Third Quarter 2005
Groundwater Monitoring Report

Former Simpson Remanufacturing Facility
Arcata, California

Prepared for:

Simpson Timber Company

Consulting Engineers & Geologists, Inc.

812 W. Wabash
Eureka, CA 95501-2138
707 / 441-8855

September 2005

003154

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash Ÿ Eureka, CA 95501-2138 Ÿ 707/441-8855 Ÿ FAX: 707/441-8877 Ÿshninfo@shn-engr.com

Reference: 003154

September 29, 2005

Mr. Ryan Miya
Department of Toxic Substances Control
Northern California-Coastal Cleanup Operations Branch
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

Subject: Third Quarter 2005 Groundwater Monitoring Report, Former Simpson Remanufacturing Facility, Arcata, California

Dear Mr. Miya:

SHN Consulting Engineers & Geologists, Inc (SHN) is providing you with the third quarter 2005, groundwater monitoring report for the Former Simpson Remanufacturing Facility, Arcata, California. SHN performed the groundwater monitoring on July 20, 2005, and August 1, 2005.

Please call me at 441-8855 if you have any questions.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, R. G.
Project Manager

FBL/SLD:lms
Enclosure: Report
copy w/encl: Kasey Ashley, RWQCB
Rob Ricci, Simpson Timber Company
Lane Devries, Sun Valley Floral Farms

Reference: 003154

Third Quarter 2005
Groundwater Monitoring Report

Former Simpson Remanufacturing Facility
Arcata, California

Prepared for:

Simpson Timber Company

Prepared by:

Consulting Engineers & Geologists, Inc.
812 W. Wabash
Eureka, CA 95501-2138
707 / 441-8855

September 2005

QA / QC: FBL___

Table of Contents

Page

1.0 Introduction 1
- 1.1 Vicinity Information 1
- 1.2 Site History 1
- 1.3 Geology and Hydrology 1

2.0 Field Activities 2
- 2.1 Monitoring Well Sampling 2
- 2.2 Laboratory Analysis 2
- 2.3 Equipment Decontamination Procedures 3
- 2.4 Investigation-Derived Waste Management 3

3.0 Groundwater Monitoring Results 3
- 3.1 Hydrogeology 3
- 3.2 Groundwater Analytical Results 4
- 3.3 Natural Attenuation Parameters 5
- 3.4 Quality Assurance 6

4.0 Discussion and Recommendations 6

5.0 References Cited 7

Appendices

- A. Field Notes
- B. Historic Monitoring Data
- C. Laboratory Analytical Reports

List of Illustrations

Tables — Page

1. Groundwater Elevations, July 20, 2005 3
2. Organic Compound Groundwater Analytical Results, Third Quarter, 2005 4
3. Reductive De-chlorination Indicator Results, July 20, 2005 5
4. DO, DCO_2, and ORP, Measurement Results, July 20, 2005 5

Figures — Follows Page

1. Site Location Map 1
2. Former Site Layout 1
3. Site Plan, Southern Lunch Room Area 1
4. Groundwater Contours, July 20, 2005 3
5. VOC Concentrations in Groundwater, Southern Lunch Room Area 4

Abbreviations and Acronyms

<	denotes a result that is “less than” the method detection limit
mV	millivolts
ppm	parts per million
mg/L	milligrams per Liter
ug/L	micrograms per Liter
BGS	Below Ground Surface
CDMG	California Division of Mines and Geology
DCE	Dichloroethene
DCO_2	Dissolved Carbon Dioxide
DO	Dissolved Oxygen
DTSC	California Department of Toxic Substances Control
EC	Electrical Conductivity
EPA	Environmental Protection Agency
MW-#	Monitoring Well-#
NA	Not Analyzed
NAVD	North American Vertical Datum
ND	Not Detected
NM	Not Measured
ORP	Oxidation-Reduction Potential
PCP	Pentachlorophenol
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
TCP	Tetrachlorophenol
VOCs	Volatile Organic Compounds

1.0 Introduction

This report presents the results of groundwater monitoring activities for the third quarter 2005, conducted at the Former Simpson Remanufacturing Facility located in, Arcata, California (Figure 1). SHN Consulting Engineers & Geologists, Inc. (SHN) performed this work on behalf of the Simpson Timber Company. This work was requested by the California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board, North Coast Region (RWQCB).

This report is presented in five sections. This section introduces the reader to the site. Section 2.0 discusses the scope of work completed at the site during the third quarter 2005 monitoring event. Section 3.0 presents the results of the groundwater-monitoring program. Section 4.0 presents a discussion of the results and recommendations for future activities. Section 5.0 presents a list of references cited.

1.1 Vicinity Information

The former remanufacturing facility is located at 3315 Foster Avenue, Arcata, Humboldt County, California (Figure 2). The majority of the site is located in the southeast quarter of Section 19, T6N, R1E, Humboldt Base and Meridian. The area is zoned industrial and agricultural exclusive. Site elevation is approximately 20 feet (North American Vertical Datum [NAVD] 1929) and the topography is relatively flat.

1.2 Site History

The site was initially developed in 1951. Operations included processing rough sawn boards into finished dimensional lumber and siding. In 1989, the facility was closed and the plant equipment was sold. In May 1999, Sun Valley Floral Farms purchased the site. Subsurface investigations have been performed at various locations throughout the site, including soil excavation at several locations. A detailed description of previous activities is included in the final removal action work plan (EnviroNet, 1997).

On January 21 and 22, 2004, SHN supervised the installation of monitoring wells MW-7 and MW-8 (Figure 3). Wells were installed by Fisch Environmental of Valley Springs, California. Wells MW-7 and MW-8 were subsequently added to the existing monitoring well network.

Groundwater beneath the site was monitored on a quarterly basis in 2004. Groundwater monitoring ceased after that time, but was resumed during the third quarter of 2005.

1.3 Geology and Hydrology

The site is located within the Arcata Bottoms, a floodplain/coastal plain of low relief. Geology in the vicinity of the site was mapped as Holocene alluvium consisting of coarse to fine sand and silt (Kelley, 1984). Gravel fill material was encountered from the ground surface to a depth of approximately 2 feet Below Ground Surface (BGS) underlain by two to five feet of silt (SHN, 2004). Sands and gravels are present below the silt from approximately 5 to 27 feet BGS. A deeper silt layer was observed at 27 feet BGS in well point SLR-1. Although no soil samples were collected below 28 feet BGS, the ease of advancement of the Geoprobe® rods from 28 to 59 feet BGS indicates that the silt layer extends to the bottom of the boring (approximately 59 feet BGS) (SHN, 2004).

Previous subsurface investigations (EnviroNet, 1997) characterized the subsurface as approximately 3-15 feet of silt/clay deposits, underlain by sands and rounded gravels, with a low permeability layer of silt and/or clay present at depths ranging from approximately 23 to 30 feet BGS.

2.0 Field Activities

2.1 Monitoring Well Sampling

SHN conducted groundwater monitoring on July 20, 2005. As part of the monitoring program, wells MW-2, MW-3, MW-7, and MW-8 were purged and sampled. Prior to purging, each well was measured for depth to water, and checked for the presence of floating product (none was observed). Electrical Conductivity (EC), pH, and temperature were monitored periodically during purging activities using portable instrumentation. Each of these four wells was also measured for Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP), and Dissolved Carbon Dioxide (DCO_2). Groundwater samples were collected from wells MW-2, MW-3, MW-7, and MW-8 utilizing disposable polyethylene bailers. A duplicate sample was collected from groundwater monitoring well MW-3 and analyzed for Volatile Organic Compounds (VOCs). The water samples were immediately placed in an ice-filled cooler, and submitted to the laboratory for analyses under appropriate chain-of-custody. The groundwater samples collected for phenol analysis did not meet the analytical method sample handling criteria and had to be recollected. On August 1, 2005, wells MW-2, MW-3, MW-7, and MW-8 were re-sampled by SHN for phenol analysis. Groundwater monitoring data sheets are included in Appendix A.

2.2 Laboratory Analysis

The groundwater samples collected on July 20, 2005 were analyzed for:

- VOCs, in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260B.
- Pentachlorophenol (PCP) and Tetrachlorophenol (TCP), in general accordance with the Canadian Pulp Report Method.
- Alkalinity, in general accordance with Standard Method 19th Edition 2320B.
- Chloride, Sulfate, and Nitrate, in general accordance with EPA Method No. 300.0.
- Dissolved Iron and Dissolved Manganese, in general accordance with EPA Method No. 200.7.

The groundwater samples collected on August 1, 2005 were analyzed for:

- Phenols, in general accordance with EPA Method No. SW8270C.

All of the sample analyses (with the exception of Phenols) were performed by North Coast Laboratories, Ltd., a California-certified analytical laboratory located in Arcata, California. The phenol analyses were performed by Alpha Analytical, Inc. of Sparks, Nevada.

2.3 Equipment Decontamination Procedures

All monitoring and sampling equipment was cleaned prior to being transported to the Former Simpson Remanufacturing Facility site. All smaller equipment was initially washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

2.4 Investigation-Derived Waste Management

All water utilized for decontaminating field-sampling equipment, and all well purge water was temporarily stored on site in 50-gallon plastic drums. The water was then transported to SHN's 1,000-gallon purge water storage tank located at 812 West Wabash Avenue in Eureka, California. Approximately 100 gallons of decontamination and purge water from the July 20, and August 1, 2005, sampling events are being stored at SHN, and will be tested and discharged, under permit, to the City of Eureka municipal sewer system. A discharge receipt will be included in the next quarterly groundwater monitoring report.

3.0 Groundwater Monitoring Results

3.1 Hydrogeology

SHN measured depth-to-groundwater in the existing monitoring wells during the third quarter 2005, monitoring event (Table 1).

Table 1
Groundwater Elevations, July 20, 2005
Former Simpson Remanufacturing Facility, Arcata, California

Sample Location	Top of Casing Elevation[1] (feet)	Depth to Groundwater[2] (feet)	Groundwater Elevation[1] (feet)
MW-1	20.69	4.73	15.96
MW-2	22.10	6.15	15.95
MW-3	22.85	7.23	15.62
MW-4	22.48	6.95	15.53
MW-5	21.82	5.81	16.01
MW-6	23.03	7.37	15.66
MW-7	21.48	5.52	15.96
MW-8	21.56	5.58	15.98

1. Relative to National American Vertical Datum (1929)
2. Below top of casing

On July 20, 2005, the direction of groundwater flow beneath the site was to the southeast, with an approximate gradient of 0.001. The water table in the area delineated by wells MW-1, MW-5, and MW-7 has a very shallow gradient, with only a 0.05 foot elevation difference between the highest water level (well MW-5) and the lowest water level (wells MW-1 and MW-7) in this area. A groundwater contour map for the July 20, 2005, monitoring event is presented as Figure 4. Historic groundwater elevation data is included in Appendix B, Table B-1.

3.2 Groundwater Analytical Results

Table 2 summarizes the organic compound laboratory analytical results.

Table 2
Organic Compound Groundwater Analytical Results, Third Quarter, 2005
Former Simpson Remanufacturing Facility, Arcata, California
(in ug/L)[1]

Sample Location	Sample Date	Phenols[2]	PCP[3]	TCP[3]	trans-1,2-DCE[4]	cis-1,2-DCE	Vinyl Chloride[5]	Benzene[5]
MW-2	7/20/05	NA[6]	<0.30[7]	<1.0	<1.0	<1.0	<1.0	<0.50
	8/1/05	ND[8]	NA	NA	NA	NA	NA	NA
MW-3	7/20/05	NA	<0.30	<1.0	<1.0	15	1.7	<0.50
	8/1/05	ND	NA	NA	NA	NA	NA	NA
MW-7	7/20/05	NA	<0.30	<1.0	<1.0	<1.0	6.6	2.0
	8/1/05	ND	NA	NA	NA	NA	NA	NA
MW-8	7/20/05	NA	<0.30	<1.0	<1.0	<1.0	4.1	<0.50
	8/1/05	ND	NA	NA	NA	NA	NA	NA
Dup-1[9]	7/20/05	NA	NA	NA	<1.0	14	1.5	<0.50

1. ug/L: micrograms per Liter
2. Analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method No. SW8270C.
3. Pentachlorophenol (PCP) and tetrachlorophenol (TCP), analyzed in general accordance with the Canadian Pulp Report Method.
4. DCE: Dichloroethene, analyzed in general accordance with EPA Method Nos. 5030B /8260B.
5. Analyzed in general accordance with EPA Method Nos. 5030B/8260B.
6. NA: Not Analyzed.
7. <: Denotes a value that is "less than" the laboratory method detection limit.
8. ND: Not Detected. See laboratory analytical report for constituent list and corresponding method detection limits.
9. Duplicate groundwater sample collected from monitoring well MW-3.

During the July 20, 2005, sampling event, the groundwater sample collected from monitoring well MW-3 contained cis-1,2- Dichloroethene (DCE), at a concentration of 15 micrograms per Liter (ug/L). The groundwater samples collected from monitoring wells MW-3, MW-7, MW-8 contained vinyl chloride at concentrations of 1.7, 6.6, and 4.1 ug /L, respectively. Benzene was present in the groundwater sample collected from monitoring well MW-7, at a concentration of 2.0 ug/L. No other VOC components were detected in any samples analyzed. PCP and TCP were not detected in any of the groundwater samples that were collected during the July 20, 2005, monitoring event. Phenols were not detected in any groundwater samples analyzed.

The complete analytical laboratory reports, chain-of-custody, and laboratory quality control data are included in Appendix C. A site map showing selected VOC concentrations in groundwater on July 20, 2005, is presented as Figure 5. Historic groundwater analytical data are included in Appendix B, Table B-2.

3.3 Natural Attenuation Parameters

Table 3 summarizes the analytical results of select inorganic constituents used to assess whether or not reductive de-chlorination of organic compounds is occurring.

Table 3
Reductive De-chlorination Indicator Results, July 20, 2005
Former Simpson Remanufacturing Facility, Arcata, California

Sample Location	Alkalinity[1] (mg/L)[2]	Chloride[3] (mg/L)	Sulfate[3] (mg/L)	Nitrate[3] (mg/L)	Dissolved Iron[4] (ug/L)[5]	Dissolved Manganese[4] (ug/L)
MW-2	45	8.9	5.0	1.2	<100[6]	2.8
MW-3	85	6.5	2.5	0.24	490	290
MW-7	190	11	7.1	<0.10	7,500	740
MW-8	190	17	<0.50	<0.10	15,000	1,900

1. Analyzed in general accordance with Standard Method 19th Edition 2320B
2. mg/L: milligrams per Liter
3. Analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 300.0
4. Analyzed in general accordance with EPA Method No. 200.7
5. ug/L: micrograms per Liter.
6. <: Denotes a value that is "less than" the method detection limit.

When reductive de-chlorination is occurring, alkalinity, chloride, dissolved iron, and dissolved manganese concentrations typically increase within the source plume, while sulfate and nitrate concentrations typically decrease. Monitoring wells MW-7 and MW-8 are considered representative of the source area. As shown in Table 3, these trends were followed for all constituents except sulfate.

DO, DCO_2, and ORP were measured in monitoring wells MW-2, MW-3, MW-7, and MW-8 on July 20, 2005 prior to sampling, and are summarized in Table 4.

Table 4
DO, DCO_2, and ORP, Measurement Results, July 20, 2005
Former Simpson Remanufacturing Facility, Arcata, California

Sample Location	DO[1] (ppm)[2]	DCO_2 [3] (ppm)	ORP[4] (mV)[5]
MW-2	0.46	30	184
MW-3	0.48	30	186
MW-7	0.44	150	33
MW-8	0.49	500	-18

1. DO: Dissolved Oxygen, field measured using portable instrumentation.
2. ppm: Measurement concentration, in parts per million.
3. DCO_2: Dissolved Carbon Dioxide, measured using a field test kit.
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation.
5. mV: millivolts

During this monitoring event, DO concentrations ranged from 0.44 parts per million (ppm) in well MW-7, to 0.49 ppm in well MW-8. These DO concentrations may be marginally sufficient to

support aerobic biodegradation. DCO_2 levels within the source area (500 ppm in well MW-8) are greater than background levels (30 ppm in wells MW-2 and MW-3), indicating that biodegradation is occurring. ORP measurements ranged from -18 millivolts (mV) in well MW-8, to 186 mV in well MW-3, indicating that anaerobic conditions may be present within the source area and that aerobic conditions may be present outside of the source area. Historic DO, DCO_2, and ORP measurement results are presented in Appendix B, Table B-3.

An analysis of degradation indicators shows that both aerobic degradation and reductive de-chlorination is occurring. Depleted DO concentrations across the site along with increased DCO_2 concentrations and decreased ORP values within the source area indicate that conditions within the source area are becoming anaerobic. The trends of the reductive de-chlorination indicators in the source area along with the continued presence of VC in wells MW-3, MW-7, and MW-8 indicate that chlorinated compounds are degrading.

3.4 Quality Assurance

Precision goals outlined in the quality assurance project plan appended in the site investigation work plan (SHN, 2003), were reviewed with respect to the duplicate sample collected from monitoring well MW-3. Vinyl chloride, benzene, and cis-1,2-Dichloroethene concentrations in the duplicate sample from MW-3 were within the precision goals. No other VOC constituents could be compared because all were below their respective laboratory method detection limits.

4.0 Discussion and Recommendations

Information collected during this quarterly groundwater-monitoring event indicates:

- The groundwater elevations on July 20, 2005 have increased when compared to those collected during the November 2004 groundwater monitoring event. During this monitoring event, the direction of groundwater flow beneath the site was to the southeast, and is consistent with the direction of flow during the November 2004, monitoring event.
- PCP and TCP were not detected in any of the groundwater samples that were collected on July 20, 2005.
- Phenols were not detected in any of the groundwater samples that were collected on August 1, 2005.
- Cis-1,2-DCE was present in the groundwater sample collected from monitoring well MW-3.
- Vinyl chloride was detected in the groundwater samples collected from monitoring wells MW-3, MW-7, MW-8.
- Benzene was present in the groundwater sample collected from monitoring well MW-7.

The presence of vinyl chloride (a decay product of VOCs, including cis-1,2-DCE) in site wells indicates that VOC biodegradation is occurring. In addition, reductive de-chlorination indicators show that VOC degradation is occurring.

In the work plan, ***Amended Subsurface Investigation, Monitoring Well Installation, and Groundwater Monitoring Work Plan***, dated November 2003, SHN recommended that groundwater monitoring be conducted for a period of one year upon completion of wells MW-7 and MW-8. This work plan was approved by the DTSC and the RWQCB in December 2003. In November 2004, the approved one year of quarterly monitoring was completed.

On March 15, 2005, SHN submitted a Five-Year Review Report to the DTSC, presenting the results of work conducted at the site in 2004, along with a summary of the work completed over the past five years. In a letter dated July 6, 2005, the DTSC concurred with the recommendation presented in the five-year review report. Therefore, in accordance with the site recommendations, SHN will continue quarterly monitoring. Quarterly monitoring will continue until July 2006, at which time, recommendations for the site will be made. The next monitoring event is scheduled for October 2005.

5.0 References Cited

Barden, M.J. and T.H. Weidemeier. (2002). Natural Attenuation for Remediation of Contaminated Sites #571. National Groundwater Association Short Course. Westerville: National Groundwater Association.

Kelly, Fredric R. (1984) "Geology and Geomorphic Features Related to Landsliding, Arcata North 7.5' Quadrangle, Humboldt County, California." California Division of Mines and Geology Open File Report 84-38. Sacramento: CDMG.

Pacific Northwest EnviroNet Group, Inc. (1997). ***Final Removal Action Work Plan Prepared for the Former Simpson Timber Company Remanufacturing Plant Site***. Santa Rosa:EnviroNet.

SHN Consulting Engineers & Geologists, Inc. (2003). ***Amended Subsurface Investigation, Monitoring Well Installation, and Groundwater Monitoring Work Plan, Former Simpson Remanufacturing Plant, Arcata, California.*** Eureka: SHN.

---. (2004). ***Report of Findings and First Quarter 2004 Groundwater Monitoring Report, Former Simpson Remanufacturing Facility, Arcata, California.*** Eureka: SHN.

Appendix B:

..\data\HistoricLabData3rdQtr2005.xls

Appendix A

Field Notes

Appendix B

Historic Monitoring Data

Appendix C

Laboratory Analytical Reports