



## ecology and environment, inc.

International Specialists in the Environment

---

720 Third Avenue, Suite 1700

Seattle, Washington 98104

Tel: (206) 624-9537, Fax: (206) 621-9832

September 24, 2009

Jeffrey Fowlow, On-Scene Coordinator  
United States Environmental Protection Agency, Region 10  
1200 Sixth Avenue, ECL-116  
Seattle, Washington 98102

RE: Contract No. EP-S7-06-02, Technical Direction Document No. 09-01-0029  
Site-Specific Sampling Plan, Electro Tech Metal Finishing, Vancouver, Washington

Dear Mr. Fowlow:

Enclosed please find the final Site-Specific Sampling Plan for the Electro Tech Metal Finishing site. If you have any questions, please contact Joshua Hancock at (206) 624-9537 or me at (206) 920-1739.

Sincerely,

ECOLOGY AND ENVIRONMENT, INC.

Steven G. Hall  
START-3 Project Leader

enclosure

cc: Kathy Parker, EPA, Region 10 ERU QA Coordinator, Seattle, WA  
Joshua Hancock, E & E, START-3 Project Manager, Seattle, WA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 Emergency Response Unit  
1200 Sixth Avenue, Suite 900  
Seattle, Washington 98101-3140



## Site Specific Sampling Plan

Project Name: Electro Tech Metal Finishing Site ID: 10HJ

Author: Joshua Hancock Company: E & E Date Completed: 9/21/2009

This Site Specific Sampling Plan (SSSP) is prepared and used in conjunction with the Quality Management Plan (QMP) for the Emergency Response Unit 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 is prepared on-site immediately prior to sampling. The completed Field Sampling Form is attached to this full length version of the SSSP that is written after the sampling event.

### 1. Approvals

Name, Title	Telephone, Email, Address	Signature	Date
Jeff Fowlow <b>On-Scene Coordinator</b>	206-553-2751, <a href="mailto:fowlow.jeffrey@epa.gov">fowlow.jeffrey@epa.gov</a>		
Kathy Parker <b>ERU Quality Assurance Coordinator</b>	206-553-0062, <a href="mailto:parker.kathy@epa.gov">parker.kathy@epa.gov</a> USEPA, M/S: ECL-116, 1200 Sixth Ave Suite 900, Seattle, WA 98101		

### 2. Additional Personnel and Affiliations involved in the project:

Name	Address	Telephone	E-mail
<b>START Project Manager</b>			
Joshua Hancock	720 Third Avenue, Suite 1700 Seattle, WA 98104	206-624-9537	<a href="mailto:jhancock@ene.com">jhancock@ene.com</a>
<b>START Quality Assurance Officer</b>			
Mark Woodke	720 Third Avenue, Suite 1700 Seattle, WA 98104	206-624-9537	<a href="mailto:mwoodke@ene.com">mwoodke@ene.com</a>
<b>Analytical Laboratory Director or Contact</b>			
To be determined (TBD)			

### 3. Physical Description and Contact Information:

<b>Site Name</b>	Electro Tech Metal Finishing	
<b>Site Location</b>	13511 NE Kerr Road, Vancouver, WA 98682 45.67.3193 , -122.533877 Section, Township Range, 10 02 02E SWWE	
<b>Property Size</b>	Approximately 3 acres	
<b>Site Contact</b>	Brad Reiner / Sally Biffle	<b>Phone Number:</b>
<b>Nearest Residents</b>	Immediately adjacent to site	<b>Direction:</b> West
<b>Primary Land Uses Surrounding the Site</b>	Mixed commercial, light industrial and residential	

### 4. The proposed schedule of project work follows:

Activity	Estimated Start Date	Estimated Completion Date	Comments
SSSP Review/Approval	9/18/2009	9/21/2009	
Mobilize to / Demobilize from Site	9/21/2009	9/23/2009	Mob/De-mob will only require 1 day over this period
Sample Collection	9/21/2009	9/22/2009	Sample collection will only require 1 day
Laboratory Sample Receipt	9/25/2009	9/25/2009	Receipt expected no later than one day after collection
Laboratory Analysis	9/28/2009	10/19/2009	Standard turn around time for metals
Data Validation	10/19/2009	10/26/2009	

## 5. Historical and Background Information

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

Electro Tech Metal Finishing (Electro Tech) is an inactive metal finishing shop located at 13511 NE Kerr Road, Vancouver, WA 98682. Electro Tech is owned and was operated by Brad Reiner. According to Mr. Reiner, the shop has been inactive since late 2008. The Washington State Department of Ecology (Ecology) cited Electro Tech with numerous repeat violations of the dangerous waste regulations (WAC 173-303) dating back to 2001. On January 23 2007 Ecology issued Administrative Order No. 4064 to Electro Tech and its then co-owners, Brad Reiner and Gary Robinson, for failing to comply with Ecology's dangerous waste regulations. Environmental sampling and characterization commenced at the site in July of 2007 when Ecology's Compliance Inspector Dee Williams and Bryan DeDonker of the Clark County Health Department collected a sample from the catch basin located in the eastern corner of the paved parking lot located on site. The results of the sample were positive for arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), and zinc (Zn). The eastern catch basin is one of two (east and west) catch basins that are connected by a perforated pipe that drains to the surrounding subsurface soil.

Mr. DeDonker and Ms. Williams returned to the site on July 24, 2007, to collect additional samples from the two catch basins as well as the site septic tank. Sample results for the east and west catch basins (Sample # D1-B and D2) were similar to the results obtained for the initial sample collected at the eastern catch basin (D1-A) in that they were positive for As, Cd, Cr, Cu, Pb, Ni, and Zn. The sample collected at the septic tank (S1) was analyzed for gasoline and heavy oil range hydrocarbons (GRH and HOH), diesel range organics (DRO), and metals. The results showed elevated levels of DRO and HOH, as well as positive results for Cr, Cu, Pb, Ni, and Zn.

Following receipt of additional information concerning two additional septic tanks located on-site, Mr. DeDonker and Ms. Williams returned to the site on September 20, 2007, to collect samples at each of the remaining two septic tanks. Samples collected from the southwestern tank (SL-SW) and the northeastern tank (SL-NE) were collected and tested for total petroleum hydrocarbons (TPH) and metals analysis. Results indicated elevated levels of GRH, DRO, and HOH, as well as positive results for As, Cr, Cu, Pb, mercury (Hg), Ni and Zn in sample SL-SW and antimony (Sb), As, Cd, Cr, Cu, Pb, Hg, Ni, Silver (Ag), and Zn in sample SL-NE.

On December 06, 2007, Mr. DeDonker was joined by Tim Ferrick of WasteWatch, Inc., and Boart Longyear, contractors of the PRP, who were hired to collect eight (8) groundwater and subsurface soil samples from locations near the septic tanks and catch basins in an attempt to identify the extent of contamination and any potential impact to groundwater in the area. Two borings were placed between the two catch basins near the perforated pipe to collect subsurface soil and groundwater samples (Electro Tech site). Six borings were placed around the three septic tanks and throughout the property to obtain adequate representation of groundwater chemistry. Borings were placed 25-35 feet below ground surface (bgs). One groundwater sample was collected (top of the water column) from each of the eight borings at a depth of approximately 22-31 feet bgs. Also, one soil sample was collected from each of the two borings near ST1-A and ST2-A, from the saturation zone of approximately 22-24 feet bgs. Five of the groundwater samples contained concentrations of Pb and Cr above the Model Toxics Control Act Method A clean up levels.

In February 2009, Ecology requested EPA's assistance with the site. Since that time EPA has initiated an Integrated Assessment (IA) at the site. A concurrent removal is also planned to dispose of the hazardous materials located in the Electro Tech shop. The samples associated with this sampling plan will be collected during the field work for the IA, but they are intended to be used for removal purposes.

## 6. Conceptual Site Model

*Example: Contaminant: Mercury*

*Transport Mechanism: vapor moving on air currents*

*Receptors: people living in the house*

Contaminants: Metals, GRH, DRO, raw product still contained within the facility which is known to be present and is believed to be hazardous.

Transport Mechanisms: Contamination that is present in the septic tanks, catch basins, and dry well are suspected of having migrated by gravity flow into site soils and groundwater. Once contamination has reached the soil and groundwater they may be directly dissolved in groundwater and/or leach from soils into groundwater. Groundwater advection and dispersion are likely to be transporting contaminants from the site.

Receptors: The most likely receptor pathway is for contaminated groundwater to enter the water supply. The site overlies a highly productive aquifer and numerous private wells are located downgradient of the site. In addition, a municipal supply well supplying approximately 80,000 people is located about 1.5 miles downgradient of the site.

## 7. Decision Statement

*Examples: 1) Determine whether surface contamination exceeds the established action level;*

*2) Determine appropriate disposal options for contaminated materials.*

The decision(s) to be made from this investigation is/are to:

1. Determine whether the wastes in the Electro Tech facility are similar to the contamination observed in environmental media.
2. Determine if facility wastes are hazardous for handling and/or disposal.

## 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).*

Action levels will be based on potential disposal requirements, including the toxicity characteristic definition of hazardous waste. For the metals listed below, the indicated concentrations determine if the material is considered hazardous by the toxicity characteristic (40 CFR 261.24).

RCRA Metal	maximum concentration (20 times rule)
arsenic	5.0 milligrams per liter (mg/L) (100 milligrams per kilogram [mg/kg])
barium	100 mg/L (2,000 mg/kg)
cadmium	1.0 mg/L (20 mg/kg)
chromium	5.0 mg/L (100 mg/kg)
lead	5.0 mg/L (100 mg/kg)
mercury	0.2 mg/L (4 mg/kg)
selenium	1.0 mg/L (20 mg/kg)
silver	5.0 mg/L (100 mg/kg)

For liquids (less than 0.5% filterable solids), the results of total analysis will be compared to the maximum concentrations above. For solids, these maximum concentrations are based on results of the toxicity characteristic leaching procedure (TCLP).

Solid wastes from the Electro Tech facility will be analyzed for total metals first. If the metal concentration is greater than 20 times the TCLP limit, then the sample will also be submitted for TCLP analysis of that metal.

Action levels for hexavalent chromium have been established at the detection limit (0.5 mg/L

for waters and 2 mg/kg for soils).

Action levels for cyanides are based on the universal treatment standards (UTS; 40 CFR 268.48):

Compound	wastewaters (mg/L)	nonwastewaters (mg/kg)
total cyanides	1.2	590
amenable cyanides	0.86	30

## 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.*

Diagram of site, with sampling areas:

02:002233.0429.01SF\ElectroTechSampleLocation.cdr-03/27/09-GRA



© 2009 Ecology and Environment, Inc.

## 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.*

The following statement(s) describe the decision rules to apply to this investigation:

1. For non-wastewaters, if any RCRA metal is detected above 20 times the TCLP limit based on the results of total EPA 6000/7000 series analytical testing, the sample will be analyzed using TCLP to characterize the waste stream.
2. For non-wastewaters, if any RCRA metal is detected above the TCLP limit based on TCLP testing, then the waste stream will be considered hazardous and disposed of / handled appropriately.
3. For wastewaters, if any RCRA metal is detected above the TCLP limits based on total metals analysis, the waste stream will be considered hazardous for that metal and disposed of and handled appropriately.
4. If hexavalent chromium is detected above the detection limit, the results will be compared to the results of soil and groundwater samples collected during the IA.
5. If cyanides are detected they will be compared to the universal treatment standards outlined in Section 8 and the information used to determine the appropriate disposal mechanism.

## 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:

None

## 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. Samples will be targeted from the tanks identified in the Electro Tech facility.
2. Two samples will be collected from each matrix of contaminated media from each container, including one container reportedly containing an acid solution with dissolved metals.
3. The sample type will be grab.
4. Three matrices will be collected: Solid precipitate salts, solution, and sludge. Any additional phases identified in the field may also be sampled.
5. The acid solution will be tested for pH by EPA method 9040. The acid type will be determined by EPA method 300.0. Samples of all three matrices will be tested for target analyte list (TAL) metals including aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc by EPA Series 6000/7000 methods, hexavalent chromium by EPA method 3060A/7196A, and total and amenable cyanide by EPA method 9010C. Samples with positive metals results greater than 20 times the TCLP limits will be analyzed for TCLP (EPA method 1311) metals.
6. The analytical laboratory is still to be determined.

### **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:

       **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:

       **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:

### **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.

Because of the short holding time for hexavalent chromium (24 hours), samples will be delivered to the laboratory as soon as possible after collection.



## **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.]*

Standard methods and requirements are expected to be sufficient for data analysis, as data will primarily be used to determine disposal requirements.

## **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
- Drum Sampling SOP

## **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.]*

The number of samples collected will be restricted to the minimum required to characterize each matrix of waste with appropriate QA/QC data.

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

Use a Sample Plan Alteration Form (SPAF) to describe project discrepancies (if any) that occur between planned project activities listed in the final SSSP and actual project work. Append completed SPAF to original SSSP.

Use a Field Sampling Form (FSF) to capture the sampling and analysis scheme for emergency responses and insert the FSF pages into the appropriate areas of the final SSSP.

**Table 1  
SAMPLE CODING**

**Project Name** \_\_\_\_**Electro Tech Metal Finishing**\_\_\_\_ **Site ID:**\_\_**10ZZ**\_\_

***SAMPLE NUMBER*** <sup>(1)</sup>

<b>Digits</b>	<b>Description</b>	<b>Code (Example)</b>
1,2,3,4	Year and Month Code	0909 (YYMM)
5,6,7,8	Consecutive Sample Number (grouped by SA as appropriate)	0201 – First sample of SA

***SAMPLE NAME / LOCATION ID*** <sup>(2)</sup>  
***(Optional)***

1,2	Sampling Area	CO -- Container DR – Drum TK – Tank VT – Vat
3,4	Consecutive Sample Number	01 – First sample of DA.
5,6	Matrix Code	PR – Precipitate SL – Sludge SO – Solution
7,8	Depth (Optional)	01

**Notes:**

(1) The Sample Number is a unique, 8-digit number assigned to each sample.

(2) The Sample Name or Location ID is an optional identifier that can be used to further describe each sample or sample location.

**Table 2. Sampling and Analysis**

<u>Data Quality</u>	<u>Sample Area</u>	<u>Parameter</u>	<u>Matrix</u>	<u>Sampling Pattern/Type</u>	<u>Method</u>	<u>Action Level</u>	<u>Reporting Levels</u>	<u>Container</u>	<u>Preservative</u>	<u>Hold Time</u>
Definitive	Each Container	total TAL metals	solid (precipitate, sludge)	Targeted Grab	SW-846 6000/7000 Series	See Section 8	0.2 mg/kg	8-oz glass	4°C	6 months (28 days Hg)
Definitive	Each Container	total TAL metals	liquids (waste solution)	Targeted Grab	SW-846 6000/7000 Series	See Section 8	0.005 - 1.0 mg/L	1-L HDPE	HNO <sub>3</sub> to pH <2 4°C	6 months (28 days Hg)
Definitive	Each Container	hexavalent chromium	solid (precipitate, sludge)	Targeted Grab	SW-846 Methods 3060A/7196A	2 mg/kg	2 mg/kg	8-oz glass	4°C	30 days to extraction, then 7 days to analysis
Definitive	Each Container	hexavalent chromium	liquids (waste solution)	Targeted Grab	SW-846 Method 7196A	0.5 mg/kg	0.5 mg/kg	1-L HDPE	4°C	24 hours
Definitive	Each Container	total and amenable cyanide	solid (precipitate, sludge)	Targeted Grab	SW-846 Method 9010C	590 mg/kg (total) 30 mg/kg (amenable)	1 mg/kg	8-oz glass	4°C	14 days
Definitive	Each Container	total and amenable cyanide	liquids (waste solution)	Targeted Grab	SW-846 Method 9010C	1.2 mg/L (total) 0.86 mg/L (amenable)	0.02 mg/L	1-L HDPE	NaOH to pH >12 4°C	14 days
Definitive	Each Container	Inorganic Ions	liquids (waste solution)	Targeted Grab	EPA Method 300.0	Not Applicable	0.003 - 0.01 mg/L	1-L HDPE	4°C	48 hours to 28 days
Definitive	Each Container	TCLP metals	solid (precipitate, sludge)	Targeted Grab	SW-846 Method 1311 and 6000/7000 Series	See Section 8	0.005 - 1.0 mg/L	NA	4°C	6 months (28 days Hg)