

**Professional Engineer's Statement  
Everett Smelter Cleanup  
June 16, 2008**

Soil remediation was carried out at the following homes within the Everett Smelter Site during the period May 2007 to November 2007:

Address	Owner
229 Bridgeway	Arthur Guinn Shaffer ←
225 Bridgeway	Steffanie Campbell
223 Bridgeway	Godfrey and Ramona Holzinger
215 Bridgeway	Joshua & Michelle Allen
209 Bridgeway	Maria Paulay
207 Bridgeway	Paul D. King
205 Bridgeway	William C. MacPherson
201 Bridgeway	James and Kathleen Pankiewicz
115 Bridgeway	Mark & Lori Childress
109 Bridgeway	Bud E. Kast

Based on the results of testing and inspections, it is my opinion that the soil remediation carried out at these homes was performed in substantial compliance with the plans, specifications, and related documents governing the work



EXPIRES 5/14/2009

# Washington Department of Ecology Everett Smelter Site 2007 Cleanup

## Details of Cleanup Activities for 229 Bridgeway

In 2007, Department of Ecology (Ecology) selected 10 homes within the Everett Smelter Site for cleanup. These homes are located along the east side of Bridgeway in north Everett. Cleanup activities were conducted from May 21, 2007 – November 30, 2007. The cleanup was conducted according to the “Everett Smelter Site: Integrated Final Cleanup Action Plan and Final Environmental Impact Statement for the Upland Area” (see Document Repository information on page 5).

Where used for the first time, definitions for words marked in *bold italics* may be found in the definition section following this summary.

This report describes the cleanup actions that were conducted, where arsenic-contaminated soil was removed and where it remains for the following location:

Property Owner	Arthur G. Shaffer
Address:	229 Bridgeway Everett, WA 98201
Snohomish County State of Washington	
Tax Parcel No.	# 005203-000-043-01

### Purpose of Sampling

The purpose of sampling was to determine the required depth of excavation for this property. The property was divided into four *Decision Units* A, B, C, and D, as shown on the site map in Attachment A. Attachment B graphically shows the sample results. An explanation of the graphs is in Attachment C. A *rotating laser level* was used to measure the depth of the excavated soil in each decision unit.

The following is a summary of the work done to remediate the property within each of the decision units or other areas on the property.

## **DECISION UNIT A**

### **Cleanup Activities**

Results of pre-cleanup sampling indicated 24 inches of soil would have to be excavated in this decision unit. The on-site coordinator witnessed the soil being removed to a depth of 24 inches.

Attachment B shows that:

- Below 24 inches, results of composite sample analyses are below the remediation levels of 150 *parts per million (ppm)*.
- Below 24 inches, the soil contains arsenic above the cleanup level of 20 ppm; therefore, a *geofabric* marker was placed.

Decision Unit A was *backfilled* with clean material as described in the Specifications for Everett Residential Soil Remediation (see Document Repository information on page 5). The excavation was backfilled with sandy soil and half a foot of topsoil. Decision Unit A was replanted with grass and shrub. Tree replacements were planted along the southern corner of the front yard as requested by the homeowner.

The paved driveway and front steps attached to the house were not removed during excavation.

### **French Drain**

A *French drain* was installed along the boundary of the decision unit adjacent to the west side of the front walkway, and south side of the driveway (near L-2 and L-1).

### **Steps**

The steps along the front yard from street level to the interior of the yard at A-5 were restored with concrete block steps and gravel.

## **DECISION UNIT B**

### **Cleanup Activities**

Results of pre-cleanup sampling indicated 12 inches of soil would have to be excavated in this decision unit. The on-site coordinator witnessed the soil being removed to a depth of 12 inches.

Attachment B shows that:

- Below 12 inches, results of composite sample analyses are below the remediation levels of 60 parts per million (ppm) and 150 ppm.
- Below 12 inches, the soil contains arsenic above the cleanup level of 20 ppm; therefore, a *geofabric* marker was placed.

After placing a geofabric marker, the decision unit was backfilled with clean material as described in the “Specifications for Everett Residential Soil Remediation” (see Document Repository information on page 5). Decision Unit B was restored with 6 inches of sandy backfill material, 6 inches of topsoil, and sod.

A gravel strip was placed between the south facing foundation and the edge of the replacement sod.

### **Planting Bed**

The planting bed between the walkway and the house was excavated to a depth of 18 inches. Geofabric was placed at the bottom of the excavation and backfilled with topsoil.

## **DECISION UNIT C**

### **Cleanup Activities**

Results of pre-cleanup sampling indicated 36 inches of soil would have to be excavated in this decision unit. The on-site coordinator witnessed the soil being removed to a depth of 36 inches.

Attachment B shows that:

- Below 36 inches, the maximum sample analyses are below the remediation level of 500 ppm.
- Below 36 inches, the soil contains arsenic above the cleanup level of 20 ppm; therefore, a geofabric marker was placed.

After placing a geofabric marker, the decision unit was backfilled with clean material as described in the “Specifications for Everett Residential Soil Remediation” (see Document Repository information on page 5). Approximately 6 inches of clean topsoil was placed above the backfill, and the surface was restored with sod unless noted otherwise. A gravel strip was placed between the foundation and edge of the replacement sod.

### **Concrete Pad**

The concrete pad between Decision Unit D and the chain link fence spanning the northwest corner of the house and the north property line was removed. The soil underneath was removed to a depth of 36 inches. Geofabric was placed at the bottom of the excavation. Thirty inches of sandy backfill was placed, followed by six inches of topsoil and sod. The homeowner elected not to have this pad replaced, as he preferred grass in this area.

### **Block Wall**

The retaining wall made of *railroad ties* between decision unit C and D was replaced with a *block retaining wall* with subsurface drainage.

### DECISION UNIT D

Results of pre-cleanup sampling indicated 24 inches of soil would have to be excavated in this decision unit. The on-site coordinator witnessed the soil being removed to a depth of 24 inches.

Attachment B shows that:

- Below 24 inches, the composite sample analyses are below the remediation level of 150 ppm.
- Below 24 inches, the soil contains arsenic above the cleanup level of 20 ppm; therefore, a geofabric marker was placed.

After placing a geofabric marker, the decision unit was backfilled with clean material as described in the "Specifications for Everett Residential Soil Remediation" (see Document Repository information on page 5). Approximately 6 inches of clean topsoil was placed above the backfill, and the surface was restored with sod. A gravel strip was placed between the foundation and edge of the replacement grass

### RESTORATION SUMMARY

- Concrete blocks were used to restore the retaining wall, formerly constructed of railroad ties, between Decision Units C and D in the backyard.
- All roof drain down spouts were connected to a subsurface four inch corrugated pipe drain system. This system surfaces down slope outside the chain link fence along the eastern property line.
- The asphalt apron at the top edge of the driveway, as well as crumbling concrete areas of the driveway, was removed. A geofabric marker layer was placed, followed by compacted gravel sub base and new concrete.
- The sewer line running parallel to the front walk was very fragile and damaged with a hand shovel during detailed excavation work in that area. The damaged section of sewer line along the edge of the walk was replaced with current industry standard PVC (polyvinyl chloride) plastic pipe.

### MATERIAL QUANTITIES

Quantity of contaminated soil removed:	914.22 Tons
Quantity of clean backfill used:	717.55 Cubic Yards
Quantity of clean topsoil used:	160 Cubic Yards

229 Bridgeway  
Everett, WA 98201



---

Jerome Cruz  
Washington Department of Ecology  
3190 160<sup>th</sup> Ave SE  
Bellevue, WA 98008

January 31, 2008

Attachments: A. Site Map  
B. Graphs of Arsenic Concentration vs. Depth  
C. Explanation of graphs

**Note:**

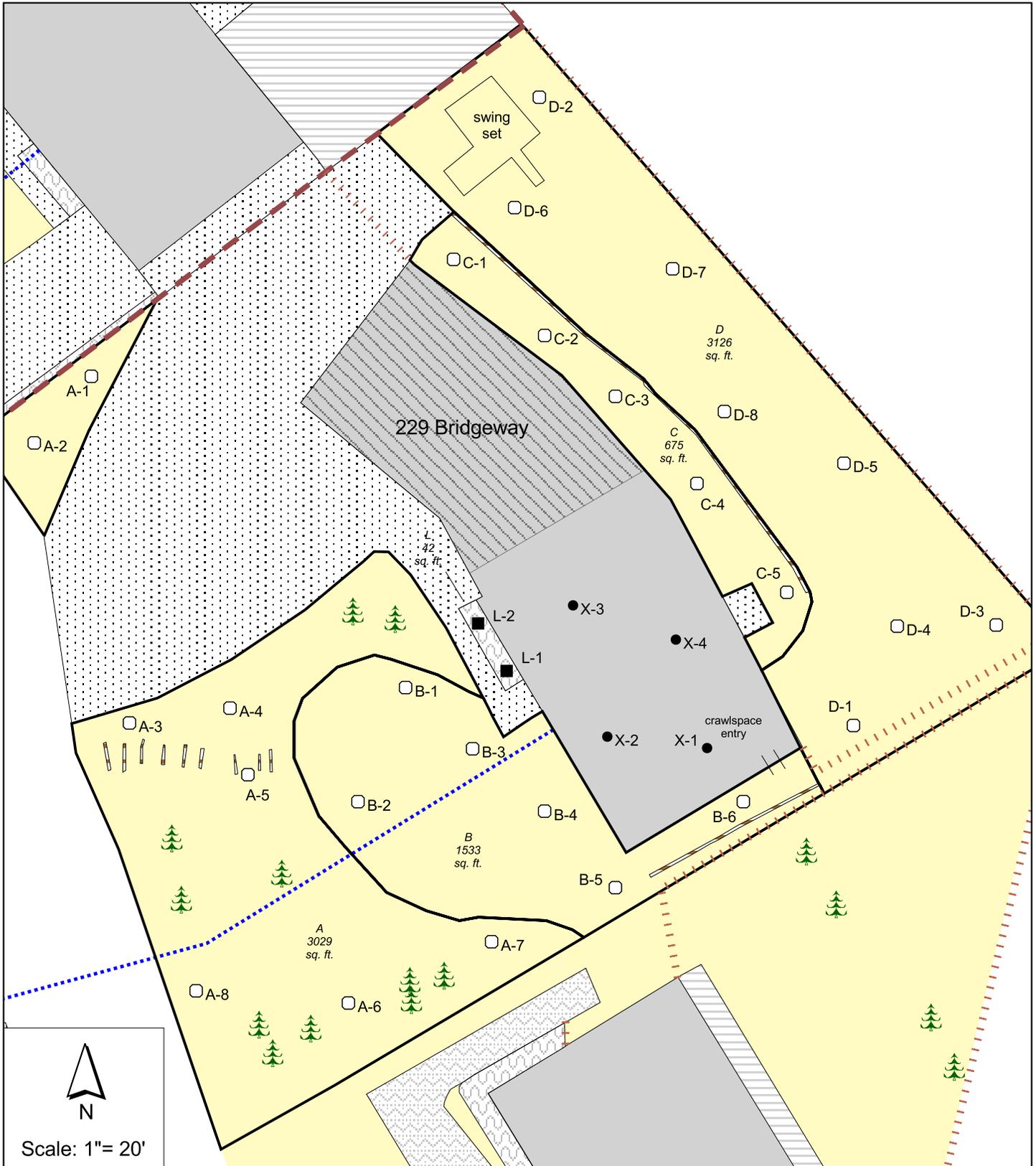
If the attachments listed above do not accompany this document, copies may be obtained from Ecology. Please contact Central Records at Ecology's Northwest Regional Office (NWRO) at (425) 649-7190 for information on obtaining copies.

**Document Repository**

These following documents can also be found at NWRO:

- Integrated Final Cleanup Action Plan
- Final Environmental Impact Statement for the Upland Area
- Specifications for Everett Residential Soil Remediation

cc: City of Everett Public Works  
Ecology Central Files, Northwest Regional Office  
Ecology Contract Officer, Headquarters  
Ecology, Office of the Attorney General  
Ecology On-site Coordinator, SAIC  
Everett Public Library  
Northeast Everett Community Organization  
Northwest Everett Neighborhood Association  
Snohomish PUD  
Wyser Construction, Inc.



**LEGEND**

- Decision Unit Samples
- Landscape Samples
- Crawlspace Samples

# 229 Bridgeway (Home 56)

Everett Smelter Homesite Cleanup

Source: Snohomish Health District

