

WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y

Everett Smelter Site

Cleanup 2007

109 Bridgeway

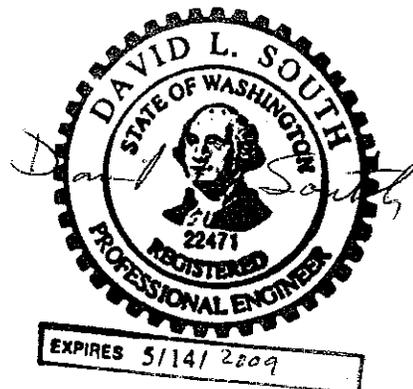
Prepared by
Washington Department of Ecology
June 2006

**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



Washington Department of Ecology Everett Smelter Site 2007 Cleanup

Details of Cleanup Activities for 109 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	Bud E. Kast
Address:	109 Bridgeway Everett, WA 98201
Snohomish County	
State of Washington	
Tax Parcel No.	# 005203-000-051-02

Purpose of Sampling

The purpose of sampling was to determine the required depth of excavation for this property. The property was divided into three *Decision Units*, A, B, and C, as shown on the attached map. 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 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, the composite sample analyses are below the remediation level of 60 *parts per million (ppm)*.
- Below 12 inches contains average arsenic concentrations below the cleanup level of 20 ppm, and so no *geofabric* marker was apparently needed for this decision unit. However, no discrete sample analyses were found for this decision unit that could have provided maximum arsenic sample concentrations, and adjacent decision units contained average and maximum arsenic concentration above the cleanup level of 20 ppm, therefore the decision was made to place geofabric at the base of the excavation to be conservative in protectiveness of the remediation.

After placing a geofabric marker, the decision unit was *backfilled* with clean material and *crushed rock* top dressing as described in the "Specifications for Everett Residential Soil Remediation" (see Document Repository information on page 5).

Visqueen Plastic Sheeting

Prior to the cleanup, the owner placed a sheet of visqueen plastic sheeting material at a shallow depth underneath the gravel areas of the yards to prevent weed growth. With the approval of the owner, geofabric was used to substitute for this weed barrier during restoration. This second sheet of geofabric was placed at a depth of 4 to 6 inches below the surface.

Storage Shed

The storage shed at the southern end of the decision unit was left in place and soil dug around it. The excavation was sloped approximately *1:1* away from the shed walls to protect the integrity of the structure. If this storage shed is removed at any time in the future, suspected arsenic contaminated soil beneath this structure will be exposed. An *animal barrier* was placed around the base of the storage shed.

Lean-to-Shed

The lean-to shed located along the southeast-facing side of the house and materials stored underneath were left in place and soil dug around it. Suspected contaminated soil remains underneath this lean-to.

109 Bridgeway
Everett, WA 98201

Plants

The planting bed along the southwest-facing front wall of the house was excavated to 18 inches, backfilled with topsoil. Replacement plants were provided with consultation and approval of the homeowner.

Fence

The small gated wood fence for the driveway was replaced with a chain link fence and gate.

DECISION UNIT B

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, the 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.

After placing a geofabric marker, the decision unit was backfilled with clean material and crushed rock as described in the "Specifications for Everett Residential Soil Remediation" (see Document Repository information on page 5).

Visqueen Plastic Sheeting

Prior to the cleanup, the homeowner placed a sheet of visqueen plastic sheeting at a shallow depth underneath the gravel areas of the yards to prevent weed growth. With the approval of the owner, geofabric was used to substitute for this weed barrier. This second sheet of geofabric was placed at a depth of 4 to 6 inches below the surface.

Styrofoam Walls

The Styrofoam walls bordering this decision unit to the north and east were replaced with concrete *block retaining walls* with accompanying retaining wall drainage.

Plants

109 Bridgeway
Everett, WA 98201

The planting bed along the northwest-facing wall of the house was excavated to 18 inches, backfilled with topsoil. Replacement plants were provided with consultation and approval of the homeowner.

Homeowner Equipment Left in Yard

Heavy rock crushing equipment was moved to allow excavation and returned to its original location after cleanup.

DECISION UNIT C

Cleanup Activities

Results of pre-cleanup sampling indicated 30 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 30 inches.

Attachment B shows that:

- Below 30 inches, the composite sample analyses are below the remediation levels of 150 parts per million (ppm).
- Below 30 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).

Block Wall

The original area consisted of bare soil at the top and concrete block covered soil slope at its lower base. This slope comprising this decision unit was replaced with a block retaining wall with accompanying retaining wall drainage and block steps. The area at the top of the retaining wall adjacent to Bridgeway was finished with geofabric weed barrier under red lava rock.

Fence

The wire fence bordering the property from Bridgeway was replaced with a chain link fence.

RESTORATION SUMMARY

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| <ul style="list-style-type: none">• As part of the property restoration, all roof drain downspouts were connected to a 4" diameter corrugated plastic pipe subsurface drain system that surfaces at the down slope eastern property line.• Loosely placed concrete block retaining wall and a Styrofoam block |
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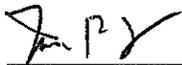
109 Bridgeway
Everett, WA 98201

retaining wall were replaced with a concrete block retaining wall. The wall incorporates a *geogrid* tie back mesh in the backfill.

- A storage shed was excavated around and an animal barrier erected at its base.
- Geofabric was placed as a weed barrier under the gravel top course that covers the front, back, and north side yards. Areas planned for asphaltting by the homeowner did not get the weed barrier.

MATERIAL QUANTITIES

Quantity of contaminated soil removed:	450.62 Tons
Quantity of clean backfill used:	205.60 Cubic Yards
Quantity of crushed rock used:	83.50 Cubic Yards



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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

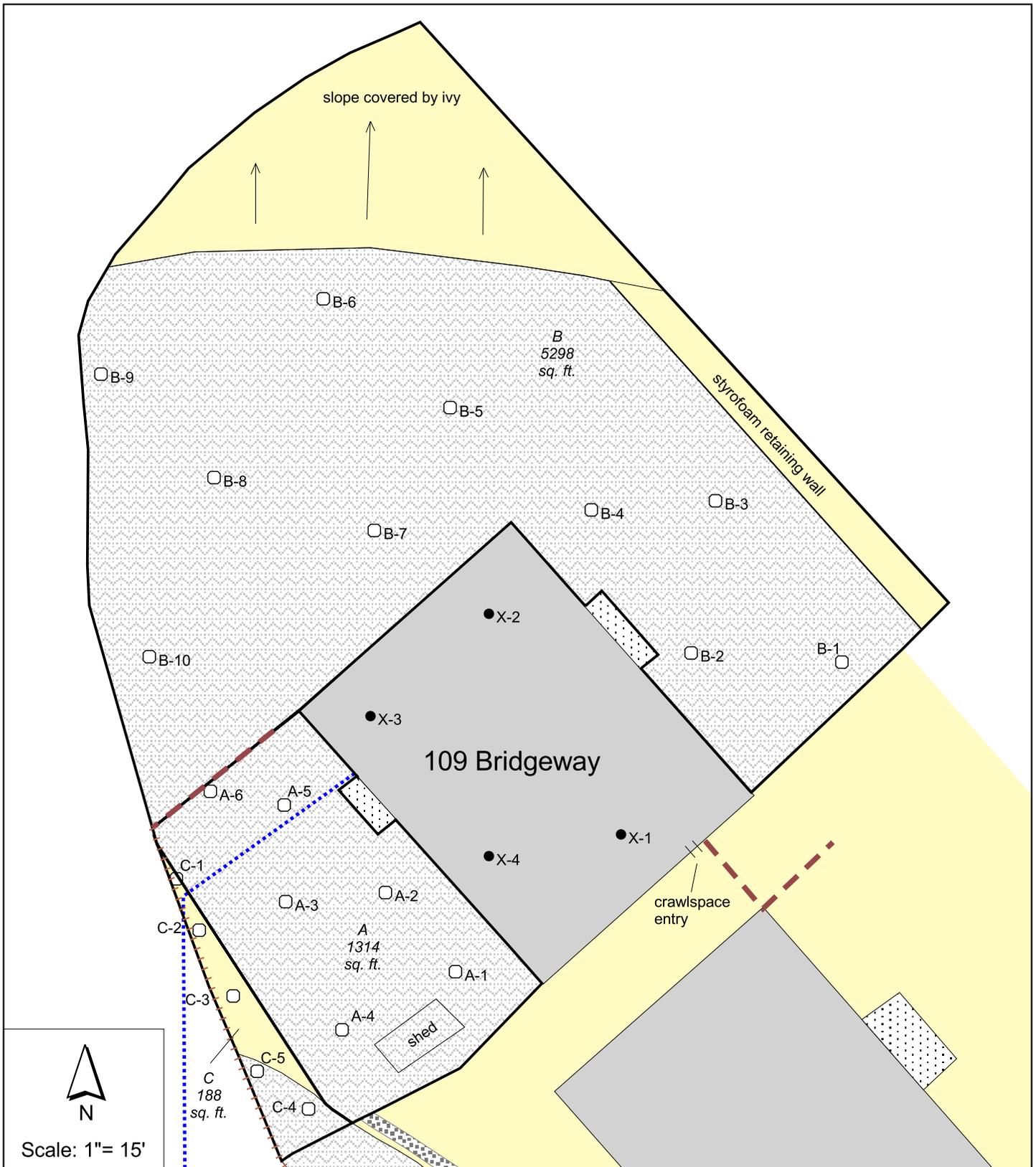
These following documents can also be found at NWRO:

- 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

109 Bridgeway
Everett, WA 98201

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
 ● Crawlspace Samples

109 Bridgeway (Home 43)

Everett Smelter Homesite Cleanup

Source: Snohomish Health District

