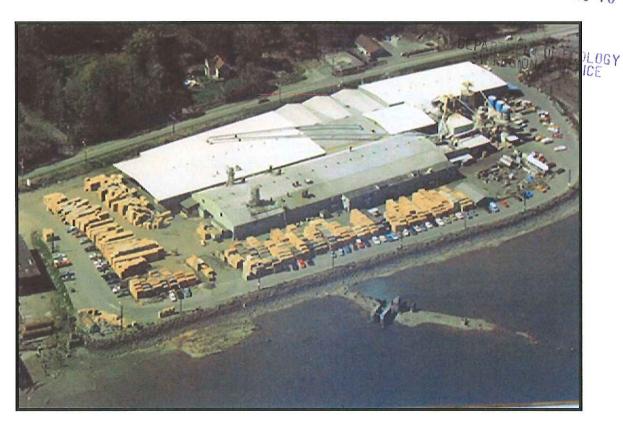
Former Hardel Plywood Site 1210 West Bay Drive NW Olympia, Washington

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Supplemental Subsurface Investigation NOV 12 A10:10



November 4, 2009

Prepared For: Hardel Mutual Plywood, Inc.

Prepared By:



GREYLOCK CONSULTING LLC

GC Project No. 0395

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1.0 INTRODUCTION

This report presents results of our Supplemental Subsurface Investigation at the Hardel Mutual Plywood Site (Site) located at 1210 West Bay Drive NW in Olympia, Washington (Figure 1).

The goal of this work was to:

- 1) Obtain additional data to update the extent of soil and groundwater contamination identified in the Hardel Mutual Plywood Feasibility Study (Greylock, 2009), and
- 2) Install two passive recovery wells and in the area surrounding MW-5.

2.0 SCOPE OF WORK

The scope of our investigation focused on the area at the northern end of the Site, near existing monitoring well, MW-5 (Figure 2) because free product was recently observed in this well.

Our site characterization work included:

- Advancing hollow stem auger borings GB-101 through GB-108 to evaluate subsurface conditions at the northern end of the Site;
- Collecting soil samples at each boring location (if possible) for laboratory chemical analyses;
- Installing two new wells (MW-8 and MW-9);
- Collecting product level measurements from MW-1, MW-5, MW-8 and MW-9.
- Evaluating laboratory chemical analysis results; and
- Preparing this report presenting the findings of our work.

3.0 PROJECT DESCRIPTION AND BACKGROUND

The Site is located at 1210 West Bay Drive NW in Olympia, Washington and is owned by Hardel Mutual Plywood Corporation (Hardel). The property is 17.8 acres in size, consisting of approximately 6.7 acres of uplands and 11.1 acres of tide lands. The upland portion of the

property consists of asphalt pavement and concrete building foundations. The property is bordered to the north by Budd Inlet and the former Delson Lumber site, to the south by the former Reliable Steel Site, to the west by West Bay Drive NW and residential properties, and to the east by Budd Inlet.

A petroleum release to soil and groundwater was discovered in July, 2004 by Stemen Environmental, Inc. (Stemen). In 2007, Hardel and the Department of Ecology (Ecology) entered into an Agreed Order to complete a Remedial Investigation/Feasibility Study (RI/FS) and Interim Cleanup Action. Hardel has completed the RI/FS and is in the process of preparing an Interim Action Work Plan (IAWP) for upland soil and groundwater cleanup.

In summary, the RI/FS concluded that two areas of the Site would require soil and groundwater cleanup. Following removal of free product, approximately 5,200 cubic yards of soil containing heavy oil on the northwestern part of the site would be excavated and disposed of offsite and 6,100 cubic yards of soil containing diesel on the southwestern part of the site would be excavated and disposed of offsite. The direction of groundwater flow was determined to be consistently toward the east-northeast.

During routine groundwater monitoring at the Site in July 2009, free product was discovered in monitoring well MW-5 (Figure 2). Previous groundwater samples from this well contained non-detectable levels of hydrocarbons. Due to this new discovery, additional borings were needed to further characterize the extent of contaminated soil and groundwater in the vicinity of MW-5. Also, to ensure the product would not migrate further, the supplemental work included installation of 2 passive recovery wells at the down gradient edge of the product plume.

4.0 FIELD ACTIVITIES

4.1 Soil Borings

Eight borings were installed by Greylock's subcontractor, Holocene Drilling Inc., on September 22, 2009 using a hollow stem auger rig. Boring locations are shown on Figure 3. The first two borings, GB-101 and GB-102, encountered refusal at 4 to 5 ft bgs. The remaining borings were advanced to a depth of 15 to 20 ft below ground surface (bgs). Two of the borings (GB-103 and GB-108) were converted into 4-inch diameter recovery wells (MW-9 and MW-8, respectively). A split spoon sampler was advanced every 5 feet to allow for geologic logging and soil sampling.

At several of the boring locations, recovery of soil was minimal. Groundwater was encountered at approximately 5 ft during drilling. Boring logs are provided in Appendix A.

Petroleum odor and/or sheen, where present, was noted and documented in field logs. A minimum of one soil sample from each of the borings was submitted to ESN Northwest Laboratory (Olympia, Washington) for chemical analyses, with the exception of borings that encountered refusal (GB-101 and GB-102). Samples collected for analysis are listed in Table 1 and were selected based on the strongest hydrocarbon odor, or if no indications of hydrocarbons were present, the sample collected nearest the water table in each exploration was submitted. Sample identification consisted of the sample location followed by the depth the sample was collected (i.e., GB103-10 was collected at GB103 from a depth of 10 ft bgs).

All auger and split spoon sampling equipment were decontaminated with a steam cleaner between boring locations.

4.2 Well Installation

MW-8 and MW-9 were installed in borings GB-108 and GB-103, respectively. These wells were constructed with Schedule 40, 4-inch diameter flush-threaded PVC pipe with 0.020-inch milled lot screen surrounded by a 10/20 silica sand pack. The screened interval was from approximately 3 to 13 ft bgs, with the sand pack 1 ft above the top of the screen. Bentonite chips were installed from 1 to 2 ft bgs to form a hydraulic seal. A tamper-resistant, flush-mount, protective casing was set in concrete over the upper end of the PVC riser. Monitoring well locations are shown on Figure 3.

Following installation, the top of casing (TOC) of the two new wells were surveyed by Andresen Surveying PLLC.

4.3 Product Measurements

On September 23, 2009, product measurements were collected from MW-1, MW-5, MW-8, and MW-9. Results of these measurements are provided in Table 2. Product (as heavy oil) was observed in MW-1, MW-5, and MW-9. Absorbent socks were placed in these wells and will be replaced on a regular basis.

5.0 ANALYTICAL LABORATORY RESULTS

Laboratory analyses included petroleum hydrocarbons (NWTPH-Dx) in soil at six boring locations. The NWTPH-Dx Method provides analytical results for Diesel Range and Oil Range Hydrocarbons. Table 1 compares the analytical results against MTCA Method A Cleanup Levels (CLARC, 2009). TPH concentrations in soil ranged from not detected at location GB-107 to 7,700 mg/kg at location GB-106. Analytical test reports are included in Appendix B.

6.0 ESTIMATED QUANTITY OF SOIL REQUIRING REMEDIAL ACTION

The May, 2009 Feasibility Study identified two discrete areas of concern (AOCs) requiring remedial action. AOC No. 1, located on the east-central portion of the site is characterized by elevated concentrations of heavy oil in soil and groundwater. AOC No. 2, located on the southeastern portion of the site is characterized by elevated concentrations of diesel in soil and groundwater. The May, 2009 Feasibility Study estimated that approximately 5,200 cubic yards (CY) of soil would require removal from AOC No. 1 and 6,100 CY of soil would require removal from AOC No. 2.

This supplemental work has identified additional soil and groundwater in the vicinity of AOC No. 1 that will require remediation. Figure 4 shows the revised extent of soil and groundwater above cleanup levels. Results of this investigation indicate that free product in the vicinity of MW-5 and MW-9 will require removal, and an estimated 3,650 CY of additional soil will require removal in the vicinity of AOC No. 1.

The revised total amount of soil requiring removal and disposal at this site is approximately 14,950 CY, with 8,850 CY removed from AOC No. 1 and 6,100 CY removed from AOC No. 2.

7.0 DISCUSSION

It appears that free product has migrated from the area surrounding MW-1 to the area surrounding MW-5. Close to 1 foot of product was measured in MW-1 in 2007. In September 2009, only a film of free product was measured in MW-1. Also, free product was observed in two wells downgradient of MW-1 in September, 2009. Absorbent socks have been installed in MW-1, MW-5, and MW-9. These socks will be regularly maintained until the interim cleanup action commences.

Based on 8 soil borings located around MW-5, an estimated 3,650 CY of additional soil will require removal and disposal in the vicinity of AOC No. 1. The revised total amount of soil requiring removal and disposal at this site is approximately14,950 CY.

8.0 LIMITATIONS

We have prepared this report for the exclusive use of Hardel and Ecology as part of their evaluation of the environmental conditions of the site. This report is not intended for use by others, and the information contained herein is not applicable to other sites. No one except Hardel and Ecology should rely on this report without first conferring with Greylock. Greylock personnel performed this study in accordance with generally accepted standards of care that existed in the state of Washington at the time of this study. We make no other warranty, either expressed or implied.

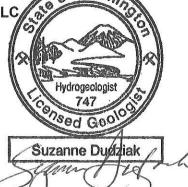
This report is based on conditions that existed at the time the study was completed. The findings of this report may be affected by the passage of time or events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, or groundwater fluctuations.

If you have any questions regarding this report, please call me at (253) 941-0654.

Sincerely,

GREYLOCK CONSULTING LLC

Suzanne Dudziak, L.H.G. Principal Hydrogeologist



9.0 REFERENCES

CLARC, 2009. Cleanup Levels and Risk Calculations (CLARC) Washington State Department of Ecology.

Greylock, 2009. Feasibility Study. Former Hardel Plywood Site, 1210 NW West Bay Drive, Olympia, Washington. May 8, 2009.

Stemen Environmental Inc., 2004. Phase 2 Environmental Site Assessment Report. Former Hardel Mutual Plywood Waterfront Property. 1210 NW West Bay Drive, Olympia, Washington. July 26, 2004.

FIGURES

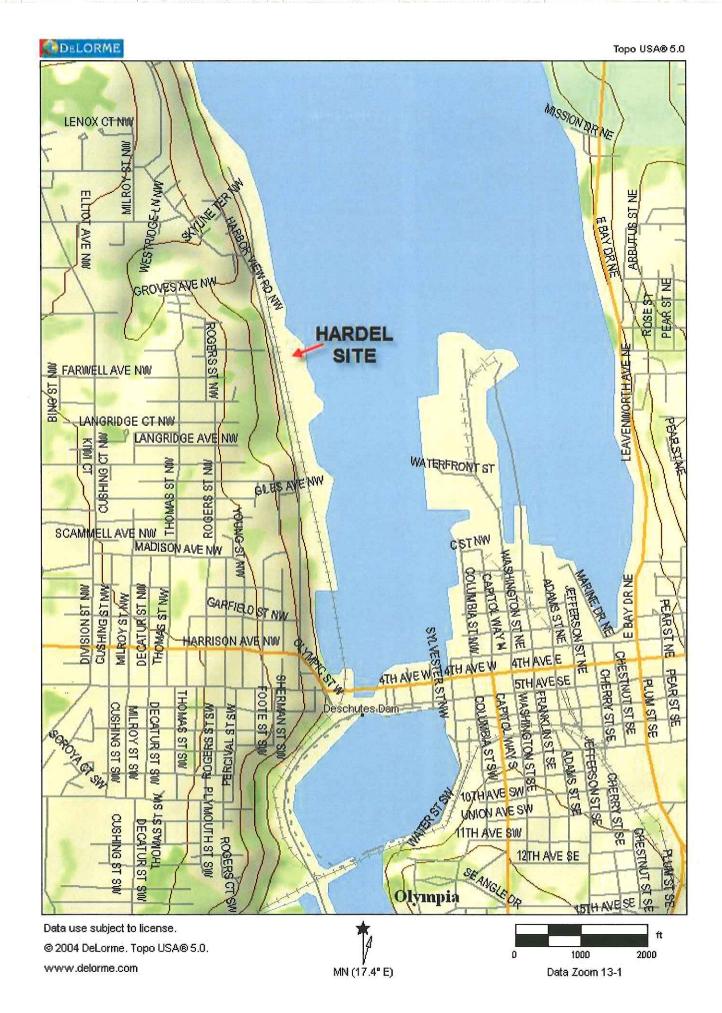


Figure 1. Vicinity Map

TABLES

Table 1. Soil Analytical Results, Hardel Olympia, September 22, 2009

140	<100	7700 5800/6300		000 1000 / 850	2000	0000						10000000000000000000000000000000000000
^50	<50	<50		<50	5 0	<50	<50 880	<50 1.000	<50 100	2,000 <50 2,000 340 / 540	2,000 2,000	Diesel Heavy Oil
												TPH in mg/kg
							===				A Criteria	
09/22/09	09/22/09 9/22/2009 09/22/09	9/22/2009	09/22/09		60/77/60	00122100					8	
MW8-5	GB106-10 GB106-15 GB107-10 MW8-5	GB106-15	GB106-10		09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09 09/22/09	GB105-5	09/22/09	09/22/09	09/22/09	09/22/09		Date Sampled:
							0000	CB404 E	GR103_10	GB103-5		Sample ID:
								9				

BOLD = Exceeds the Screening Criteria

Table 2. Free Product Measurements, Hardel Olympia

Date	Time	Well No.	Depth to	Depth to	Approx.	Comments
			Product in	Water in	Product	
			(ft)	(ft)	Thickness (ft)	
9/23/2009	1142	MW-8		2.25	0	No product observed
9/23/2009	1156	MW-9		2.65	film	Product is heavy, black oil
9/23/2009	1215	MW-1		4.83	film	Product is heavy, black oil
9/23/2009	1239	MW-5	2.94	2.91	0.03	Product is heavy, black oil

APPENDIX A - BORING LOGS



Page 1

Water Resources & Environmental Services

Project: Hardel Mutual Plywood Job #: 0395 Boring #: 68-101 Location: 1210 West Bay Drive NW, Olympia, WA Approximate Elevation: Not Surveyed Subcontractor/Equipment: Holocene Drilling Drilling Method: Hollow Stem Auger Date: 9/22/2009 Logged By: S. Dudziak € Lithology Color Depth (Soil Description Comments 0. Gray Silty Sand (SM), medium grained Gray Dry; No Odor Refusal @ 5 ft



Page 1

Water Resources & Environmental Services

Pr	oject: Hardel Mutual Plywood		Job #: 0395	. В	oring #: GB-102
Lo	Cation: 1210 West Bay Drive NW, Olympia, WA		Approximat	e Elevation: Not Surveyed	
Sı	bcontractor/Equipment: Holocene Drilling		Drilling Met	hod: Hollow Stem Auger	
Da	ite: 9/22/2009		Logged By:	S. Dudziak	
Depth (ft.)	Soil Description	Lithology	Color	Comments	
0_					·
-	Gravel (GP), Cobbles		Gray	Dry; No Odor	
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Refusal @ 4.5 ft	



Page 1

Water Resources & Environmental Services

Pro	ject: Hardel Mutual Plywood		Job #: 0395	5 Boring	j#: GB103/MW-9
Loc	cation: 1210 West Bay Drive NW, Olympia, Washingto	on	Approximat	te Elevation: 10.78 ft	
Sul	contractor/Equipment: Holosene Drilling		Drilling Met	hod: Hollow Stem Auger	
Dat	e: 9/22/09		Logged By:	S. Dudziak	
Depth (ft.)	Soil Description	Lithology	Color	Comments	Well Construction
0_					
	Silty Sand (SM) medium grained Silty Sand (SM) Silty Sand (SM) Silty Sand (SM) contains some wood		Gray Dark Brown Medium Brown	Sample GB103-5 Moist, No Odor Blow Counts: 2-2-1 Sample GB103-10 Wet, Moderate hydrocarbon odor Blow Counts: 1-1-5 Sample GB103-15 Wet, Slight hydrocarbon odor Blow Counts: 4-5-1	3 - 13 rt 4 lb. soree i. 0.02 slot
0.0	Wood		, a	Sample GB103-20 No odor, No sheen Blow Counts: 9-4-3	



Water Resources & Environmental Services

Page 1

Pro	ject: Hardel Mutual Plywood		Job #: 0396	5 Boring #: 98104
Loc	cation: 1210 West Bay Drive NW, Olympia, Washingt	ton	Approxima	te Elevation:
Sul	bcontractor/Equipment: Holocene Drilling		Drilling Met	hod: Hollow Stem Auger
Dat	te: 9/22/09		Logged By:	S. Dudziak
Depth (IL)	Soil Description	Lithology	Color	Comments
	Sandy Silt (SM) contains 10% gravel and 25% wood Wood with Silt (SM) 80% Wood 20% Silt		Dark Brown	Sample GB104-5 Moist, No Odor Blow Counts: 2-7-3
	Wood with Silt (SM) 80% Wood 20% Silt		Dark Gray	Sample GB104-10 Wet, No odor Blow Counts: 1-0-1
		* × ×		Sample GB104-15 Wet, No odor Blow Counts: 4-2-4



Page 1

Water Resources & Environmental Services

Job #: 0395 Boring #: GB105 Project: Hardel Mutual Plywood Approximate Elevation: Location: 1210 West Bay Drive NW, Olympia, Washington Subcontractor/Equipment: Holocene Drilling Drilling Method: Hollow Stem Auger Date: 9/22/09 Logged By: S. Dudziak Lithology Color Depth Comments Soil Description 0. Gray Silty Sand (SM) gravel at 4 ft Gravel @ 4 ft Sample GB105-5 Dry, No Odor 5 Blow Counts: 2-2-2 Gray Silt (ML) with Wood 60% Silt 40% Wood Wood Silt (ML) with Wood 50% Silt 50% Wood Sample GB105-10 Wet, Slight odor Blow Counts: 3-1-2 0 -Gray 15 Wood with Silt (ML) Gray Sample GB105-16 70% Wood 30% Silt Wet, No odor, No sheen



Page 1

Water Resources & Environmental Services

Boring #: GB108 Job #: 0395 Project: Hardel Mutual Plywood Location: 1210 West Bay Drive NW, Olympia, Washington Approximate Elevation: Subcontractor/Equipment: Holocene Drilling Drilling Method: Hollow Stem Auger Date: 9/22/09 Logged By: S. Dudziak € Lithology Color Depth (Soil Description Comments Gray Silty Sand (SM) Sandy Silt (SM), with gravel No Recovery; No Sample Moist, No Odor 5 Silty Sand (SM), with Wood 30% Wood Brown Blow Counts: 4-5-7 Sample GB106-10 Wet, Slight odor Blow Counts: 2-3-2 0 -Gray Sandy Silt (SM) with Wood 60% Wood Sample GB106-15 Wet, No odor, No sheen



Page 1

	ject: Hardel Mutual Plywood		Job #: 0395	
	ation: 1210 West Bay Drive NW, Olympia, Washingto	on	Approximat	
Sul	contractor/Equipment: Holocene Drilling			10(1: Hollow Stern Auger
—	e: 9/22/09		Logged By:	S. Dudziak
Cobin (ir.)	Soil Description	Lithology	Color	Comments
7	Silty Gravel (GM)	14	Brown	
	Silt (ML) with Wood 70% Silt 30% Wood		Brown	No Recovery; No Sample No Odor Blow Counts: 7-9-8
_	Silt (ML) with Wood 50% Silt		Brown	Wet, No odor Blow Counts: 8-5-3
-	50% Wood		Gray	
_	Silt (ML) with Wood 60% Wood 40% Silt			
			Brown	Sample GB107-15 Wet, No odor



Page 1

Water Resources & Environmental Services

Pre	ject: Hardel Mutual Plywood		Job #: 0395	Boring	j#: GB108/MW-8
Lo	cation: 1210 West Bay Drive NW, Olympia, Washingto	on	Approximat	e Elevation: 10.36 ft	77.H36
Su	bcontractor/Equipment: Holosene Drilling		Drilling Metl	10(1: Hollow Stem Auger	
Da	te: 9/22/09		Logged By:	S. Dudziak	
Depth (ft.)	Soil Description	Lithology	Color	Comments	Well Construction
0_	Sitty Sand (SM) with wood				Demest
5	Sitty Sand (SM) with wood Sitty Sand (SM) with wood		Dark Brown	Sample MW8-5 Moist, No Odor Blow Counts: 1-2-3 No Sample (only recovered wood) Strong petroleum odor, Wet Blow Counts: 7-10-7 Sample MW8-13 Wet, Moderate hydrocarbon odor Blow Counts: 7-8-10	3-13 ft 4 h. solee h, 0.02 s lot

APPENDIX B - ANALYTICAL REPORTS

ESN NORTHWEST CHEMISTRY LABORATORY

Greylock Consulting HARDEL / AP PROJECT ESN Northwest 1210 Eastside Street SE Suite 200 Olympia, WA 98501

Washington

(360) 459-4670 (360) 459-3432 Fax

lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample	Date	Date	Surrogate	Diesel Range Organics	Lube Oil Range Organics
Number	Prepared	Analyzed	Recovery (%)	(mg/kg)	(mg/kg)
Method Blank	9/23/2009	9/24/2009	99	nd	nd
GB103-5	9/23/2009	9/24/2009	71	nd	340
GB103-10	9/23/2009	9/24/2009	58	nd	100
GB104-5	9/23/2009	9/24/2009	76	nd	1000
GB104-10	9/29/2009	9/29/2009	101	nd	880
GB105-5	9/23/2009	9/24/2009	131	nd	6800
GB105-10	9/29/2009	9/29/2009	92	nd	2000
GB106-10	9/29/2009	9/29/2009	84	nd	7700
GB106-10 DUP	9/23/2009	9/24/2009	97	nd	6300
GB107-10	9/29/2009	9/29/2009	98	nd	nd
MW8-5	9/23/2009	9/24/2009	123	nd	140
Reporting Limits				50	100

[&]quot;nd" Indicates not detected at the listed detection limits.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE: 50% TO 150%

[&]quot;int" Indicates that interference prevents determination.

ESN NORTHWEST CHEMISTRY LABORATORY

Greylock Consulting HARDEL / AP PROJECT Washington ESN Northwest 1210 Eastside Street SE Suite 200 Olympia, WA 98501 (360) 459-4670 (360) 459-3432 Fax lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil by Method NWTPH-Dx/Dx Extended

Sample	Date	Date	Surrogate	Diesel Range Organics	Lube Oil Range Organics
Number	Prepared	Analyzed	Recovery (%)	(mg/kg)	(mg/kg)
Method Blank	9/30/2009	10/2/2009	112	nd	nd
GB-103-5	9/30/2009	10/2/2009	88	nd	540
GB-106-15	9/30/2009	10/2/2009	92	nd	5800
GB-105-16	9/30/2009	10/2/2009	99	nd	1500
GB-105-16 DUP	9/30/2009	10/2/2009	87	nd	850
Reporting Limits				50	100

[&]quot;nd" Indicates not detected at the listed detection limits.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE: 50% TO 150%

[&]quot;int" Indicates that interference prevents determination.

ESN Environmental Services Network

CHAIN-OF-CUSTODY RECORD

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