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

September 30, 2016

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

Re: Trip Report for the Cottage Grove Mercury Response, Contract Number EP-S7-13-07, Technical Direction Document Number 16-03-004

Dear Mr. Fowlow:

Enclosed please find the Trip Report for the Cottage Grove Mercury Response site located in Cottage Grove, Oregon. If you have any questions regarding this submittal, please call Jacob Moersen or me at (206) 624-9537.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Brad Martin

Brad Martin
START-IV Emergency Response Team Leader

cc: Jacob Moersen, START-IV Project Manager, E & E, Seattle, WA

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TRIP REPORT

Cottage Grove Mercury Response
Cottage Grove, Oregon
TDD: *16-03-0004*

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

September 2016

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Table of Contents

1. SITE INFORMATION

Site Name:	Cottage Grove Mercury Site
Responsible Party Name:	Matthew Pooler
Location, Primary:	70835 London Road, Cottage Grove, OR 97424
Location, Secondary:	71125 London Road, Cottage Grove, OR 97424
CERCLIS ID:	10PP
Latitude: 43.5817555	**Longitude:-123.0709450**
Date(s) of Trip:	March 7, 2016 through March 12, 2016

2. PURPOSE

The United States Environmental Protection Agency (EPA) tasked Ecology and Environment, Inc. (E & E), under Superfund Technical Assessment and Response Team (START) contract number EP-S7-13-07, Technical Direction Document number 16-03-0004, to support an EPA emergency response to an uncontrolled mercury release at a residence in Cottage Grove, Oregon. The purpose of the Cottage Grove Mercury Site (Site) emergency response was to:

- Assess the extent of mercury contamination at the spill location and adjacent areas potentially impacted by cross contamination;
- Contain and recover elemental mercury from the spill location;
- Excavate mercury-contaminated soil;
- Secure mercury-contaminated personal belongings;
- Decontaminate areas impacted by cross contamination to a level deemed safe for normal use;
- Arrange for disposal of elemental mercury and mercury-contaminated soil and personal belongings; and
- Assess and stabilize additional containers of chemicals and automotive fluids for off-Site disposal.

START was tasked to provide technical support and document Site conditions and activities through logbook entries and photographs. Attachment A contains photographs taken during field activities at the Site.

3. PERSONS INVOLVED

Agency/Company	Contact Persons/ Position	Phone Number
EPA	Jeffrey Fowlow, Federal On-Scene Coordinator (OSC)	(206) 553-6362
Property Owner	Matthew Pooler	(208) 773-2312
Oregon Department of Environmental Quality (ODEQ)	Bryn Thoms, Project Manager	(541) 686-7838
	Geoff Brown, State On-Scene Coordinator	
START—E & E, Inc.	Jacob Moersen, Project Manager	(206) 624-9537
Emergency and Rapid Response Services (ERRS) – EQM, Inc.	Patrick Heyneman, Response Manager	(208) 512-2047

4. BACKGROUND

On March 7, 2016, a mercury spill was reported at a residence located at 70835 London Road in Cottage Grove, Oregon (Figure 1). The property owner, Mr. Matthew Pooler, was reportedly removing a box of glass bottles from a storage shed when he lost his footing and dropped the box onto the floor of the adjacent carport. A glass bottle containing approximately 4 to 8 fluid ounces of mercury broke upon contact with the ground, and mercury was subsequently released onto the soil and gravel floor of the carport. Mr. Pooler fell to the ground and made contact with the spilled mercury. He then proceeded into the house and washed his hands in both the bathroom and kitchen sinks before driving his pickup truck approximately one-quarter mile to meet his sister, Melinda Pooler, at her house located at 71125 London Road. Mr. Pooler then called the Oregon Emergency Response System and was put in contact with the Oregon Department of Environmental Quality (ODEQ). He was advised to place his clothing in a bag and keep the pickup truck in its current location pending further assessment. ODEQ then requested assistance cleaning up the spill from EPA.

5. FIELD ACTIVITIES

EPA initiated work at the Site with the START and Emergency and Rapid Response Services (ERRS) contractors on March 8, 2016. During the ensuing cleanup, START provided technical support including operation of a Lumex mercury vapor analyzer (MVA) to screen for mercury vapors in accordance with the Site-specific sampling plan (SSSP; E&E, 2016). ERRS performed the recovery and stabilization of mercury and mercury-contaminated soil, clothing, and other material for off-Site disposal.

EPA identified Site-specific screening levels based on the EPA Region 10 Responder Readiness Module for Mercury Response (EPA Mercury Module; EPA, 2012) and Site-specific action levels based on a guidance document provided by EPA and the Agency for Toxic Substances and Disease Registry (ATSDR). This document is the Chemical-Specific Health Consultation for Joint EPA/ATSDR National Mercury Cleanup Workgroup – Action Levels for Elemental Mercury Spills (ATSDR Health Consultation; ATSDR, 2012). Additional information regarding Site-specific screening and action levels is found in Section 5.1.

The first phase of the response was to confirm the presence of mercury based on visual observation and screening with the Lumex MVA in the carport and areas potentially cross-contaminated with mercury (Section 5.2; Table 1). After the presence of mercury was confirmed at the spill site, the next step involved characterizing the extent of contamination in the carport and initiating cleanup and restoration activities (Section 5.3). The second phase of the response included assessing and mitigating mercury cross-contamination at both residences in addition to Mr. Pooler's personal belongings and pickup truck (Sections 5.4 to 5.6, respectively). The final phase of the response included a survey of the property to identify additional containers of mercury and other chemicals for stabilization in preparation for off-Site disposal (Section 5.7). Although outside the scope of the initial response, a survey of the Site identified a number of dilapidated drums and buckets containing automotive fluids. With Mr. Pooler's permission, these fluids were consolidated and staged on Site pending transportation to a disposal facility. The mercury and mercury-contaminated soil and debris were secured and staged for transportation off-Site to the appropriate disposal and/or holding facilities.

5.1 Site-Specific Screening and Action Levels

EPA identified Site-specific screening levels based on the EPA Mercury Module and/or Site-specific action levels based on the ATDSR Health Consultation for soil, residential buildings, personal items, and vehicles.

5.1.1 Soil Screening Level

The EPA Mercury Module provides the following guidance for assessing mercury spills on soil.

> The simplest technique for field-screening soils at mercury spills has proven the most effective: 1-quart polyethylene bags are filled with approximately 0.5 kilograms of potentially contaminated surface soil and sealed. The bag is heated to about 30°C (86°F) for 15 minutes or more and mercury in air is measured in the headspace of the bag. The soil may be considered contaminated if the headspace mercury vapor concentrations are two to three times greater than concentrations of background samples. Alternatively, a contamination threshold of 6,000 nanograms per cubic meter (ng/m^3) can be used as determined by ATSDR.

START identified six background locations for screening with the Lumex MVA (Figure 2). In accordance with the aforementioned heating technique, the average mercury vapor concentration in the headspace of heated background soil samples was 206 ng/m^3 (Table 2). Due to the relatively low ambient outdoor temperature (approximately 60°F) and elevated relative humidity resulting in reduced volatilization of mercury vapor, EPA elected a soil screening level of 1,000 ng/m^3 which was greater than three times the background concentration (618 ng/m^3) but below the ATSDR threshold of 6,000 ng/m^3.

Table 1 - Mercury Vapors in Background Soil

Sample ID	Sample Type	Lumex MVA, heated headspace (ng/m^3)
BKG-01	Background	183
BKG-02	Background	152
BKG-03	Background	222
BKG-04	Background	253
BKG-05	Background	266
BKG-06	Background	161
	Average	**206**

5.1.2 Residence Screening Action Level

Based on the ATSDR Health Consultation, the standard action level for ambient air in residential settings is 1,000 ng/m^3 (ATSDR, 2012). This value was accepted as the Site-specific action level for the primary residence (Matthew Pooler's house) and the secondary residence (Melinda Pooler's house).

5.1.3 Personal Property Disposal Action Levels

Based on the ATSDR Action Levels, the acceptable concentration of mercury vapor for personal property is 3,000 to 6,000 ng/m^3 (ATSDR, 2012). The action level for disposal of personal possessions was established at 10,000 ng/m^3 because experience has shown decontamination of personal belongings above this concentration is either not possible or impractical.

5.1.4 Vehicle Screening Action Levels

Based on the ATSDR Health Consultation, the recommended action level for vehicles is 3,000 to 6,000 ng/m^3 (ATSDR, 2012). Although the initial Lumex MVA screening in the cab of the pickup truck detected mercury vapor concentrations were approximately 600 ng/m^3, the EPA OSC expressed concern that the

cooler air temperatures (approximately 40°F) and elevated relative humidity were causing readings to be biased low. As a result, EPA selected a revised action level of 1,000 ng/m^3 for the truck.

5.2 Air Monitoring for Mercury Vapors

START performed an initial screening with the Lumex MVA and identified elevated concentrations of mercury vapors at the carport spill site, the residences, personal belongings, and the pickup truck. Maximum concentrations of mercury vapors at each location are included in Table 2.

Table 2 - Maximum Mercury Vapor Concentrations

Location	Maximum Mercury Concentration
Carport	45,000 ng/m^3; visible mercury observed
Matt Pooler's House	18,000 ng/m^3
Melinda Pooler's House	5,000 ng/m^3
Matt Pooler's clothing	45,000 ng/m^3
Mr. Pooler's Truck	2,000 ng/m^3

5.3 Spill Location in the Carport

On March 8, START used the Lumex MVA to assess the spill area. Upon close inspection, visible mercury beads were observed amongst the soil, gravel, and organic material (leaf litter) in the carport area. ERRS deployed a mercury vacuum to remove visible mercury followed by hand tools for excavating soil and other material in the vicinity of the spill area. The spill occurred near a depression in the northeast corner of the carport, and mercury contamination was identified in the depression with the Lumex MVA. The depth of excavation below grade using hand tools ranged from 3 to 29 inches.

Upon follow-up screening with Lumex MVA, additional mercury vapors were intermittently detected in the area outside the carport. However, due to elevated humidity, relatively low temperatures, and a light breeze it was difficult to determine the source of the mercury vapors. ERRS arranged for delivery of a mini-excavator to the site and proceeded to excavate an area approximately 225 square feet to a depth of 2 to 4 inches below grade. Approximately three to five cubic yards of soil and material was excavated from around the carport and placed in a roll-off container.

START utilized the soil screening methodology outlined in the EPA Responder Module and described in Section 5.1.1 which involved screening the headspace of a heated soil sample with the Lumex MVA. A total of 12 confirmation soil samples were collected from two to four inches below grade. The average headspace reading with the Lumex MVA was 168 ng/m^3 with a maximum concentration of 370 ng/m^3; these concentrations were well below the Site-specific screening level of 1,000 ng/m^3 (Table 2). One additional confirmation soil sample collected at 29 inches below grade had a mercury vapor concentration of 2,530 ng/m^3 which, although greater than the Site-specific screening level, was still less than the ATSDR threshold of 6,000 ng/m^3 (Table 2). In response, EPA directed ERRS to backfill and compact all excavated areas with ¾ inch minus gravel thus mitigating the remaining risk posed by residual mercury vapors in the carport.

In addition to screening the heated headspace of each soil sample with the Lumex MVA, EPA directed START to screen the unheated headspace of each sample with the Lumex MVA and analyze the soil using an X-ray fluorescence (XRF) instrument. Although the XRF instrument is unreliable as a primary tool for assessing spills involving elemental mercury due to the heterogeneous distribution of contamination,

the XRF was utilized as a secondary tool to assess correlation with both heated and unheated headspace Lumex MVA results. However, the results of both the unheated Lumex screening and the XRF were inconsistent, and the heated headspace methodology was thus confirmed as the most reliable and conservative approach for confirmation soil screening at the Site.

Table 3 – Confirmation Soil Sample Screening Results

Sample ID	Sample Type	Lumex MVA, unheated (ng/m^3)	XRF (ppm)	Lumex MVA, heated (ng/m^3)
SB-01-02	Excavation Sample	192	28	370
SB-02-04	Excavation Sample	30	26.3	25
SB-03-02	Excavation Sample	35	20.8	140
SB-04-02	Excavation Sample	60	14.7	173
SB-05-02	Excavation Sample	115	7	200
SB-06-29	Excavation Sample	220	29.7	2530
SB-07-02	Excavation Sample	125	15.6	260
SB-08-02	Excavation Sample	50	8.8	140
SB-09-02	Excavation Sample	80	11.1	125
SB-10-02	Excavation Sample	60	5.8	110
SB-11-02	Excavation Sample	25	37.9	120
SB-12-02	Excavation Sample	50	14	160
SB-13-02	Excavation Sample	50	20.6	190

5.4 Residential Assessments

START deployed two-person field teams to assess the primary and secondary residences. At each residence, the home owners were interviewed to identify potential areas that may have been cross-contaminated with mercury. Typical areas identified for screening include the entryway, bedrooms, kitchen, and living room.

During the surveys, ambient mercury concentrations were recorded at the floor and adult breathing zone (ABZ) level at a minimum of three readings per location. If elevated concentrations were identified in a room, residents were advised of decontamination methods to reduce mercury vapors which typically included isolated the affected area followed by repeated cycles of heating and ventilation.

Mercury vapors were initially detected above at both residences above the action level 1,000 ng/m^3 for ambient air in residential settings. However, the contamination appeared to be isolated and no visible mercury was observed in either residence.

5.4.1 Primary Residence

The primary residence (Matt Pooler's House) had elevated concentrations of mercury vapor in the bathroom sink exceeding 4,000 ng/m^3; upon running hot water through the sink, the readings spiked to 18,000 ng/m^3. Mr. Pooler reportedly washed his hands in this sink immediately after the mercury spill and these readings were not entirely unexpected. The drain and P-trap in the bathroom were removed,

cleaned and reinstalled. Additional screening with the Lumex MVA identified continued elevations of mercury vapors in excess of the action level for ambient air in residential settings. ERRS then replaced the drain and P-trap with new fixtures resulting in an immediate decrease of mercury vapor concentrations to approximately 600 ng/m^3 which was below than the action level. The remaining areas in the home including the kitchen sink, bathroom, and living room were all below the action level. No additional mitigation was performed inside the primary residence.

5.4.2 Secondary Residence

The Lumex MVA identified mercury vapor concentrations exceeding 2,000 ng/m^3 in the living area of the secondary residence (Melinda Pooler's House). START reported that a wood-burning stove in the living room was actively being used as the primary heat source for the home. The only specific location with elevated mercury vapors was the rocking chair cushion with concentrations approaching 5,000 ng/m^3. Mr. Pooler was reportedly sitting in this chair when he placed the call to emergency services. EPA recommended that the cushion be disposed or subjected to repeated cycles of heat and outdoor ventilation. On March 11, EPA returned to the home and resurveyed with the Lumex MVA. All readings were below the action level of 1,000 ng/m^3, including the rocking chair cushion which had been heated and temporarily placed outdoors.

5.5 Personal Property

Following the mercury spill, Mr. Pooler placed his clothing in a closed plastic bag. START screened the headspace of the plastic bag with the Lumex MVA on March 8. The maximum mercury vapor concentration was 45,000 ng/m^3 with sustained readings greater than 20,000 ng/m^3. These concentrations indicated the likely presence of elemental mercury vapor on the clothing. Because the mercury vapor concentration was greater than the action level of 10,000 ng/m^3 for personal belongings, no effort was made to decontaminate the clothing. The property owner provided consent for EPA to dispose of the contaminated clothing.

5.6 Truck Screening and Decontamination

On March 8, START deployed the Lumex MVA to screen the interior of pickup truck including the steering wheel, seats, foot pedals, and floor carpeting. The maximum concentrations were approximately 600 ng/m^3 although localized weather conditions, including ambient air temperature of approximately 40°F and elevated relative humidity, were likely causing a low bias. Due to concern that elevated temperatures would increase volatilization of mercury contamination in the truck during summertime months, ERRS proceeded with the standard decontamination process of the truck including utilizing a mercury vacuum and repeated cycles of heat and ventilation.

The truck was rescreened on March 10 after the interior was vacuumed and an initial cycle of heating and ventilation. The maximum concentration of mercury vapors in ambient air was 2,000 ng/m^3. Targeted screening with the Lumex MVA identified elevated concentrations on the floor and seat on the driver's side. Later that day the truck floor was treated with HgCS-102, a mercury cleaning solution for hard surfaces, followed by additional heating and ventilation. Follow up screening on March 11 showed reduced mercury vapor concentrations of approximately 550 ng/m^3. No additional treatment was required, and Mr. Pooler was advised that mercury vapors in the truck were below Site-specific action level of 1,000 ng/m^3.

5.7 Mercury and Other Chemicals

5.7.1 Elemental Mercury Recovery

Mr. Pooler reported that additional containers of mercury were possibly stored on the property. During a subsequent survey of the Site, EPA recovered three flasks traditionally used to store and transport mercury. These flasks were found in a Quonset hut and workshop, and each flask had a volume of 2.55 liters with the ability to hold 76 pounds of elemental mercury at standard temperature and pressure. One flask was approximately 40% full of mercury, and the other two flasks were completely full of fluid that appeared to be hydraulic oil at the surface. Due to the density of mercury, ERRS expressed concern that a separate phase of mercury may reside at the bottom of these two flasks. All three containers were isolated and staged for transportation off site.

5.7.2 Chemical and Automotive Fluid Recovery and Stabilization

While on Site, EPA discovered additional chemicals including a 500 milliliter (ml) container of hydrochloric acid, a 500 ml container of nitric acid, a 250 ml container of barium dioxide, and a container of sulfur containing less than one kilogram of material. The containers were in poor condition, and Mr. Pooler provided permission for EPA to arrange for transportation and off-Site disposal of the chemicals.

EPA also identified approximately 25 rusted, damaged, and leaking drums and/or buckets of automotive fluids. The containers were in dilapidated with evidence of rusting and leaking. With permission of the property owner, ERRS combined a total of approximately 100 gallons of automotive fluids into two new 85-gallon overpack drums. ODEQ agreed to arrange for transportation and disposal of the automotive fluids through their household hazardous waste program. The overpacked drums were stored in the locked Quonset hut pending confirmation from ODEQ, and the old drums were crushed and placed in the roll-off container.

5.8 Final Site Inspection & Demobilization

Upon completion of final air monitoring and backfill placement on March 11, the majority of START and ERRS contractors demobilized from Site. On March 12, the EPA OSC and one START representative conducted a final site review with the homeowner and ensured the primary residence and Quonset hut were secured.

6. SAMPLING METHODS AND ANALYSIS

6.1 Air Monitoring

Two Lumex MVA instruments were used throughout the duration of the cleanup. Each unit was auto-calibrated prior to each assessment, filters replaced when needed, and funnel attachments periodically tested for contamination. Air monitoring data was recorded in the technical log book with time and location.

Exterior air monitoring with the Lumex MVA was collected at random times and at ground level and within the ABZ, approximately four to five feet above ground level. Collection locations included the exterior of both residences, EPA command post, and near the Quonset hut and shed. Background readings averaged 15 to 35 ng/m^3 collected at various times of the day with high temperature variability ranging from 35 to 60°F.

Interior air monitoring with the Lumex MVA was collected at multiple heights, including but not limited to ground level and ABZ. Screening locations were targeted and included features or targets such as

garbage bins, shoes, brooms, entryways. A minimum of three readings were recorded in each area. Interior temperatures ranged from approximately 40 to 80°F.

6.2 Soil Screening

Soil screening consisted of in situ and ex situ sampling following methods outlined in the EPA Mercury Module. In situ screening results were used as one of the directives for excavation location and depth needed, while ex situ sampling and screening was used as final confirmation in the field.

6.2.1 In Situ Soil Screening

The Lumex MVA was used for in situ screening at targeted ground locations to guide the excavation near the spill site. Measurements were recorded in a technical log book including time, location, and instrument ID. These measurements were taken approximately 1 inch from the ground surface to collect an accurate mercury vapor concentration without physically contacting the ground surface.

6.2.2 Ex Situ Soil Sampling and Screening

The Lumex MVA was used for ex situ screening of soil samples. Each targeted soil sample was collected in a polyethylene sample bag. The headspace of the bag was measured and recorded and the bag was then heated to 80 degrees Fahrenheit. Following heat treatment, the headspace was re-screened. See Table 3 for pre- and post-heat treatment results. The ex situ heated sample results were used as site clearance samples in the spill area.

7. WASTE GENERATED

Elemental mercury was initially transported to the Burlington Environmental facility in Kent, Washington, prior to shipment to Bethlehem Apparatus in Hellertown, Pennsylvania. The Mercury Export Ban Act (MEBA) of 2008 prohibits the sale, distribution, and transfer of metallic mercury held by federal agencies. In accordance with MEBA, the mercury was shipped to Bethlehem Apparatus for temporary storage until an appropriate holding facility is approved by the U.S. Department of Energy.

The mercury-contaminated soil and debris was placed in a 20 cubic yard roll-off container along with mercury-contaminated clothing and used personal protective equipment generated during the cleanup. The remaining empty drums and buckets of automotive fluids were crushed and placed in the roll-off container. Upon completion of the cleanup, the roll-off container was transported to Burlington Environmental disposal facility in Kent, Washington. The small containers of chemicals were also shipped to the Burlington Environmental facility for disposal, and the overpacked drums of automotive fluids were stored on Site in the locked Quonset hut until ODEQ could arrange for disposal. Waste disposal manifests for Burlington Environmental can be found in Attachment B.

Table 4 - Waste Summary

Waste Stream	Medium	Quantity
Mercury-containing soil and debris	Solid	20 yd^3
Elemental mercury	Liquid	30 lbs
6.1 Poison (Barium Dioxide, sulphur) 8 Corrosive (Hydrochloric Acid) 8 (5.1, 6.1) Poison Inhalation Hazard, Zone B (Nitric Acid)	Solid, Liquid	4 lbs

8. CONCLUSIONS

EPA performed an emergency response to a mercury spill at a residence located in Cottage Grove, Oregon. The mercury was released to the soil and gravel floor of a carport on March 7, 2016. ODEQ requested assistance from EPA in performing the cleanup. On March 8, EPA initiated a cleanup at the request of ODEQ which included excavation of mercury-contaminated soil and debris at the spill location followed by restoration with gravel backfill. Mercury cross-contamination was confirmed at two homes, a vehicle and personal belongings including clothing. The areas impacted by cross-contamination were assessed and mitigated to eliminate or significantly reduce the risk posed by mercury vapors to concentrations below the Site-specific screening and action levels. Notably, the only personal belongings identified for disposal were the clothes worn by the property owner at the time of the mercury spill.

Additional containers of elemental mercury were discovered at the Site and secured for transportation off-Site to the appropriate facility in accordance with the Mercury Export Ban Act. Additional containers of chemicals and automotive fluids were identified, overpacked as necessary, and secured for transportation and disposal. EPA demobilized from the Site on March 12, 2016.

No further response action at the site is anticipated at this time.

9. REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR), March 12, 2012, *Chemical-Specific Health Consultation for Joint EPA/ATSDR National Mercury Cleanup Workgroup Action Levels for Elemental Mercury Spills*, prepared by Division of Toxicology and Environmental Medicine Prevention, Response and Medical Support Branch Emergency Response Team.

Ecology and Environment, Inc. (E & E), March 22, 2016, *Site-Specific Sampling Plan: Cottage Grove Mercury Response*, prepared for United States Environmental Protection Agency, Contract Number EP-S7-13-07, Technical Direction Document Number 16-03-0004.

Environmental Protection Agency (EPA), June 2012, *Responder Readiness Module – Mercury Response Version 1.0*, prepared for EPA Region 10.

SITE FIGURES

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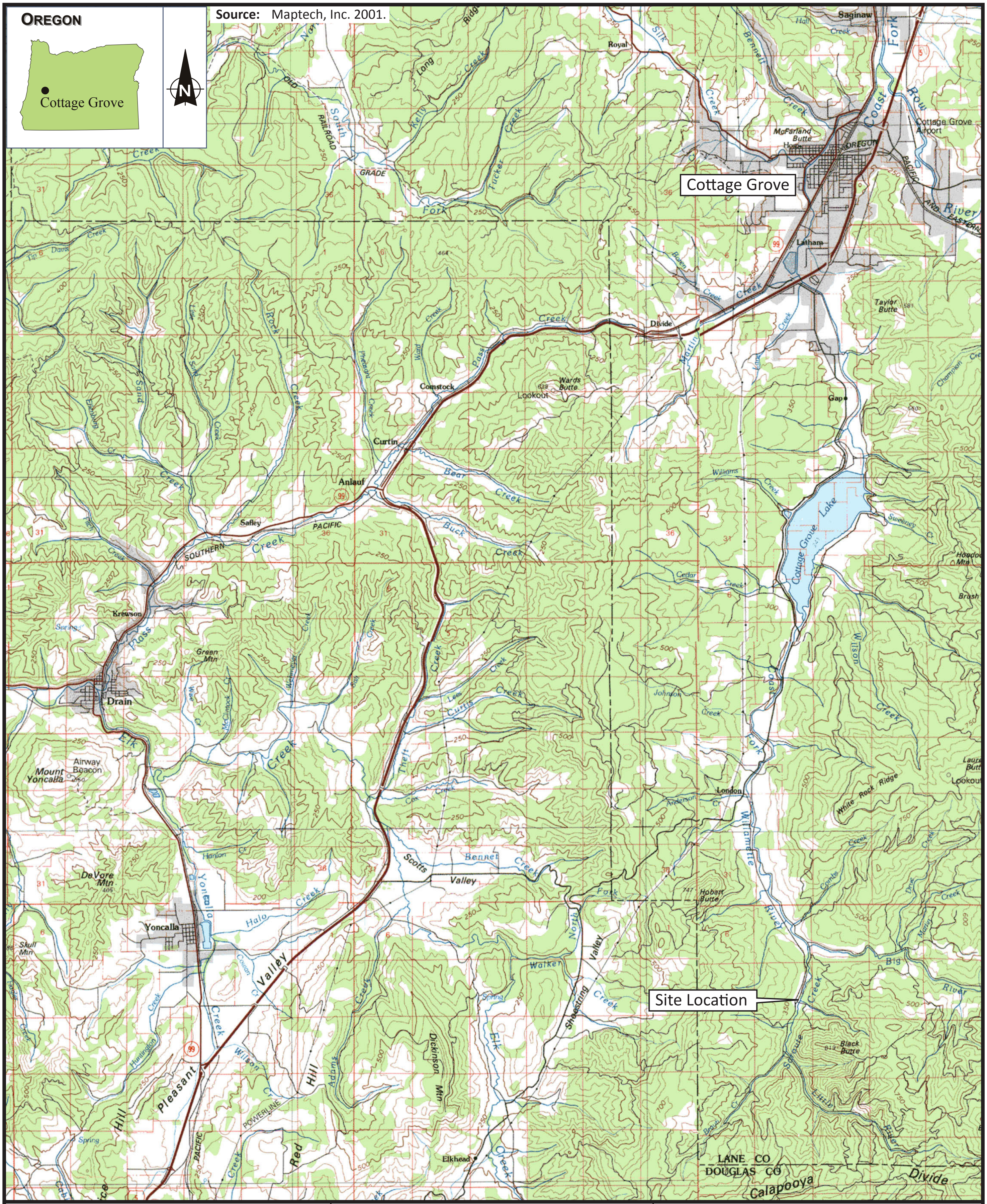

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Seattle, Washington

COTTAGE GROVE MERCURY RESPONSE Cottage Grove, Oregon		Figure 1 SITE VICINITY MAP	
0 — 2.25 Approximate Scale in Miles	Date: 3/23/16	Drawn by: AES	10:START IV\16030004\fig 1

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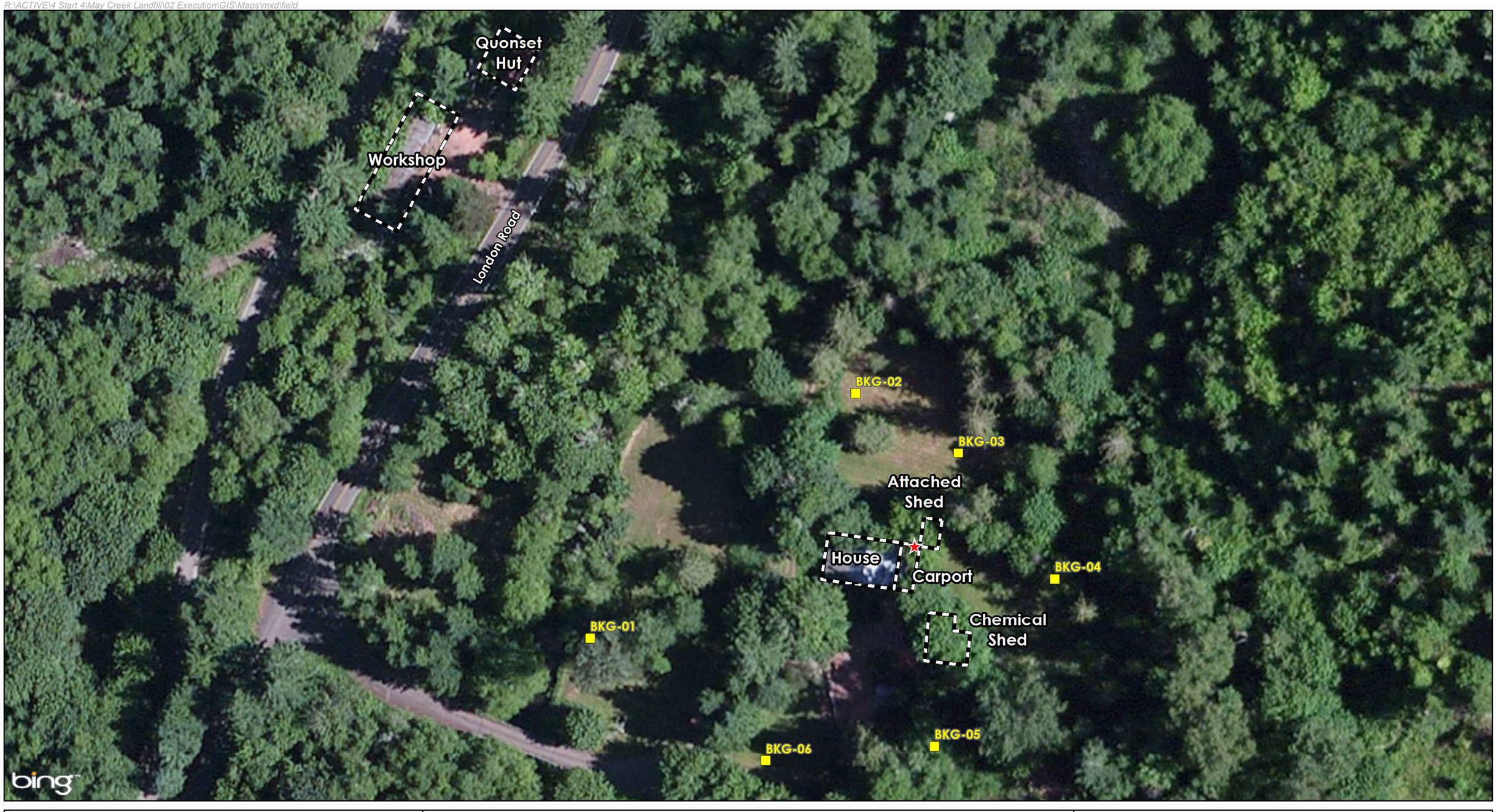

★ Spill Location

Soil Samples*

*Sample locations are approximate

Figure 2
Site Layout

Cottage Grove, Oregon

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N

100 50 0 100 Feet

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ATTACHMENT A
Photographic Documentation

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Photo 1 View of the spill site at the far end of the carport.

Direction: *North* *Date: 3/8/16* *Time: 11:51* *Taken by: EC*

Photo 3 Excavating mercury-contaminated soil by hand in the carport.

Direction: *West* *Date: 3/9/16* *Time: 10:20* *Taken by: EC*

Photo 2 Visible mercury beads in the carport.

Direction: *Closeup* *Date: 3/9/16* *Time: 10:37* *Taken by: EC*

Photo 4 Excavating mercury-contaminated soil by hand in the carport.

Direction: *North* *Date: 3/9/16* *Time: 11:47* *Taken by: EC*

Photo 5 Screening excavated areas with the Lumex mercury vapor analyzer.

Direction: *West* *Date: 3/9/16* *Time: 11:07* *Taken by: EC*

Photo 6 Screening excavated areas with the Lumex mercury vapor analyzer.

Direction: *East* *Date: 3/9/16* *Time: 11:58* *Taken by: EC*

Photo 7 Excavated area in the carport, ranging from 3 to 21 inches in depth.

Direction: *Closeup* *Date: 3/9/16* *Time: 11:49* *Taken by: EC*

Photo 8 Excavating shallow soil and leaf litter outside the carport to a depth of 2 inches.

Direction: *North* *Date: 3/9/16* *Time: 16:07* *Taken by: EC*

Photo 10 Pin flags denote locations for additional mercury vapor screening.

Direction: *Northwest* *Date: 3/10/16* *Time: 12:45* *Taken by: EC*

Photo 9 Screening excavated areas with the Lumex mercury vapor analyzer.

Direction: *Northwest* *Date: 3/9/16* *Time: 16:23* *Taken by: EC*

Photo 11 Backfilled excavated area in the carport with 3/4" minus gravel.

Direction: *Closeup* *Date: 3/10/16* *Time: 16:03* *Taken by: EC*

Photo 12 Backfilled excavated area near the carport with 3/4" minus gravel.

Direction: *East* *Date: 3/10/16* *Time: 16:05* *Taken by: EC*

Photo 13 Interior of the truck before treatment.

Direction: Closeup Date: 3/8/16 Time: 10:54 Taken by: EC

Photo 14 Screening the interior of the truck for mercury vapors.

Direction: Closeup Date: 3/10/16 Time: 13:28 Taken by: EC

Photo 15 Interior of the truck after it was vacuumed and subject to heat/ventilation cycles.

Direction: *Closeup* *Date: 3/10/16* *Time: 16:02* *Taken by: EC*

Photo 16 Interior of the truck after it was vacuumed and subject to heat/ventilation cycles.

Direction: *Closeup* *Date: 3/10/16* *Time: 16:02* *Taken by: EC*

Photo 17 Radiation screening inside the primary residence.

Direction: *Inside* *Date: 3/10/16* *Time: 12:36* *Taken by: JM*

Photo 18 Mercury vapor screening inside the bathroom of the primary residence before replacing P-trap.

Direction: *Inside* *Date: 3/10/16* *Time: 12:38* *Taken by: JM*

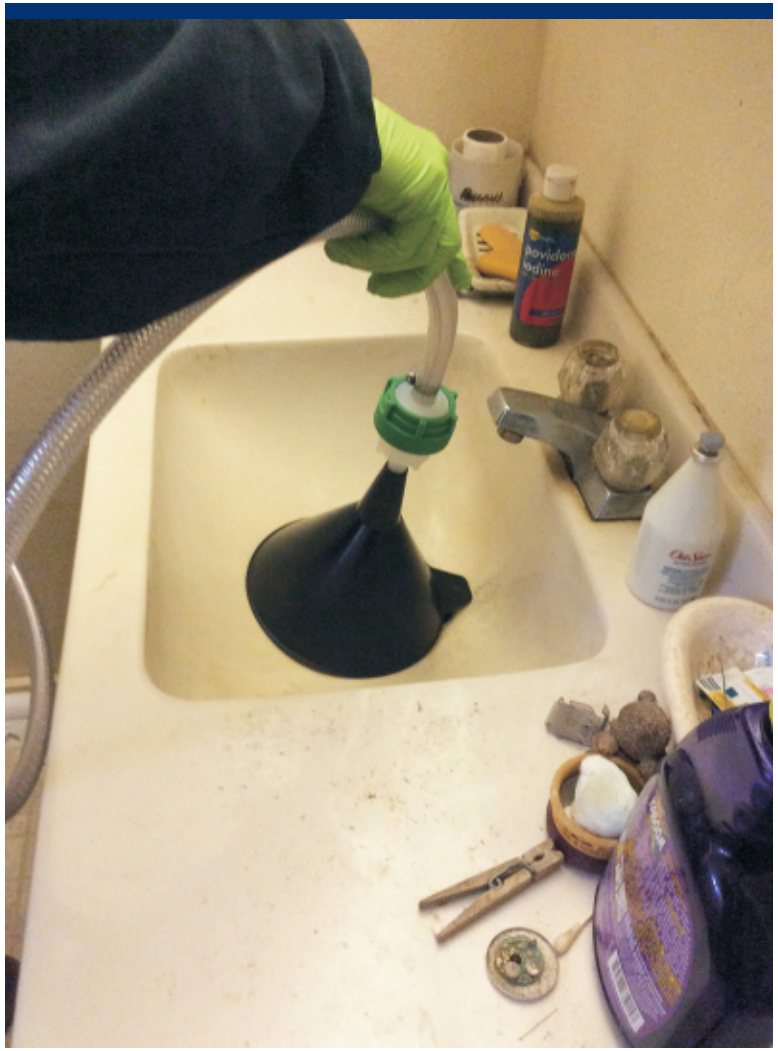

Photo 19 Mercury vapor screening inside the bathroom of the primary residence after replacing P-trap.

Direction: *Inside* *Date: 3/11/16* *Time: 08:38* *Taken by: EC*

Photo 20 Mercury vapor screening of ex-situ soil from the excavated area after heating in accordance with EPA Region 10 Mercury Response Module.

Direction: *West* *Date: 3/10/16* *Time: 11:35* *Taken by: EC*

Photo 21 One mercury flask was found in a shed.

Direction: *Inside*	*Date: 3/9/16*	*Time: 13:54*	*Taken by: RW*

Photo 22 A total of three mercury flasks were found on site at various locations.

Direction: *Closeup*	*Date: 3/11/16*	*Time: 10:21*	*Taken by: EN*

Photo 23 Two containers of chemicals were found on site; one container was labeled hydrochloric acid.

Direction: *Closeup* *Date: 3/8/16* *Time: 12:51* *Taken by: EC*

Photo 24 A container of barium dioxide was discovered on site.

Direction: *Closeup* *Date: 3/8/16* *Time: 12:51* *Taken by: EC*

Photo 25 Automotive fluids were consolidated for transportation off site with permission from the property owner.

Direction: *Closeup* *Date: 3/11/16* *Time: 09:52* *Taken by: EN*

Photo 26 Containers in poor condition were flattened using the skid steer.

Direction: *North* *Date: 3/11/16* *Time: 10:28* *Taken by: EN*

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ATTACHMENT B
Waste Disposal Manifests

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897023-16 2342485

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: ORP 136004157 ~~CESQG~~ pl
2. Page 1 of: 1
3. Emergency Response Phone: (877) 577-2669
4. Manifest Tracking Number: 000126248 DAT

GENERATOR

5. Generator's Name and Mailing Address
US EPA Region 10 - London Road East
1200 Sixth Avenue, Suite 900 (ECL ~~133~~) 116
Seattle WA 98101 (206)533-2751
Generator's Phone:

Generator's Site Address (if different than mailing address)
US EPA Region 10 - London Road
70835 London Road East
Cottage Grove OR 97424 (206)553-2751

6. Transporter 1 Company Name: BURLINGTON ENVIRONMENTAL, LLC
U.S. EPA ID Number: WAR000001743

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY
20245 77TH AVENUE SOUTH
KENT, WA 98032 (253) 872-8030
Facility's Phone:
U.S. EPA ID Number: WAD991281767

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. UN3077 WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (MERCURY) 9 PGIII RQ(1)	001	CM	10,000	P	D009
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
(1) 754746-00 - ERG(171) MERCURY-CONTAMINATED

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: OBO EPA JEFFREY FOWLOW
Signature:
Month: 3 Day: 11 Year: 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Brian Leap
Signature:
Month: 3 Day: 11 Year: 16

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name:
Signature:
Month: Day: Year:

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

898281-18

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Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: ORP936004157
2. Page 1 of: 1
3. Emergency Response Phone: (877) 577-2669
4. Manifest Tracking Number: 000126256 DAT

GENERATOR

5. Generator's Name and Mailing Address
US EPA Region 10 - London Road East
1200 Sixth Avenue, Suite 900 (ECL-133)
Seattle WA 98101 (206)533-2751
Generator's Phone:

Generator's Site Address (if different than mailing address)
US EPA Region 10 - London Road
70835 London Road East
Cottage Grove OR 97424 (206)553-2751

6. Transporter 1 Company Name: BURLINGTON ENVIRONMENTAL, LLC
U.S. EPA ID Number: WAR000001743

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
BURLINGTON ENVIRONMENTAL, LLC. KENT FACILITY
20245 77TH AVENUE SOUTH
KENT, WA 98032 (253) 872-8030
Facility's Phone:
U.S. EPA ID Number: WAD991281767

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. UN2809 WASTE MERCURY 8 (6.1) PGIII RQ(1) (RQ)	1	DF	150	P	D009
X	2. ~~UN1884 WASTE BARIUM OXIDE 6.1 PGIII~~ UN 3288 Waste Toxic Solid, Inorganic, n.o.s., 6.1, PG II	1	DF	11	P	D005
X	3. UN1789 WASTE HYDROCHLORIC ACID SOLUTION 8 PGII	1	DF	9	P	D002
X	4. UN2032 WASTE NITRIC ACID, RED FUMING *POISON INHALATION HAZARD - ZONE B* 8 (5.1, 6.1) PGI	1	CF	9	P	D001 D002

14. Special Handling Instructions and Additional Information
(1) 754747-00 - ERG(172) ELEMENTAL MERCURY (P (2) 754930-00 - ERG(157) TOXICS CLASS 6.1 LAB (3) 755119-00 - ERG(157) CORROSIVE CLASS 8 LA (4) 755128-00 - ERG(157) REACTIVES CLASS 4.2

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: OBO EPA JEFFREY FOWLOW
Signature:
Month 3 Day 12 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: JOHN LUBOW
Signature:
Month 3 Day 12 Year 16
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name:
Signature:
Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)