UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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OFFICE OF ENVIRONMENTAL CLEANUP
EMERGENCY MANAGEMENT PROGRAM

Site Specific Sampling Plan

Project Name: Baker City Hg Explosion ________TO No: TO-21-T2-SS3_______________

Author: Seth Wing___ Company: Ecology and Environment___Date Completed: _10/07/2017

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Assurance Plan (QAP) for the Emergency Management Program for collecting samples during this Removal Program project. The information contained herein is based on the information available at the time of preparation. As better information becomes available, this SSSP will be adjusted.

When inadequate time is available for preparing the SSSP in advance of the sampling event, a Field Sampling Form may be prepared on-site immediately prior to sampling. This full length version of the SSSP is written after the sampling event and the completed Field Sampling Form attached to it.

1. Approvals

Name, Title	Telephone, Email, Address	Signature
Stephen Ball **On-Scene Coordinator**	208-530-9107, ball.stephen@epa.gov USEPA , M/S: ECL-133, 1200 Sixth Ave. Suite 900, Seattle, WA 98101	
Kathy Parker **EMP Quality Assurance Coordinator**	206-553-0062, parker.kathy@epa.gov USEPA , M/S: ECL-133, 1200 Sixth Ave. Suite 900, Seattle, WA 98101	

I. Project Management and Organization

2. Personnel and Roles involved in the project:

Name	Telephone, Email, Company, Address	Project Role	Data Recipient
Stephen Ball	208-530-9107, ball.stephen@epa.gov USEPA , M/S: ECL-133, 1200 Sixth Ave. Suite 900, Seattle, WA 98101	On Scene Coordinator	Yes
Eric Lindeman	206-419-3422, elindeman@ene.com, E & E 720 Third Ave, Suite 1700 Seattle, WA 98104	START Project Manager	Yes
Kathy Parker	206 553-0062, parker.kathy@epa.gov USEPA , M/S: ECL-133, 1200 Sixth Ave. Suite 900, Seattle, WA 98101	EMP Quality Assurance Coordinator	No
Mark Woodke	206-624-9537, mwoodke@ene.com, E & E 720 Third Ave, Suite 1700 Seattle, WA 98104	START Quality Assurance Reviewer	Yes

3. Physical Description and Site Contact Information:

Site Name	Baker City Hg Explosion	
Site Location	(b) (6) ., Baker City, OR 97814 (44.746371, -117.847974) Assessor Map#: 09S4029, Assessor Reference # 9239 (Figure 1)	
Property Size	Home site: 1 acre, rangeland: 131 acres	
Site Contact	(b) (6)	**Phone Number:**
Nearest Residents	566 feet east from point source	**Direction:** From Highway 7 (south from Baker City, OR), 0.7 miles East up Griffin Gulch Ln.
Primary Land Uses Surrounding the Site	Rangeland, residential	

4. The proposed schedule of project work follows:

Activity	**Estimated Start Date**	**Estimated Completion Date**	**Comments**
SSSP Review/Approval			
Mobilize to / Demobilize from Site	10/2/2017	10/13/2017	
Sample Collection	10/6/2017	10/6/2017	
Laboratory Sample Receipt	10/7/2017	10/7/2017	
Laboratory Analysis	10/10/2017	10/11/2017	
Data Validation	10/11/17	10/21/2017	

5. Historical and Background Information

Describe briefly what you know about the site that is relevant to sampling and analysis for this investigation.

The site is a residential property where a natural cover fire was started that spread to other equipment and to a 5th wheel recreational vehicle (RV). It was reported that approximately a gallon of Hg was stored inside the RV. Because of the heat from the fire the Hg container or some other source exploded, dispersing the Hg up and around the property. The Hg was dispersed into very fine, particulate-like volumes. The Hg landed on many flat surfaces of other equipment, debris, and on the ground in the vicinity of the RV. Based on Hg vapor monitoring with a Lumex, the amount of vapor indicated that there was Hg covering most of the front yard of the property.

6. Conceptual Site Model

Example: Contaminant: Mercury
Transport Mechanism: vapor moving on air currents
Receptors: people living in the house

Contaminants: Elemental mercury in liquid, microbead and vapor form

Transport Mechanisms:
Initial transport mechanism: explosion of a container of elemental mercury. Settlement of mercury into soil.
Transport after initial event: vapor from air movement; physical collection on PPE or clothing, sampling equipment, and movement of site materials.

Receptors: Residents living nearby, property owner ((b) (6) property owner’s family and guests, trespassers, prospective buyers of items stored on the property or the property itself, and local wildlife.

7. Decision Statement

Examples: 1) Determine whether surface contamination exceeds the established action level;
2) Determine appropriate disposal options for contaminated materials.

The decisions to be made from this investigation are to:

1.) Determine extent of contamination that exceeds established action level for surfaces of soil and property
2.) Delineate zones of contamination
3.) Prioritize response actions
4.) Determine appropriate disposal options for contaminated materials

8. Action Level

State the analyte, concentration, and units for each selected action level. Describe the rationale for choosing each action level and its source (i.e. MTCA, PRG, ATSDR, etc.) Example: The action level for total mercury in soil is 6.7 mg/kg (from Regional Screening Level residential).

Preliminary screening levels for contaminated materials has been established by EPA on scene coordinators to aid field assessment teams with property that may have come into contact with elemental mercury. These levels are as follows:

Personal Items

- Items screened at less than 6000 ng/m^3 can be:
  - retained for use, or
  - disposed of through municipal waste
- Items screened at above 6000 ng/m^3 can be:
  - provided to the assessment team for decontamination/possible return, or
  - disposed of as non-hazardous or hazardous waste

Soil

- Soil that screens less than 6000 ng/m^3 :
  - No action required
- Soil above 6000 ng/m^3 will be characterized further by the following:
  - TCLP analysis to determine suitability for disposal
  - Generator knowledge
  - Conceptual site model in conjunction with monitoring results
- The action for soil in exceedance will be determined by the additional characterization and may be:
  - Left in place and/or capped,
  - Disposed of as non-hazardous waste, or
  - Disposed of as hazardous waste

Transferability Test

Rationale: since booties and Tyvek are used as surrogates for shoes and carpet, and measurements are taken following the same protocol as for personal items, the personal item action level shall be used.

- Tyvek screened at less than 6000 ng/m^3 demonstrates a successful test and mercury is not considered transferable above action levels.
- Tyvek screened at greater than 6000 ng/m^3 demonstrates a failed test and further action is needed.

II. Data Acquisition and Measurement Objectives

9. Site Diagram and Sampling Areas

A Sampling Area is an area within in which a specific action will be performed.
Examples : 1) Each drum on the site is a Sampling Area;

2) Each section of sidewalk in front of the residence is a Sampling Area;
3) Each sampling grid section is a Sampling Area.

Sampling and management areas have been pre-defined on figure 1. Each area has been designated with a letter, A – G, with A and B surrounding the point source of mercury, C being the properties front yard, D and E being the outer driveways, F being behind the house, and G being the county-owned gravel road in front of the property.

It is assumed that sections closest to the point source will be most contaminated (A, B, and C), with regions outside of this having lower contamination (D, E, F, and G).

Mercury vapor monitoring will take place at discrete points roughly 20 feet apart. This density is flexible and can be changed as needed in the field based on findings, physical obstructions, and EPA objectives. Locations selected will be flagged by number and a GPS location will be recorded. Multiple readings may be taken at a discrete locations to further characterize the site.

Air monitoring for particulate matter may also occur outside of the contaminated zone on a continual basis.

10. The Decision Rules

These can be written as logical If…, Then.. statements. Describe how the decisions will be made and how to address results falling within the error range of the action level. Examples: 1) In the Old Furnace Sampling Area, the soil in the area around the furnace structure will be excavated until sample analysis with XRF shows no mercury concentrations in surface soil above the lower limit of the error associated with the action level, 18.4 mg/kg. 2) If the concentrations of contaminants in a SA are less than the lower limit of the error associated with the action level, then the area may be characterized as not posing an unacceptable risk to human health or the environment and may be dismissed from additional RP activities. The area may be referred to other Federal, State or Local government agencies.

Soil Monitoring

1. Mercury vapor monitoring will begin in the outside perimeter of sections E, D, and F, working inward towards the initial contaminant point source. If mercury concentration exceeds the screening criteria listed in Section 8, the location will be marked, both physically (pin flag) and digitally (GPS), to clearly show it has been designated beyond the established action level. Monitored locations that are found to be under the established action level will similarly be marked showing that they have been cleared.
2. Monitoring of soil will continue inward, towards the point source, until the site is fully characterized.
3. If outside perimeter is found to be above the established action level, then monitoring beyond current management sections should be considered.
4. If time permits, soil monitoring should be considered in locations up to 200-300 feet from the point source, outside of the established management area. These samples can be either bagged soil surface samples that will be tested ex situ, or in situ mercury vapor readings.

Soil Monitoring Methodology

1. Black plastic 9 gallon mixing trays/tubs were acquired and pre-prepared as monitoring apparatus for the soil monitoring method. A hole was drilled into the bottom of the tub and sealed with packaging tape, in order to seal the headspace.
2. The tub is placed upside-down (hole facing up) over a section of soil to be monitored.
3. The tub is left in place for at least 30 minutes. Direct sunlight is preferred, but may not be always achievable.
4. After 30 minutes or longer, the tape is peeled back and the Lumex inlet is inserted into the hole. This simulates as a headspace reading, monitoring only the air space between the bin and soil. Allow the instrument to take the first 10 second average, and record the second 10 second average, along with the date and time.
5. Reseal the tub
6. An infrared thermometer is used to record the soil temperature beneath the tub after the reading is recorded.
7. The tubs can be screened for Hg with the Lumex and reused if they do not demonstrate contamination > background. Mercury wipes or other decontamination methods may be used as necessary.

Personal Property Monitoring

1. If an item has visible mercury on it, it will be considered above action level and will enter the

decontamination stream.

2. Large items without visible contamination will be sampled with a Lumex and funnel, directly above the surface of the item. If this technique returns inconsistent data, wrapping or bagging the item should be considered, then a headspace sample can be taken after 10 minutes of being bagged.
3. Small and medium sized items should be first read with a Lumex and funnel outside of the heavily contaminated area, directly over the item. If a result lower than the action level is found then bagging should be considered for a headspace sample. Items that are found to be above the action level should be decontaminated or put in the hazardous waste stream.
4. Very small items from the same area should be combined and bagged for headspace sampling.
5. Items that are under the action limit should be placed in a designated area for clean property. Items that cannot be decontaminated should be placed into the hazardous waste stream.

Soil Sampling

1. Soil Samples will be taken depending on the decision needs, this will determine the analytes required. These decision criteria may include analytical confirmation of contamination at a specified management area and depth, and/or may be used for analytical disposal requirements. Analytical method and lab requirements will determine the quantity of soil needed for sample and preservation requirements if any.
2. Soil sampling will be targeted and will be based on either a set single homogenized grab sample, or a specified area at which point a homogenized four-point composite sample will be taken to best represent the area in question.
3. Sample depth will be determined prior to sampling, where sampling requires a range of depth, sampling from a clean sidewall of the sampling pit will comprise of the sample.

Transferability Test

1. Testing for mercury transferability from walking over contaminated ground may be performed both on soils and within the private residence.
2. Booties act as a surrogate for shoes and Tyvek suits act as a surrogate for carpet.
3. These readings may be required in regions of likely foot traffic from the property owner and possible visitors.
4. If the test comes back with levels higher than agreed upon limit, actions to remove or cap contamination should be considered.

Transferability Methodology

1. When at the location of interest, two sets of clean ShuBee brand shoe covers are placed over shoes of technician.
2. Clean plastic is placed on ground, then a clean Tyvek suit is placed on top of that.
3. Technician will then walk within area of suspected contamination for at least one minute, ensuring that he/she has covered full area of interest. Gait of technician should be that of an average person walking on flat ground.
4. After walking on area of suspected contamination, technician should thoroughly walk back and forth on Tyvek suit.
5. Tyvek can now be placed in a clean plastic bag and closed.
6. Outer shoe covers can be removed and placed in a separate plastic bag and closed.
7. Both plastic bags should be left in sun for at least 10 minutes and ideally reach a temperature over 60°F.
8. A temperature reading of the bag should be taken with an infrared thermometer, then the bags headspace should be measured with a Lumex for mercury vapor concentration.

11. Information Needed for the Decision Rule

What information needs to be collected to make the decisions – this includes non-sampling info as well: action levels, climate history, direction of water flow, etc. Examples: Current and future on-site and off-site land use; wind direction, humidity and ambient temperature; contaminant concentrations in surface soil.

The following inputs to the decision are necessary to interpret the analytical results:

1) Action levels (available in section 8)
2) Contaminant concentrations (Hg) from vapor monitoring
3) Temperature

12. Sampling and Analysis

For each SA, describe:

1. *sampling pattern (random, targeted, scheme for composite)*
2. *number of samples, how many to be collected from where, and why*
3. *sample type (grab, composite)*
4. *matrix (air, water, soil)*
5. *analytes and analytical methods*
6. *name and locations of off-site laboratories, if applicable.*

1.) Sampling pattern: targeted
2.) Number of soil vapor monitoring points: roughly 25 per 10,000 square feet, or one every 20 feet. For the pre-determined management area (figure 1) this would be 102 total monitoring points. Additional targeted points may be added to more precisely classify zones of contamination. Additionally, points may be added to confirm areas are below action level.
3.) Number of property item vapor monitoring points: to be determined, this is contingent on
4.) Sample type: Composite vapor sample using a Lumex RA-915+ will be used, and results based on a 10 second average.
5.) Matrix: Air
6.) Analytes and analytical method: mercury vapor, atomic absorption spectrometry (Lumex RA-915+), or atomic fluorescence spectroscopy (Jerome J505)

13. Applicability of Data (place an X in front of the data categories needed, explain with comments)

Do the decisions to be made from the data require that the analytical data be:
1) definitive data, 2) screening data (with definitive confirmation) or 3) screening data (without definitive confirmation)?

_X_***A) Definitive data*** *is analytical data of sufficient quality for final decision-making. To produce definitive data on-site or off-site, the field or lab analysis will have passed full Quality Control (QC) requirements (continuing calibration checks, Method Detection Limit (MDL) study, field duplicate samples, field blank, matrix spikes, lab duplicate samples, and other method-specific QC such as surrogates) AND the analyst will have passed a Precision and Recovery (PAR) study AND the instrument will have a valid Performance Evaluation sample on file. This category of data is suitable for:* ***1) enforcement purposes, 2) determination of extent of contamination, 3) disposal, 4) RP verification or 5) cleanup confirmation.***
Comments: N/A

___***B) Screening data with definitive confirmation*** *is analytical data that may be used* ***to support preliminary or intermediate decision-making*** *until confirmed by definitive data. However, even after confirmation, this data is often not as precise as definitive data. To produce this category of data, the analyst will have passed a PAR study to determine analytical error AND 10% of the samples are split and analyzed by a method that produced definitive data with a minimum of three samples above the action level and three samples below it.*
Comments: N/A

_X_***C) Screening data*** *is analytical data which has not been confirmed by definitive data. The QC requirements are limited to an MDL study and continuing calibration checks. This data can be used for making decisions:* ***1) in emergencies, 2) for health and safety screening, 3) to supplement other analytical data, 4) to determine where to collect samples, 5) for waste profiling, and 6) for preliminary identification of pollutants****. This data is not of sufficient quality for final decision-making.*
Comments: Soil monitoring

14. Special Sampling or Analysis Directions

Describe any special directions for the planned sampling and analysis such as additional quality controls or sample preparation issues. Examples: 1) XRF and Lumex for sediment will be calibrated before each day of use and checked with a second source standard. 2) A field blank will be analyzed with each calibration to confirm the concentration of non-detection. 3) A Method Detection Limit determination will be performed prior to the start of analysis so that the lower quantitation limit can be determined. 4) If particle size is too large for accurate analyses, the samples will be ground prior to analysis. If the sample contains too much moisture for accurate analyses, the sample will be decanted and air dried prior to analysis.

Duplicate monitoring of the same location may be required, as weather and temperature may cause uncertainty. This will be determined on a case-by-case basis.

15. Method Requirements

[Describe the restrictions to be considered in choosing an analytical method due to the need to meet specific regulations, policies, ARARs, and other analytical needs. Examples: 1) Methods must meet USEPA Drinking Water Program

requirements. 2) Methods must achieve lower quantitation limits of less than 1/10 the action levels.3) Methods must be performed exactly as written without modification by the analytical laboratory.]

None

16. Sample Collection Information

[Describe any activities that will be performed related to sample collection]

The applicable sample collection Standard Operating Procedures (SOPs) or methods will be followed and include:

Field Activity Logbook SOP
Sample Packaging and Shipping SOP
Sampling Equipment Decontamination SOP
Instrument Manufacturer's manual/QSG: Lumex MVA
Region 9 Mercury Emergency Response Guide
Region 10 Mercury Responder Readiness Module

17. Optimization of Sampling Plan (Maximizing Data Quality While Minimizing Time and Cost)

[Describe what choices were made to reduce cost of sampling while meeting the needed level of data quality. Example: The XRF will be used in situ whenever possible to achieve accurate results. Reproducibility and accuracy of in situ XRF analyses will be checked by collecting, air drying, analyzing and comparing five in situ samples at the start of sampling. Where interferences are suspected, steps will be taken to eliminate the interferences by mechanisms such as drying, grinding or sieving the samples or analyzing them using the Lumex with soil attachment.]

Near surface mercury vapor concentrations will be as taken as close to the surface of the target area as is possible without contaminating the intake of the instrument.

Mercury vapor concentrations greater than 50,000 ng/m^3 may be determined using the Jerome portable mercury analyzer.

If ambient mercury vapor analysis for items is not consistent, items may be bagged or boxed to achieve a stable atmosphere.

The format for sample number identification is summarized in Table 1. Sample collection and analysis information is summarized in Table 2.

Table 1
SAMPLE CODING

Project Name: Baker City Mercury Explosion **Site ID:** **OR0790**

SAMPLE LOCATION $^{(1)}$

Digits	Description	Code (Example)
1, 2	Sampling Area	BG – Background SA – Soil from section A SB – Soil from section B … SG – Soil from section G SX – Soil from beyond management areas PA – Property from section A PB - Property from section B … PG – Property from section G PX – Property from beyond management

		areas
3, 4, 5	Consecutive Sample Number (grouped by SA as appropriate)	001 (First sample of SA)

Notes:
(1) The sample number is a unique, 5-digit number assigned to each sample.
(2) Monitoring locations will be numbered sequentially to expedite monitoring process.

Table 2. Sampling and Analysis

Data Quality	Sampling Area	Matrix	Sampling Pattern	Sample Type	Data Quality	Number of Field Samples	Analyte or Parameter	Method Number	Action Level	Method Quant. Limit	#/type of Sample Containers per Sample	Preservative	Hold Time	Field QC
Field Screen	Targeted Decision Areas	Air	Targeted, Random	Grab	Screening (personal items), Screening with Definitive Confirmation	120+	Mercury	Lumex MVA differential Zeeman Atomic Absorption spectrometry using high frequency modulation of light polarization	6,000 ng/m^3	2 ng/m^3	N/A	N/A	N/A	N/A
Lab Analysis	Targeted Decision Areas	Soil	Targeted	Composite or Grab	Definitive Data	2+	RCRA Metals TCLP	SW846 1311/6010 & 7470	RCRA Disposal requirements	See Attachment	1x 8oz glass	ice	N/A	1 per 20 samples

Table 3. Common Sample Handling Information

Analysis Type	Sub Analysis	Matrix	Analytical Method	Container Type	Minimum Volume	Preservative	Temperature/ Storage	Hold Time	Source
Metals	Metals Not including Mercury or Hexavalent chromium. Includes TAL, PP, RCRA lists)	Solid	EPA 6000 / 7000 Series	Glass Jar	200 g	n/a	None	6 months	SW-846 ch. 3
		Aqueous	EPA 6000 / 7000 Series	PTFE or HDPE	600 mL	HNO_3 to pH < 2	Not listed	6 months	SW-846 ch. 3
	Mercury	Solid	EPA 7471B	Glass Jar	200 g	n/a	≤ 6º C	28 days	SW-846 ch. 3
		Aqueous	EPA 7470A	PTFE or HDPE	400 mL	HNO_3 to pH < 2	Not listed	28 days	SW-846 ch. 3
	Hexavalent Chromium, (Hexachrome, Cr+6)	Solid	Lab-specific soil extraction modification, EPA 7196A	Glass Jar	100 g	n/a	≤ 6º C	28 days to extraction	SW-846 ch. 3
		Aqueous	EPA 218.6 (Drinking Water)	PTFE or HDPE	400 mL	n/a	≤ 6º C	24 hours	SW-846 ch. 3

Analysis Type	Sub Analysis	Matrix	Analytical Method	Container Type	Minimum Volume	Preservative	Temperature/ Storage	Hold Time	Source
	XRF	Solid (in situ; on the ground surface)	6200	none	n/a	none	none	Analyze Immediately	n/a
		Solid (ex situ)	6200	plastic bag	200 g	none	none	6 months	n/a
VOCs	VOCs / BTEX	Solid	EPA 5035 / 8260B	*	*	*	*	2 days to lab / 14 days	SW-846 ch. 4
		Aqueous	EPA 8260B	Amber Vial with Septa Lid	2 x 40 mL	HCl to pH< 2	≤ 6° C (headspace free)	14 days	SW-846 ch. 4
SVOCs	SVOCs / PAHs	Solid	EPA 8270D	Glass Jar	8 ounces	n/a	≤ 6° C	14 days	SW-846 ch. 4
		Aqueous	EPA 8270D	Amber Glass	2 x 1 L	n/a	≤ 6° C	7 days	SW-846 ch. 4
PCBs and Dioxins/Furans	PCBs	Solid	EPA 8082	Glass Jar	8 ounces	n/a	≤ 6° C	none	SW-846 ch. 4
		Aqueous	EPA 8082	Amber Glass	2 x 1 L	n/a	≤ 6° C	none	SW-846 ch. 4
	Dioxins/Furans	Solid	EPA 8280 or 8290	Glass Jar	8 ounces	n/a	≤ 6° C	none	SW-846 ch. 4
		Aqueous	EPA 8280 or 8290	Amber Glass	2 x 1 L	n/a	≤ 6° C	none	SW-846 ch. 4
Pesticides and Herbicides	Chlorinated Pesticides	Solid	EPA 8081	Glass Jar	8 ounces	n/a	≤ 6° C	14 days	SW-846 ch. 4
		Aqueous	EPA 8081	Amber Glass	2 x 1 L	n/a	≤ 6° C	7 days	SW-846 ch. 4
	Chlorinated Herbicides	Solid	EPA 8151	Glass Jar	8 ounces	n/a	≤ 6° C	14 days	SW-846 ch. 4
		Aqueous	EPA 8151	Amber Glass	2 x 1 L	n/a	≤ 6° C	7 days	SW-846 ch. 4
NWTPH	Gasoline-Range Organics	Solid	TPHs/NWTPH-Gx	Amber Glass Jar with Septa Lid	4 ounces	n/a	≤ 6° C (headspace free)	14 days	Method
		Aqueous	TPHs/NWTPH-Gx	Amber Vial with Septa Lid	2 x 40 mL	pH < 2 with HCl	≤ 6° C (headspace free)	7 days unpreserved 14 days preserved	Method
	Diesel-Range Organics	Solid	3510, 3540/3550, 8000	Glass Jar	8 ounces	n/a	≤ 6° C	14 days	Method
		Aqueous	3510, 3540/3550, 8000	Glass Amber	2 x 1 L	pH < 2 with HCl	≤ 6° C	7 days unpreserved 14 days preserved	Method
Geotechnical	Particle Size Analysis	Solid	ASTM D-422	Glass Jar or Plastic Bag	2 x 8 ounce	none	n/a	n/a	Method
Miscellaneous	pH	Solid	EPA 9045	Glass Jar	8 ounces	n/a	n/a	Analyze Immediately	SW-846 ch. 3
		Aqueous	EPA 9040C	PTFE	25 mL	n/a	n/a	Analyze Immediately	SW-846 ch. 3
	Total Organic Carbon (TOC)	Solid	SW-846 9060	Glass Jar	100 mL	n/a	≤ 6° C	28 days	SW-846
		Aqueous	EPA 415.1	PTFE or HDPE	200 mL	store in dark HCL or H_2SO_4 to pH <2	≤ 6° C	7 days unpreserved 28 days preserved	Method
	Cyanide	Solid	SW-846 9013	Glass Jar	5 g	n/a	≤ 6° C	14 days	SW-846 ch. 3
		Aqueous	SW-846 9010C	PTFE or HDPE	500 mL	NaOH to pH > 12	≤ 6° C	14 days	SW-846 ch. 3
	Conductivity	Aqueous	EPA 120.1	PTFE or HDPE	100 mL	n/a	n/a	Analyze Immediately	Method
	Hardness	Aqueous	EPA 130.1	PTFE or HDPE	1 x 1 L	HNO3 to pH<2	≤ 6° C	28 days	Method
	Flash Point	Aqueous	EPA 1010A or 1020B	Glass Jar	2 x 250 mL	n/a	≤ 6° C	n/a	Method

Analysis Type	Sub Analysis	Matrix	Analytical Method	Container Type	Minimum Volume	Preservative	Temperature/ Storage	Hold Time	Source
	Total Suspended Solids	Aqueous	EPA 160.2	PTFE or HDPE	100 mL	n/a	≤ 6º C	7 days	Method
	Total Dissolved Solids	Aqueous	EPA 160.1	PTFE or HDPE	100 mL	n/a	≤ 6º C	7 days	Method
	Nitrate/nitrite	Aqueous	EPA 353.2	PTFE or HDPE	1 x 250 mL	H_2SO_4 to pH <2	≤ 6º C	28 days	Method
	Nitrate	Aqueous	SW-846 9210A	PTFE or HDPE	1,000 mL	n/a	≤ 6º C	28 days	SW-846 ch. 3
	Nitrite	Aqueous	SW-846 9216	PTFE or HDPE	25 mL	n/a	≤ 6º C	48 hours	SW-846 ch. 3, Method
	Fluoride	Aqueous	SW-846 9214	PTFE or HDPE	300 mL	n/a	≤ 6º C	28 days	SW-846 ch. 3
	Chloride	Aqueous	SW-846 9250	PTFE or HDPE	50 mL	n/a	≤ 6º C	28 days	SW-846 ch. 3
	Sulfate	Aqueous	SW-846 9035	PTFE or HDPE	50 mL	n/a	≤ 6º C	28 days	SW-846 ch. 3
	Sulfide	Solid	SW-846 9215	Glass Jar	1 x 4 ounces	Fill sample surface with 2N zinc acetate until moistened.	≤ 6º C (headspace free)	7 days	SW-846 ch. 3
		Aqueous	SW-846 9031	PTFE or HDPE	100 mL	4 drops 2N zinc acetate/100 mL sample; NaOH to pH>9.	≤ 6º C (headspace free)	7 days	SW-846 ch. 3

Key:

* = See individual methods. We typically collect 3xEnCore-type samplers and 1x40 mL VOA vial per sample, keep at ≤ 6ºC with no chemical preservative, and they must be at the lab within 48 hours of collection.

C = Celsius
Cr = chromium
EPA = Environmental Protection Agency
g =grams
H2SO4 = sulfuric acid
HCL = hydrochloric acid
HDPE = high-density polyethylene
Hg = mercury
HNO_3 = nitric acid
L = liter
mL = milliliter
n/a = not applicable
NaOH = sodium hydroxide
PCBs = polychlorinated biphenyls
PTFE = polytetrafluoroethylene
RCRA = Resource Conservation and Recovery Act
SVOCs = semivolatile organic compounds
SW-846 = EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
TAL = Target Analyte List
TPH = total petroleum hydrocarbons
VOA = Volatile Organic Analysis
VOCs = Volatile Organic Compounds

III. Assessment and Response

A Sample Plan Alteration Form (SPAF) will be used to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. The completed SPAF will be approved by the OSC and QAC and appended to the original SSSP.

A Field Sampling Form (FSF) may be used to capture the sampling and analysis scheme for emergency responses in the field and then the FSF pages can be inserted into the appropriate areas of the final SSSP.

Corrective actions will be assessed by the sampling team and others involved in the sampling and a corrective action report describing the problem, solution, and recommendations will be forwarded to the OSC and the EMP QAC.

IV. Data Validation and Usability

If soil samples are requested for lab analyses, the sample collection data will be entered into Scribe and Scribe will be used to print lab Chains of Custody. Results of lab analyses will be entered into Scribe as they are received and uploaded to Scibe.net when the sampling and analysis has been completed.

18. Data Validation or Verification will be performed by:

EMP's general recommendation on validation is that a minimum of CLP-equivalent stage IIA verification and validation be performed for every SSSP involving laboratory analyses. However, stage IIB is preferred if the lab can provide it. Dioxins should be validated at CLP-equivalent stage 4.

	Data Verification and Validation Stages						
Performed by:	I	IIA	IIB	III	IV	Verification	Other:
E and E QA Reviewer			N/A		N/A		
EPA Region 10 QA Office							
MEL staff							
Other:							

The following qualifiers shall be used in data validation:

U -	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J -	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
JH -	The result is an estimated quantity, but the result may be biased high.
JL -	The result is an estimated quantity, but the result may be biased low.
JK -	The result is an estimated quantity, but the result may have an unknown bias.
JQ -	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).

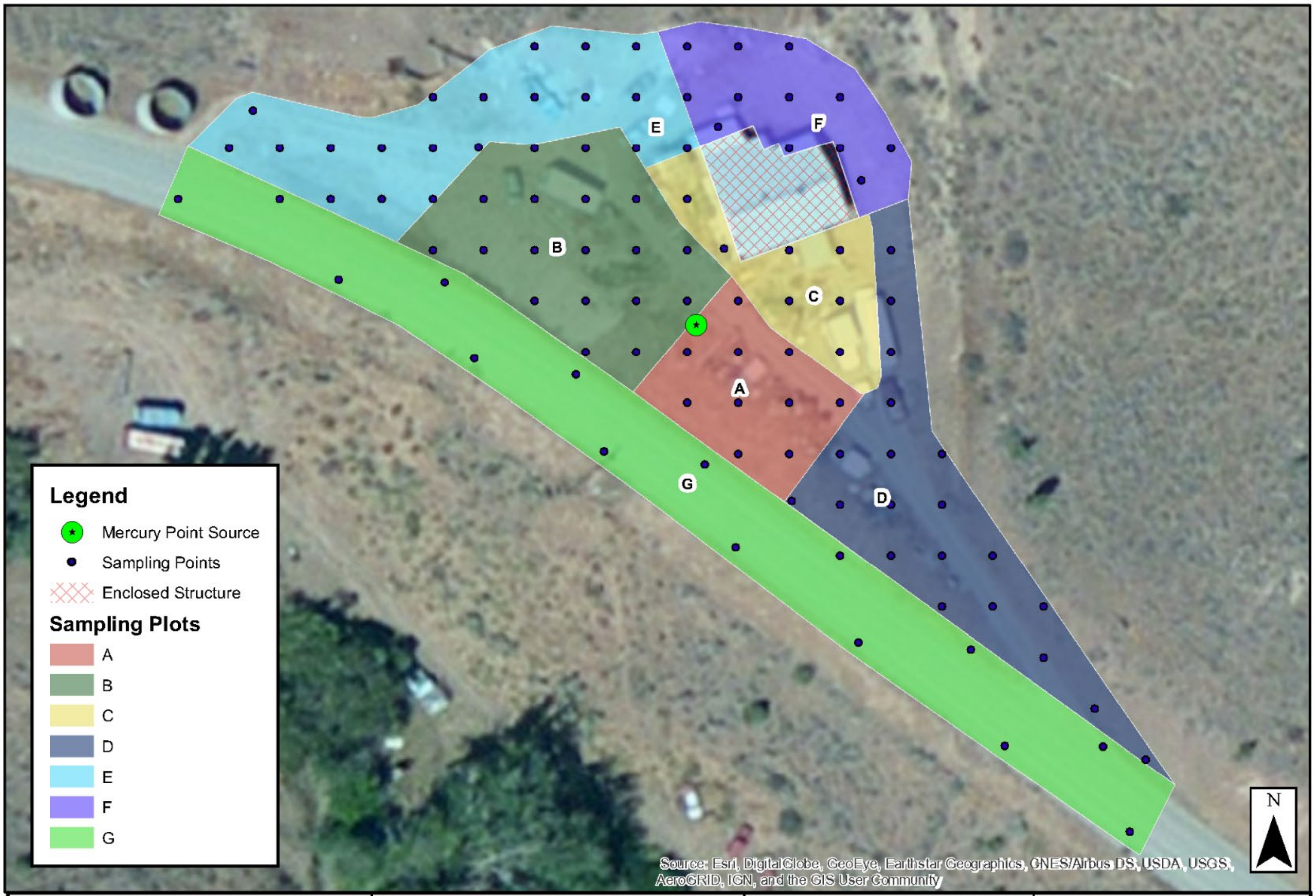
N - The analysis indicates the presence of an analyte for which there is presumptive evidence to make a “tentative identification”.

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

UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

C - The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/ Mass Spectrometer (GC/MS).



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

ecology and environment, inc.
Global Environmental Specialists

0 25 50 100
Feet

CREE PROPERTY SAMPLING PLAN
Baker City, Oregon

Figure 1

Date : 9/26/2017