:	13.693 g
Analysis Date:	03/24/2017 1432	Run Type:	RA	Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		2800	F1	29	150

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	23_032317a025.D
Dilution:	5.0			Initial Weight/Volume:	11.495 g
Analysis Date:	03/23/2017 2334			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		5300		56	810
Bis(2-chloroethyl)ether		ND		120	810 U
2-Chlorophenol		ND		33	810
1,3-Dichlorobenzene		ND		39	410
1,4-Dichlorobenzene		ND		67	410
Benzyl alcohol		ND		120	810
1,2-Dichlorobenzene		ND		33	450
2-Methylphenol		ND		54	810
3 & 4 Methylphenol		ND		120	1600
N-Nitrosodi-n-propylamine		ND		120	810 JL
Hexachloroethane		ND		35	810
Nitrobenzene		ND		46	810 JL
Isophorone		ND		41	810
2-Nitrophenol		ND		120	810
2,4-Dimethylphenol		ND hw		120	810
Benzoic acid		7200	J hw Q	1000	20000
Bis(2-chloroethoxy)methane		ND		41	810 U
2,4-Dichlorophenol		ND		120	810
1,2,4-Trichlorobenzene		ND		49	410
Naphthalene		ND		41	160
4-Chloroaniline		ND		730	2400
Hexachlorobutadiene		ND		120	410
4-Chloro-3-methylphenol		ND hw		120	810
2-Methylnaphthalene		81	J Q	33	160
Hexachlorocyclopentadiene		ND		210	810 U
2,4,6-Trichlorophenol		ND		120	1200
2,4,5-Trichlorophenol		ND		120	810
2-Chloronaphthalene		ND		41	160
2-Nitroaniline		ND		120	810
Dimethyl phthalate		ND hw		41	810
Acenaphthylene		42	J Q	41	160
2,6-Dinitrotoluene		ND		120	810 U
3-Nitroaniline		ND		330	810
Acenaphthene		ND		41	160
2,4-Dinitrophenol		ND		1600	8100
4-Nitrophenol		ND		370	8100
Dibenzofuran		ND		41	810
2,4-Dinitrotoluene		ND		120	810
Diethyl phthalate		ND		490	1600
4-Chlorophenyl phenyl ether		ND hw		50	810
Fluorene		250		41	160
4-Nitroaniline		ND		160	810 U
4,6-Dinitro-2-methylphenol		ND hw		810	8100 U
N-Nitrosodiphenylamine		380	J Q	120	410
4-Bromophenyl phenyl ether		ND		63	810
Hexachlorobenzene		ND hw		41	410

MN 3-30-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	23_032317a025.D
Dilution:	5.0			Initial Weight/Volume:	11.495 g
Analysis Date:	03/23/2017 2334			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Pentachlorophenol		1500	J Q	740	2000
Phenanthrene		1300		41	160
Anthracene		1100		41	160
Di-n-butyl phthalate		~~ND~~		410	4100 U
Pyrene		5700		41	160
Butyl benzyl phthalate		ND		410	1600 U
3,3'-Dichlorobenzidine		ND		240	1600
Benzo[a]anthracene		180		41	160
Chrysene		460		41	200
Bis(2-ethylhexyl) phthalate		33000		410	4900
Di-n-octyl phthalate		1400	J Q	130	4100
Benzo[a]pyrene		1100		110	280
Indeno[1,2,3-cd]pyrene		ND		41	330 U
Dibenz(a,h)anthracene		ND		98	330
Benzo[g,h,i]perylene		ND		120	280
Carbazole		ND		41	810
1-Methylnaphthalene		370		41	240
Benzo[b]fluoranthene		330		41	160
Benzo[k]fluoranthene		ND		110	450 U
bis(chloroisopropyl) ether		ND		120	2000 U

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	63	X	65 - 125
Phenol-d5 (Surr)	57	X	69 - 118
Nitrobenzene-d5 (Surr)	63	X	66 - 120
2-Fluorobiphenyl	54	X	67 - 115
2,4,6-Tribromophenol (Surr)	53	X	59 - 128
Terphenyl-d14 (Surr)	76	X	78 - 136

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241313	Instrument ID:	TAC051
Prep Method:	3550B	Prep Batch:	580-241170	Lab File ID:	0324A014.D
Dilution:	50			Initial Weight/Volume:	11.495 g
Analysis Date:	03/24/2017 1724	Run Type:	RADL	Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 0916			Injection Volume:	2 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Fluoranthene		330000		410	1600

MW 33047

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington, has been completed. Analyses for Polychlorinated Biphenyls (PCBs - EPA Method 8082) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at 0°C to 6°C. The samples were collected on March 21, 2017, extracted on March 23, 2017, and were analyzed by March 24, 2017. There are no holding time limits for Method 8082 PCB analyses.

2. **Instrument Performance: Acceptable.**

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was $\leq 0.3\%$ for capillary column analyses.

3. **Initial and Continuing Calibration: Acceptable.**

All initial calibration relative standard deviations (RSDs) were within QC limits. All continuing calibration % differences (% D) were within QC limits.

4. **Error Determination: Not Provided.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. **Blanks: Acceptable.**

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in the laboratory blanks.

6. **Performance Evaluation Samples: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **System Monitoring Compounds (SMCs): Acceptable.**

All recoveries of the SMCs were within the established control limits.

8. **Blank Spike (BS) and BS Duplicate (BSD) Analyses: Acceptable.**

BS and BSD recoveries were within QC limits.

9. **Duplicates: Acceptable.**

Relative Percent Differences (RPDs) of all spiked analytes were within QC limits.

10. **Compound Identification: Acceptable.**

All positive results were dual-column confirmed with differences between the columns less than 25%.

11. **Target Compound Quantitation and Quantitation Limits: Acceptable.**

Sample results and quantitation limits were correctly calculated.

12. **Laboratory Contact**

No laboratory contact was required.

13. **Overall Assessment**

There were a total of 14 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241274	Instrument ID:	TAC035
Prep Method:	3546	Prep Batch:	580-241163	Initial Weight/Volume:	10.653 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2307			Injection Volume:	1 uL
Prep Date:	03/23/2017 0843			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.014	0.047
PCB-1221		ND		0.0079	0.021
PCB-1232		ND		0.0092	0.021
PCB-1242		ND		0.0030	0.019
PCB-1248		ND		0.0054	0.021
PCB-1254		0.20		0.0028	0.019
PCB-1260		ND		0.0036	0.019

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	70		37 - 140
Tetrachloro-m-xylene	49		45 - 135

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: **17030023**

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241290	Instrument ID:	TAC035
Prep Method:	3546	Prep Batch:	580-241163	Initial Weight/Volume:	10.390 g
Dilution:	10			Final Weight/Volume:	10 mL
Analysis Date:	03/24/2017 1146			Injection Volume:	1 uL
Prep Date:	03/23/2017 0843			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.13	0.45 U
PCB-1221		ND		0.076	0.20
PCB-1232		ND		0.088	0.20
PCB-1242		ND		0.029	0.18
PCB-1248		ND		0.052	0.20
PCB-1254		0.11	J Q	0.027	0.18
PCB-1260		ND		0.034	0.18 U

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	82		37 - 140
Tetrachloro-m-xylene	54		45 - 135

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington, has been completed. Analysis for Extended Diesel Range Total Petroleum Hydrocarbons (Ecology Method NWTPH-Dx) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at 4°C ± 2°C. The samples were collected on March 21, 2017, extracted on March 23, 2017, and analyzed by March 24, 2017, therefore meeting QC criteria of less than 14 days between collection and extraction for soil samples and less than 40 days between extraction and analysis.

2. **Initial Calibration: Acceptable.**

Calculations were verified as correct. All relative percent differences (RPDs) were within the laboratory control limits.

3. **Continuing Calibration: Acceptable.**

Calculations were verified as correct. All percent differences (%Ds) were within the laboratory control limits.

4. **Error Determination: Not Performed.**

Samples necessary for bias and precision determination were not provided to the laboratory. All samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. Blanks: Acceptable.

A method blank was analyzed for each extraction batch for each matrix and analysis system. Diesel- and motor oil-range TPHs were not detected in the method blank.

6. System Monitoring Compounds (SMC): Satisfactory.

All recoveries of the SMCs were within the established control limits except both SMCs with 0% recoveries in both samples. No actions were taken as both samples were analyzed at 10-fold dilutions.

7. Performance Evaluation Samples: Not Provided.

Performance evaluation samples were not provided to the laboratory.

8. Matrix Spike (MS) and MS Duplicate (MSD): Acceptable.

MS and MSD results were within QC limits.

9. Blank Spike (BS) and BS Duplicate (BSD): Satisfactory.

BS and BSD recoveries were within QC limits except dinoseb with a high matrix spike duplicate recovery; no action was taken based on the spike outlier alone.

10. Duplicates: Acceptable.

All spike duplicate results were within QC limits.

11. Quantitation and Quantitation Limits: Acceptable.

Sample concentrations were correctly calculated.

12. Laboratory Contact: Not Required.

No laboratory contact was required.

13. Overall Assessment of Data for Use

According to the laboratory, sample 17030022 contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes, and the peak profile present in sample 17030023 is atypical of a hydrocarbon pattern and consists of discrete peaks. Based on this information, associated sample results were qualified as estimated quantities with an unknown bias (JK).

There were a total of 14 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	580-241262	Instrument ID:	SEA012
Prep Method:	3546	Prep Batch:	580-241193	Lab File ID:	074B0101.D
Dilution:	10			Initial Weight/Volume:	11.243 g
Analysis Date:	03/24/2017 1040			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1051			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
#2 Diesel (C10-C24)		18000	JK	190	440
Motor Oil (>C24-C36)		70000		160	890

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	0	X	50 - 150

MW 3/30/17

Client: Ecology and Environment, Inc. Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	580-241262	Instrument ID:	SEA012
Prep Method:	3546	Prep Batch:	580-241193	Lab File ID:	075B0201.D
Dilution:	10			Initial Weight/Volume:	11.192 g
Analysis Date:	03/24/2017 1101			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1051			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
#2 Diesel (C10-C24)		74000	JK	180	420
Motor Oil (>C24-C36)		23000	JK	150	830

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	0	X	50 - 150

3/30/17

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington has been completed. Toxicity characteristic leaching procedure (TCLP) Resource Conservation and Recovery Act (RCRA) metals plus copper, nickel, and zinc analyses (EPA Methods 1311, 6010, and 7470) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2 and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at < 6°C (only applies to mercury). The samples were collected on March 21, 2017, and were TCLP extracted and analyzed by March 27, 2017, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury).

2. **Initial and Continuing Calibration: Acceptable.**

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits. All AA recoveries were within QC limits and the initial calibration correlation coefficient was > 0.995.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. There were no detections in any blanks except barium (0.004 mg/L), cadmium (0.0007 mg/L), and lead (0.0027 mg/L) in the initial calibration blank and nickel (0.0188 mg/L) in the method blank. Associated positive sample results were qualified as not detected (U) if the sample result was less than five times the positive blank concentration.

4. **ICP Interference Check Sample: Acceptable.**

An Interference Check Sample (ICS) was analyzed at the beginning of each sequence or at least

twice every 8 hours, whichever was more frequent. All applicable ICS (solution AB) results were within QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Satisfactory.

A serial dilution analysis was performed per matrix per concentration or per sample delivery group, whichever was more frequent. All serial dilution results were within QC limits except barium. Associated sample results were qualified as estimated quantities with a high bias (JH) for original sample results greater than the serial dilution results and estimated quantities with a low bias (JL) for original sample results less than the serial dilution results.

8. Matrix Spike Analysis: Acceptable.

A matrix spike analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. Spike recoveries were within the QC limits.

9. Duplicate Analysis: Acceptable.

A laboratory duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

10. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. Overall Assessment of Data for Use

There were a total of 22 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: barium, cadmium, and lead. Two sample results were qualified as estimated quantities (J) based on serial dilution outliers.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response

Publication "National Functional Guidelines for Superfund Inorganic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-1

Client Sample ID: 17030022

Lab Sample ID: 580-66890-9
Client Matrix: Solid

Date Sampled: 03/21/2017 1000
Date Received: 03/22/2017 0955

6010C Metals (ICP)-TCLP

Analysis Method:	6010C	Analysis Batch:	580-241500	Instrument ID:	TAC047
Prep Method:	3010A	Prep Batch:	580-241332	Lab File ID:	241332 340 350 354.a
Dilution:	1.0	Leach Batch:	580-241237	Initial Weight/Volume:	50 mL
Analysis Date:	03/27/2017 1756			Final Weight/Volume:	50 mL
Prep Date:	03/24/2017 1329				
Leach Date:	03/23/2017 1452				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		~~ND~~		0.0047	0.060 U
Barium		0.48	JL	0.00080	0.010
Cadmium		~~0.0028~~	~~JQ~~	0.00050	0.020 U
Chromium		0.034		0.0033	0.025
Copper		~~ND~~		0.024	0.050 U
Lead		0.10		0.0026	0.030
Nickel		0.36	B	0.0040	0.020
Selenium		~~ND~~		0.0054	0.10 U
Silver		~~ND~~		0.0085	0.050 U
Zinc		5.1		0.0093	0.040

7470A Mercury (CVAA)-TCLP

Analysis Method:	7470A	Analysis Batch:	580-241444	Instrument ID:	TAC103
Prep Method:	7470A	Prep Batch:	580-241333	Lab File ID:	241401.CSV
Dilution:	1.0	Leach Batch:	580-241237	Initial Weight/Volume:	5 mL
Analysis Date:	03/27/2017 1248			Final Weight/Volume:	50 mL
Prep Date:	03/24/2017 1332				
Leach Date:	03/23/2017 1452				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		~~ND~~		0.00041	0.0020 U

3-30-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-1

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10
Client Matrix: Solid

Date Sampled: 03/21/2017 1020
Date Received: 03/22/2017 0955

6010C Metals (ICP)-TCLP

Analysis Method:	6010C	Analysis Batch:	580-241500	Instrument ID:	TAC047
Prep Method:	3010A	Prep Batch:	580-241332	Lab File ID:	241332 340 350 354.a
Dilution:	1.0	Leach Batch:	580-241237	Initial Weight/Volume:	50 mL
Analysis Date:	03/27/2017 1759			Final Weight/Volume:	50 mL
Prep Date:	03/24/2017 1329				
Leach Date:	03/23/2017 1452				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		0.0077	JQ	0.0047	0.060
Barium		0.87	JL	0.00080	0.010
Cadmium		0.050		0.00050	0.020
Chromium		0.010	JQ	0.0033	0.025
Copper		0.12		0.024	0.050
Lead		6.2		0.0026	0.030
Nickel		0.18	B MW	0.0040	0.020
Selenium		ND		0.0054	0.10 U
Silver		ND MW		0.0085	0.050 U
Zinc		3.2		0.0093	0.040

7470A Mercury (CVAA)-TCLP

Analysis Method:	7470A	Analysis Batch:	580-241444	Instrument ID:	TAC103
Prep Method:	7470A	Prep Batch:	580-241333	Lab File ID:	241401.CSV
Dilution:	1.0	Leach Batch:	580-241237	Initial Weight/Volume:	5 mL
Analysis Date:	03/27/2017 1239			Final Weight/Volume:	50 mL
Prep Date:	03/24/2017 1332				
Leach Date:	03/23/2017 1452				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		ND MW		0.00041	0.0020 U

MW 3-30-17

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MEMORANDUM

DATE: March 29, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 1 trip blank, 4 water, and 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington, has been completed. Volatile Organic Compound (VOC) analysis (EPA Method 8260) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered:

17030014	17030015	17030016	17030017	17030018
17030019	17030020	17030021		

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained and received within the QC limits of 4°C ± 2°C. The samples were collected on March 20 and 21, 2017, were received at the laboratory on March 22, 2017, and were analyzed by March 23, 2017, therefore meeting QC criteria of less than 14 days between collection and analysis for soil and preserved water samples.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were within the QC limits except chloroethane with a low relative response factor in the initial calibration associated with the water samples; the associated sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) and/or correlation coefficients were within the QC limits.

4. **Continuing Calibration: Satisfactory.**

All RRFs were within the QC limits except chloroethane in all continuing calibrations; no additional actions were taken. All % differences (%D) were within the QC limits except vinyl acetate with a high recovery in the March 8 (19:39) calibration and acrolein, 2,2-dichloropropane, 2-methyl-2-propanol, and vinyl acetate in the March 23 (11:26) calibration. No actions were taken based on the %D outliers as there were no detections in the associated samples.

5. **Blanks: Satisfactory.**

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank except n-propylbenzene (9.95 ug/kg) and 1,2,4-trimethylbenzene (33.7 ug/kg); associated positive sample results less than five times the blank results were qualified as not detected (U). There were no detections in the trip blank (sample 17030021) except vinyl chloride (0.091 ug/L; no actions were taken as there were no detections in the associated samples) and naphthalene (0.14 J ug/L; associated positive, non-diluted, sample results less than the method reporting limit [MRL] were qualified as not detected [U] at the MRL).

6. **System Monitoring Compounds (SMCs): Acceptable.**

All SMC recoveries were within QC limits.

7. **Blank Spike (BS)/BS Duplicate (BSD) Analysis: Satisfactory.**

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except high recoveries for trans-1,2-dichloro-ethene, cis-1,2-dichlorothene, and trichloroethene associated with the product samples; associated positive sample results were qualified as estimated quantities with a high bias (JH).

8. **Matrix Spike (MS)/MS Duplicate (MSD) Analysis: Acceptable.**

MS and MSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

9. **Duplicate Analysis: Acceptable.**

Duplicate and spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate and spike duplicate results were within QC limits.

10. **Internal Standards: Acceptable.**

All internal standards were within $\pm$ 30 seconds of the continuing calibration internal standard retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

11. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

12. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

13. **Overall Assessment of Data for Use**

A total of 480 results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. Four sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: n-propylbenzene and 1,2,4-trimethylbenzene. The following potential contaminants of concern were detected in the trip blank: vinyl chloride and naphthalene.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030014

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method: 8260C
Prep Method: 5030B
Dilution: 1.0
Analysis Date: 03/23/2017 1913
Prep Date: 03/23/2017 1913

Analysis Batch: 580-241247
Prep Batch: N/A

Instrument ID: TAC048
Lab File ID: C232017013:D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,2-Dichlorobenzene	ND		0.050	0.30
2-Chlorotoluene	ND		0.070	0.50
1,2,3-Trichloropropane	ND		0.050	0.20
Carbon tetrachloride	ND		0.025	0.20
cis-1,3-Dichloropropene	ND		0.090	0.50
Chlorobenzene	ND		0.025	0.20
Vinyl chloride	ND		0.013	0.020
sec-Butylbenzene	ND		0.070	0.50
Dibromomethane	ND MW		0.025	0.20
m-Xylene & p-Xylene	0.15	J Q	0.050	0.50
o-Xylene	ND		0.060	0.50
1,2,4-Trichlorobenzene	ND		0.040	0.20
Styrene	ND		0.10	0.50
Chlorobromomethane	ND		0.025	0.20
Dichlorobromomethane	ND		0.025	0.20
1,3-Dichlorobenzene	ND		0.050	0.30
Benzene	ND		0.025	0.20
~~Chloroethane~~	~~ND~~		~~0.075~~	~~0.50~~
trans-1,3-Dichloropropene	ND		0.025	0.20
1,2,3-Trichlorobenzene	ND		0.10	0.50
N-Propylbenzene	ND		0.025	0.20
4-Isopropyltoluene	ND		0.050	0.30
n-Butylbenzene	ND		0.080	0.50
1,1-Dichloropropene	ND		0.015	0.10
cis-1,2-Dichloroethene	ND		0.025	0.20
1,1,2,2-Tetrachloroethane	ND MW		0.025	0.20
1,2,4-Trimethylbenzene	0.039	J Q	0.030	0.20
Toluene	0.26		0.025	0.20
Naphthalene	ND		0.10	0.50
1,3,5-Trimethylbenzene	ND		0.083	0.50
1,3-Dichloropropane	ND		0.025	0.20
Chloroform	ND		0.030	0.20
4-Chlorotoluene	ND		0.050	0.30
Chlorodibromomethane	ND		0.025	0.20
Dichlorodifluoromethane	ND		0.050	0.40
1,1,2-Trichloroethane	ND		0.025	0.20
tert-Butylbenzene	ND		0.10	0.50
Chloromethane	ND		0.050	0.30
Methylene Chloride	ND		0.11	0.50
1,1-Dichloroethene	ND		0.018	0.10
Isopropylbenzene	ND		0.060	0.50
1,2-Dichloroethane	ND		0.025	0.20
Tetrachloroethene	ND		0.070	0.50
1,1,1-Trichloroethane	ND		0.025	0.20
2,2-Dichloropropane	ND		0.060	0.50
Ethylene Dibromide	ND MW		0.025	0.10

MW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030014

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017013.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1913			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1913				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bromoform	ND		0.080	0.50
1,2-Dibromo-3-Chloropropane	ND		0.44	2.0
Trichlorofluoromethane	ND		0.025	0.50
Trichloroethene	ND		0.025	0.20
Bromobenzene	ND		0.035	0.20
1,2-Dichloropropane	ND		0.025	0.20
1,1,1,2-Tetrachloroethane	ND		0.025	0.20
Ethylbenzene	ND		0.030	0.20
trans-1,2-Dichloroethene	ND		0.025	0.20
Hexachlorobutadiene	ND		0.075	0.50
1,1-Dichloroethane	ND		0.025	0.20
Bromomethane	ND		0.16	1.0
1,4-Dichlorobenzene	ND		0.050	0.30
Methyl tert-butyl ether	ND		0.025	0.20

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	98		81 - 120
Toluene-d8 (Surr)	99		75 - 125
Trifluorotoluene (Surr)	98		74 - 118
Dibromofluoromethane (Surr)	101		42 - 132
1,2-Dichloroethane-d4 (Surr)	103		46 - 150

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030015

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method: 8260C
Prep Method: 5030B
Dilution: 1.0
Analysis Date: 03/23/2017 1821
Prep Date: 03/23/2017 1821

Analysis Batch: 580-241247
Prep Batch: N/A

Instrument ID: TAC048
Lab File ID: C232017011.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,2-Dichlorobenzene	ND		0.050	0.30
2-Chlorotoluene	ND		0.070	0.50
1,2,3-Trichloropropane	ND		0.050	0.20
Carbon tetrachloride	ND		0.025	0.20
cis-1,3-Dichloropropene	ND		0.090	0.50
Chlorobenzene	ND		0.025	0.20
Vinyl chloride	ND		0.013	0.020
sec-Butylbenzene	ND		0.070	0.50
Dibromomethane	ND		0.025	0.20
m-Xylene & p-Xylene	0.20	J	0.050	0.50
o-Xylene	0.079	J	0.060	0.50
1,2,4-Trichlorobenzene	ND		0.040	0.20
Styrene	ND		0.10	0.50
Chlorobromomethane	ND		0.025	0.20
Dichlorobromomethane	ND		0.025	0.20
1,3-Dichlorobenzene	ND		0.050	0.30
Benzene	0.054	J	0.025	0.20
Chloroethane	ND		0.075	0.50
trans-1,3-Dichloropropene	ND		0.025	0.20
1,2,3-Trichlorobenzene	ND		0.10	0.50
N-Propylbenzene	ND		0.025	0.20
4-Isopropyltoluene	ND		0.050	0.30
n-Butylbenzene	ND		0.080	0.50
1,1-Dichloropropene	ND		0.015	0.10
cis-1,2-Dichloroethene	ND		0.025	0.20
1,1,2,2-Tetrachloroethane	ND		0.025	0.20
1,2,4-Trimethylbenzene	0.093	J	0.030	0.20
Toluene	0.15	J	0.025	0.20
Naphthalene	0.13	J	0.10	0.50
1,3,5-Trimethylbenzene	ND		0.083	0.50
1,3-Dichloropropane	ND		0.025	0.20
Chloroform	ND		0.030	0.20
4-Chlorotoluene	ND		0.050	0.30
Chlorodibromomethane	ND		0.025	0.20
Dichlorodifluoromethane	ND		0.050	0.40
1,1,2-Trichloroethane	ND		0.025	0.20
tert-Butylbenzene	ND		0.10	0.50
Chloromethane	ND		0.050	0.30
Methylene Chloride	ND		0.11	0.50
1,1-Dichloroethene	ND		0.018	0.10
Isopropylbenzene	ND		0.060	0.50
1,2-Dichloroethane	ND		0.025	0.20
Tetrachloroethene	ND		0.070	0.50
1,1,1-Trichloroethane	ND		0.025	0.20
2,2-Dichloropropane	ND		0.060	0.50
Ethylene Dibromide	ND		0.025	0.10

MW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030015

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method: 8260C
Prep Method: 5030B
Dilution: 1.0
Analysis Date: 03/23/2017 1821
Prep Date: 03/23/2017 1821

Analysis Batch: 580-241247
Prep Batch: N/A

Instrument ID: TAC048
Lab File ID: C232017011.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bromoform	ND		0.080	0.50
1,2-Dibromo-3-Chloropropane	ND		0.44	2.0
Trichlorofluoromethane	ND		0.025	0.50
Trichloroethene	ND		0.025	0.20
Bromobenzene	ND		0.035	0.20
1,2-Dichloropropane	ND		0.025	0.20
1,1,1,2-Tetrachloroethane	ND		0.025	0.20
Ethylbenzene	0.048	J	0.030	0.20
trans-1,2-Dichloroethene	ND		0.025	0.20
Hexachlorobutadiene	ND		0.075	0.50
1,1-Dichloroethane	ND		0.025	0.20
Bromomethane	ND		0.16	1.0
1,4-Dichlorobenzene	ND		0.050	0.30
Methyl tert-butyl ether	ND		0.025	0.20

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	95		81 - 120
Toluene-d8 (Surr)	100		75 - 125
Trifluorotoluene (Surr)	101		74 - 118
Dibromofluoromethane (Surr)	99		42 - 132
1,2-Dichloroethane-d4 (Surr)	103		46 - 150

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017016.D
Dilution:	20			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2031			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 2031				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,2-Dichlorobenzene	ND		1.0	6.0 U
2-Chlorotoluene	ND		1.4	10
1,2,3-Trichloropropane	ND		1.0	4.0
Carbon tetrachloride	ND		0.50	4.0
cis-1,3-Dichloropropene	ND		1.8	10
Chlorobenzene	ND		0.50	4.0
Vinyl chloride	ND		0.26	0.40
sec-Butylbenzene	ND		1.4	10
Dibromomethane	ND		0.50	4.0
m-Xylene & p-Xylene	6.2	J Q	1.0	10
o-Xylene	ND		1.2	10 U
1,2,4-Trichlorobenzene	0.80	J Q	0.80	4.0
Styrene	ND		2.0	10 U
Chlorobromomethane	ND		0.50	4.0
Dichlorobromomethane	ND		0.50	4.0
1,3-Dichlorobenzene	ND		1.0	6.0
Benzene	2.4	J Q	0.50	4.0
Chloroethane	ND		1.5	10 U R
trans-1,3-Dichloropropene	ND		0.50	4.0 U
1,2,3-Trichlorobenzene	ND		2.0	10
N-Propylbenzene	ND		0.50	4.0
4-Isopropyltoluene	ND		1.0	6.0
n-Butylbenzene	ND		1.6	10
1,1-Dichloropropene	ND		0.30	2.0
cis-1,2-Dichloroethene	ND		0.50	4.0
1,1,2,2-Tetrachloroethane	8.5		0.50	4.0
1,2,4-Trimethylbenzene	1.1	J Q	0.60	4.0
Toluene	8.7		0.50	4.0
Naphthalene	3.0	J Q	2.0	10
1,3,5-Trimethylbenzene	ND		1.7	10 U
1,3-Dichloropropane	ND		0.50	4.0
Chloroform	ND		0.60	4.0
4-Chlorotoluene	ND		1.0	6.0
Chlorodibromomethane	ND		0.50	4.0
Dichlorodifluoromethane	ND		1.0	8.0
1,1,2-Trichloroethane	5.2		0.50	4.0
tert-Butylbenzene	ND		2.0	10 U
Chloromethane	110		1.0	6.0
Methylene Chloride	ND		2.2	10 U
1,1-Dichloroethene	ND		0.36	2.0
Isopropylbenzene	ND		1.2	10
1,2-Dichloroethane	ND		0.50	4.0
Tetrachloroethene	ND		1.4	10
1,1,1-Trichloroethane	ND		0.50	4.0
2,2-Dichloropropane	ND		1.2	10
Ethylene Dibromide	ND		0.50	2.0

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017016.D
Dilution:	20			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2031			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 2031				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bromoform	ND		1.6	10 U
1,2-Dibromo-3-Chloropropane	ND		8.8	40
Trichlorofluoromethane	ND		0.50	10
Trichloroethene	ND		0.50	4.0
Bromobenzene	ND		0.70	4.0
1,2-Dichloropropane	ND		0.50	4.0
1,1,1,2-Tetrachloroethane	ND		0.50	4.0
Ethylbenzene	1.6	J Q	0.60	4.0
trans-1,2-Dichloroethene	ND		0.50	4.0 U
Hexachlorobutadiene	ND		1.5	10
1,1-Dichloroethane	ND		0.50	4.0
Bromomethane	4.3	J Q	3.2	20
1,4-Dichlorobenzene	ND		1.0	6.0 U
Methyl tert-butyl ether	43		0.50	4.0

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	97		81 - 120
Toluene-d8 (Surr)	100		75 - 125
Trifluorotoluene (Surr)	100		74 - 118
Dibromofluoromethane (Surr)	99		42 - 132
1,2-Dichloroethane-d4 (Surr)	104		46 - 150

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030017

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method: 8260C
Prep Method: 5030B
Dilution: 1.0
Analysis Date: 03/23/2017 1847
Prep Date: 03/23/2017 1847

Analysis Batch: 580-241247
Prep Batch: N/A

Instrument ID: TAC048
Lab File ID: C232017012.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,2-Dichlorobenzene	ND		0.050	0.30
2-Chlorotoluene	ND		0.070	0.50
1,2,3-Trichloropropane	ND		0.050	0.20
Carbon tetrachloride	ND		0.025	0.20
cis-1,3-Dichloropropene	ND		0.090	0.50
Chlorobenzene	ND		0.025	0.20
Vinyl chloride	ND		0.013	0.020
sec-Butylbenzene	ND		0.070	0.50
Dibromomethane	ND		0.025	0.20
m-Xylene & p-Xylene	3.1		0.050	0.50
o-Xylene	1.4		0.060	0.50
1,2,4-Trichlorobenzene	ND		0.040	0.20
Styrene	ND		0.10	0.50
Chlorobromomethane	ND		0.025	0.20
Dichlorobromomethane	ND		0.025	0.20
1,3-Dichlorobenzene	ND		0.050	0.30
Benzene	3.9		0.025	0.20
Chloroethane	ND		0.075	0.50
trans-1,3-Dichloropropene	ND		0.025	0.20
1,2,3-Trichlorobenzene	ND		0.10	0.50
N-Propylbenzene	0.39		0.025	0.20
4-Isopropyltoluene	11		0.050	0.30
n-Butylbenzene	ND		0.080	0.50
1,1-Dichloropropene	ND		0.015	0.10
cis-1,2-Dichloroethene	ND		0.025	0.20
1,1,2,2-Tetrachloroethane	ND		0.025	0.20
1,2,4-Trimethylbenzene	1.0		0.030	0.20
Toluene	7.2		0.025	0.20
Naphthalene	0.46	J	0.10	0.50
1,3,5-Trimethylbenzene	ND		0.083	0.50
1,3-Dichloropropane	ND		0.025	0.20
Chloroform	ND		0.030	0.20
4-Chlorotoluene	ND		0.050	0.30
Chlorodibromomethane	ND		0.025	0.20
Dichlorodifluoromethane	ND		0.050	0.40
1,1,2-Trichloroethane	ND		0.025	0.20
tert-Butylbenzene	ND		0.10	0.50
Chloromethane	0.062	J	0.050	0.30
Methylene Chloride	ND		0.11	0.50
1,1-Dichloroethene	ND		0.018	0.10
Isopropylbenzene	0.50		0.060	0.50
1,2-Dichloroethane	ND		0.025	0.20
Tetrachloroethene	ND		0.070	0.50
1,1,1-Trichloroethane	ND		0.025	0.20
2,2-Dichloropropane	ND		0.060	0.50
Ethylene Dibromide	ND		0.025	0.10

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030017

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017012.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1847			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1847				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bromoform	ND		0.080	0.50
1,2-Dibromo-3-Chloropropane	ND		0.44	2.0
Trichlorofluoromethane	ND		0.025	0.50
Trichloroethene	ND		0.025	0.20
Bromobenzene	ND		0.035	0.20
1,2-Dichloropropane	ND		0.025	0.20
1,1,1,2-Tetrachloroethane	ND		0.025	0.20
Ethylbenzene	1.3		0.030	0.20
trans-1,2-Dichloroethene	ND		0.025	0.20
Hexachlorobutadiene	ND		0.075	0.50
1,1-Dichloroethane	ND		0.025	0.20
Bromomethane	ND		0.16	1.0
1,4-Dichlorobenzene	ND		0.050	0.30
Methyl tert-butyl ether	ND		0.025	0.20

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	96		81 - 120
Toluene-d8 (Surr)	100		75 - 125
Trifluorotoluene (Surr)	102		74 - 118
Dibromofluoromethane (Surr)	100		42 - 132
1,2-Dichloroethane-d4 (Surr)	101		46 - 150

MW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030018

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: 3585
Dilution: 1.0
Analysis Date: 03/23/2017 1639
Prep Date: 03/23/2017 1237

Analysis Batch: 580-241213
Prep Batch: 580-241208

Instrument ID: SEA046
Lab File ID: C2317019.D
Initial Weight/Volume: 1.11 g
Final Weight/Volume: 10 mL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Dichlorodifluoromethane		ND		4400	19000 U
Chloromethane		ND		980	9700
Vinyl chloride		ND		2500	15000
Bromomethane		ND		1300	19000
Chloroethane		ND		1500	39000
Trichlorofluoromethane		ND		3600	19000
1,1-Dichloroethene		ND		470	1900
Methylene Chloride		ND		6300	24000
trans-1,2-Dichloroethene		ND		1400	3900
1,1-Dichloroethane		ND		410	3900
2,2-Dichloropropane		ND		1200	3900
cis-1,2-Dichloroethene		ND		470	3900
Bromochloromethane		ND		600	3900
Chloroform		440	J Q	410	3900
1,1,1-Trichloroethane		1300	J Q	330	3900
Carbon tetrachloride		ND		370	1900 U
1,1-Dichloropropene		ND		510	3900 U
Benzene		27000		830	1900
1,2-Dichloroethane		ND		530	1900 U
Trichloroethene		ND		770	2400
1,2-Dichloropropane		ND		230	1900
Dibromomethane		ND		720	5800
Bromodichloromethane		ND		360	3900
cis-1,3-Dichloropropene		ND		390	1900
Toluene		49000		3100	15000
trans-1,3-Dichloropropene		ND		680	3900 U
1,1,2-Trichloroethane		ND		270	1900 U
Tetrachloroethene		910	J Q	510	1900
1,3-Dichloropropane		ND		530	3900 U
Dibromochloromethane		ND		1100	3900 U
1,2-Dibromoethane		370	J Q	330	1900
Chlorobenzene		ND		950	3900 U
Ethylbenzene		8300		880	3900
1,1,1,2-Tetrachloroethane		ND		1000	3900 U
1,1,2,2-Tetrachloroethane		ND		220	1900 U
m-Xylene & p-Xylene		34000		3100	19000
o-Xylene		15000		1300	3900
Styrene		15000		590	3900
Bromoform		ND		2500	19000 U
Isopropylbenzene		1500	J Q	830	3900
Bromobenzene		ND		1700	9700 U
N-Propylbenzene		4000	B	660	3900
1,2,3-Trichloropropane		ND		1100	3900 U
2-Chlorotoluene		ND		850	3900 U
1,3,5-Trimethylbenzene		6700		740	3900
4-Chlorotoluene		ND		950	3900 U

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030018

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method:	8260C	Analysis Batch:	580-241213	Instrument ID:	SEA046
Prep Method:	3585	Prep Batch:	580-241208	Lab File ID:	C2317019.D
Dilution:	1.0			Initial Weight/Volume:	1.11 g
Analysis Date:	03/23/2017 1639			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1237				

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
t-Butylbenzene		~~ND~~		750	3900 U
1,2,4-Trimethylbenzene		23000	~~B~~	580	3900
sec-Butylbenzene		1200	J Q	780	3900
1,3-Dichlorobenzene		~~ND~~		570	5800 U
4-Isopropyltoluene		1200	J Q	760	3900
1,4-Dichlorobenzene		~~ND~~		1000	5800 U
n-Butylbenzene		2500	J Q	1100	3900
1,2-Dichlorobenzene		610	J Q	440	3900
1,2-Dibromo-3-Chloropropane		ND		9500	19000 U
1,2,4-Trichlorobenzene		ND		1500	5800
1,2,3-Trichlorobenzene		ND		1400	3900
Hexachlorobutadiene		ND		1800	9700
Naphthalene		170000		1200	5800
Methyl tert-butyl ether		~~ND~~		580	3900 U

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	92		79 - 119
4-Bromofluorobenzene (Surr)	104		79 - 120
Dibromofluoromethane (Surr)	100		78 - 118
Trifluorotoluene (Surr)	107		52 - 152
1,2-Dichloroethane-d4 (Surr)	96		81 - 121

03/27/2017

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: 3585
Dilution: 1.0
Analysis Date: 03/23/2017 1706
Prep Date: 03/23/2017 1237

Analysis Batch: 580-241213
Prep Batch: 580-241208

Instrument ID: SEA046
Lab File ID: C2317020.D
Initial Weight/Volume: 0.99 g
Final Weight/Volume: 10 mL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Dichlorodifluoromethane		ND		5000	22000 U
Chloromethane		ND		1100	11000
Vinyl chloride		ND		2800	16000
Bromomethane		ND		1500	22000
Chloroethane		ND		1700	43000
Trichlorofluoromethane		ND		4100	22000
1,1-Dichloroethene		ND		530	2200
Methylene Chloride		ND		7000	27000
trans-1,2-Dichloroethene		ND		1600	4300
1,1-Dichloroethane		ND		460	4300
2,2-Dichloropropane		ND		1300	4300
cis-1,2-Dichloroethene		ND		530	4300
Bromochloromethane		ND		670	4300
Chloroform		ND		460	4300
1,1,1-Trichloroethane		ND		370	4300
Carbon tetrachloride		ND		410	2200
1,1-Dichloropropene		ND		580	4300
Benzene		ND		930	2200
1,2-Dichloroethane		ND		600	2200
Trichloroethene		ND		870	2700
1,2-Dichloropropane		ND		260	2200
Dibromomethane		ND		800	6500
Bromodichloromethane		ND		400	4300
cis-1,3-Dichloropropene		ND		430	2200
Toluene		ND		3400	16000
trans-1,3-Dichloropropene		ND		760	4300
1,1,2-Trichloroethane		ND		300	2200
Tetrachloroethene		ND		580	2200
1,3-Dichloropropane		ND		600	4300
Dibromochloromethane		ND		1200	4300
1,2-Dibromoethane		ND		370	2200
Chlorobenzene		ND		1100	4300
Ethylbenzene		ND		990	4300
1,1,1,2-Tetrachloroethane		ND		1200	4300
1,1,2,2-Tetrachloroethane		ND		250	2200
m-Xylene & p-Xylene		ND		3500	22000
o-Xylene		ND		1500	4300
Styrene		ND		660	4300
Bromoform		ND		2900	22000
Isopropylbenzene		ND		930	4300
Bromobenzene		ND		1900	11000
N-Propylbenzene		1400	J B Q	740	4300
1,2,3-Trichloropropane		ND		1200	4300 U
2-Chlorotoluene		ND		960	4300 U
1,3,5-Trimethylbenzene		980	J Q	830	4300
4-Chlorotoluene		ND		1100	4300 U

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: 3585
Dilution: 1.0
Analysis Date: 03/23/2017 1706
Prep Date: 03/23/2017 1237

Analysis Batch: 580-241213
Prep Batch: 580-241208

Instrument ID: SEA046
Lab File ID: C2317020.D
Initial Weight/Volume: 0.99 g
Final Weight/Volume: 10 mL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
t-Butylbenzene		~~ND~~		840	4300 U
1,2,4-Trimethylbenzene		3300	J B Q	650	4300
sec-Butylbenzene		1100	J Q	880	4300
1,3-Dichlorobenzene		~~ND~~		640	6500 U
4-Isopropyltoluene		7800		850	4300
1,4-Dichlorobenzene		~~ND~~		1200	6500 U
n-Butylbenzene		2100	J Q	1300	4300
1,2-Dichlorobenzene		ND		490	4300 U
1,2-Dibromo-3-Chloropropane		ND		11000	22000
1,2,4-Trichlorobenzene		ND		1700	6500
1,2,3-Trichlorobenzene		ND		1600	4300
Hexachlorobutadiene		ND		2000	11000 U
Naphthalene		2300	J Q	1400	6500
Methyl tert-butyl ether		~~ND~~		650	4300 U

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	92		79 - 119
4-Bromofluorobenzene (Surr)	104		79 - 120
Dibromofluoromethane (Surr)	99		78 - 118
Trifluorotoluene (Surr)	106		52 - 152
1,2-Dichloroethane-d4 (Surr)	95		81 - 121

Client: Ecology and Environment, Inc. Job Number: 580-66890-2

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: 3585
Dilution: 1.0
Analysis Date: 03/23/2017 1733
Prep Date: 03/23/2017 1237

Analysis Batch: 580-241213
Prep Batch: 580-241208

Instrument ID: SEA046
Lab File ID: C2317021.D
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 10 mL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Dichlorodifluoromethane		ND		4400	19000
Chloromethane		ND		960	9500
Vinyl chloride		ND		2500	14000
Bromomethane		ND		1300	19000
Chloroethane		ND		1500	38000
Trichlorofluoromethane		ND		3600	19000
1,1-Dichloroethene		ND		470	1900
Methylene Chloride		ND		6100	24000
trans-1,2-Dichloroethene		ND		1400	3800
1,1-Dichloroethane		ND		400	3800
2,2-Dichloropropane		ND		1200	3800
cis-1,2-Dichloroethene		ND		470	3800
Bromochloromethane		ND		590	3800
Chloroform		ND		400	3800
1,1,1-Trichloroethane		ND		320	3800
Carbon tetrachloride		ND		360	1900
1,1-Dichloropropene		ND		500	3800
Benzene		ND		820	1900
1,2-Dichloroethane		ND		520	1900
Trichloroethene		ND		760	2400
1,2-Dichloropropane		ND		230	1900
Dibromomethane		ND		700	5700
Bromodichloromethane		ND		350	3800
cis-1,3-Dichloropropene		ND		380	1900
Toluene		ND		3000	14000
trans-1,3-Dichloropropene		ND		670	3800
1,1,2-Trichloroethane		ND		270	1900
Tetrachloroethene		ND		500	1900
1,3-Dichloropropane		ND		520	3800
Dibromochloromethane		ND		1100	3800
1,2-Dibromoethane		ND		320	1900
Chlorobenzene		ND		930	3800
Ethylbenzene		ND		870	3800
1,1,1,2-Tetrachloroethane		ND		1000	3800
1,1,2,2-Tetrachloroethane		ND		220	1900
m-Xylene & p-Xylene		ND		3100	19000
o-Xylene		ND		1300	3800
Styrene		ND		580	3800
Bromoform		ND		2500	19000
Isopropylbenzene		ND		820	3800
Bromobenzene		ND		1600	9500
N-Propylbenzene		730	J B Q	650	3800
1,2,3-Trichloropropane		ND		1100	3800 U
2-Chlorotoluene		ND		840	3800 U
1,3,5-Trimethylbenzene		1200	J Q	720	3800
4-Chlorotoluene		ND		930	3800 U

3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds by GC/MS

Analysis Method: 8260C
Prep Method: 3585
Dilution: 1.0
Analysis Date: 03/23/2017 1733
Prep Date: 03/23/2017 1237

Analysis Batch: 580-241213
Prep Batch: 580-241208

Instrument ID: SEA046
Lab File ID: C2317021.D
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 10 mL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
t-Butylbenzene		ND		730	3800 U
1,2,4-Trimethylbenzene		4200	B	570	3800
sec-Butylbenzene		ND		770	3800 U
1,3-Dichlorobenzene		ND		560	5700
4-Isopropyltoluene		ND		740	3800
1,4-Dichlorobenzene		ND		1000	5700
n-Butylbenzene		1700	J	1100	3800
1,2-Dichlorobenzene		ND		430	3800 U
1,2-Dibromo-3-Chloropropane		ND		9400	19000
1,2,4-Trichlorobenzene		ND		1500	5700
1,2,3-Trichlorobenzene		ND		1400	3800
Hexachlorobutadiene		ND		1700	9500
Naphthalene		61000		1200	5700
Methyl tert-butyl ether		ND		570	3800 U

Surrogate	%Rec	Qualifier	Acceptance Limits
Toluene-d8 (Surr)	105		79 - 119
4-Bromofluorobenzene (Surr)	99		79 - 120
Dibromofluoromethane (Surr)	108		78 - 118
Trifluorotoluene (Surr)	114		52 - 152
1,2-Dichloroethane-d4 (Surr)	104		81 - 121

03/27/2017

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030021

Lab Sample ID: 580-66890-8
Client Matrix: Water

Date Sampled: 03/21/2017 0945
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017007.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1543			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1543				

Analyte	Result (ug/L)	Qualifier	MDL	RL
1,2-Dichlorobenzene	ND		0.050	0.30
2-Chlorotoluene	ND		0.070	0.50
1,2,3-Trichloropropane	ND		0.050	0.20
Carbon tetrachloride	ND		0.025	0.20
cis-1,3-Dichloropropene	ND		0.090	0.50
Chlorobenzene	ND		0.025	0.20
Vinyl chloride	0.091		0.013	0.020
sec-Butylbenzene	ND		0.070	0.50
Dibromomethane	ND		0.025	0.20
m-Xylene & p-Xylene	ND		0.050	0.50
o-Xylene	ND		0.060	0.50
1,2,4-Trichlorobenzene	ND		0.040	0.20
Styrene	ND		0.10	0.50
Chlorobromomethane	ND		0.025	0.20
Dichlorobromomethane	ND		0.025	0.20
1,3-Dichlorobenzene	ND		0.050	0.30
Benzene	ND		0.025	0.20
Chloroethane	ND		0.075	0.50
trans-1,3-Dichloropropene	ND		0.025	0.20
1,2,3-Trichlorobenzene	ND		0.10	0.50
N-Propylbenzene	ND		0.025	0.20
4-Isopropyltoluene	ND		0.050	0.30
n-Butylbenzene	ND		0.080	0.50
1,1-Dichloropropene	ND		0.015	0.10
cis-1,2-Dichloroethene	ND		0.025	0.20
1,1,2,2-Tetrachloroethane	ND		0.025	0.20
1,2,4-Trimethylbenzene	ND		0.030	0.20
Toluene	ND		0.025	0.20
Naphthalene	0.14	J	0.10	0.50
1,3,5-Trimethylbenzene	ND		0.083	0.50
1,3-Dichloropropane	ND		0.025	0.20
Chloroform	ND		0.030	0.20
4-Chlorotoluene	ND		0.050	0.30
Chlorodibromomethane	ND		0.025	0.20
Dichlorodifluoromethane	ND		0.050	0.40
1,1,2-Trichloroethane	ND		0.025	0.20
tert-Butylbenzene	ND		0.10	0.50
Chloromethane	ND		0.050	0.30
Methylene Chloride	ND		0.11	0.50
1,1-Dichloroethene	ND		0.018	0.10
Isopropylbenzene	ND		0.060	0.50
1,2-Dichloroethane	ND		0.025	0.20
Tetrachloroethene	ND		0.070	0.50
1,1,1-Trichloroethane	ND		0.025	0.20
2,2-Dichloropropane	ND		0.060	0.50
Ethylene Dibromide	ND		0.025	0.10

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030021

Lab Sample ID: 580-66890-8
Client Matrix: Water

Date Sampled: 03/21/2017 0945
Date Received: 03/22/2017 0955

8260C Volatile Organic Compounds (GC/MS)

Analysis Method:	8260C	Analysis Batch:	580-241247	Instrument ID:	TAC048
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	C232017007.D
Dilution:	1.0			Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1543			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1543				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Bromoform	ND		0.080	0.50
1,2-Dibromo-3-Chloropropane	ND		0.44	2.0
Trichlorofluoromethane	ND		0.025	0.50
Trichloroethene	ND		0.025	0.20
Bromobenzene	ND		0.035	0.20
1,2-Dichloropropane	ND		0.025	0.20
1,1,1,2-Tetrachloroethane	ND		0.025	0.20
Ethylbenzene	ND		0.030	0.20
trans-1,2-Dichloroethene	ND		0.025	0.20
Hexachlorobutadiene	ND		0.075	0.50
1,1-Dichloroethane	ND		0.025	0.20
Bromomethane	ND		0.16	1.0
1,4-Dichlorobenzene	ND		0.050	0.30
Methyl tert-butyl ether	ND		0.025	0.20

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene (Surr)	96		81 - 120
Toluene-d8 (Surr)	100		75 - 125
Trifluorotoluene (Surr)	100		74 - 118
Dibromofluoromethane (Surr)	98		42 - 132
1,2-Dichloroethane-d4 (Surr)	102		46 - 150

ecology and environment, inc.
Global Environmental Specialists
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Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: March 29, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 4 water and 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington, has been completed. Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270) was performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2/4VE/M).

The samples were numbered:

17030014	17030015	17030016	17030017	17030018
17030019	17030020			

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained and received within the QC limits of 0°C to 6°C. The samples were collected on March 20 and 21, 2017, were extracted on March 23, 2017, and were analyzed by March 26, 2017, therefore meeting holding time criteria of less than 14 days between collection and extraction and less than 40 days between extraction and analysis.

2. **Tuning: Acceptable.**

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. **Initial Calibration: Satisfactory.**

All average Relative Response Factors (RRFs) were within the QC limits except n-nitroso-di-n-propylamine with a low RRF; associated sample quantitation limits were rejected (R). All Relative Standard Deviations (RSDs) were within the QC limits.

4. **Continuing Calibration: Satisfactory.**

All RRFs were within the QC limits except n-nitroso-di-n-propylamine with low RRFs; no additional actions were taken based on these outliers. All % differences were within the QC limits except

low nitrobenzene and 2-methylnaphthalene recoveries on March 23 (13:58), a high 3,3'-dichlorobenzidine recoveries on March 25 (15:41), and high 4-nitroaniline and 3,3'-dichlorobenzidine recoveries on March 26 (16:19). Positive results associated with high recovery outliers were qualified as estimated quantities with a high bias (JH). Positive results and sample quantitation limits associated with low recovery outliers were qualified as estimated quantities with a low bias (JL or UJL).

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. System Monitoring Compounds (SMCs): Satisfactory.

All SMC recoveries were within QC limits except one high outlier (nitrobenzene-d5) in samples 17030014, 17030014MS, and 17030014MSD, a high nitrobenzene-d5 result and low fluorobiphenyl, 2,4,6-tribromophenol, terphenyl-d14, 2-fluorophenol results in sample 17030016, a high phenol-d6 result in sample 17030017, a high terphenyl-d14 result in sample 17030019, and high nitrobenzene-d5 results in in samples 17030020, 17030020MS, and 17030020MSD. No qualifications were applied based on one SMC outlier per samples. For samples with more than one SMC outlier, positive results associated with high recovery outliers were qualified as estimated quantities with a high bias (JH), and positive results and sample quantitation limits associated with low recovery outliers were qualified as estimated quantities with a low bias (JL or UJL).

7. Matrix Spike (MS)/MS Duplicate (MSD) Analysis: Satisfactory.

MS and MSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits except many high recovery outliers and a few low recovery outliers in the spike analyses of sample 17030020; no qualifiers were applied based on these outliers alone.

8. Blank Spike (BS)/BS Duplicate (BSD) Analysis: Acceptable.

BS and BSD analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within QC limits.

9. Duplicate Analysis: Satisfactory.

Duplicate and spike duplicate analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate and spike duplicate results were within QC limits except two spike duplicate outliers. No qualifiers were applied based on the duplicate outliers.

10. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

11. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

12. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

13. Overall Assessment of Data for Use

A total of 480 results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers. 57 samples results were qualified as estimated quantities based on spike accuracy outliers. Six sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030014

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270D
Prep Method: 3520C
Dilution: 5.0
Analysis Date: 03/25/2017 2019
Prep Date: 03/23/2017 1546

Analysis Batch: 580-241374
Prep Batch: 580-241252

Instrument ID: TAC051
Lab File ID: 0325A009.D
Initial Weight/Volume: 1031.7 mL
Final Weight/Volume: 2 mL
Injection Volume: 2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	1.8	J Q	0.48	2.9
Bis(2-chloroethyl)ether	ND		0.48	1.9 U
2-Chlorophenol	ND		0.48	1.9
1,3-Dichlorobenzene	ND		0.48	1.9
1,4-Dichlorobenzene	ND		0.48	1.9
Benzyl alcohol	1.7	J Q	0.48	1.9
1,2-Dichlorobenzene	ND		0.48	1.9 U
2-Methylphenol	2.0		0.48	1.9
3 & 4 Methylphenol	0.51	J Q	0.48	3.9
N-Nitrosodi-n-propylamine	10		0.48	1.9
Hexachloroethane	ND		0.48	2.9 U
Nitrobenzene	ND		0.48	1.9
Isophorone	ND		0.48	1.9
2-Nitrophenol	ND		0.48	1.9
2,4-Dimethylphenol	1.8	J Q	1.5	9.7
Benzoic acid	ND	~~F1~~	2.9	15 U
Bis(2-chloroethoxy)methane	ND		0.48	1.9
2,4-Dichlorophenol	ND		0.48	1.9
1,2,4-Trichlorobenzene	ND		0.48	1.9
Naphthalene	ND		0.48	1.9
4-Chloroaniline	ND	~~F1~~	0.48	1.9
Hexachlorobutadiene	ND		0.48	2.9
4-Chloro-3-methylphenol	ND		0.48	1.9
2-Methylnaphthalene	ND		0.097	0.97
Hexachlorocyclopentadiene	ND		0.48	9.7
2,4,6-Trichlorophenol	ND		0.48	2.9
2,4,5-Trichlorophenol	ND		0.48	1.9
2-Chloronaphthalene	ND		0.097	0.29
2-Nitroaniline	ND	~~F1~~ ~~F2~~	0.48	1.9
Dimethyl phthalate	ND		0.48	1.9
Acenaphthylene	ND		0.097	0.39
2,6-Dinitrotoluene	ND		0.48	1.9
3-Nitroaniline	ND	~~F1~~	0.58	1.9
Acenaphthene	ND		0.097	0.48
2,4-Dinitrophenol	ND		4.8	24
4-Nitrophenol	ND		4.8	15
Dibenzofuran	ND		0.48	1.9
2,4-Dinitrotoluene	ND		0.48	1.9
Diethyl phthalate	ND		0.48	1.9
4-Chlorophenyl phenyl ether	ND		0.48	1.9
Fluorene	0.49		0.097	0.29
4-Nitroaniline	ND	~~F1~~ ~~F2~~	0.48	2.9 U
4,6-Dinitro-2-methylphenol	ND		4.8	19
N-Nitrosodiphenylamine	ND	~~F1~~	0.48	1.9
4-Bromophenyl phenyl ether	ND		0.48	1.9
Hexachlorobenzene	ND		0.48	1.9

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030014**

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A009.D
Dilution:	5.0			Initial Weight/Volume:	1031.7 mL
Analysis Date:	03/25/2017 2019			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	ND	F1	0.48	3.4
Phenanthrene	ND		0.097	0.39
Anthracene	ND		0.048	0.19
Di-n-butyl phthalate	ND	F1	0.63	1.9
Fluoranthene	ND		0.063	0.24
Pyrene	ND	F1	0.063	0.29
Butyl benzyl phthalate	ND	F1	0.97	2.9
3,3'-Dichlorobenzidine	ND	F1	0.48	9.7
Benzo[a]anthracene	ND	F1	0.097	0.29
Chrysene	ND		0.063	0.19
Bis(2-ethylhexyl) phthalate	ND		5.7	15
Di-n-octyl phthalate	ND	F1	0.87	1.9
Benzo[a]pyrene	ND		0.097	0.19
Indeno[1,2,3-cd]pyrene	ND		0.097	0.29
Dibenz(a,h)anthracene	ND	F1	0.097	0.29
Benzo[g,h,i]perylene	ND	F1	0.097	0.29
Carbazole	ND		0.48	1.9
1-Methylnaphthalene	ND		0.15	0.29
Benzo[b]fluoranthene	ND	F1	0.097	0.39
Benzo[k]fluoranthene	ND		0.097	0.29
bis(chloroisopropyl) ether	ND		0.48	1.9

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	81		50 - 113
Phenol-d5 (Surr)	118		52 - 120
Nitrobenzene-d5 (Surr)	138	X	59 - 120
2-Fluorobiphenyl	92		50 - 120
2,4,6-Tribromophenol (Surr)	111		57 - 132
Terphenyl-d14 (Surr)	94		72 - 140

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030015

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A012.D
Dilution:	5.0			Initial Weight/Volume:	979.7 mL
Analysis Date:	03/25/2017 2132			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.51	3.1
Bis(2-chloroethyl)ether	ND		0.51	2.0
2-Chlorophenol	ND		0.51	2.0
1,3-Dichlorobenzene	ND		0.51	2.0
1,4-Dichlorobenzene	ND		0.51	2.0
Benzyl alcohol	0.99	J	0.51	2.0
1,2-Dichlorobenzene	ND		0.51	2.0
2-Methylphenol	ND		0.51	2.0
3 & 4 Methylphenol	ND		0.51	4.1
N-Nitrosodi-n-propylamine	ND		0.51	2.0
Hexachloroethane	ND		0.51	3.1
Nitrobenzene	ND		0.51	2.0
Isophorone	ND		0.51	2.0
2-Nitrophenol	ND		0.51	2.0
2,4-Dimethylphenol	ND		1.5	10
Benzoic acid	ND		3.1	15
Bis(2-chloroethoxy)methane	ND		0.51	2.0
2,4-Dichlorophenol	ND		0.51	2.0
1,2,4-Trichlorobenzene	ND		0.51	2.0
Naphthalene	ND		0.51	2.0
4-Chloroaniline	ND		0.51	2.0
Hexachlorobutadiene	ND		0.51	3.1
4-Chloro-3-methylphenol	ND		0.51	2.0
2-Methylnaphthalene	0.13	J	0.10	1.0
Hexachlorocyclopentadiene	ND		0.51	10
2,4,6-Trichlorophenol	ND		0.51	3.1
2,4,5-Trichlorophenol	ND		0.51	2.0
2-Chloronaphthalene	ND		0.10	0.31
2-Nitroaniline	ND		0.51	2.0
Dimethyl phthalate	ND		0.51	2.0
Acenaphthylene	ND		0.10	0.41
2,6-Dinitrotoluene	ND		0.51	2.0
3-Nitroaniline	ND		0.61	2.0
Acenaphthene	ND		0.10	0.51
2,4-Dinitrophenol	ND		5.1	26
4-Nitrophenol	ND		5.1	15
Dibenzofuran	ND		0.51	2.0
2,4-Dinitrotoluene	ND		0.51	2.0
Diethyl phthalate	ND		0.51	2.0
4-Chlorophenyl phenyl ether	ND		0.51	2.0
Fluorene	0.21	J	0.10	0.31
4-Nitroaniline	ND		0.51	3.1
4,6-Dinitro-2-methylphenol	ND		5.1	20
N-Nitrosodiphenylamine	ND		0.51	2.0
4-Bromophenyl phenyl ether	ND		0.51	2.0
Hexachlorobenzene	ND		0.51	2.0

MW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030015

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A012.D
Dilution:	5.0			Initial Weight/Volume:	979.7 mL
Analysis Date:	03/25/2017 2132			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	ND		0.51	3.6
Phenanthrene	ND		0.10	0.41
Anthracene	ND		0.051	0.20
Di-n-butyl phthalate	ND		0.66	2.0
Fluoranthene	3.0		0.066	0.26
Pyrene	ND		0.066	0.31
Butyl benzyl phthalate	ND		1.0	3.1
3,3'-Dichlorobenzidine	ND		0.51	10
Benzo[a]anthracene	ND		0.10	0.31
Chrysene	ND		0.066	0.20
Bis(2-ethylhexyl) phthalate	ND		6.0	15
Di-n-octyl phthalate	ND		0.92	2.0
Benzo[a]pyrene	ND		0.10	0.20
Indeno[1,2,3-cd]pyrene	ND		0.10	0.31
Dibenz(a,h)anthracene	ND		0.10	0.31
Benzo[g,h,i]perylene	ND		0.10	0.31
Carbazole	ND		0.51	2.0
1-Methylnaphthalene	ND		0.15	0.31
Benzo[b]fluoranthene	ND		0.10	0.41
Benzo[k]fluoranthene	ND		0.10	0.31
bis(chloroisopropyl) ether	ND		0.51	2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	74		50 - 113
Phenol-d5 (Surr)	91		52 - 120
Nitrobenzene-d5 (Surr)	93		59 - 120
2-Fluorobiphenyl	86		50 - 120
2,4,6-Tribromophenol (Surr)	97		57 - 132
Terphenyl-d14 (Surr)	81		72 - 140

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A013.D
Dilution:	10			Initial Weight/Volume:	1120.4 mL
Analysis Date:	03/25/2017 2156			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	ND		0.89	5.4
Bis(2-chloroethyl)ether	ND		0.89	3.6
2-Chlorophenol	ND		0.89	3.6
1,3-Dichlorobenzene	ND		0.89	3.6
1,4-Dichlorobenzene	ND		0.89	3.6
Benzyl alcohol	ND		0.89	3.6
1,2-Dichlorobenzene	ND		0.89	3.6
2-Methylphenol	ND		0.89	3.6
3 & 4 Methylphenol	ND		0.89	7.1
N-Nitrosodi-n-propylamine	ND		0.89	3.6
Hexachloroethane	ND		0.89	5.4
Nitrobenzene	ND		0.89	3.6
Isophorone	ND		0.89	3.6
2-Nitrophenol	ND		0.89	3.6
2,4-Dimethylphenol	ND		2.7	18
Benzoic acid	ND		5.4	27
Bis(2-chloroethoxy)methane	ND		0.89	3.6
2,4-Dichlorophenol	ND		0.89	3.6
1,2,4-Trichlorobenzene	ND		0.89	3.6
Naphthalene	ND		0.89	3.6
4-Chloroaniline	ND		0.89	3.6
Hexachlorobutadiene	ND		0.89	5.4
4-Chloro-3-methylphenol	2.5	JQ	0.89	3.6
2-Methylnaphthalene	ND		0.18	1.8
Hexachlorocyclopentadiene	ND		0.89	18
2,4,6-Trichlorophenol	ND		0.89	5.4
2,4,5-Trichlorophenol	ND		0.89	3.6
2-Chloronaphthalene	ND		0.18	0.54
2-Nitroaniline	ND		0.89	3.6
Dimethyl phthalate	9.0	JH	0.89	3.6
Acenaphthylene	ND		0.18	0.71
2,6-Dinitrotoluene	ND		0.89	3.6
3-Nitroaniline	ND		1.1	3.6
Acenaphthene	ND		0.18	0.89
2,4-Dinitrophenol	ND		8.9	45
4-Nitrophenol	ND		8.9	27
Dibenzofuran	ND		0.89	3.6
2,4-Dinitrotoluene	ND		0.89	3.6
Diethyl phthalate	ND		0.89	3.6
4-Chlorophenyl phenyl ether	ND		0.89	3.6
Fluorene	ND		0.18	0.54
4-Nitroaniline	ND		0.89	5.4
4,6-Dinitro-2-methylphenol	ND		8.9	36
N-Nitrosodiphenylamine	ND		0.89	3.6
4-Bromophenyl phenyl ether	ND		0.89	3.6
Hexachlorobenzene	ND		0.89	3.6

Client: Ecology and Environment, Inc. Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A013.D
Dilution:	10			Initial Weight/Volume:	1120.4 mL
Analysis Date:	03/25/2017 2156			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Pentachlorophenol	ND		0.89	6.2
Phenanthrene	ND		0.18	0.71
Anthracene	ND		0.089	0.36
Di-n-butyl phthalate	ND		1.2	3.6
Fluoranthene	ND		0.12	0.45
Pyrene	ND		0.12	0.54
Butyl benzyl phthalate	ND		1.8	5.4
3,3'-Dichlorobenzidine	ND		0.89	18
Benzo[a]anthracene	ND		0.18	0.54
Chrysene	ND		0.12	0.36
Bis(2-ethylhexyl) phthalate	ND		11	27
Carbazole	ND		0.89	3.6
1-Methylnaphthalene	ND		0.27	0.54
bis(chloroisopropyl) ether	ND		0.89	3.6

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	3	X	50 - 113
Phenol-d5 (Surr)	58		52 - 120
Nitrobenzene-d5 (Surr)	170	X	59 - 120
2-Fluorobiphenyl	14	X	50 - 120
2,4,6-Tribromophenol (Surr)	16	X	57 - 132
Terphenyl-d14 (Surr)	4	X	72 - 140

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030016**

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241384	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0326A005.D
Dilution:	100			Initial Weight/Volume:	1120.4 mL
Analysis Date:	03/26/2017 1708	Run Type:	DL	Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Di-n-octyl phthalate	ND		16	36 U
Benzo[a]pyrene	ND		1.8	3.6
Indeno[1,2,3-cd]pyrene	ND		1.8	5.4
Dibenz(a,h)anthracene	ND		1.8	5.4
Benzo[g,h,i]perylene	ND		1.8	5.4
Benzo[b]fluoranthene	ND		1.8	7.1
Benzo[k]fluoranthene	ND		1.8	5.4

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030017

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270D
Prep Method: 3520C
Dilution: 10
Analysis Date: 03/25/2017 2221
Prep Date: 03/23/2017 1546

Analysis Batch: 580-241374
Prep Batch: 580-241252

Instrument ID: TAC051
Lab File ID: 0325A014.D
Initial Weight/Volume: 919.1 mL
Final Weight/Volume: 2 mL
Injection Volume: 2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenol	98		1.1	6.5
Bis(2-chloroethyl)ether	3.4	J Q	1.1	4.4
2-Chlorophenol	ND		1.1	4.4 U
1,3-Dichlorobenzene	ND		1.1	4.4
1,4-Dichlorobenzene	ND		1.1	4.4
Benzyl alcohol	4.9		1.1	4.4
1,2-Dichlorobenzene	ND		1.1	4.4 U
2-Methylphenol	130		1.1	4.4
N-Nitrosodi-n-propylamine	ND		1.1	4.4 U R
Hexachloroethane	ND		1.1	6.5 U
Nitrobenzene	ND		1.1	4.4
Isophorone	ND		1.1	4.4
2-Nitrophenol	ND		1.1	4.4
2,4-Dimethylphenol	ND		3.3	22
Benzoic acid	ND		6.5	33
Bis(2-chloroethoxy)methane	ND		1.1	4.4
2,4-Dichlorophenol	ND		1.1	4.4
1,2,4-Trichlorobenzene	ND		1.1	4.4
Naphthalene	ND		1.1	4.4
4-Chloroaniline	ND		1.1	4.4
Hexachlorobutadiene	ND		1.1	6.5
4-Chloro-3-methylphenol	ND		1.1	4.4
2-Methylnaphthalene	ND		0.22	2.2
Hexachlorocyclopentadiene	ND		1.1	22
2,4,6-Trichlorophenol	ND		1.1	6.5
2,4,5-Trichlorophenol	ND		1.1	4.4
2-Chloronaphthalene	ND		0.22	0.65
2-Nitroaniline	ND		1.1	4.4
Dimethyl phthalate	ND		1.1	4.4
Acenaphthylene	ND		0.22	0.87
2,6-Dinitrotoluene	ND		1.1	4.4
3-Nitroaniline	ND		1.3	4.4
Acenaphthene	ND		0.22	1.1
2,4-Dinitrophenol	ND		11	54
4-Nitrophenol	ND		11	33
Dibenzofuran	ND		1.1	4.4
2,4-Dinitrotoluene	ND		1.1	4.4
Diethyl phthalate	ND		1.1	4.4
4-Chlorophenyl phenyl ether	ND		1.1	4.4
Fluorene	ND		0.22	0.65
4-Nitroaniline	ND		1.1	6.5
4,6-Dinitro-2-methylphenol	ND		11	44
N-Nitrosodiphenylamine	ND		1.1	4.4
4-Bromophenyl phenyl ether	ND		1.1	4.4
Hexachlorobenzene	ND		1.1	4.4
Pentachlorophenol	ND		1.1	7.6

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030017**

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241374	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0325A014.D
Dilution:	10			Initial Weight/Volume:	919.1 mL
Analysis Date:	03/25/2017 2221			Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Phenanthrene	ND		0.22	0.87
Anthracene	ND		0.11	0.44
Di-n-butyl phthalate	ND		1.4	4.4
Fluoranthene	ND		0.14	0.54
Pyrene	ND		0.14	0.65
Butyl benzyl phthalate	ND		2.2	6.5
3,3'-Dichlorobenzidine	ND		1.1	22
Benzo[a]anthracene	ND		0.22	0.65
Chrysene	ND		0.14	0.44
Bis(2-ethylhexyl) phthalate	ND		13	33
Carbazole	ND		1.1	4.4
1-Methylnaphthalene	ND		0.33	0.65
bis(chloroisopropyl) ether	ND		1.1	4.4

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	81		50 - 113
Phenol-d5 (Surr)	760	X	52 - 120
Nitrobenzene-d5 (Surr)	75		59 - 120
2-Fluorobiphenyl	109		50 - 120
2,4,6-Tribromophenol (Surr)	103		57 - 132
Terphenyl-d14 (Surr)	88		72 - 140

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030017**

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241384	Instrument ID:	TAC051
Prep Method:	3520C	Prep Batch:	580-241252	Lab File ID:	0326A006.D
Dilution:	100			Initial Weight/Volume:	919.1 mL
Analysis Date:	03/26/2017 1732	Run Type:	DL	Final Weight/Volume:	2 mL
Prep Date:	03/23/2017 1546			Injection Volume:	2 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
3 & 4 Methylphenol	300		11	87
Di-n-octyl phthalate	ND		20	44
Benzo[a]pyrene	ND		2.2	4.4
Indeno[1,2,3-cd]pyrene	ND		2.2	6.5
Dibenz(a,h)anthracene	ND		2.2	6.5
Benzo[g,h,i]perylene	ND		2.2	6.5
Benzo[b]fluoranthene	ND		2.2	8.7
Benzo[k]fluoranthene	ND		2.2	6.5

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Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030018**

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a017.D
Dilution:	1.0			Initial Weight/Volume:	0.112 g
Analysis Date:	03/23/2017 2014			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		35000		620	8900
Bis(2-chloroethyl)ether		ND		1300	8900
2-Chlorophenol		ND		360	8900
1,3-Dichlorobenzene		ND		430	4500
1,4-Dichlorobenzene		ND		740	4500
Benzyl alcohol		ND		1300	8900
1,2-Dichlorobenzene		ND		360	4900
2-Methylphenol		6500	J	600	8900
3 & 4 Methylphenol		20000		1300	18000
~~N-Nitrosodi-n-propylamine~~		~~ND~~		~~1300~~	~~8900~~
Hexachloroethane		ND		380	8900
Nitrobenzene		ND		510	8900
Isophorone		ND		450	8900
2-Nitrophenol		ND		1300	8900
2,4-Dimethylphenol		3400	J	1300	8900
Benzoic acid		19000	J	11000	220000
Bis(2-chloroethoxy)methane		ND		450	8900
2,4-Dichlorophenol		ND		1300	8900
1,2,4-Trichlorobenzene		ND		540	4500
Naphthalene		500	J	450	1800
4-Chloroaniline		ND		8000	27000
Hexachlorobutadiene		ND		1300	4500
4-Chloro-3-methylphenol		ND		1300	8900
2-Methylnaphthalene		570	J	360	1800
Hexachlorocyclopentadiene		ND		2300	8900
2,4,6-Trichlorophenol		ND		1300	13000
2,4,5-Trichlorophenol		ND		1300	8900
2-Chloronaphthalene		ND		450	1800
2-Nitroaniline		ND		1300	8900
Dimethyl phthalate		ND		450	8900
Acenaphthylene		ND		450	1800
2,6-Dinitrotoluene		ND		1300	8900
3-Nitroaniline		ND		3600	8900
Acenaphthene		ND		450	1800
2,4-Dinitrophenol		ND		18000	89000
4-Nitrophenol		ND		4000	89000
Dibenzofuran		ND		450	8900
2,4-Dinitrotoluene		ND		1300	8900
Diethyl phthalate		ND		5400	18000
4-Chlorophenyl phenyl ether		ND		540	8900
Fluorene		ND		450	1800
4-Nitroaniline		ND		1800	8900
4,6-Dinitro-2-methylphenol		ND		8900	89000
N-Nitrosodiphenylamine		ND		1300	4500
4-Bromophenyl phenyl ether		ND		700	8900
Hexachlorobenzene		ND		450	4500

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030018

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a017.D
Dilution:	1.0			Initial Weight/Volume:	0.112 g
Analysis Date:	03/23/2017 2014			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Pentachlorophenol		ND		8100	22000 U
Phenanthrene		ND		450	1800
Anthracene		ND		450	1800
Di-n-butyl phthalate		ND		4500	45000
Fluoranthene		ND		450	1800
Pyrene		ND		450	1800
Butyl benzyl phthalate		ND		4500	18000
3,3'-Dichlorobenzidine		ND		2700	18000
Benzo[a]anthracene		ND		450	1800
Chrysene		ND		450	2200
Bis(2-ethylhexyl) phthalate		ND		4500	54000
Di-n-octyl phthalate		2000	J Q	1400	45000
Benzo[a]pyrene		ND		1200	3100 U
Indeno[1,2,3-cd]pyrene		ND		450	3600
Dibenz(a,h)anthracene		ND		1100	3600
Benzo[g,h,i]perylene		ND		1300	3100
Carbazole		ND		450	8900
1-Methylnaphthalene		490	J Q	450	2700
Benzo[b]fluoranthene		ND		450	1800 U
Benzo[k]fluoranthene		ND		1300	4900
bis(chloroisopropyl) ether		ND		1300	22000

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	98		65 - 125
Phenol-d5 (Surr)	97		69 - 118
Nitrobenzene-d5 (Surr)	98		66 - 120
2-Fluorobiphenyl	92		67 - 115
2,4,6-Tribromophenol (Surr)	80		59 - 128
Terphenyl-d14 (Surr)	96		78 - 136

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030019**

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a018.D
Dilution:	10			Initial Weight/Volume:	0.102 g
Analysis Date:	03/23/2017 2039			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		ND		6800	98000
Bis(2-chloroethyl)ether		ND		15000	98000
2-Chlorophenol		ND		3900	98000
1,3-Dichlorobenzene		ND		4700	49000
1,4-Dichlorobenzene		ND		8100	49000
Benzyl alcohol		ND		15000	98000
1,2-Dichlorobenzene		ND		3900	54000
2-Methylphenol		ND		6600	98000
3 & 4 Methylphenol		ND		15000	200000
N-Nitrosodi-n-propylamine		ND		15000	98000
Hexachloroethane		ND		4200	98000
Nitrobenzene		ND		5600	98000
Isophorone		ND		4900	98000
2-Nitrophenol		ND		15000	98000
2,4-Dimethylphenol		ND		15000	98000
Benzoic acid		ND		130000	2500000
Bis(2-chloroethoxy)methane		ND		4900	98000
2,4-Dichlorophenol		ND		15000	98000
1,2,4-Trichlorobenzene		ND		5900	49000
Naphthalene		ND		4900	20000
4-Chloroaniline		ND		88000	290000
Hexachlorobutadiene		ND		15000	49000
4-Chloro-3-methylphenol		ND		15000	98000
2-Methylnaphthalene		ND		3900	20000
Hexachlorocyclopentadiene		ND		25000	98000
2,4,6-Trichlorophenol		ND		15000	150000
2,4,5-Trichlorophenol		ND		15000	98000
2-Chloronaphthalene		ND		4900	20000
2-Nitroaniline		ND		15000	98000
Dimethyl phthalate		ND		4900	98000
Acenaphthylene		ND		4900	20000
2,6-Dinitrotoluene		ND		15000	98000
3-Nitroaniline		ND		39000	98000
Acenaphthene		ND		4900	20000
2,4-Dinitrophenol		ND		200000	980000
4-Nitrophenol		ND		44000	980000
Dibenzofuran		ND		4900	98000
2,4-Dinitrotoluene		ND		15000	98000
Diethyl phthalate		ND		59000	200000
4-Chlorophenyl phenyl ether		ND		6000	98000
Fluorene		ND		4900	20000
4-Nitroaniline		ND		20000	98000
4,6-Dinitro-2-methylphenol		ND		98000	980000
N-Nitrosodiphenylamine		ND		15000	49000
4-Bromophenyl phenyl ether		ND		7600	98000
Hexachlorobenzene		ND		4900	49000

JLW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a018.D
Dilution:	10			Initial Weight/Volume:	0.102 g
Analysis Date:	03/23/2017 2039			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Pentachlorophenol		ND		89000	250000 U
Phenanthrene		ND		4900	20000
Anthracene		ND		4900	20000
Di-n-butyl phthalate		ND		49000	490000
Fluoranthene		ND		4900	20000
Pyrene		ND		4900	20000
Butyl benzyl phthalate		ND		49000	200000
3,3'-Dichlorobenzidine		ND, W		29000	200000
Benzo[a]anthracene		7500	J Q	4900	20000
Chrysene		15000	J Q	4900	25000
Bis(2-ethylhexyl) phthalate		560000	J Q	49000	590000
Di-n-octyl phthalate		ND		16000	490000 U
Benzo[a]pyrene		ND		13000	34000
Indeno[1,2,3-cd]pyrene		ND		4900	39000
Dibenz(a,h)anthracene		ND		12000	39000
Benzo[g,h,i]perylene		ND		15000	34000
Carbazole		ND		4900	98000
1-Methylnaphthalene		ND		4900	29000
Benzo[b]fluoranthene		ND		4900	20000
Benzo[k]fluoranthene		ND		14000	54000
bis(chloroisopropyl) ether		ND, W		15000	250000

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	95		65 - 125
Phenol-d5 (Surr)	99		69 - 118
Nitrobenzene-d5 (Surr)	109		66 - 120
2-Fluorobiphenyl	114		67 - 115
2,4,6-Tribromophenol (Surr)	88		59 - 128
Terphenyl-d14 (Surr)	165	X W	78 - 136

3-29-17 03/27/2017

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a019.D
Dilution:	10			Initial Weight/Volume:	0.107 g
Analysis Date:	03/23/2017 2104			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Phenol		1800000		6400	93000
Bis(2-chloroethyl)ether		ND		14000	93000 U
2-Chlorophenol		ND	F1	3700	93000
1,3-Dichlorobenzene		ND		4500	47000
1,4-Dichlorobenzene		ND		7800	47000
Benzyl alcohol		ND		14000	93000
1,2-Dichlorobenzene		ND W	F1	3700	51000
2-Methylphenol		1100000		6300	93000
3 & 4 Methylphenol		2800000		14000	190000
~~N-Nitrosodi-n-propylamine~~		~~ND~~	~~F1~~	~~14000~~	~~93000~~ U mR
Hexachloroethane		ND		4000	93000 U JL
Nitrobenzene		ND	F1	5300	93000
Isophorone		ND	F1	4700	93000
2-Nitrophenol		ND m	F1 W	14000	93000
2,4-Dimethylphenol		1500000		14000	93000
Benzoic acid		280000	J F1 Q	120000	2300000
Bis(2-chloroethoxy)methane		ND	F1	4700	93000 U
2,4-Dichlorophenol		ND		14000	93000
1,2,4-Trichlorobenzene		ND W		5600	47000
Naphthalene		83000	F1	4700	19000
4-Chloroaniline		ND	F1	84000	280000 U
Hexachlorobutadiene		ND		14000	47000
4-Chloro-3-methylphenol		ND	F1	14000	93000
Hexachlorocyclopentadiene		ND	F1	24000	93000
2,4,6-Trichlorophenol		ND	F1	14000	140000
2,4,5-Trichlorophenol		ND	F1	14000	93000
2-Chloronaphthalene		ND	F1	4700	19000
2-Nitroaniline		ND	F1	14000	93000
Dimethyl phthalate		ND	F1	4700	93000
Acenaphthylene		ND	F1	4700	19000
2,6-Dinitrotoluene		ND	F1	14000	93000
3-Nitroaniline		ND m	F1 m	37000	93000
Acenaphthene		9800	J F1 Q	4700	19000
2,4-Dinitrophenol		ND	F1	190000	930000 U
4-Nitrophenol		ND m	F1	42000	930000 U
Dibenzofuran		170000	F1	4700	93000
2,4-Dinitrotoluene		ND	F1	14000	93000 U
Diethyl phthalate		ND	F1 m	56000	190000
4-Chlorophenyl phenyl ether		ND W		5700	93000
Fluorene		100000		4700	19000
4-Nitroaniline		ND		19000	93000 U
4,6-Dinitro-2-methylphenol		ND m		93000	930000 U
N-Nitrosodiphenylamine		19000	J Q	14000	47000
4-Bromophenyl phenyl ether		ND		7300	93000 U
Hexachlorobenzene		ND		4700	47000
Pentachlorophenol		ND m	F1 m	85000	230000

JW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030020**

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241229	Instrument ID:	TAC023
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	23_032317a019.D
Dilution:	10			Initial Weight/Volume:	0.107 g
Analysis Date:	03/23/2017 2104			Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
Phenanthrene		55000		4700	19000
Anthracene		26000	F1	4700	19000
Di-n-butyl phthalate		ND	F1	47000	470000 U
Fluoranthene		11000	J F1 Q	4700	19000
Pyrene		14000	J F1 Q	4700	19000
Butyl benzyl phthalate		ND	F1	47000	190000 U
3,3'-Dichlorobenzidine		ND	F1 F2	28000	190000
Benzo[a]anthracene		ND	F1	4700	19000
Chrysene		ND	F1	4700	23000
Bis(2-ethylhexyl) phthalate		91000	J F1 Q	47000	560000
Di-n-octyl phthalate		ND	F1	15000	470000 U
Benzo[a]pyrene		ND	F1	12000	33000
Indeno[1,2,3-cd]pyrene		ND		4700	37000
Dibenz(a,h)anthracene		ND		11000	37000
Benzo[g,h,i]perylene		ND		14000	33000
Carbazole		ND	F1	4700	93000
1-Methylnaphthalene		93000	F1	4700	28000
Benzo[b]fluoranthene		ND		4700	19000 U
Benzo[k]fluoranthene		ND		13000	51000
bis(chloroisopropyl) ether		ND	F1	14000	230000

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorophenol (Surr)	113		65 - 125
Phenol-d5 (Surr)	109		69 - 118
Nitrobenzene-d5 (Surr)	362	X	66 - 120
2-Fluorobiphenyl	108		67 - 115
2,4,6-Tribromophenol (Surr)	107		59 - 128
Terphenyl-d14 (Surr)	115		78 - 136

3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030020**

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8270D Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270D	Analysis Batch:	580-241313	Instrument ID:	TAC051
Prep Method:	3580A	Prep Batch:	580-241200	Lab File ID:	0324A011.D
Dilution:	10			Initial Weight/Volume:	0.107 g
Analysis Date:	03/24/2017 1610	Run Type:	RA	Final Weight/Volume:	10 mL
Prep Date:	03/23/2017 1127			Injection Volume:	2 uL

Analyte	DryWt Corrected: N	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylnaphthalene		200000	F1	3700	19000

3-29-17

ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: March 29, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 4 water and 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington, has been completed. Analyses for Polychlorinated Biphenyls (PCBs - EPA Method 8082) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered:

17030014	17030015	17030016	17030017	17030018
17030019	17030020			

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at 0°C to 6°C. The samples were collected on March 20 and 21, 2017, extracted on March 23, 2017, and were analyzed by March 23, 2017. There are no holding time limits for Method 8082 PCB analyses.

2. **Instrument Performance: Acceptable.**

The surrogate retention time percent difference between the initial calibration standards and the remaining standards and samples was ≤ 0.3% for capillary column analyses.

3. **Initial and Continuing Calibration: Acceptable.**

All initial calibration relative standard deviations (RSDs) were within QC limits. All continuing calibration % differences (% D) were within QC limits except two high results for Aroclor 1262 in one continuing calibration; no actions were taken as Aroclor 1262 was not detected in any samples.

4. **Error Determination: Not Provided.**

Samples necessary for bias and precision determination were not provided to the laboratory. All

samples were flagged RND (Recovery Not Determined) and PND (Precision Not Determined), although the flags are not found on the Form I's.

5. **Blanks: Acceptable.**

A method blank was prepared at the required frequency of every time samples were extracted for each matrix and for each concentration level, or every 20 samples, whichever is greater, and for each analytical system. No target analytes were detected in the laboratory blanks.

6. **Performance Evaluation Samples: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

7. **System Monitoring Compounds (SMCs): Acceptable.**

All recoveries of the SMCs were within the established control limits.

8. **Blank Spike (BS) and BS Duplicate (BSD) Analyses: Acceptable.**

BS and BSD recoveries were within QC limits.

9. **Duplicates: Acceptable.**

Relative Percent Differences (RPDs) of all spiked analytes were within QC limits.

10. **Compound Identification: Acceptable.**

All results were dual-column confirmed with differences between the columns less than 25%.

11. **Target Compound Quantitation and Quantitation Limits: Acceptable.**

Sample results and quantitation limits were correctly calculated.

12. **Laboratory Contact**

No laboratory contact was required.

13. **Overall Assessment**

A total of 49 results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response

Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030014

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241274	Instrument ID:	TAC035
Prep Method:	3510C	Prep Batch:	580-241183	Initial Weight/Volume:	965.5 mL
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2019			Injection Volume:	1 uL
Prep Date:	03/23/2017 1014			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.018	0.52
PCB-1221	ND		0.030	0.52
PCB-1232	ND		0.016	0.52
PCB-1242	ND		0.015	0.52
PCB-1248	ND		0.015	0.52
PCB-1254	ND		0.016	0.52
PCB-1260	ND		0.040	0.52

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	62		38 - 121
Tetrachloro-m-xylene	83		26 - 124

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030015

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241274	Instrument ID:	TAC035
Prep Method:	3510C	Prep Batch:	580-241183	Initial Weight/Volume:	926 mL
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2110			Injection Volume:	1 uL
Prep Date:	03/23/2017 1014			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.018	0.54 U
PCB-1221	ND		0.031	0.54
PCB-1232	ND		0.016	0.54
PCB-1242	ND		0.015	0.54
PCB-1248	ND		0.015	0.54
PCB-1254	ND		0.016	0.54
PCB-1260	ND		0.042	0.54

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	53		38 - 121
Tetrachloro-m-xylene	85		26 - 124

JMW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241274	Instrument ID:	TAC035
Prep Method:	3510C	Prep Batch:	580-241183	Initial Weight/Volume:	1092.3 mL
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2127			Injection Volume:	1 uL
Prep Date:	03/23/2017 1014			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.016	0.46
PCB-1221	ND		0.027	0.46
PCB-1232	ND		0.014	0.46
PCB-1242	ND		0.013	0.46
PCB-1248	ND		0.013	0.46
PCB-1254	ND		0.014	0.46
PCB-1260	ND		0.036	0.46

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	75		38 - 121
Tetrachloro-m-xylene	88		26 - 124

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030017

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241274	Instrument ID:	TAC035
Prep Method:	3510C	Prep Batch:	580-241183	Initial Weight/Volume:	907.3 mL
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 2143			Injection Volume:	1 uL
Prep Date:	03/23/2017 1014			Result Type:	PRIMARY

Analyte	Result (ug/L)	Qualifier	MDL	RL
PCB-1016	ND		0.019	0.55
PCB-1221	ND		0.032	0.55
PCB-1232	ND		0.017	0.55
PCB-1242	ND		0.015	0.55
PCB-1248	ND		0.015	0.55
PCB-1254	ND		0.017	0.55
PCB-1260	ND		0.043	0.55

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	44		38 - 121
Tetrachloro-m-xylene	62		26 - 124

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030018**

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241155	Instrument ID:	TAC035
Prep Method:	3580A	Prep Batch:	580-241202	Initial Weight/Volume:	0.207 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1337			Injection Volume:	1 uL
Prep Date:	03/23/2017 1128			Result Type:	PRIMARY

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.024	0.48
PCB-1221		ND		0.16	0.53
PCB-1232		ND		0.11	0.53
PCB-1242		ND		0.10	0.48
PCB-1248		ND		0.077	0.53
PCB-1254		ND		0.043	0.48
PCB-1260		ND		0.063	0.48

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	99		37 - 140
Tetrachloro-m-xylene	94		45 - 135

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241155	Instrument ID:	TAC035
Prep Method:	3580A	Prep Batch:	580-241202	Initial Weight/Volume:	0.224 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1411			Injection Volume:	1 uL
Prep Date:	03/23/2017 1128			Result Type:	PRIMARY

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.022	0.45
PCB-1221		ND		0.15	0.49
PCB-1232		ND		0.098	0.49
PCB-1242		ND		0.094	0.45
PCB-1248		ND		0.071	0.49
PCB-1254		ND		0.040	0.45
PCB-1260		ND		0.058	0.45

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	78		37 - 140
Tetrachloro-m-xylene	85		45 - 135

3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

8082A Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082A	Analysis Batch:	580-241155	Instrument ID:	TAC035
Prep Method:	3580A	Prep Batch:	580-241202	Initial Weight/Volume:	0.202 g
Dilution:	1.0			Final Weight/Volume:	10 mL
Analysis Date:	03/23/2017 1444			Injection Volume:	1 uL
Prep Date:	03/23/2017 1128			Result Type:	PRIMARY

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
PCB-1016		ND		0.025	0.50 U
PCB-1221		ND		0.17	0.54
PCB-1232		ND		0.11	0.54
PCB-1242		ND		0.10	0.50
PCB-1248		ND		0.079	0.54
PCB-1254		ND		0.045	0.50
PCB-1260		ND		0.064	0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
DCB Decachlorobiphenyl	74		37 - 140
Tetrachloro-m-xylene	71		45 - 135

ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: March 29, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 4 water and 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington has been completed. RCRA metals plus copper, nickel, and zinc analyses (EPA Methods 6010, 6020, 7470, and 7471) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2 and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered:

17030014	17030015	17030016	17030017	17030018
17030019	17030020			

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at < 6°C (only applies to mercury). The samples were collected on March 20, 2017, and were analyzed by March 24, 2017, therefore meeting QC criteria of less than 6 months between collection, extraction, and analysis (28 days for mercury).

2. **Initial and Continuing Calibration: Acceptable.**

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits. All AA recoveries were within QC limits and the initial calibration correlation coefficient was > 0.995.

3. **Blanks: Satisfactory.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. There were no detections in any blanks that potentially affected sample results except mercury (0.0000465 mg/L) in the method blank and barium (0.0059 mg/L) and chromium (0.0037 mg/L) in the initial calibration blank. Associated sample results were qualified as not detected (U) if the sample result was less than five times the positive blank concentration.

4. ICP Interference Check Sample: Acceptable.

An Interference Check Sample (ICS) was analyzed at the beginning of each sequence or at least twice every 8 hours, whichever was more frequent. All applicable ICS (solution AB) results were within QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. ICP Serial Dilution: Acceptable.

A serial dilution analysis was performed per matrix per concentration or per sample delivery group, whichever was more frequent. All serial dilution results were within QC limits.

8. Matrix Spike Analysis: Acceptable.

A matrix spike analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. Spike recoveries were within the QC limits.

9. Duplicate Analysis: Acceptable.

A laboratory duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

10. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

11. Overall Assessment of Data for Use

A total of 77 results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: mercury, barium, and chromium. No sample results were qualified as estimated quantities based on serial dilution outliers.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response

Publication "National Functional Guidelines for Superfund Inorganic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030014**

Lab Sample ID: 580-66890-1
Client Matrix: Water

Date Sampled: 03/20/2017 0931
Date Received: 03/22/2017 0955

6020A Metals (ICP/MS)-Total Recoverable

Analysis Method:	6020A	Analysis Batch:	580-241330	Instrument ID:	SEA044
Prep Method:	3005A	Prep Batch:	580-241192	Lab File ID:	049SMPL.D
Dilution:	5.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/24/2017 1157			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1050				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Arsenic	0.0032	J Q	0.0014	0.0050
Barium	0.0033	J Q	0.00027	0.0060
Cadmium	0.00050	J Q	0.00014	0.0020
Chromium	~~ND~~		0.00071	0.0020 U
Copper	0.0034	J Q	0.0030	0.010
Lead	0.038		0.00017	0.0020
Nickel	ND		0.0020	0.015 U
Selenium	ND		0.0015	0.0050
Silver	ND		0.00015	0.0020
Zinc	0.28		0.0095	0.035

7470A Mercury (CVAA)

Analysis Method:	7470A	Analysis Batch:	580-241238	Instrument ID:	TAC103
Prep Method:	7470A	Prep Batch:	580-241169	Lab File ID:	241169.CSV
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/23/2017 1243			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 0904				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Mercury	0.000048	J B Q	0.000041	0.00020

MW 3-29-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: **17030015**

Lab Sample ID: 580-66890-2
Client Matrix: Water

Date Sampled: 03/20/2017 0937
Date Received: 03/22/2017 0955

6020A Metals (ICP/MS)-Total Recoverable

Analysis Method:	6020A	Analysis Batch:	580-241330	Instrument ID:	SEA044
Prep Method:	3005A	Prep Batch:	580-241192	Lab File ID:	058SMPL.D
Dilution:	5.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/24/2017 1237			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1050				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Arsenic	0.0038	J Q	0.0014	0.0050
Barium	0.012		0.00027	0.0060
Cadmium	0.00017	J Q	0.00014	0.0020
Chromium	0.0029		0.00071	0.0020
Copper	0.014		0.0030	0.010
Lead	0.028		0.00017	0.0020
Nickel	0.0033	J Q	0.0020	0.015
Selenium	ND		0.0015	0.0050 U
Silver	ND		0.00015	0.0020 U
Zinc	0.50		0.0095	0.035

7470A Mercury (CVAA)

Analysis Method:	7470A	Analysis Batch:	580-241238	Instrument ID:	TAC103
Prep Method:	7470A	Prep Batch:	580-241169	Lab File ID:	241169.CSV
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/23/2017 1331			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 0904				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Mercury	0.00011	J B Q	0.000041	0.00020

3/29/17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030016

Lab Sample ID: 580-66890-3
Client Matrix: Water

Date Sampled: 03/20/2017 1048
Date Received: 03/22/2017 0955

6020A Metals (ICP/MS)-Total Recoverable

Analysis Method: 6020A
Prep Method: 3005A
Dilution: 5.0
Analysis Date: 03/24/2017 1242
Prep Date: 03/23/2017 1050

Analysis Batch: 580-241330
Prep Batch: 580-241192

Instrument ID: SEA044
Lab File ID: 059SMPL.D
Initial Weight/Volume: 50 mL
Final Weight/Volume: 50 mL

Analyte	Result (mg/L)	Qualifier	MDL	RL
Arsenic	0.062		0.0014	0.0050
Barium	0.037		0.00027	0.0060
Cadmium	0.0047		0.00014	0.0020
Chromium	0.68		0.00071	0.0020
Copper	0.20		0.0030	0.010
Lead	0.039		0.00017	0.0020
Nickel	0.99		0.0020	0.015
Selenium	0.0085		0.0015	0.0050
Silver	~~ND~~ MW		0.00015	0.0020 U
Zinc	4.2		0.0095	0.035

7470A Mercury (CVAA)

Analysis Method: 7470A
Prep Method: 7470A
Dilution: 10
Analysis Date: 03/23/2017 1343
Prep Date: 03/23/2017 0904

Analysis Batch: 580-241238
Prep Batch: 580-241169

Instrument ID: TAC103
Lab File ID: 241169.CSV
Initial Weight/Volume: 5 mL
Final Weight/Volume: 50 mL

Analyte	Result (mg/L)	Qualifier	MDL	RL
Mercury	0.0068	J B MW Q	0.0041	0.020

MW 3/29/17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

Client Sample ID: 17030017

Lab Sample ID: 580-66890-4
Client Matrix: Water

Date Sampled: 03/20/2017 1750
Date Received: 03/22/2017 0955

6020A Metals (ICP/MS)-Total Recoverable

Analysis Method:	6020A	Analysis Batch:	580-241330	Instrument ID:	SEA044
Prep Method:	3005A	Prep Batch:	580-241192	Lab File ID:	060SMPL.D
Dilution:	5.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/24/2017 1246			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1050				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Arsenic	0.0089		0.0014	0.0050
Barium	0.012		0.00027	0.0060
Cadmium	~~ND~~		0.00014	0.0020 U
Chromium	0.0030		0.00071	0.0020
Copper	0.0043	J Q	0.0030	0.010
Lead	0.0046		0.00017	0.0020
Nickel	0.053		0.0020	0.015
Selenium	~~ND~~		0.0015	0.0050 U
Silver	~~ND~~		0.00015	0.0020 U
Zinc	0.26		0.0095	0.035

7470A Mercury (CVAA)

Analysis Method:	7470A	Analysis Batch:	580-241238	Instrument ID:	TAC103
Prep Method:	7470A	Prep Batch:	580-241169	Lab File ID:	241169.CSV
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	03/23/2017 1336			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 0904				

Analyte	Result (mg/L)	Qualifier	MDL	RL
Mercury	0.00016	J B Q	0.000041	0.00020

3-29-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-2

Client Sample ID: 17030018

Lab Sample ID: 580-66890-5
Client Matrix: Waste

Date Sampled: 03/21/2017 0805
Date Received: 03/22/2017 0955

6010C Metals (ICP)

Analysis Method: 6010C
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/24/2017 0313
Prep Date: 03/23/2017 1406

Analysis Batch: 580-241280
Prep Batch: 580-241226

Instrument ID: TAC047
Lab File ID: 241071 069 070 099 1
Initial Weight/Volume: 1.1474 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		4.4		0.28	1.7

Analysis Method: 6010C
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/24/2017 0943
Prep Date: 03/23/2017 1406

Analysis Batch: 580-241295
Prep Batch: 580-241226

Instrument ID: TAC047
Lab File ID: 032417.asc
Initial Weight/Volume: 1.1474 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Arsenic		ND		0.28	2.6 U
Cadmium		ND		0.043	0.87 U
Chromium		0.64	J	0.16	1.1 U
Copper		2.5		0.63	2.2
Lead		0.32	J	0.084	1.3 U
Nickel		0.76	J	0.17	0.87
Selenium		ND		0.17	4.4 U
Silver		ND		0.49	2.2 U

Analysis Method: 6010C
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/24/2017 1120
Prep Date: 03/23/2017 1406

Analysis Batch: 580-241348
Prep Batch: 580-241226

Instrument ID: TAC047
Lab File ID: 241205 215 256 218.a
Initial Weight/Volume: 1.1474 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Barium		0.16	J	0.039	0.44 U

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 03/23/2017 1409
Prep Date: 03/23/2017 1127

Analysis Batch: 580-241244
Prep Batch: 580-241201

Instrument ID: TAC103
Lab File ID: 241201.CSV
Initial Weight/Volume: 0.6323 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		ND		0.0057	0.019 U

3-29-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-2

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

6010C Metals (ICP)

Analysis Method:	6010C	Analysis Batch:	580-241280	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	241071 069 070 099 1
Dilution:	1.0			Initial Weight/Volume:	1.0497 g
Analysis Date:	03/24/2017 0316			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		1.6	J Q	0.31	1.9

Analysis Method:	6010C	Analysis Batch:	580-241295	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	032417.asc
Dilution:	1.0			Initial Weight/Volume:	1.0497 g
Analysis Date:	03/24/2017 0947			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Arsenic		ND		0.30	2.9 U
Cadmium		ND		0.047	0.95 U
Chromium		1.3		0.18	1.2
Copper		ND		0.69	2.4 U
Lead		ND		0.091	1.4
Nickel		ND		0.19	0.95
Selenium		ND		0.19	4.8
Silver		ND		0.53	2.4

Analysis Method:	6010C	Analysis Batch:	580-241348	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	241205 215 256 218.a
Dilution:	1.0			Initial Weight/Volume:	1.0497 g
Analysis Date:	03/24/2017 1123			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Barium		ND		0.043	0.48 U

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	580-241244	Instrument ID:	TAC103
Prep Method:	7471A	Prep Batch:	580-241201	Lab File ID:	241201.CSV
Dilution:	1.0			Initial Weight/Volume:	0.6706 g
Analysis Date:	03/23/2017 1436			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1127				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.015	J Q	0.0054	0.018

3/29/17

Client: Ecology and Environment, Inc. Job Number: 580-66890-2

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

6010C Metals (ICP)

Analysis Method:	6010C	Analysis Batch:	580-241280	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	241071 069 070 099 1
Dilution:	1.0			Initial Weight/Volume:	1.0580 g
Analysis Date:	03/24/2017 0320			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		ND		0.30	1.9 U

Analysis Method:	6010C	Analysis Batch:	580-241295	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	032417.asc
Dilution:	1.0			Initial Weight/Volume:	1.0580 g
Analysis Date:	03/24/2017 0950			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Arsenic		ND		0.30	2.8 U
Cadmium		ND		0.046	0.95 U
Chromium		1.8		0.17	1.2
Copper		ND		0.68	2.4 U
Lead		ND		0.091	1.4
Nickel		ND		0.19	0.95
Selenium		ND		0.19	4.7
Silver		ND		0.53	2.4

Analysis Method:	6010C	Analysis Batch:	580-241348	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241226	Lab File ID:	241205 215 256 218.a
Dilution:	1.0			Initial Weight/Volume:	1.0580 g
Analysis Date:	03/24/2017 1127			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1406				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Barium		ND		0.043	0.47 U

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	580-241244	Instrument ID:	TAC103
Prep Method:	7471A	Prep Batch:	580-241201	Lab File ID:	241201.CSV
Dilution:	1.0			Initial Weight/Volume:	0.6492 g
Analysis Date:	03/23/2017 1434			Final Weight/Volume:	50 mL
Prep Date:	03/23/2017 1127				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		ND		0.0055	0.018 U

3-29-17

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MEMORANDUM

DATE: March 29, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington

SUBJ: **Organic Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington, has been completed. Flash point (EPA Method 1020), basic sediment and water (ASTM Method D-1796), and pH (EPA Method 9040) analyses were performed by Test America, Inc., Seattle, Washington and Corpus Christi, Texas. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2/4VE/M).

The samples were numbered: 17030018 17030019 17030020

Data Qualifications:

1. **Sample Holding Times: Satisfactory.**

The samples were received at 7.7°C, just above soil and water sample QC limits of 0°C to 6°C; no actions were taken for these product samples. The samples were collected on March 20 and 21, 2017, and were analyzed by March 24, 2017, therefore meeting holding time criteria of no holding time limits for flash point and basic sediment and water but exceeding the QC limits of as soon as possible for pH; all pH results were qualified as estimated quantities with an unknown bias (JK).

2. **Initial and Continuing Calibration: Acceptable.**

All initial and continuing calibration results were within the QC limits.

3. **Blanks: Acceptable.**

All blank results were within QC limits.

4. **Blank Spike (BS)/BS Duplicate (BSD) Analysis: Acceptable.**

BS and BSD analyses were performed at the required frequency. All recoveries were within QC limits.

5. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Overall Assessment of Data for Use

A total of 15 results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. A total of three sample results were qualified as estimated quantities based on holding time outliers. No sample results were qualified as estimated quantities based on incorrect sample containers or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

General Chemistry

Client Sample ID: **17030018**

Lab Sample ID: 580-66890-5 Date Sampled: 03/21/2017 0805
Client Matrix: Waste Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	Dil	Method
pH	4.5	JK	SU	1.0	9040B
Analysis Batch: 580-241300	Analysis Date: 03/24/2017 0913			DryWt Corrected: N	
Percent Oil	10		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Solids	6.0		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Water	84		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Flashpoint	140		Degrees F			1.0	1020A
Analysis Batch: 580-241322	Analysis Date: 03/24/2017 1311					DryWt Corrected: N	

Client: Ecology and Environment, Inc.

Job Number: 580-66890-2

General Chemistry

Client Sample ID: **17030019**

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	Dil	Method
pH	7.3	J+	SU	1.0	9040B
Analysis Batch: 580-241300	Analysis Date: 03/24/2017 0915			DryWt Corrected: N	
Percent Oil	94		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Solids	1.0		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Water	5.0		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Flashpoint	>212		Degrees F			1.0	1020A
Analysis Batch: 580-241322	Analysis Date: 03/24/2017 1311					DryWt Corrected: N	

3-29-17

General Chemistry

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	Dil	Method
pH	4.5	JK	SU	1.0	9040B
Analysis Batch: 580-241300	Analysis Date: 03/24/2017 0920			DryWt Corrected: N	
Percent Oil	99		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Solids	1.0		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	
Percent Water	0.00		%	1.0	D1796
Analysis Batch: 560-137885	Analysis Date: 03/24/2017 1500			DryWt Corrected: N	

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Flashpoint	>212		Degrees F			1.0	1020A
Analysis Batch: 580-241322	Analysis Date: 03/24/2017 1311					DryWt Corrected: N	

MW 3-29-17

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MEMORANDUM

DATE: March 31, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Data Quality Assurance Review, Treoil Industries Assessment - Oil Site, Ferndale, Washington**

REF: TDD: 17-01-0012 PAN: 1004530.0002.017.01

The data quality assurance review of 3 product samples collected from the Treoil Industries Assessment – Oil site located in Ferndale, Washington, has been completed. Total Petroleum Hydrocarbons – Oil and Grease (EPA Method 1664A; modified for product samples), total halogens (EPA Method 9076) and BTU (ASTM Method D-240) analyses were performed by Test America, Inc., Pensacola, Florida, and Nashville, Tennessee. All sample analyses were evaluated following EPA's Stage 2B and/or 4 Data Validation Electronic and/or Manual Process (S2/4VE/M).

The samples were numbered: 17030018 17030019 17030020

Data Qualifications:

The samples were received slightly above the soil and water QC limits 0°C to 6°C; no actions were taken since the associated samples are product samples. The samples were collected on March 20 and 21, 2017, and were extracted and/or analyzed by March 27, 2017.

All calibration, method blank, laboratory control sample, and matrix spike analyses were within QC limits. The BTU duplicate analysis exceeded QC limits; the associated BTU results were qualified as estimated quantities with an unknown bias (JK).

There were a total of 18 results validated in this data memorandum. Three sample results were qualified as estimated quantities based on duplicate precision outliers. No sample results were qualified as estimated quantities based on spike accuracy outliers, holding time outliers, incorrect sample containers, or sample temperature outliers. No sample results were rejected. No potential contaminants of concern were detected in the laboratory blanks.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/ Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Organic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

General Chemistry

Client Sample ID: 17030018

Lab Sample ID: 580-66890-5 Date Sampled: 03/21/2017 0805
Client Matrix: Waste Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
HEM (Oil & Grease)	500000		mg/L	14000	40000	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
SGT-HEM (Oil & Grease)	ND MW		mg/L	14000	40000 U	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
Chlorine	160		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Halogens	160		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Organic Chloride	160		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
BTU	4400	JK	BTU/lb	200	200	1.0	D240-87
Analysis Batch: 490-417530	Analysis Date: 03/27/2017 1328						DryWt Corrected: N

MW 3/30/17

General Chemistry

Client Sample ID: 17030019

Lab Sample ID: 580-66890-6
Client Matrix: Waste

Date Sampled: 03/21/2017 0723
Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
HEM (Oil & Grease)	167000		mg/L	2000	5710	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
SGT-HEM (Oil & Grease)	57900		mg/L	2000	5710	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
Chlorine	130		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Halogens	130		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Organic Chloride	130		ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
BTU	20000	JK	BTU/lb	200	200	1.0	D240-87
Analysis Batch: 490-417530	Analysis Date: 03/27/2017 1328						DryWt Corrected: N

MW 3-30-17

General Chemistry

Client Sample ID: 17030020

Lab Sample ID: 580-66890-7
Client Matrix: Waste

Date Sampled: 03/20/2017 0900
Date Received: 03/22/2017 0955

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
HEM (Oil & Grease)	159000		mg/L	2800	8000	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
SGT-HEM (Oil & Grease)	73600		mg/L	2800	8000	1.0	1664A
Analysis Batch: 400-347384	Analysis Date: 03/27/2017 1453						DryWt Corrected: N
Prep Batch: 400-346912	Prep Date: 03/27/2017 1453						
Chlorine	28	J Q	ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Halogens	28	J Q	ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N
Total Organic Chloride	28	J Q	ug/g	22	100	1.0	9076
Analysis Batch: 490-416263	Analysis Date: 03/26/2017 1214						DryWt Corrected: N

Analyte	Result	Qual	Units	RL	RL	Dil	Method
BTU	18000	JK	BTU/lb	200	200	1.0	D240-87
Analysis Batch: 490-417530	Analysis Date: 03/27/2017 1328						DryWt Corrected: N

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MEMORANDUM

DATE: March 30, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington has been completed. Resource Conservation and Recovery Act (RCRA) metals (minus mercury) plus copper, silver, and zinc analyses (EPA Methods 6010 and 7471) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2 and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained at < 6°C. The samples were collected on March 21, 2017, and were analyzed by March 29, 2017, therefore meeting QC criteria of less than 6 months between collection and analysis.

2. Initial and Continuing Calibration: Acceptable.

A minimum of one calibration standard and a blank were analyzed at the beginning of the ICP analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All ICP recoveries were within the QC limits.

3. Blanks: Satisfactory.

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. There were no detections in any blanks that potentially affected sample results except lead (0.29 mg/kg) in the preparation blank and barium (0.0016 mg/L) in continuing calibration blank 4. Associated sample results were qualified as not detected (U) if the sample result was less than five times the positive blank concentration.

4. ICP Interference Check Sample: Acceptable.

An Interference Check Sample (ICS) was analyzed at the beginning of each sequence or at least twice every 8 hours, whichever was more frequent. All applicable ICS (solution AB) results were within

QC limits of 80% - 120% recovery.

5. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

6. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

7. Duplicate Analysis: Acceptable.

A laboratory spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

8. Laboratory Control Sample Analysis: Acceptable.

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

9. Overall Assessment of Data for Use

There were a total of 22 results validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. The following potential contaminants of concern were detected in the laboratory blanks: lead and barium.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Inorganic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc.

Job Number: 580-66890-4

Client Sample ID: **17030022**

Lab Sample ID: 580-66890-9
Client Matrix: Solid

% Moisture: 50.0

Date Sampled: 03/21/2017 1000
Date Received: 03/22/2017 0955

6010C Metals (ICP)

Analysis Method:	6010C	Analysis Batch:	580-241749	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241607	Lab File ID:	241606 621 607 627.a
Dilution:	1.0			Initial Weight/Volume:	1.1340 g
Analysis Date:	03/29/2017 1314			Final Weight/Volume:	50 mL
Prep Date:	03/28/2017 1523				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Arsenic		6.3		0.56	5.3
Barium		130		0.079	0.88
Cadmium		~~ND~~		0.086	1.8 U
Chromium		240		0.32	2.3
Copper		390		1.3	4.4
Lead		310	B	0.17	2.6
Selenium		~~ND~~		0.35	8.8 U
Silver		3.7	Q	0.99	4.4
Zinc		550		0.57	3.5

Analysis Method:	6010C	Analysis Batch:	580-241749	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241607	Lab File ID:	241606 621 607 627.a
Dilution:	10			Initial Weight/Volume:	1.1340 g
Analysis Date:	03/29/2017 1321			Final Weight/Volume:	50 mL
Prep Date:	03/28/2017 1523				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Nickel		190		3.5	18

MW 3-30-17

Client: Ecology and Environment, Inc.

Job Number: 580-66890-4

Client Sample ID: 17030023

Lab Sample ID: 580-66890-10
Client Matrix: Solid

% Moisture: 46.5

Date Sampled: 03/21/2017 1020
Date Received: 03/22/2017 0955

6010C Metals (ICP)

Analysis Method:	6010C	Analysis Batch:	580-241749	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241607	Lab File ID:	241606 621 607 627.a
Dilution:	1.0			Initial Weight/Volume:	1.0357 g
Analysis Date:	03/29/2017 1317			Final Weight/Volume:	50 mL
Prep Date:	03/28/2017 1523				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Barium		120		0.081	0.90
Chromium		130		0.33	2.3
Selenium		~~ND~~		0.36	9.0 U

Analysis Method:	6010C	Analysis Batch:	580-241749	Instrument ID:	TAC047
Prep Method:	3050B	Prep Batch:	580-241607	Lab File ID:	241606 621 607 627.a
Dilution:	10			Initial Weight/Volume:	1.0357 g
Analysis Date:	03/29/2017 1324			Final Weight/Volume:	50 mL
Prep Date:	03/28/2017 1523				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Arsenic		38	J Q	5.8	54
Cadmium		~~ND~~		0.88	18 U
Copper		140		13	45
Lead		3800	B	1.7	27
Nickel		120		3.6	18
Silver		~~ND~~		10	45 U
Zinc		340		5.8	36

3-30-17

ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: April 4, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, Washington

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, Washington MW

SUBJ: **Inorganic Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 sediment samples collected from the Treoil Industries Biorefinery CERCLA Response site located in Ferndale, Washington has been completed. Mercury analyses (EPA Method 7471) were performed by Test America, Inc., Tacoma, Washington. All sample analyses were evaluated following EPA's Stage 2 and/or 4 Data Validation Electronic and/or Manual Process (S2B/4VE/M).

The samples were numbered: 17030022 17030023

Data Qualifications:

1. **Sample Holding Times: Acceptable.**

The samples were maintained at < 6°C. The samples were collected on March 21, 2017, and were analyzed by March 30, 2017, therefore meeting QC criteria of less than 6 months between collection and analysis.

2. **Initial and Continuing Calibration: Acceptable.**

A minimum of one calibration standard and a blank were analyzed at the beginning of the AA analysis sequence and after every 10 samples. No results were greater than 110% of the highest calibration standard. All AA recoveries were within the QC limits.

3. **Blanks: Acceptable.**

A preparation blank was analyzed for each 20 samples or per matrix per concentration level. Blanks were analyzed after each Initial or Continuing Calibration Verification. There were no detections in any blanks that potentially affected sample results.

4. **Precision and Bias Determination: Not Performed.**

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

5. **Performance Evaluation Sample Analysis: Not Provided.**

Performance evaluation samples were not provided to the laboratory.

6. **Duplicate Analysis: Acceptable.**

A laboratory spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All duplicate results were within QC limits.

7. **Laboratory Control Sample Analysis: Acceptable.**

A Laboratory Control Sample (LCS) was analyzed per SDG per matrix. All LCS results were within the established control limits.

8. **Overall Assessment of Data for Use**

Two results were validated in this data memorandum. No sample results were qualified as estimated quantities based on duplicate precision outliers or spike accuracy outliers. No sample results were rejected. No sample results were qualified as estimated quantities based on holding time outliers, incorrect sample containers, or sample temperature outliers. No potential contaminants of concern were detected in the laboratory blanks. The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical method(s), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and/or the Office of Emergency and Remedial Response Publication "National Functional Guidelines for Superfund Inorganic Methods Data Review, January 2017". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

H - The sample result is biased high.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

K - The bias of the sample is not known.

L - The sample result is biased low.

Q - Detected concentration is below the method reporting limit/Contract Required Quantitation Limit, but is above the method quantitation limit.

R - The data is rejected and unusable. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The material was analyzed for but was not detected. The reported detection limit is estimated because QC criteria were not met.

Client: Ecology and Environment, Inc. Job Number: 580-66890-5

Client Sample ID: **17030022**

Lab Sample ID: 580-66890-9 Date Sampled: 03/21/2017 1000
Client Matrix: Solid % Moisture: 50.0 Date Received: 03/22/2017 0955

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	580-241872	Instrument ID:	TAC103
Prep Method:	7471A	Prep Batch:	580-241838	Lab File ID:	241838.CSV
Dilution:	1.0			Initial Weight/Volume:	0.6765 g
Analysis Date:	03/30/2017 1702			Final Weight/Volume:	50 mL
Prep Date:	03/30/2017 1441				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.11		0.011	0.035

MW 4-4-17

Client: Ecology and Environment, Inc. Job Number: 580-66890-5

Client Sample ID: **17030023**

Lab Sample ID: 580-66890-10 Date Sampled: 03/21/2017 1020
Client Matrix: Solid % Moisture: 46.5 Date Received: 03/22/2017 0955

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	580-241872	Instrument ID:	TAC103
Prep Method:	7471A	Prep Batch:	580-241838	Lab File ID:	241838.CSV
Dilution:	1.0			Initial Weight/Volume:	0.7449 g
Analysis Date:	03/30/2017 1704			Final Weight/Volume:	50 mL
Prep Date:	03/30/2017 1441				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.83		0.0090	0.030

MW 4-4-17

ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: March 23, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, WA MW

SUBJ: **Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response Site, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 13 solid samples collected from the Treoil Industries Biorefinery CERCLA Response site in Ferndale, Washington, has been completed. Polarized light microscopy (PLM) (EPA Method 600/R-93-116) asbestos analyses were performed by EMLab P&K, Inc., Irvine, California. All sample analyses were evaluated following EPA's Stage 2B Data Validation Manual Process (S2BM).

The samples were numbered:

17030001	17030002	17030003	17030004	17030005	17030006
17030007	17030008	17030009	17030010	17030011	17030012
17030013					

Data Qualifications:

The samples were collected on March 15, 2017, and were analyzed by March 16, 2017. No discrepancies were noted in the laboratory case narrative.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and the analytical method(s). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

EMLab P&K
17461 Derian Ave, Suite 100, Irvine, CA 92614
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: TestAmerica-Seattle
C/O: Ms. Kristine Allen
Re: 580-66773-1; Treoil

Date of Sampling: 03-15-2017
Date of Receipt: 03-16-2017
Date of Report: 03-16-2017

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Total Samples Submitted:	13
Total Samples Analyzed:	13
Total Samples with Layer Asbestos Content > 1%:	4

Location: 17030001, TS01 Lab ID-Version‡: 7895914-1

Sample Layers	Asbestos Content
Off-White Fibrous Material	ND
Yellow Non-Fibrous Material	ND
Gray Non-Fibrous Material	ND
Composite Non-Asbestos Content:	15% Glass Fibers 3% Cellulose
Sample Composite Homogeneity:	Poor

Location: 17030002, TS02 Lab ID-Version‡: 7895915-1

Sample Layers	Asbestos Content
Off-White Fibrous Material	ND
Yellow Non-Fibrous Material	ND
Gray Non-Fibrous Material	ND
Composite Non-Asbestos Content:	15% Glass Fibers 3% Cellulose
Sample Composite Homogeneity:	Poor

Location: 17030003, TS03 Lab ID-Version‡: 7895916-1

Sample Layers	Asbestos Content
Dark Gray Fibrous Material	60% Chrysotile
Sample Composite Homogeneity:	Moderate

Location: 17030004, TS04 Lab ID-Version‡: 7895917-1

Sample Layers	Asbestos Content
Yellow Non-Fibrous Material	ND
Composite Non-Asbestos Content:	3% Cellulose
Sample Composite Homogeneity:	Good

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

EMLab P&K
17461 Derian Ave, Suite 100, Irvine, CA 92614
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: TestAmerica-Seattle
C/O: Ms. Kristine Allen
Re: 580-66773-1; Treoil

Date of Sampling: 03-15-2017
Date of Receipt: 03-16-2017
Date of Report: 03-16-2017

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 17030005, TS05

Lab ID-Version‡: 7895918-1

Sample Layers	Asbestos Content
Off-White Fibrous Material	ND
Yellow Semi-Fibrous Material	ND
Composite Non-Asbestos Content:	75% Glass Fibers 5% Cellulose
Sample Composite Homogeneity:	Good

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

EMLab P&K
17461 Derian Ave, Suite 100, Irvine, CA 92614
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: TestAmerica-Seattle
C/O: Ms. Kristine Allen
Re: 580-66773-1; Treoil

Date of Sampling: 03-15-2017
Date of Receipt: 03-16-2017
Date of Report: 03-16-2017

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 17030006, TS06 Lab ID-Version‡: 7895919-1

Sample Layers	Asbestos Content
Off-White Fibrous Material	75% Chrysotile
Sample Composite Homogeneity:	Good

Location: 17030007, TS07 Lab ID-Version‡: 7895920-1

Sample Layers	Asbestos Content
White Woven Material	90% Chrysotile
Light Gray Fibrous Material	98% Amosite
Sample Composite Homogeneity:	Moderate

Location: 17030008, TS08 Lab ID-Version‡: 7895921-1

Sample Layers	Asbestos Content
Gray Fibrous Material	75% Chrysotile
Composite Non-Asbestos Content:	3% Glass Fibers
Sample Composite Homogeneity:	Good

Location: 17030009, TS09 Lab ID-Version‡: 7895922-1

Sample Layers	Asbestos Content
White Fibrous Material	ND
Black Semi-Fibrous Material	ND
Composite Non-Asbestos Content:	80% Glass Fibers
Sample Composite Homogeneity:	Moderate

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

EMLab P&K
17461 Derian Ave, Suite 100, Irvine, CA 92614
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: TestAmerica-Seattle
C/O: Ms. Kristine Allen
Re: 580-66773-1; Treoil

Date of Sampling: 03-15-2017
Date of Receipt: 03-16-2017
Date of Report: 03-16-2017

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 17030010, TS10

Lab ID-Version‡: 7895923-1

Sample Layers	Asbestos Content
White Coating	ND 1 V %
Yellow Fibrous Material	ND 1 V %
Composite Non-Asbestos Content:	70% Glass Fibers 2% Synthetic Fibers
Sample Composite Homogeneity:	Moderate

Location: 17030011, TS11

Lab ID-Version‡: 7895924-1

Sample Layers	Asbestos Content
White Coating	ND 1 V %
Yellow Fibrous Material	ND 1 V %
Composite Non-Asbestos Content:	70% Glass Fibers 2% Synthetic Fibers
Sample Composite Homogeneity:	Moderate

Location: 17030012, TS12

Lab ID-Version‡: 7895925-1

Sample Layers	Asbestos Content
Black Roofing Shingle with Gray Pebbles	ND 1 V %
Black Roofing Tar	ND 1 V %
Composite Non-Asbestos Content:	20% Glass Fibers 3% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 17030013, TS13

Lab ID-Version‡: 7895926-1

Sample Layers	Asbestos Content
Gray Fibrous Material	ND 1 V %
Composite Non-Asbestos Content:	95% Glass Fibers 3% Cellulose
Sample Composite Homogeneity:	Good

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

03/16/2017

ecology and environment, inc.
Global Environmental Specialists

720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: March 27, 2017

TO: David Burford, START-IV Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-IV Chemist, E & E, Seattle, WA

SUBJ: **Data Quality Assurance Review, Treoil Industries Biorefinery CERCLA Response Site, Ferndale, Washington**

REF: TDD: 17-03-0003 PAN: 1004530.0004.180.02

The data quality assurance review of 2 solid samples collected from the Treoil Industries Biorefinery CERCLA Response site in Ferndale, Washington, has been completed. Polarized light microscopy (PLM) (EPA Method 600/R-93-116) asbestos analyses were performed by EMLab P&K, Inc., Irvine, California. All sample analyses were evaluated following EPA's Stage 2B Data Validation Manual Process (S2BM).

The samples were numbered: 17030024 17030025

Data Qualifications:

The samples were collected on March 24, 2017, and were analyzed by March 27, 2017. No discrepancies were noted in the laboratory case narrative.

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan and/or Sampling and Quality Assurance Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the EPA Region 10 Emergency Management Program SOG 144E Analytical Data Validation, and the analytical method(s). Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

EMLab P&K
17461 Derian Ave, Suite 100, Irvine, CA 92614
(866) 888-6653 Fax (623) 780-7695 www.emlab.com

Client: TestAmerica-Seattle
C/O: Ms. Kristine Allen
Re: 580-67033-1; No: 10-032417-131956-0007

Date of Sampling: 03-24-2017
Date of Receipt: 03-27-2017
Date of Report: 03-27-2017

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Total Samples Submitted:	2
Total Samples Analyzed:	2
Total Samples with Layer Asbestos Content > 1%:	2

Location: 17030024, WBD057

Lab ID-Version‡: 7924739-1

Sample Layers	Asbestos Content
White Semi-Fibrous Material	15% Amosite 7% Chrysotile
Sample Composite Homogeneity:	Moderate

Location: 17030025, WBD056

Lab ID-Version‡: 7924740-1

Sample Layers	Asbestos Content
White Semi-Fibrous Material	15% Amosite 7% Chrysotile
Sample Composite Homogeneity:	Moderate

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

MW 3-27-17

03/28/2017

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ATTACHMENT E

Tank Inventory

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September 18, 2017

Brooks Stanfield, OSC
U.S. EPA Region 10
1200 Sixth Ave. Suite 900 (ECL-116)
Seattle WA 98101

Reference: Contract No. EP-S7-13-02, EPA Task Order 0045

Subject: FINAL Summary of Above Ground Storage Tanks (AST's) located at the Treoil Industries Biorefinery Oil Site after July-August 2017 Removal Activities, EQM PN 030309.0045

Dear Mr. Stanfield,

EQM is pleased to submit this detailed summary of the 50 AST's that are located at the Treoil Industries Biorefinery Oil site (4242 Aldergrove Road, Ferndale, WA 98248). Tank measurements and observations were collected during the EPA emergency response at this facility that occurred between 3/13/17 and 4/7/17. This report also includes updated changes to select tank contents and conditions after the supplemental removal activities that occurred at the site between July 24 and August 7, 2017.

Tank soundings were collected utilizing an interphase probe that differentiates between water and oil and/or a tape measure coated with water-detecting paste. Tank volume and material quantity estimates are approximate, and based on relative height of material compared to the total volume of the tank, and were not based on more accurate tank level/volume charts. The summary is itemized for each AST, and includes volume estimates as originally observed/ measured in each tank, and also includes any changes in material volume that occurred as of 4/7/17, such as tanks that were pumped out using a vacuum (vac) truck. As of 4/7/17, all open ports 2-inches and larger on the tops of all of the AST's were covered with either flange blanks, threaded caps or drum lids secured to the flange ports, as feasible.

Based on tank soundings, much of the non-pumpable tall oil in the tanks had converted to a more pumpable phase, attributable to warmer ambient temperatures between April and July. EPA, ERRS and START contractors re-mobilized to the site between 7/24/17 and 8/7/17 to remove additional pumpable water/tall oil liquids (using vacuum trucks), and semi/non-pumpable tall oil material (using a vactor truck and vacuum sludge boxes) from nine AST's that were located outside of containment areas (Tanks T-1, T-2, T-3, T-11, T-12, T-13, T-14, T-15 and T-20). In addition, a mixture of tall-oils solids, and water/tall oil liquid were physically removed from Tank T-50; The Tank T-50 shell was cut up for scrap metal and removed from the site for recycling during this time frame. Changes to contents and conditions of the tanks that were addressed during these pumping activities are summarized in the itemized tank discussions below.

Approximately 93,000 gallons of combined water/tall oil/tall oil sludge and tall oil solids were removed from the AST's at the site during the combined EPA removal activities that occurred March-April and July-August 2017. These activities reduced that total estimated quantity of material in the tanks at the Treoil Industries facility from approximately 206,344 gallons down to 113,423 gallons. The majority of the material remaining in the AST's at the site, post August 2017 is semi/non-pumpable tall oil sludge.

Schematic drawings (provided by the START Contractor, Ecology and Environment, Inc.) showing the relative locations of the 50 AST's on the Treoil property, as referenced in this report, are included on Figure 1 (original disposition as encountered on 3/13/17) and Figure 2 (final disposition as of 8/7/17), respectively. Spreadsheets summarizing the tank sizes and estimated contents, as initially observed in March 2017, and remaining as of August 2017, are also attached.

If you require further information please call me at (206) 445-4556.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

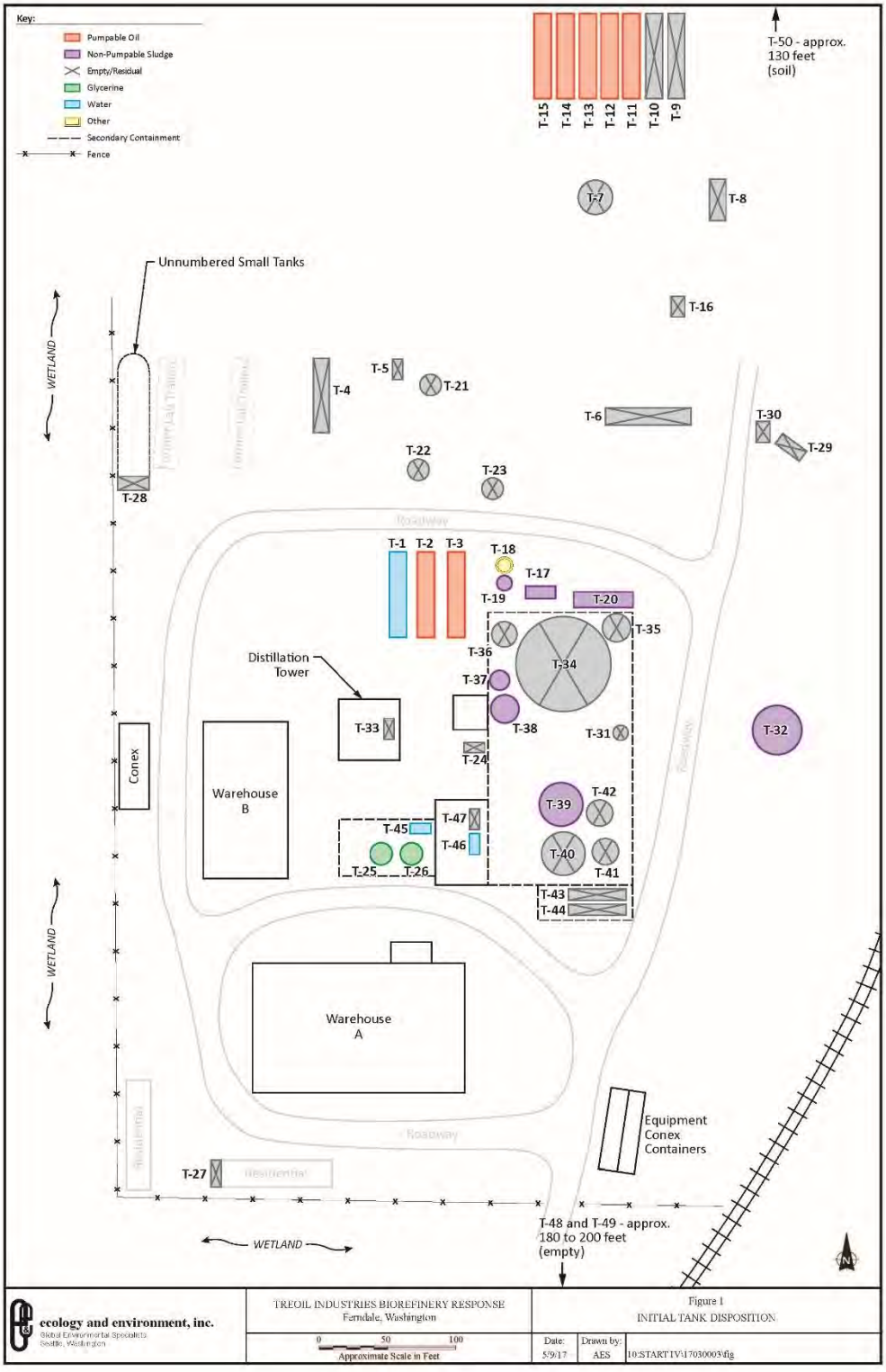
Tony Bahnick

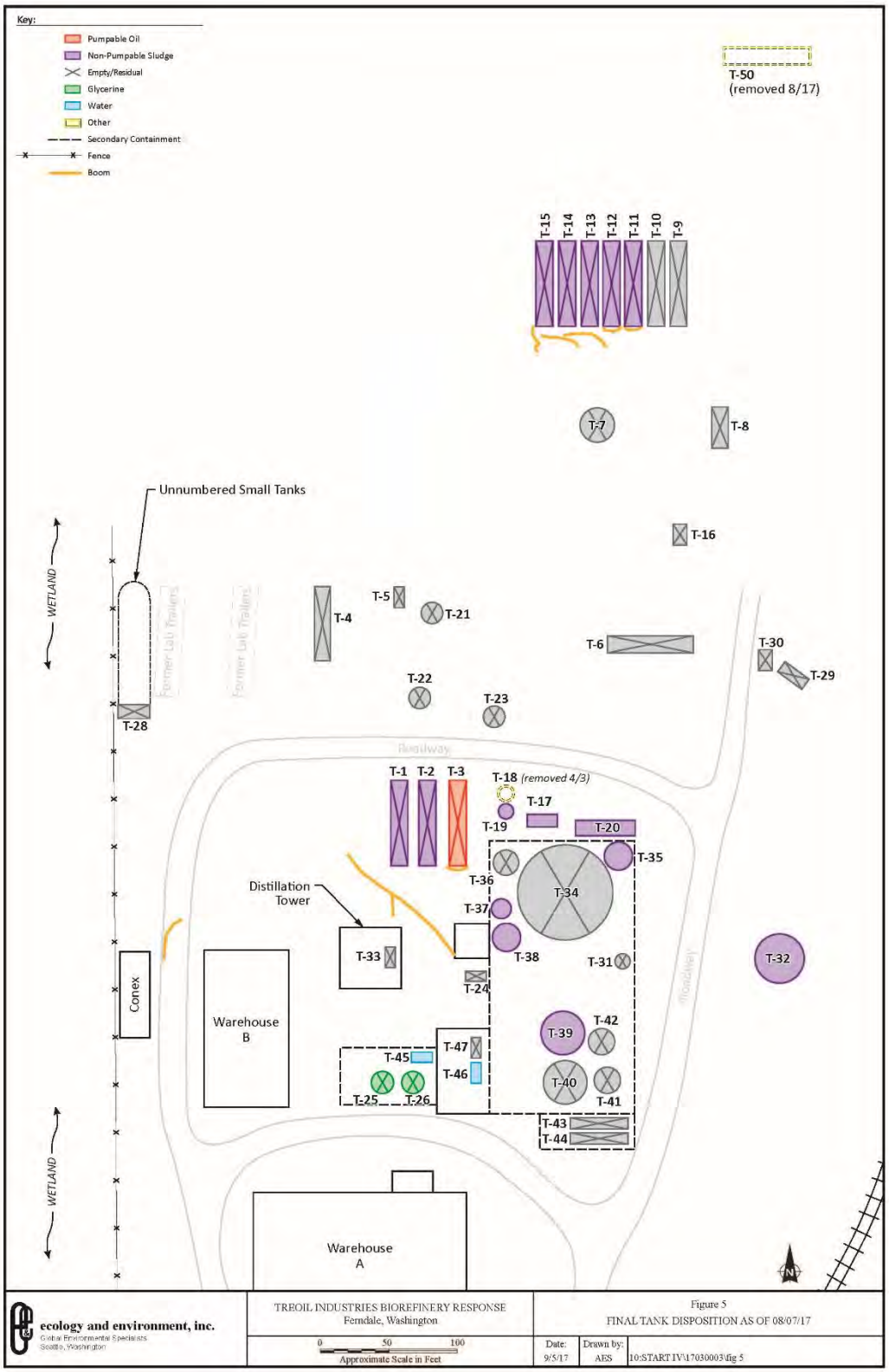
Tony Bahnick
Senior Response Manager

lp/tb

enclosure

cc: Jeff Fowlow, EPA Region 10 OSC
Laurie Palmer, EQM Subcontract Mgr.
Ron McManamy, EQM Program Mgr.


Key:
Pumpable Oil
Non-Pumpable Sludge
Empty/Residual
Glycerine
Water
Other
Secondary Containment
Fence
T-50 - approx. 130 feet (soil)
T-15
T-14
T-13
T-12
T-11
T-10
T-9
T-7
T-8
Unnumbered Small Tanks
T-16
WETLAND
T-4
T-5
T-21
T-6
T-30
T-29
T-22
T-23
T-28
Roadway
T-1
T-2
T-3
T-18
T-17
T-19
T-20
T-35
T-36
T-34
Distillation Tower
T-37
T-38
T-33
T-31
T-32
T-24
Conex
Warehouse B
T-39
T-42
T-47
T-45
T-46
T-40
T-41
T-25
T-26
T-43
T-44
Warehouse A
Residential
Equipment Conex Containers
T-27
T-48 and T-49 - approx. 180 to 200 feet (empty)
N
ecology and environment, inc.
Global Environmental Specialists
Seattle, Washington
TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington
0 50 100
Approximate Scale in Feet
Figure 1
INITIAL TANK DISPOSITION
Date: 5/9/17
Drawn by: AES
I:\0:START\V\17030003\fig


Key:
Pumpable Oil
Non-Pumpable Sludge
Empty/Residual
Glycerine
Water
Other
Secondary Containment
Fence
Boom
T-50
(removed 8/17)
T-15
T-14
T-13
T-12
T-11
T-10
T-9
T-7
T-8
Unnumbered Small Tanks
T-16
WETLAND
T-4
T-5
T-21
T-6
T-30
T-29
T-22
T-23
T-28
Former Lab Trailers
Roadway
T-1
T-2
T-3
T-18 (removed 4/3)
T-17
T-19
T-20
T-35
T-36
T-34
Distillation Tower
T-37
T-38
T-31
T-32
T-33
T-24
Conex
Warehouse B
T-42
T-39
T-47
T-45
T-46
T-40
T-41
T-25
T-26
T-43
T-44
Warehouse A
WETLAND
N
ecology and environment, inc.
Global Environmental Specialists
Seattle, Washington
TREOIL INDUSTRIES BIOREFINERY RESPONSE
Ferndale, Washington
0 50 100
Approximate Scale in Feet
Figure 5
FINAL TANK DISPOSITION AS OF 08/07/17
Date: 9/5/17
Drawn by: AES
10:\START IV\17030003\fig 5

T-1

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
0.42' = 962 gallons - pumpable tall oil
1.33' = 3,077 gallons - oily water
3.17' = 7,333 gallons - non-pumpable tall oil
6.34' = 11,372 gallons - total material in the tank

Measured tank contents as of 4/7/17:
1.33' = 3,077 gallons - pumpable tall oil /oily water
3.17' = 7,333 gallons - non-pumpable tall oil
4.59' = 10,410 gallons - total material in the tank

Notes: Approximately 4,000 gallons of oily water was pumped out of tank T-1 using a vac truck; other oily water from Tank T-18 and sumps adjacent to Warehouse B were also pumped into Tank T-1 prior to T-1 being pumped.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
3.83' = 8,860 gallons - non-pumpable tall oil
3.83' = 8,860 gallons - total material in the tank

Notes: A total of approximately 5,550 gallons of mixed water/pumpable tall oil was pumped out of tank T-1 using vac trucks.

T-2

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
1.50' = 3,470 gallons - pumpable tall oil
4.00' = 9,253 gallons - non-pumpable tall oil
5.50' = 12,723 gallons - total material in the tank

Measured tank contents as of 4/7/17:
0.08' = 192 gallons - pumpable tall oil
4.00' = 9,253 gallons - non-pumpable tall oil
4.08' = 9,445 gallons - total material in the tank

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
1.17' = 2,707 gallons - non-pumpable tall oil
1.17' = 2,707 gallons - total material in the tank

Notes: A total of approximately 10,016 gallons of tall oil was pumped out of tank T-2 using vac trucks.

T-3

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
2.00' = 4,627 gallons - pumpable tall oil
3.50' = 8,096 gallons - non-pumpable tall oil
5.50' = 12,723 gallons - total material in the tank

Measured tank contents as of 4/7/17:
0.50' = 1,157 gallons - pumpable tall oil
3.50' = 8,096 gallons - non-pumpable tall oil
4.00' = 9,253 gallons - total material in tank

Notes: Tank T-3 is leaking from a bottom valve on the north side of the tank, and from a bolt fitting on the south side of the tank. Approximately 3,470 gallons of tall oil was pumped out of tank T-3 using a vac truck

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
0.25' = 578 gallons - non-pumpable tall oil
0.25' = 578 gallons - total material in the tank

Notes: A total of approximately 12,145 gallons of tall oil liquid/sludge was pumped out of tank T-3 using a combination of vac trucks and vactor/vacuum sludge boxes. The tank is essentially empty, as the residual sludge layer is below the internal steam pipes located at the bottom of the tank, and below the level of the leaking valve.

T-4


Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is empty

T-5

Tank Capacity Calculation: 4 ea x 6' height x 2.67' diameter = 1005 gallons

Measured tank contents:
The four tanks are empty

T-6

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is empty

Notes: The tank is placed upside down

T-7

Tank Capacity Calculation: 20' height x 16' diameter = 30,080 gallons

Measured tank contents:
The tank is empty

T-8

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is empty

T-9

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is empty

T-10

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is empty

T-11

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
1.00' = 2,313 gallons - pumpable tall oil
8.00' = 18,506 gallons- non-pumpable tall oil
9.00' = 20,819 gallons - total material in the tank

Measured tank contents as of 4/7/17: No change.

Notes – Tank T-11 has leaks at the valve and seam/weld points on the south end of the tank.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
4.67' = 10,803 gallons - non-pumpable tall oil
4.67' = 10,803 gallons - total material in the tank

Notes: A total of approximately 10,016 gallons of tall oil liquid/sludge was pumped out of tank T-11 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-12



Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents: 1.50' = 3,470 gallons pumpable tall oil
7.50' = 17,350 gallons non-pumpable tall oil
9.00' = 20,820 gallons total material in the tank

Measured tank contents as of 4/7/17: No Change.

Notes: Tank T-12 has leaks at the weld seems on the south side of the tank.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
4.50' = 10,410 gallons - non-pumpable tall oil
4.50' = 10,410 gallons - total material in the tank

Notes: A total of approximately 10,410 gallons of tall oil liquid/sludge was pumped out of tank T-12 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-13

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents: 1.00' = 3,313 gallons pumpable tall oil
8.00' = 18,506 gallons non-pumpable tall oil
9.00' = 20,819 gallons total material in the tank

Measured tank contents as of 4/7/17: No change.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
5.00' = 11,566 gallons - non-pumpable tall oil
5.00' = 11,566 gallons - total material in the tank

Notes: A total of approximately 9.253 gallons of tall oil liquid/sludge was pumped out of tank T-13 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-14

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
1.00' = 2,313 gallons - pumpable tall oil
5.00' = 11,566 gallons - non-pumpable tall oil
6.00' = 13,879 gallons - total material in the tank

Measured tank contents as of 4/7/17: No Change.

Notes: Tank T-14 has a leak at a lower weld seem on the south end of the tank.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
3.67' = 8,490 gallons - non-pumpable tall oil
3.67' = 8,490 gallons - total material in the tank

Notes: A total of approximately 5,389 gallons of tall oil liquid/sludge was pumped out of tank T-14 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-15

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents: 1.00' = 2,313 gallons pumpable tall oil
4.00' = 9,253 gallons non-pumpable tall oil
5.00' = 11,566 gallons total material in the tank

Measured tank contents as of 4/7/17: No Change.

Measured tank contents as of 8/7/17:
Trace - pumpable tall oil /oily water
3.25' = 7,518 gallons - non-pumpable tall oil
3.25' = 7,518 gallons - total material in the tank

Notes: A total of approximately 4,048 gallons of tall oil liquid/sludge was pumped out of tank T-15 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-16

Tank Capacity Calculation: 7.5' length x 7.5' width x 4' height elliptical = 1,322 gallons

Measured tank contents:
The tank is empty

T-17

Tank Capacity Calculation: 8' length x 5.5' width x 3.75' height elliptical = 969 gallons

Measured tank contents:
2.00' = 517 gallons – non-pumpable tall oil

Measured tank contents as of 4/7/17 and 8/7/17: No Change

Notes: material is dense – tar/asphalt - like

T-18

Tank Capacity Calculation: 10.5' height x 10.5' diameter = 6,169 gallons

Measured tank contents:
3.92' = 2,303 gallons – oily water
0.50' = 294 gallons - non-pumpable tall oil
4.42' = 2,597 gallons - total material in the tank

Measured tank contents as of 4/7/17: The tank was demolished and hauled off-site as scrap metal

Notes: 53-55-gallon drums were stored in tank T-18. Most of the drums had holes punched in them and contained varying amounts of sludge and liquid. After the drums /water/sludge were removed from tank - tank was demolished and hauled off site for scrap metal recycling

T-19

Tank Capacity Calculation: 21' height x 12' diameter = 17,766 gallons

Measured tank contents:
12.2' = 10,321 gallons - non-pumpable tall oil

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-20

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
0.60' = 1,388 gallons - pumpable tall oil
9.45' = 21,860 gallons - non-pumpable tall oil
10.05' = 23,248 gallons - total material in the tank

Measured tank contents as of 4/7/17: No change

Notes: Pumpable tall oil has leaves, sticks / organic debris mixed with the liquid at the manhole.

Measured tank contents as of 8/7/17:
2.58' = 5,968 gallons - pumpable tall oil /oily water
1.00' = 2,313 gallons - non-pumpable tall oil
3.58' = 8.281 gallons - total material in the tank

Notes: As liquid was being removed from T-20, it was observed that the sludge layer was actually a 12" layer of sludge floating on pumpable tall oil/water mix. A total of approximately 14,967 gallons of tall oil liquid/sludge was pumped out of tank T-20 using a combination of vac trucks and vactor/vacuum sludge boxes.

T-21

Tank Capacity Calculation: 4.75' length x 3.45' diameter = 332 gallons

Measured tank contents:
The tank is empty

T-22

Tank Capacity Calculation: 5.0' length x 2.55' width x 3.67' height elliptical = 275 gallons

Measured tank contents:
0.08' = 7.7 gallons – residual gasoline

Measured tank contents as of 4/7/17 and 8/7/17: No change

T-23

Tank Capacity Calculation: 4.17' length x 3.83' diameter = 360 gallons

Measured tank contents:
The tank is empty

T-24

Tank Capacity Calculation: 6.33' length x 4.5' diameter = 753 gallons

Measured tank contents:
0.60' = 100 gallons – fuel oil

Measured tank contents as of 4/7/17 and 8/7/17: The tank has no drainable liquid.

Notes: This tank supplied fuel to the boiler that serviced the tank farm area. The measured tank contents was based on the level of visible liquid in the sight glass – when the drain valves on the bottom of the tank were opened, no liquid came out.

T-25

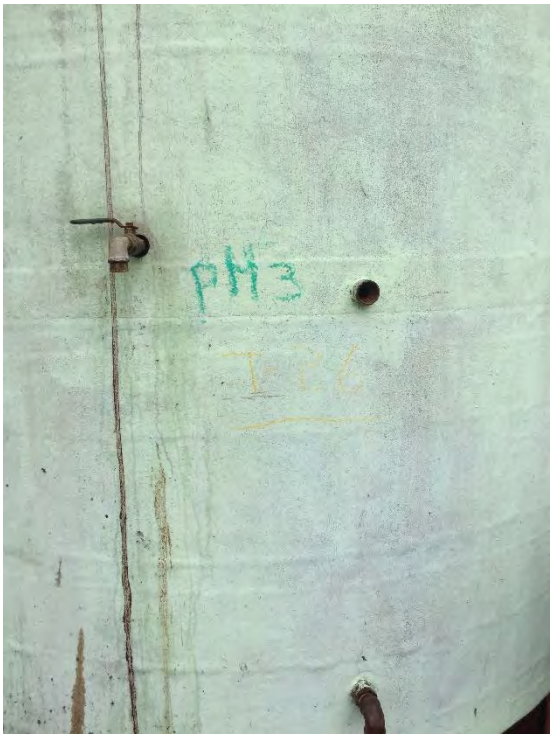
Tank Capacity Calculation: 18' Height x 8' diameter = 6,768 gallons

Measured tank contents:
9' = 3,384 gallons – crude glycerin

Measured tank contents as of 4/7/17: The tank was pumped empty.

Notes: Tank contents estimated as liquid was not visible in the site glass – assumed tank was full just below the site glass.

T-26



Tank Capacity Calculation: 18' Height x 8' diameter = 6,768 gallons

Measured tank contents:
15' = 5,640 gallons – crude glycerin

Measured tank contents as of 4/7/17: The tank was pumped empty.

Notes: Measured tank content based of the level of liquid visible in the site glass.

T-27

Tank Capacity Calculation: 5' length x 3.17' diameter = 295 gallons

Measured tank contents:
The tank is empty

T-28

Tank Capacity Calculation: 7' length x 3.83' diameter = 603 gallons

Measured tank contents:
The tank is empty

T-29

Tank Capacity Calculation: 20' length x 6.75' diameter = 5,353 gallons

Measured tank contents:
The tank is empty

T-30

Tank Capacity Calculation: 5.8' length x 4' width x 0.54' height = 94 gallons

Measured tank contents:
The tank is empty

T-31

Tank Capacity Calculation: 6' length x 3.83' diameter = 517 gallons

Measured tank contents:
The tank is empty

T-32

Tank Capacity Calculation: 30' Height x 18' diameter = 57,105 gallons

Measured tank contents:
0.10' = 190 gallons – oily water
3.50' = 6,662 gallons - non-pumpable tall oil
3.60' = 6,852 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

Notes: Leakage observed around lower valve.

T-33

Tank Capacity Calculation: 6' length x 2.33' width x 4.08' height = 335 gallons

Measured tank contents:
The tank is empty

Notes: Tank located on top of frac tower structure.

T-34

Tank Capacity Calculation: 30' height x 40' diameter = 282,000 gallons

Measured tank contents:
The tank is empty

T-35

Tank Capacity Calculation: 15' height x 5' diameter = 2,203 gallons

Measured tank contents:
2.0' = 294 gallons – oily water
7.75' = 1,138 gallons - non-pumpable tall oil
9.75' = 1,432 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No Change.

T-36

Tank Capacity Calculation: 20' height x 10' diameter = 11,750 gallons

Measured tank contents:
0.04' = 25 gallons – oily water
0.50' = 294 gallons - non-pumpable tall oil
0.54' = 319 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change

T-37

Tank Capacity Calculation: 20' height x 6' diameter = 4,230 gallons

Measured tank contents:
1.75' = 370 gallons - pumpable tall oil
13.78' = 2,915 gallons - non-pumpable tall oil
15.53' = 3,285 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-38

Tank Capacity Calculation: 20' height x 10' diameter = 11,750 gallons

Measured tank contents:
0.30' = 176 gallons – oily water
0.90' = 529 gallons - pumpable tall oil
7.20' = 4,230 gallons - non-pumpable tall oil
8.40' = 4,935 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-39

Tank Capacity Calculation: 24' height x 20' diameter = 56,400 gallons

Measured tank contents:
0.30' = 705 gallons – oily water
1.90' = 4,465 gallons - non-pumpable tall oil
2.20' = 5,170 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-40

Tank Capacity Calculation: 24' height x 20' diameter = 56,400 gallons

Measured tank contents:
0.10' = 235 gallons - non-pumpable tall oil

Measured tank contents as of 4/7/17 and 8/7/17: No change.

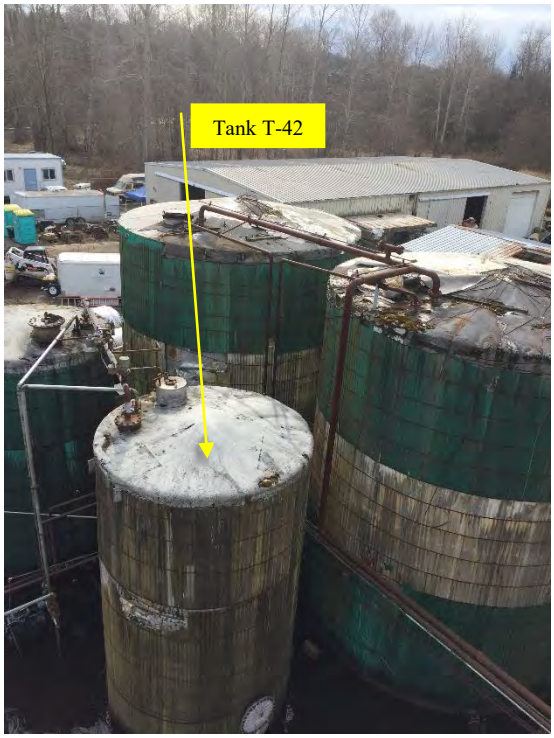
T-41

Tank Capacity Calculation: 20' height x 10' diameter = 11,750 gallons

Measured tank contents:
0.40' = 235 gallons - pumpable tall oil
0.50' = 294 gallons - non-pumpable tall oil
0.90' = 529 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-42



Tank Capacity Calculation: 20' height x 10' diameter = 11,750 gallons

Measured tank contents:
0.70' = 411 gallons – oily water
0.60' = 352 gallons - non-pumpable tall oil
1.30' = 763 gallons - total material in the tank

Measured tank contents as of 4/7/17 and 8/7/17: No change.

T-43

Tank Capacity Calculation: 30' length x 6' diameter = 6,345 gallons

Measured tank contents:
The tank is empty

T-44

Tank Capacity Calculation: 30' length x 6' diameter = 6,345 gallons

Measured tank contents:
The tank is empty

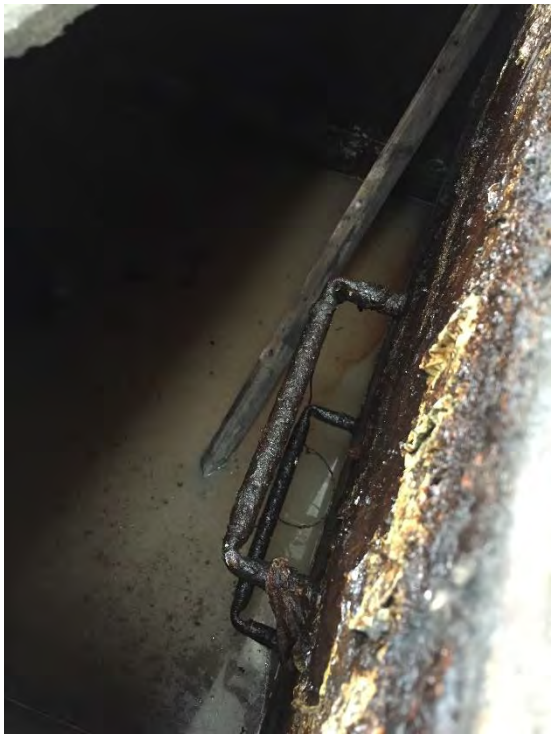
T-45

Tank Capacity Calculation: 5.5' length x 2.75' diameter = 244 gallons

Measured tank contents:
0.46' = 41 gallons – oily water

Measured tank contents as of 4/7/17 and 8/7/17: No change

T-46



Tank Capacity Calculation: 4' length x 4'x 4' height = 2479 gallons

Measured tank contents:
1.00' = 120 gallons – oily water

Measured tank contents as of 4/7/17 and 8/7/17: No change

Notes: Open-top vat

T-47

Tank Capacity Calculation: 4.92' length x 3.25' width x 3.33' height = 398 gallons

Measured tank contents:
The tank is empty

Notes: Open-top vat

T-48

Tank Capacity Calculation: 30' length x 12' diameter = 25,380 gallons

Measured tank contents:
The tank is empty

T-49

Tank Capacity Calculation: 30' length x 12' diameter = 25,380 gallons

Measured tank contents:
The tank is empty

T-50

Tank Capacity Calculation: 37.5' length x 10.5' diameter = 24,289 gallons

Measured tank contents:
The tank is approximately ½ filled with inert soil materials with vegetation growing out of the tank.
Measured tank contents as of 4/7/17: No change.

Notes: The tank has two side panels cut out.

During the July-August 2017 site removal activities, Tank T-50 was observed to be approximately 1/2 full of soil-type materials and supersacks of tall oil - resin material with free liquid (water/tall oil mix) in bottom of tank; vegetation was growing out of tank. It was also observed that the tank had several holes in the bottom of it where oil/water were dripping from and pooling on the ground beneath the tank. The tank contents were physically removed/solidified and disposed of off-site as tall oil – solids waste. The tank was demolished, cut for scrap metal and hauled off-site for recycling in August 2017. Under the oversight of an Archeologist, the pooled oil on the ground and associated impacted soils were excavated and hauled off-site for disposal as tall oil – solid waste. The maximum depth of the excavation was 1.5 feet, and no archeological artifacts were observed during the excavation. The excavation area was recontoured as a swale and hydroseeded with wetland-mix seeds native to the area.

Treoil Industries Biorefinery Oil Site
Tank Calculations Summary Report
EPA Task Order 0045 / EQM PN 030303.0045

Tank ID	Description	Length	Width (Diameter)	Height (Diameter)	Max tank volume cubic feet calc rectangle	Max tank volume cubic feet calc cylinder (horizontal tank)	Max tank volume cubic feet calc cylinder (vertical tank)	Max tank volume cubic feet calc ellipse	Max Tank Volume Gallons		Water - aqueous Liquid Level	Water-Aqueous Liquid Gallons		Pumpable non-aqueous and/or Resinous - Tall Oil Liquid Level	Pumpable non-aqueous and/or Resinous - Tall Oil Liquid Gallons		Non-Pumpable Tall Oil / Sludge level	Non-Pumpable Tall Oil / Sludge Gallons		Total Material in Tanks - Gallons		Subtotal	Tank Contents Status as of 4/7/17	Notes
Tank Farm Containment Area- Deep		130.00	10.00	3.50	4,550.00				34,034.00		1.75	17,017.00		-	-			-	17,017.00			1.96' water = 19.059 gallons of water	As of 3/29/17
Tank Farm Containment Area- shallow		130.00	60.00	3.00	23,400.00				175,032.00		1.00	58,344.00		-	-			-	58,344.00			1.16' water = 67,679 gallons of water	As of 3/29/17
												75,361.00			**-**			**-**	**75,361.00**		**75,361.00**	**86,738 gallons of water in tank farm containment**	**Subtotal water in Tank Farm Containment**
Tank Farm Containment Area Tanks																			-				
TF-34	Large Tank		40.00	30.00		-	37,700.40		281,998.99		-	-		-	-		-	-	-			No change	Tank is empty - no liquids/sludges were detected with the interface probe. All ports on the top of the tank are sealed/piped
TF-35	NE corner of berm		5.00	15.00			294.53		2,203.12		2.00	293.75		-	-		7.75	1,138.28	1,432.03			No change	green mark on tank - Oily water in tank above sludge, open 3" port on top
TF-36	Northwest corner - north tank		10.00	20.00			1,570.85		11,749.96		0.04	24.67		-	-		0.50	293.75	318.42			No change	Less than 1' water/non-pumpable tall oil in tank.
TF-37	Northwest corner - center tank		6.00	20.00			565.51		4,229.98		-	-		1.75	370.12		13.78	2,914.46	3,284.58			No change	ecology indicated the tank was full - had liquid - liquid is non-aqueous - water was not detected.
TF-38	Northwest corner - south tank		10.00	20.00			1,570.85		11,749.96		0.30	176.25		0.90	528.75		7.20	4,229.98	4,934.98			No change	All ports on top of tank are sealed - piping
TF-39	Southwest corner - northwest tank		20.00	24.00			7,540.08		56,399.80		0.30	705.00		-	-		1.90	4,464.98	5,169.98			No change	2.2' of liquid/sludge in tank
TF-40	Southwest corner - southwest tank		20.00	24.00			7,540.08		56,399.80		-	-		-	-		0.10	235.00	235.00			No change	Empty - 0.1' sludge
TF-41	Southwest corner - southeast tank		10.00	20.00			1,570.85		11,749.96		-	-		0.40	235.00		0.50	293.75	528.75			No change	<1' of material in tank
TF-42	Southwest corner - northeast tank		10.00	20.00			1,570.85		11,749.96		0.70	411.25		-	-		0.60	352.50	763.75			No change	<1.5' of material in tank
TF-43	trailer tank w/ 1230 placard (methanol?)	30.00		6.00		848.26			6,344.98		-	-		-	-		-	-	-			No change	Tank is empty - ports on top of tank are sealed/piped
TF-44	trailer tank w/ 1230 placard (methanol?)	30.00		6.00		848.26			6,344.98		-	-		-	-		-	-	-			No change	Tank is empty - ports on top of tank are sealed/piped
Subtotal Tank Farm Tanks									**460,921.48**			**1,610.92**			**1,133.87**			**13,922.70**	**15,533.62**		**15,533.62**		**Subtotal tank farm**
Tanks Outside Containment Area									-														
T-1	3 red tanks - west tank	37.50		10.50		3,247.24			24,289.37		1.33	3,076.65		0.42	962.32		3.17	7,333.08	11,372.05			1.33' (3,077 gallons) oily water remaining after pumping - no change in non-pumpable tall oil level (approximately 4,000 gallons was pumped out of T-1 - additional water volume was from T-18 and other site sources that were pumped into tank T-1)	sludge level 88" from top - 16" water and 5" oil on top of the sludge = liquid level from top of tank = 67". Liquid level to top of tank after vac truck pump out on 4/5/17 = 72"
T-2	3 red tanks - center tank	37.50		10.50		3,247.24			24,289.37		-	-		1.50	3,469.91		4.00	9,253.09	12,723.00			0.083' (192 gallons) pumpable tall oil remaining after pumping - no change in non-pumpable tall oil level	sludge level 78" from top - 18" oil on top of sludge - no water detected. Liquid level from top of tank = 60". Liquid level measured on 4/7/17 after pump out = 77"
T-3 - tank leaking (valve and bolt connection)	3 red tanks - east tank	37.50		10.50		3,247.24			24,289.37		-	-		2.00	4,626.55		3.50	8,096.46	12,723.00			0.5' (1.157 gallons) pumpable tall oil remaining after pumping - no change in non-pumpable tall oil level	sludge level 84" from top - 24" oil on top of sludege - no water detected. Liquid level from top of tank = 60". Liquid level measured on 4/7/17 after pump out = 78"
T-4	solo tank northwest area of site	37.50		10.50		3,247.24			24,289.37		0.08	185.06		-	-		-	-	185.06			No change	Empty - assume 1-inch residual
T-5	yellow frame with 4 poly process tanks		2.67	6.00			134.38		1,005.17		0.08	13.40		-	-		-	-	13.40			No change	Empty - assume 1-inch residual
T-6	solo tank north of berm area - upside down	37.50		10.50		3,247.24			24,289.37		-	-		-	-		0.08	185.06	185.06			No change	Empty - assume 1-inch residual
T-7	North area of site		16.00	20.00			4,021.38		30,079.89		0.08	120.32		-	-		-	-	120.32			No change	Empty - assume 1-inch residual
T-8	North Site Tank Group - solo tank	37.50		10.50		3,247.24			24,289.37		0.33	763.38		-	-		-	-	763.38			No change	Empty - approx. 4" water - minimal sludge - green marked empty
T-9	North Site Tank Group - east end	37.50		10.50		3,247.24			24,289.37		0.04	92.53		-	-		-	-	92.53			No change	Empty - approx 1/2 1-inch residual - green marked empty
T-10	North Site Tank Group - 2nd from west	37.50		10.50		3,247.24			24,289.37		0.08	185.06		-	-		-	-	185.06			No change	Empty - assume 1-inch residual - green marked empty
T-11 - leak at valve, leak at seam/weld point	North Site Tank Group - 3rd from west	37.50		10.50		3,247.24			24,289.37		-	-		1.00	2,313.27		8.00	18,506.18	20,819.46			No change	Green marked full
T-12 - leak at seams	North Site Tank Group - 4th from west	37.50		10.50		3,247.24			24,289.37		-	-		1.50	3,469.91		7.50	17,349.55	20,819.46			No change	Green marked full
T-13	North Site Tank Group - 3rd from east	37.50		10.50		3,247.24			24,289.37		-	-		1.00	2,313.27		8.00	18,506.18	20,819.46			No change	Green marked "?" - assume 1/2 full
T-14 - leak at lower seam	North Site Tank Group - 2nd from east	37.50		10.50		3,247.24			24,289.37		-	-		1.00	2,313.27		5.00	11,566.36	13,879.64			No change	Green marked empty - assume 1/2 full
T-15	North Site Tank Group - west end	37.50		10.50		3,247.24			24,289.37		-	-		1.00	2,313.27		4.00	9,253.09	11,566.36			No change	Green marked empty - 5' full
T-16	Truck bed tank - North site	7.50	7.50	4.00				176.72	1,321.87		-	-		-	-		0.08	26.44	26.44			No change	Empty - assume 1-inch residual - green marked empty
T-17	Tanks adactent to north side of containment berm - eliptical tank	8.00	5.50	3.75				129.60	969.37		-	-		-	-		2.00	517.00	517.00			No change	Sounded Tank sludge visible
T-18 - tank leaking - side hole	Tanks adjacent to north side of containment berm - tank on stantions		10.00	10.50			824.70		6,168.73		3.92	2,302.99		-	-		0.50	293.75	2,596.74			Drums /water/sludge removed from tank - tank was demolished and hauled off site for scrap metal recycling	green mark on tank - Drums are located inside of the tank - 53 drums - several filled with water/liquids. Top of sludge has heavy oil/tar-like consitancy - 4" water and 6" sludge in tank after the 53 drums were removed
T-19	Tank adjacent to north side of containment berm - tank with false bottom		12.00	21.00			2,375.13		17,765.94		-	-		-	-		12.20	10,321.16	10,321.16			No change	Green mark on tank (3/4 up?) - sludge peanut butter consistancy - no water, no pumpable liquids
T-20	Tank adjacent to north side of containment berm - horizontal tank	37.50		10.50		3,247.24			24,289.37		-	-		0.60	1,387.96		9.45	21,860.43	23,248.39			No change	Green mark full on tank
T-21	Heating oil type tank - north site	4.75		3.45		44.41			332.15		0.08	7.70		-	-		-	-	7.70			No change	Empty - 1" residual liquid
T-22	Heating oil type tank - north site	5.00	2.55	3.67				36.75	274.90		-	-		0.08	5.99		-	-	5.99			No change	Empty - 1-inch residual gasoline
T-23	Heating oil type tank - north site	4.17		3.83		48.04			359.37		0.08	7.51		-	-		-	-	7.51			No change	Empty - assume 1-inch residual
T-24	Fuel tank for boiler	6.33		4.50		100.68			753.07		-	-		0.60	100.41		-	-	100.41			No change	Visible liquid in sight glass - no liquid came out of tank from drain plugs on the bottom of the tank (drain valves opened on 3/30/17) - residual in site glass only
T-25	Glycerine tank - west		8.00	18.00			904.81		6,767.98		-	-		9.00	3,383.99		-	-	3,383.99			Tank was pumped empty	Assume half full - liquid not visible in site glass

Treoil Industries Biorefinery Oil Site
Tank Calculations Summary Report
EPA Task Order 0045 / EQM PN 030303.0045

T-26	Glycerine tank - east		8.00	18.00			904.81		6,767.98		-	-		15.00	5,639.98		-	-		5,639.98			Tank was pumped empty	Site glass 3/4 full - phase separated
T-27	Tank next to job/mobile trailers - sw corner of site	5.00		3.17		39.46			295.19		0.08	7.45		-	-		-	-		7.45			No change	Empty - assume 1-inch residual
T-28	Trailer tank - west fence line	7.00		3.83		80.65			603.26		0.08	12.60		-	-		-	-		12.60			No change	Empty - 1" residual liquid
T-29	East fence line in woods - north of berm	20.00		6.75		715.72			5,353.57		0.08	63.45		-	-		-	-		63.45			No change	Empty - 1" residual liquid
T-30	small rectangular tank - northeast of berm	5.80	4.00	0.54	12.53				93.71		-	-		-	-		0.08	13.88		13.88			No change	Empty - 1" residual liquid
T-31	heating oil UST - east side of berm	6.00		3.83		69.13			517.08		-	-		0.08	10.80		-	-		10.80			No change	Empty - 1" residual liquid
T-32 - leak at valve	Large AST - east fence line - east of berm		18.00	30.00			7,634.33		57,104.80		0.10	190.35		-	-		3.50	6,662.23		6,852.58			No change	5 openings in top of tank, plus side openings
T-33	Tank on top of frac tower platform	6.00	2.33	4.08				44.80	335.10		-			-	-		-			-			No change	Empty
T-45	Tank in glycerine tank berm area	5.50		2.75		32.67			244.36		0.46	40.88		-	-		-	-		40.88			No change	2 open 2.5" ports on top of tank
T-46	south vat - east side of process area	4.00	4.00	4.00	64.00		-		478.72		1.00	119.68		-	-		-	-		119.68			No change	open vat
T-47	north vat - east side of process area	4.92	3.25	3.33	53.25				398.29		-	-		-	-		-	-		-			No change	Empty - open vat
T-48	Tanks south of site - southern tank	30.00		12.00		3,393.04			25,379.91		-	-		-	-		-	-		-			No change	Empty
T-49	Tanks south of site - northern tank	30.00	-	12.00	-	3,393.04	-		25,379.91		-	-		-	-		-	-		-			No change	Empty
T-50	Cut up tank - northernmost site	37.50	-	10.50		3,247.24			24,289.37		-	-		-	-		5.00	11,566.36		11,566.36			No change	1/2 full of soil-type materials - vegetation growing out of tank. Drip out of port on west side of tank - blocked with wood - appears to be water.
Subtotal Tanks outside of Tank Farm Containment Area									**553,090.80**			**7,189.01**			**32,310.91**			**151,310.31**		**190,810.23**		**190,810.23**		**Subtotal Outside Tank Farm**
Subtotal All Tanks / containment												**84,160.93**			**33,444.78**			**165,233.01**		**281,704.85**		**281,704.85**		**Total estimated liquids/sludges in tanks and containment area**
44 tanks																							
																						206,343.85		**Total estimated liquids/sludges in tanks only**
18 empty																							

ATTACHMENT F

Waste Manifest Summary

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Waste Manifest Summary for Treoil Biodiesel Refinery

Date	Waste Stream	Medium	Quantity	Weight	Manifest #	Carrier	Facility	Location
3/17/2017	Glycerin/Methanol/Vegetable Oil	Tote	4	800 gal	NP	Whole Energy	Whole Energy	Anacortes, WA
3/18/2017	Glycerin/Methanol/Vegetable Oil	Tote	3	750 gal	NP	Whole Energy	Whole Energy	Anacortes, WA
3/18/2017	Methanol/Water	Tote	1	150 gal	NP	Whole Energy	Whole Energy	Anacortes, WA
3/25/2017	Crude Glycerin	Truck	1	2,300 gal	MV 367	Whole Energy	Whole Energy	Anacortes, WA
3/25/2017	USP Glycerin	Truck	1	5 gal	MV 367	Whole Energy	Whole Energy	Anacortes, WA
3/27/2017	Vegetable Oil	Truck	1	2,300 gal	MV368	Whole Energy	Whole Energy	Anacortes, WA
3/31/2017	UN1993, Waste Flammable Liquids, N.O.S., (Toluene, Xylene), 3, PG II, RQ (D001)	Drum	1	150 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN1479, Waste Oxidizing Solid, N.O.S., (Calcium hypochlorite, Potassium Nitrate), 5.1, PGIII, RQ (D001)	Drum	1	250 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2810, Toxic Liquids, Organic, N.O.S. (Calcium Fluoride, Sodium Sulfamate), 6.1, PGII	Drum	1	175 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2810, Toxic Liquids, Organic, N.O.S. (Copper Sulfate, Zirconium), 6.1, PG II	Drum	1	125 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2811, Toxic Solids, Organic, N.O.S. (Ammonium Sulfate, Copper Sulfate), 6.1, PG II	Drum	1	300 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2811, Waste Toxic Solids, Organic, N.O.S. (Magnesium Sulfate, Silver Sulfate), 6.1, PG II	Drum	1	300 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2022, Waste Cresylic Acid, 6.1 (8), PGII	Drum	1	30 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2810, Toxic Liquids, Organic, N.O.S. (DBNPA, Glutaraldehyde), 6.1, PG III	Drum	1	275 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN2810, Toxic Liquids, Organic, N.O.S. (Microbicide Potassium Dimethdithio Carbamate), 6.1, PGIII	Drum	1	300 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN3264, Waste Corrosive Liquid, Acidic, Inorganic, N.O.S. (Hydrochloric Acid, Sulfuric Acid), 8, PG II	Drum	1	300 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN3264, Waste Corrosive Liquid, Acidic, Inorganic, N.O.S. (Ammonium Chloride, Sulfuric Acid), 8, PG11, RQ (D002)	Drum	1	300 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN3266, Waste Corrosive Liquid, Basic, Inorganic, N.O.S. (Potassium Hydroxide, Sodium Hydroxide), 8, PG II, RQ (D002)	Drum	2	500 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN1789, Waste Hydrochloric Acid Solution, 8, PG II	Drum	1	75 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	UN3432, Polychlorinated Biphenyls, Solid, 9, PG III, R-S-D-03-01-17	Drum	1	25 kilo	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	Material not Regulated by DOT, (Washington State Dangerous Waste Only, Toxic)	Drum	1	100 lbs.	009932781 FLE	Clean Harbors Environmental Services	Clean Harbors Aragonite	Grantsville, UT
3/31/2017	Material not Regulated by DOT, (Washington State Dangerous Waste Only, Solid Corrosive)	Drum	1	250 lbs.	00932782 FLE	Clean Harbors Environmental Services	Clean Harbors Grassy Mountain	Grantsville, UT
3/31/2017	UN1263, Waste Paint Related Material, 3, PG II, RA (D001, D005)	Drum	4	500 lbs.	9932783 FLE	Clean Harbors Environmental Services	Clean Harbors Environmental Services	Kimball, NE
3/31/2017	Material not Regulated by DOT, (Washington State Dangerous Waste Only, Toxic)	Drum	1	100 lbs.	9932783 FLE	Clean Harbors Environmental Services	Clean Harbors Environmental Services	Kimball, NE
3/31/2017	UN3098, Waste Oxidizing Liquid, Corrosive, N.O.S., 5.1 (8), PG II	Drum	1	400 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA

Waste Manifest Summary for Treoil Biodiesel Refinery

Date	Waste Stream	Medium	Quantity	Weight	Manifest #	Carrier	Facility	Location
3/31/2017	UN3077, Waste Environmentally Hazardous Substances, Solid, N.O.S. (Pentaerythritol), 9, PG III	Drum	1	200 LBS	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN3077, Waste Environmentally Hazardous Substances, Solid, N.O.S. (Arsenic, Silver) 9, PG III	Drum	2	600 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN3259, Waste Amines, Solid, Corrosive, N.O.S. (Triethanolamine (Solid)), 8, PG I	Drum	1	200 LBS	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN3259, Waste Amines, Solid, Corrosive, N.O.S. (Triethanolamine (Solid)), 8, PG I	Drum	1	400 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1823, Waste Sodium Hydroxide, Solid, 8, PG II	Drum	1	200 LBS	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	NA3077, Hazardous Waste, Solid, N.O.S. (Lead), 9, PG III	Drum	1	800 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1866, Waste Resin Solution, (Contains Styrene Monomer), 3, PG III	Drum	4	1,400 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1954, Compressed Gas, Flammable, N.O.S. (Propane), 2.1	Cylinder	9	250 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	NA3082, Hazardous Waste, Liquid, N.O.S. (Lead), 9, PG III	Drum	3	1,300 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1155, Waste Ethyl Ether, 3, PG I	Drum	1	150 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	Material not Regulated by DOT	Drum	1	300 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1823, Waste Sodium Hydroxide, Solid, 8, PG II	Drum	3	550 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1824, Waste Sodium Hydroxide Solution, 8, PG II	Drum	9	3,600 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1748, Waste Calcium Hypochlorite, Dry, 5.1, PG II	Drum	2	525 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	NA3082, Hazardous Waste, Liquid, N.O.S. (Lead), 9, PG III	Drum	3	900 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Corrosive)	Drum	1	300 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN2491, Waste Ethanolamine (Ethanolamine), 8, PG III	Drum	1	300 lbs.	000161773 DAT	Burlington Environmental	Burlington Environmental	Kent, WA
3/31/2017	UN1993, Waste Flammable Liquids, N.O.S., (Benzene, Xylene), 3, PG II	Truck	1	2,923 gal	000161772 DAT	Burlington Environmental	Burlington Environmental	Tacoma, WA
3/31/2017	UN1993, Waste Flammable Liquids, N.O.S. (Benzene, Xylene), 3, PG II	Truck	1	4,800 gal	6000015 MPW	MP Environmental Services	Burlington Environmental	Tacoma, WA
7/25/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	4100 gal	011059545 FLE	Clean Harbors Environmental Services	Emerald Sevices , Inc	Tacoma, WA
7/25/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	4716 gal	011059546 FLE	Clean Harbors Environmental Services	Emerald Sevices , Inc	Tacoma, WA
7/25/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	4843 gal	011059551 FLE	Clean Harbors Environmental Services	Emerald Sevices , Inc	Tacoma, WA
7/27/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	2000 gal	01105943 FLE	Clean Harbors Environmental Services	Emerald Sevices , Inc	Tacoma, WA

Waste Manifest Summary for Treoil Biodiesel Refinery

Date	Waste Stream	Medium	Quantity	Weight	Manifest #	Carrier	Facility	Location
7/27/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Truck	2	1787 gal	000182646 DAT	MP Environmental Services	Chemical Waste Managemnet	Arlington, OR
7/27/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Truck	3	3700 gal	000182652 DAT	Certified Cleaning Services	Chemical Waste Managemnet	Arlington, OR
7/27/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Truck	4	4071 gal	00182653 DAT	Certified Cleaning Services	Chemical Waste Managemnet	Arlington, OR
8/1/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	23.12 tons	11063906 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/1/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	21.40 tons	011063907 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/1/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	24.01 tons	011063909 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/1/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	19.59 tons	011063911 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/2/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	16.76 tons	011063904 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/2/2017	Material not Regulated by DOT (Washington State Dangerous Waste Only, Toxic, WT02)	Truck	1	20.07 tons	011063905 FLE	R Transport Inc	Chemical Waste Managemnet	Arlington, OR
8/3/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Sludge Box	1	9.32 tons	000180772 DAT	MP Environmental Services	Chemical Waste Managemnet	Arlington, OR
8/3/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Sludge Box	1	9.07 tons	000180773 DAT	MP Environmental Services	Chemical Waste Managemnet	Arlington, OR
8/3/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Sludge Box	1	8.02 tons	000180774 DAT	MP Environmental Services	Chemical Waste Managemnet	Arlington, OR
8/7/2017	Material not regulated by US DOT, Washington State Dangerous Waste (WT02)	Roll Off	1	20 cubic yards	000180778 DAT	MP Environmental Services	Chemical Waste Managemnet	Arlington, OR

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ATTACHMENT G

Archeological Report

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CULTURAL RESOURCES REPORT COVER SHEET

Author: Thomas E. Becker

Title of Report: Results of Cultural Resources Monitoring at the Treoil Project Site, Whatcom County, Washington

Date of Report: August 15, 2017

County(ies): Whatcom Section: 8 Township: 39N Range: 1E

Quad: Blaine, Wash. 1952 (rev. 1994) Acre: 0.1

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

DAHP Archaeological Site #:

_____
_____
_____
_____
_____
_____
_____

- Submission of PDFs is required.
- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.

APPLIED
ARCHAEOLOGICAL
RESEARCH, INC.
Cultural Resource Management and Historic Preservation

4001 NE Halsey Street, Suite 3
Portland, OR 97232
Phone (503) 281-9451

August 15, 2017

David Burford
Ecology and Environment, Inc.
720 Third Avenue, Suite 1700
Seattle, WA 98104

Re.: Results of Cultural Resources Monitoring at the Treoil Site, Whatcom County, Washington. Applied Archaeological Research, Inc. Report No. 1908

Dear Mr. Burford:

Ecology and Environment, Inc. (E&E), under contract to the U.S. Environmental Protection Agency (EPA), is supporting an emergency cleanup removal action at a part of the 34-acre Treoil site, located near Ferndale, Whatcom County, Washington. The involvement of the EPA and the use of federal funds in the clean-up requires compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implanting regulations, 36 CFR 800. To assist the EPA in fulfilling its Section 106 responsibilities, E&E retained Applied Archaeological Research, Inc. (AAR), to provide a cultural resource monitor during the removal of contaminated soils. The cultural resource monitoring was conducted at the request of the Lummi Indian Nation to ensure that cultural resources were not adversely affected by the excavations.

Cultural resource monitoring fieldwork was conducted July 31, 2017, by AAR archaeologist Thomas E. Becker, M.A., RPA, under the technical supervision of Bill R. Roulette, M.A., RPA. Because pollutants were known to be present on the property, site workers were required to have completed Hazardous Waste Operations and Emergency Response (HAZWOPER) training. Mr. Becker has completed the 40-Hour HAZWOPER 29 CFR 1910.120(e) training and has been certified since 2003. He most recently completed his 8-hour refresher course on July 27, 2017.

Project Background and Setting

The Treoil site is located west of Ferndale, two miles east of Birch Bay and one mile west of Terrell Creek, in the southeast quarter of Section 8, Township 39 North, Range 1 East, Willamette Meridian (Figure 1). It has a street address of 4242 Alder Grove Road, Ferndale. The property was designed and operated as a tall oil refinery in 1971 and refitted as a bio-diesel refinery in 2007. Due to the recent discovery of oil in a navigable waterway that was traced back to the Treoil property, the EPA is removing any oil products that are under threat of release on the property. During this phase of the project, a tank was discovered that was leaking more aggressively than it had been earlier in the year. EPA decided to perform an excavation to mitigate the release. EPA's contractor, EQM, was then tasked with removing the oil and the underlying soil. The area of potential effects (APE) for the project measured roughly 65 by 65 feet. The vertical extent of the APE was unknown at the time of the monitoring.

Monitoring Methods

Prior to any project-related ground disturbance the surface of the APE was thoroughly examined. Ground surface visibility was approximately 50 percent. Monitoring consisted of a close examination of horizontal and vertical soil exposures as they were created, as well as an examination of the stockpiled

soil. Project activities were recorded using a digital camera and the areas of ground disturbance were plotted on a project map.

The oil and underlying sediment was removed from the APE using a John Deere 50D excavator attached with a 3-foot-wide flat-bladed bucket (Figure 2). Excavations began with the removal of an approximately six-inch thick layer of sediment, which was adequate to remove most of the oil-tainted material. Deeper excavations occurred in areas where oil had seeped below this depth. Overall depths of excavated sediment varied from six to 18 inches. After the sediment was removed, excavated areas were contoured and will be reseeded with grass at a future date (Figure 3). All removed sediments were temporarily stockpiled on impermeable plastic sheeting for future transport off site.

Findings

No artifacts or other evidence for archaeological resources were observed on the ground surface or during the monitoring activities. On that basis, it is AAR's finding that the sediment removal had no adverse effect on cultural resources.

Closure

If you have any questions concerning AAR's study or this letter report, please contact the second author at 503-281-9451 or by email at tom@aar-crm.com. Thank you.

Sincerely,

Thomas Becker

Thomas E. Becker, M.A., RPA
Project Archaeologist

Attachments

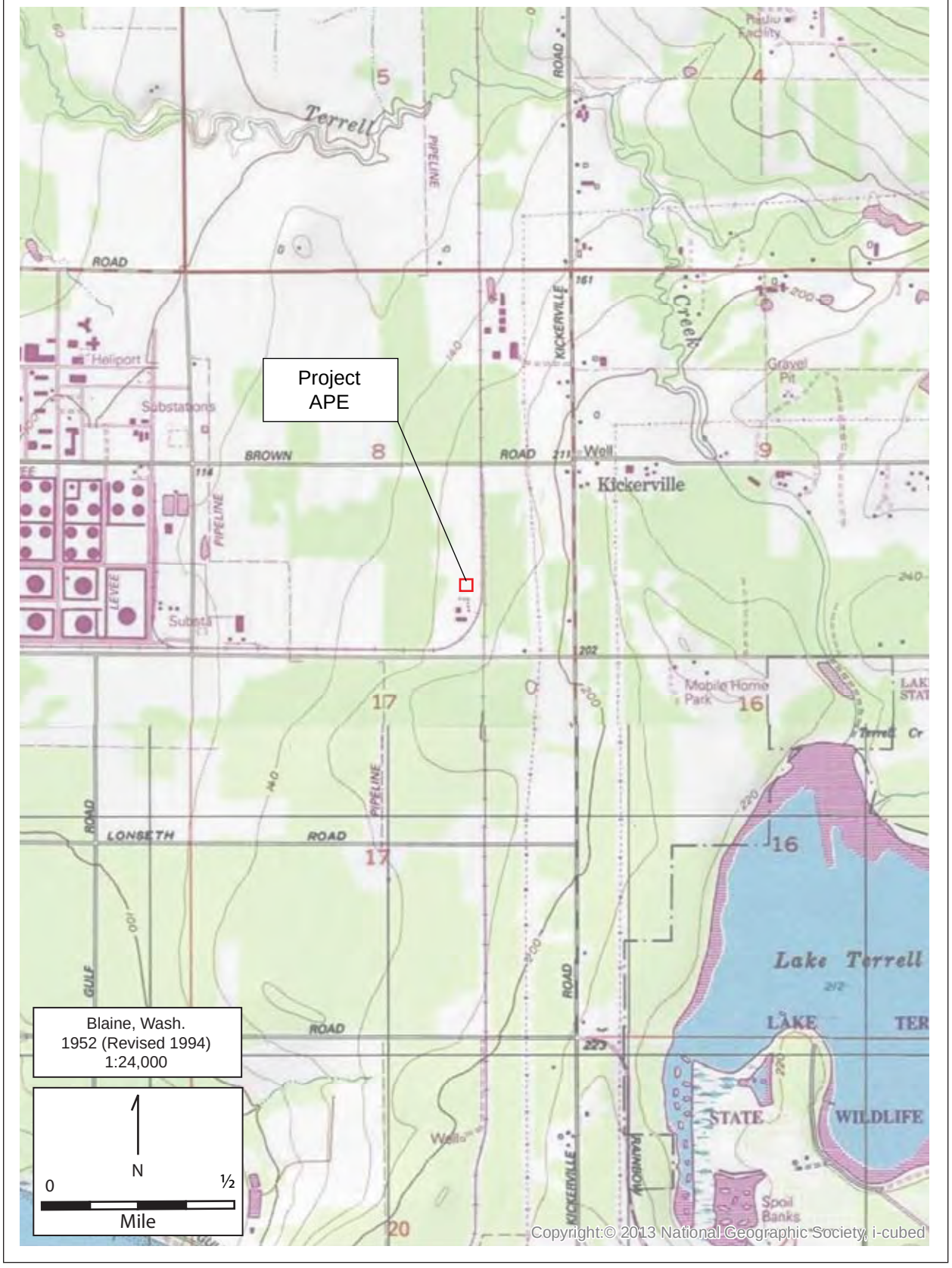

Figure 1. Location of the project APE.

Figure 2. View looking east of the APE showing the oil spill and clean-up operations underway.

Figure 3. View looking west of APE at completion of excavations.

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