



---

## **Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report**

Sierra Pacific Industries  
Arcata Division Sawmill  
2593 New Navy Base Road  
Arcata, California

*Prepared for:*

**Sierra Pacific Industries**

April 7, 2004

Project No. 9329, Task 5

---

**Geomatrix Consultants**

2101 Webster Street  
12th Floor  
Oakland, CA 94612  
(510) 663 4100 • FAX (510) 663 4141



April 7, 2004  
Project 9329 Task 5

Executive Officer  
California Regional Water Quality Control Board  
North Coast Region  
5550 Skylane Boulevard, Suite A  
Santa Rosa, California 95403

Attention: Dean Prat

Subject: Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report  
Sierra Pacific Industries  
Arcata Division Sawmill  
2593 New Navy Base Road  
Arcata, California

Dear Mr. Prat:

As requested by Sierra Pacific Industries, we have enclosed a copy of the subject report prepared on behalf of Sierra Pacific Industry Industries.

Sincerely yours,  
GEOMATRIX CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "B. Thompson".

Brian Thompson, C.E.G., C.HG.  
Project Geologist

A handwritten signature in black ink, appearing to read "Ross Steenson".

Ross Steenson, C.HG.  
Senior Hydrogeologist

A handwritten signature in black ink, appearing to read "Edward P. Conti".

Edward P. Conti, C.E.G., C.HG.  
Principal Geologist

BJT/RAS/EPC/abr  
Enclosure



California Regional Water Quality Control Board  
North Coast Region  
Attention: Dean Prat  
April 7, 2004  
Page 2

cc: Bob Ellery, Sierra Pacific Industries (with enclosure)  
Gordie Amos, Sierra Pacific Industries (with enclosure)  
David Dun, Dun and Martinek, LLP (with enclosure)  
Fred Evenson, Law Offices of Frederic Evenson (with enclosure)  
Jim Lamport, Ecological Rights Foundation (with enclosure)



---

## **Monitoring Wells MW-20 and MW-21 Installation and Soil Sampling Report**

Sierra Pacific Industries  
Arcata Division Sawmill  
2593 New Navy Base Road  
Arcata, California

*Prepared for:*

**Sierra Pacific Industries**

*Prepared by:*

**Geomatrix Consultants, Inc.**  
2101 Webster Street, 12th Floor  
Oakland, California 94612  
(510) 663-4100

April 7, 2004

Project No. 9329, Task 5

---

**Geomatrix Consultants**

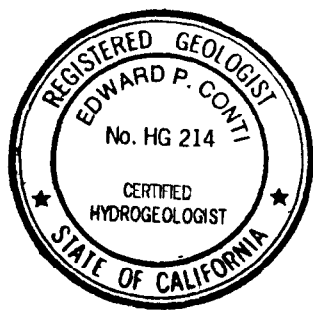
## PROFESSIONAL CERTIFICATION

### MONITORING WELLS MW-20 AND MW-21 INSTALLATION AND SOIL SAMPLING REPORT

Sierra Pacific Industries  
Arcata Division Sawmill  
2593 New Navy Base Road  
Arcata, California

April 7, 2004  
Project No. 9329.000, Task 5

This report was prepared by Geomatrix Consultants, Inc., under the professional supervision of Edward P. Conti. The findings, recommendations, specifications and/or professional opinions presented in this report were prepared in accordance with generally accepted professional hydrogeologic practice, and within the scope of the project. There is no other warranty, either express or implied.



---

Edward P. Conti, C.E.G., C.HG.  
Principal Geologist

## TABLE OF CONTENTS

	<b>Page</b>
1.0 INTRODUCTION .....	1
2.0 FIELD AND LABORATORY METHODOLOGY .....	1
2.1 MONITORING WELL MW-20 INSTALLATION .....	2
2.2 MONITORING WELL MW-21 INSTALLATION .....	3
2.2.1 Boring .....	3
2.2.2 Soil Sampling and Laboratory Methods .....	3
2.2.3 Well Construction .....	4
2.3 DEVELOPMENT OF MW-20 AND MW-21 MONITORING WELLS .....	5
2.4 INVESTIGATION-DERIVED WASTE .....	5
2.5 WELL SURVEY .....	5
3.0 SOIL SAMPLING RESULTS .....	6
3.1 SUBSURFACE CONDITIONS .....	6
3.2 LABORATORY ANALYTICAL RESULTS .....	6
3.3 LABORATORY DATA QUALITY REVIEW .....	7
4.0 FUTURE WELL MONITORING AND SAMPLING .....	8
5.0 REFERENCES .....	9

### TABLES

Table 1	Monitoring Well Construction Details
Table 2	Soil Sample Analytical Results For pH, TOC, and Chlorinated Phenols
Table 3	Soil Sample Analytical Results For Dioxins and Furans

### FIGURES

Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Former Green Chain Area Plan
Figure 4	Former Green Chain Area Sample Location Map
Figure 5	Pentachlorophenol in Soil

### APPENDICES

Appendix A	Permits - Humboldt County Division of Environmental Health
Appendix B	Boring Logs, Well Construction Details, and Well Development Records
Appendix C	Laboratory Analytical Reports and Chain-of-Custody Records
Appendix D	Topographic Plat and Monitor Well (Survey) Data

## **MW-20 AND MW-21 WELL INSTALLATION AND SOIL SAMPLING REPORT**

Sierra Pacific Industries  
Arcata Division Sawmill  
2593 New Navy Base Road  
Arcata, California

### **1.0 INTRODUCTION**

Geomatrix Consultants, Inc. (Geomatrix) has prepared this report on behalf of Sierra Pacific Industries, Inc. (SPI) to document the installation of two monitoring wells (MW-20 and MW-21) and provide results for related soil sampling activities at the SPI Arcata Division Sawmill, located in Arcata, California (Figure 1). The well installations and soil sampling were performed in accordance with requirements of the Consent Decree between the Ecological Rights Foundation and Sierra Pacific Industries, Inc., et al (case number C-01-0520-MEJ) and according to a work plan prepared by Geomatrix on January 20, 2004 and approved by the California Regional Water Quality Control Board, North Coast Region (RWQCB) on January 29, 2004.

Monitoring wells MW-20 and MW-21 were installed for the purpose of monitoring chlorinated phenols in groundwater in the former green chain area at the site (Figure 2). Monitoring well MW-20 was constructed within the footprint of the source area removal excavation conducted during interim remedial measures (Geomatrix, 2003a) to monitor groundwater for chlorinated phenols at the former source area (Figure 3). Monitoring well MW-21 was constructed approximately 30 feet east of existing monitoring well MW-7 to further define the extent of chlorinated phenols in groundwater in the former green chain area and to collect additional data pertaining to the natural attenuation of chlorinated phenols in groundwater (Figure 3).

Soil samples were collected during the installation of monitoring well MW-21. Soil samples were not collected during the installation of monitoring well MW-20 as a boring was not advanced for this well construction, as discussed in Section 3.1. Results from analysis of the MW-21 soil samples are included in this report.

### **2.0 FIELD AND LABORATORY METHODOLOGY**

Monitoring wells MW-20 and MW-21 were installed at the SPI Arcata Division Sawmill facility in January and February 2004, respectively. During preparation for the field activities,

drilling permits were obtained from the Humboldt County Division of Environmental Health (HCDEH), Underground Service Alert (USA) was notified of the work area, and a site-specific health and safety plan was prepared for the work. Fieldwork was implemented according to the HCDEH permit and health and safety plan, and in accordance with the RWQCB-approved work plan. A California-registered geologist supervised the fieldwork. The following sections document field and analytical methodology of the well installations and related soil sampling activities.

## **2.1 MONITORING WELL MW-20 INSTALLATION**

Fisch Environmental of Valley Springs, California (C57 License Number 683865) constructed well MW-20 on January 23, 2004 in accordance with HCDEH Well and Boring Permit Number 27-J (Appendix A) and under the supervision of Geomatrix. The well was installed in the green chain area within the footprint of the source-area removal excavation conducted during interim remedial measures (Geomatrix, 2003a) (Figure 3). USA ticket number 022795 was issued for this work. Norm Crawford of the HCDEH inspected the well on February 13, 2004.

Fisch Environmental installed well MW-20 through a 12-inch-diameter section of polyvinyl chloride (PVC) pipe that was placed vertically within the source area removal excavation prior to backfill. Fisch Environmental placed well casing and annular materials through the PVC pipe as the pipe was removed from the ground using a hoist, toe strap, and equipment operator from the SPI Arcata Division Sawmill facility. Well construction details are summarized in Table 1, graphically represented on a log in Appendix B, and discussed below.

The monitoring well was constructed of 4-inch-diameter, Schedule 40 PVC blank casing and 0.010-inch, slotted casing (screen). The well casing was placed at a depth of 7 feet below the ground surface (bgs) on sandy backfill material; based on this depth and the depth of the former excavation (approximately 8 feet bgs), it is estimated that approximately 1 foot of slough was present within the 12-inch-diameter PVC pipe. The well screen was installed from 3.2 to 6.8 feet bgs.



Fisch Environmental added filter pack sand (RMC Lonestar Number 2/12) and directed the crane operator to simultaneously pull the 12-inch-diameter PVC pipe out of the ground. Approximately three to four feet of filter pack sand was added. Due to difficulty encountered removing the 12-inch-diameter PVC pipe with the crane and based on the predicted volume of sand to be added over this interval, the filter pack is composed of a mixture of the RMC Lonestar Number 2/12 sand and sand that was used to backfill the excavation. Sandy backfill material collapsed around the 4-inch-diameter well casing between approximately one and three feet bgs after the filter pack was added and during final removal of the PVC pipe. Fisch Environmental removed a foot of this material by hand to install a bentonite transition seal, from one to two feet bgs. Completion at the surface consisted of an 8-inch-diameter, traffic-rated well box that was encased within a sand-cement slurry that was placed to the approximate level of the base of surrounding concrete pavement. The approximate two inches of well box stick-up will be filled-in when the excavation is paved over by SPI.

## **2.2 MONITORING WELL MW-21 INSTALLATION**

Monitoring well MW-21 was installed in the green chain area approximately 30 feet east of existing monitoring well MW-7 (Figure 3). Due to limited access to this location, because of facility structures, this well was installed at a later date (February 13, 2004) than well MW-20 and using a different drilling company with limited access equipment, Precision Sampling, Inc. (PSI) of Richmond, California (C57 License Number 636387). PSI constructed well MW-21 in accordance with HCDEH Permit (well and boring) number 27-K (Appendix A) and under the supervision of Geomatrix. USA ticket number 022795 was issued for this work. Norm Crawford of the HCDEH inspected the well on February 13, 2004.

### **2.2.1 Boring**

PSI advanced a 2.5-inch-diameter boring to a total depth of approximately eight feet for the MW-21 well installation using a DA-II limited access drill rig. PSI utilized the Enviro-core™ sampling system to continuously core soil during advancement of the borehole. A Geomatrix geologist screened recovered soil core for organic vapors using an organic vapor meter with a photoionization detector and described the soil using American Society of Testing and Materials Standard D2488-90, based on the Unified Soil Classification System, for guidance. A log of this boring is included in Appendix B.

### **2.2.2 Soil Sampling and Laboratory Methods**

Geomatrix collected samples of soil during continuous core of the boring for monitoring well MW-21. Soil was recovered during the core sampling within plastic tubing; samples were

collected from the tubing by cutting the tubing into approximately six-inch sections and sealing each end of the cut sections with Teflon™ sheets and plastic end caps. Each sample was then labeled, tightly wrapped in a zip-sealed bag and taped, and placed in an ice-chilled cooler for transfer to an analytical laboratory for selected analyses that included the following:

- Chlorinated phenols - Canadian Pulp Method;
- Total organic carbon - U.S. Environmental Protection Agency (EPA) Method 9060;
- pH - EPA Method 9045B; and
- Dioxins and furans - EPA Method 1613.

Samples were delivered under chain-of-custody to Alpha Analytical Laboratories, Inc. of Ukiah, California (Alpha Analytical), a California Department of Health Services-certified analytical laboratory. Samples collected at depths of 1.5, 3.0, 5.0, and 7.0 feet bgs were analyzed by Alpha Analytical for chlorinated phenols, total organic carbon, and pH and the results were reported on a wet-weight basis. Samples collected at depths of 1 and 4.5 feet bgs were transferred under chain-of-custody to Frontier Analytical Laboratory of El Dorado Hills, California (Frontier Analytical), also a California Department of Health Services-certified analytical laboratory, and analyzed for dioxins and furans. Dioxin and furan results are reported on both dry- and wet-weight basis. The dioxin and furan results are a complex mixture of various dioxin/furan congeners, which are generally summarized in terms of their 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) toxicity equivalence (TEQ) based on toxicity equivalency factors adopted by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (Cal-EPA, 2003).

Laboratory analytical reports and chain-of-custody documentation are included in Appendix C. Soil sampling results are discussed in Section 3.

### **2.2.3 Well Construction**

PSI installed monitoring well MW-21 through drive casing advanced for the 2.5-inch-diameter boring described in Section 2.2.1. Well casing and annular materials were placed through the drive casing as it was retracted from the borehole. PSI installed a pre-pack well constructed of ¾-inch-diameter (nominal inner) and 1.5-inch-diameter (nominal outer), schedule 40, PVC casing and 0.01-inch slotted well screen. Filter pack sand (RMC Lonestar Number 2/16) was placed between the inner and outer well screens, during field construction of the pre-pack well, and in the annular space from the bottom of the well to about six inches above the well screen

section, which was set from 2.1 to 8.1 feet bgs. The remaining annular space was filled with a bentonite seal (from 1 to 1.5 feet bgs). The surface completion consisted of a four-inch-square, steel, stand pipe. The four-foot-long, stand pipe was completed three feet above grade with 1 foot placed below grade and encased in concrete. Annular space within the stand pipe was filled with filter pack sand followed by a two-inch cap of concrete to just below the top of the well casing.

### **2.3 DEVELOPMENT OF MONITORING WELLS MW-20 AND MW-21**

Geomatrix developed monitoring well MW-20 on February 12, 2004 and monitoring well MW-21 on February 13, 2004 using a combination of surging and pumping techniques. Monitoring well MW-20 was surged with a 4-inch-diameter, rubber swab, and monitoring well MW-21 was surged with a ½ -inch-diameter, steel fitting. A diaphragm pump and a peristaltic pump were used to remove sediment and pump the well screen intervals at monitoring wells MW-20 and MW-21, respectively.

Pumping across various depths within the well screen interval continued until purged groundwater was visibly clear and water quality parameters stabilized to within 10 percent for specific conductance, 0.08 pH units of pH, and 1 degree Celsius for temperature. A total of approximately 85 gallons (about 30 casing volumes) and 3 gallons (about 43 casing volumes) of groundwater were extracted from monitoring wells MW-20 and MW-21, respectively, during development.

### **2.4 INVESTIGATION-DERIVED WASTE**

Drilling and sampling equipment used during the well installation and soil sampling activities were cleaned prior to use. The equipment was either steam cleaned, or it was washed in a mixture of environmental-grade detergent and municipal water and then rinsed with municipal water.

Waste that resulted from the cleaning procedures and from the sampling and well installation activities, including soil that was generated and purge water from well development (Section 2.3), were placed in 55-gallon, steel drums and labeled. The drums were temporary stored in a secure location at the site pending characterization and disposal at an appropriate off-site, waste-disposal facility.

### **2.5 WELL SURVEY**

Omsberg & Company (Omsberg), a California-licensed land surveyor of Eureka, California, surveyed monitoring wells MW-20 and MW-21 on February 13, 2004. The other 19

monitoring wells at the facility (Table 1 and Figure 3) were resurveyed with these wells to resolve discrepancies with previous survey data. Survey data and a plot of well locations (topographic plat) from Omsberg are included in Appendix D.

Omsberg located the wells relative to regional datum for horizontal (latitude and longitude) and vertical (elevation) control; the horizontal datum was North American Datum of 1983 and the vertical datum was National Geodetic Vertical Datum of 1929. For vertical control, both the top of the north-side of the well casing and the ground surface were surveyed. Survey data is summarized in Table 1 with the well construction details.

### **3.0 SOIL SAMPLING RESULTS**

This section presents results of soil sampling activities. Observations of subsurface conditions (lithology and groundwater occurrence) are discussed relative to previous investigation and well monitoring results, and soil sampling results are presented and discussed.

#### **3.1 SUBSURFACE CONDITIONS**

Subsurface conditions, including lithology and occurrence of groundwater, were similar to previous investigation results (Geomatrix, 2000b). Soil encountered consisted of fine- to medium-sand that has been characterized as being of sand dune origin. Native soil was encountered during the installation of monitoring well MW-21. Soil surrounding monitoring well MW-20 was excavation backfill material obtained from the facility property, as discussed in the Report on Interim Remedial Measures: Source Area Removal (Geomatrix, 2003a), and appears to be consistent with dune sand exposed on the property.

Wet soil was first encountered during monitoring well MW-20 and MW-21 installations at depths of approximately 1.25 feet bgs (2.25 feet below the raised former green chain platform) and approximately 1 foot bgs, respectively. These depths are similar to the depth-to-groundwater that have been measured in the vicinity during groundwater monitoring events (Geomatrix, 2004).

#### **3.2 LABORATORY ANALYTICAL RESULTS**

Laboratory analytical results for soil samples collected during the installation of monitoring well MW-21 (Appendix C) are summarized in Tables 2 and 3. Figure 4 shows investigation samples have been collected in the former green chain area vicinity, and Figure 5 summarizes MW-21 and previous soil sample results.

Table 2 presents results for soil samples collected at depths of 1.5, 3.0, 5.0 and 7.0 feet bgs and analyzed for pH, TOC, and chlorinated phenols. Soil pH in the samples ranged from 6.4 to 6.8, and TOC concentrations ranged from 925 to 1070 milligrams per kilogram (mg/kg; parts per million), with the higher TOC concentrations in the vicinity of 3.0 and 5.0 feet bgs.

Chlorinated phenols were not detected in the soil samples collected from depths of 1.5, 5.0, and 7.0. Pentachlorophenol (PCP) was detected in the 3-foot sample at a concentration of 4.1 mg/kg. As shown on Figure 5, this PCP concentration at this depth is consistent with other soil sampling results for PCP in the vicinity; PCP, if detected, is present at a depth around 3 feet ( $\pm 2$  feet) bgs. PCP has not been detected at depths greater than 5 feet bgs.

Table 3 presents results for soil samples collected at depths of 1.0 and 4.5 feet bgs and analyzed for dioxins and furans. As discussed in Section 2.2.2, dioxin and furan concentrations refer to a complex mixture of various dioxin/furan congeners that are generally summarized in terms of 2,3,7,8-TCDD and based on toxicity equivalency factors. The toxicity equivalence (TEQ) calculated from the soil samples collected at 1.0 and 4.5 feet were 1.32 and 0.006 picograms per gram (pg/g; parts per trillion), respectively, for wet-weight results and 1.54 and 0.007 pg/g, respectively, for dry-weight results. The percent of toxicity equivalence contributed by 2,3,7,8-TCDD for each sample was zero.

Soil sample results were consistent with our current understanding of the distribution of constituents of concern at the former green chain area. The results confirm the presence of low concentrations of PCP and some dioxin/furan congeners. The concentrations of these constituents will be further monitored through groundwater sampling events scheduled for monitoring well MW-21 (Section 4.0).

### **3.3 LABORATORY DATA QUALITY REVIEW**

Geomatrix evaluated data quality using data verification procedures described in the U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (U.S. EPA, 1999) and Inorganic Data Review (U.S. EPA, 2002). A check of laboratory quality assurance and quality control (QA/QC) procedures, such as method blank analyses, surrogate recoveries, and laboratory control spikes and duplicate spikes, were included in the review. Based on our review, the soil sampling results appear to be representative, as qualified below.

The laboratory control spike for chlorinated phenols had zero recovery. The laboratory QA/QC official believes that the spike was not added as the duplicate spike results were within control limits. All other laboratory QA/QC procedures were within acceptable limits.

Some analytical results for dioxin and furan concentrations were flagged by the laboratory for being below (less than) the instrument calibration range. Results for these low concentration congeners should therefore be considered approximate. All other analytical results appear to be accurate. The Geomatrix project manager has reviewed the data, and the soil sampling data are considered representative and complete.

#### **4.0 FUTURE WELL MONITORING AND SAMPLING**

Monitoring wells MW-20 and MW-21, installed to further evaluate chlorinated phenols in groundwater at the SPI facility, will be monitored and sampled and results will be reported on a quarterly frequency in accordance with RWQCB Monitoring and Reporting Program No. R1-203-0127. The first monitoring and sampling event for these wells was performed in March 2004.

## 5.0 REFERENCES

- Cal-EPA, 2003, Adoption of the Revised Toxic Equivalency Factors (TEFWHO-97) for PCDDs, PCDFs, and Dioxin-like PCBs (memorandum), Office of Environmental health hazard Assessment, August 29.
- Geomatrix, 2003a, Report on Interim Remedial Measures: Source Area Removal, Sierra Pacific Industries, Arcata Division Sawmill, 2593 New Navy Base Road, Arcata, California, December 1.
- Geomatrix, 2003b, Final Feasibility Study for Remediation of Wood Surface Protection Chemicals, Arcata Division Sawmill, 2593 New Navy Base Road, Arcata, California, December 1.
- Geomatrix, 2004, Fourth Quarter 2003 Groundwater Monitoring Report, Arcata Division Sawmill, 2593 New Navy Base Road, Arcata, California, January 22.
- U.S. EPA, 1999, Contract Laboratory Program National Functional Guidelines for Organic Data Review (OSWER 9240.1-05A-P PB99-963506, EPA 540/R-99-008; October, 1999).
- U.S. EPA, 2002, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (OSWER 9240.1-35, EPA 540-R-01-008; July, 2002).



# TABLES

---



**TABLE 1**  
**MONITORING WELL CONSTRUCTION DETAILS <sup>1</sup>**

Sierra Pacific Industries  
Arcata Division Sawmill  
Arcata, California

Well No.	Date Installed	Total Boring Depth (ft bgs)	Total Well Depth (ft bgs)	Well Diameter (inches)	Latitude <sup>2</sup>	Longitude <sup>2</sup>	Ground Level Elevation <sup>2</sup> (ft msl)	Top of Casing Elevation <sup>2</sup> (ft msl)	Screened Interval (ft bgs)	Screen Slot Size (inches)	Filter Pack Interval (ft bgs)	Bentonite Seal Interval (ft bgs)	Surface Seal Interval <sup>3</sup> (ft bgs)
<b>Shallow Wells</b>													
MW-1	5-Mar-02	8	8	2	40.8661595	124.1521395	6.77	6.34	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-2	5-Mar-02	9	8	2	40.8661024	124.1525276	7.06	6.26	2.0 – 8.0	0.01	1.5 – 9.0	1.0 – 1.5	0 – 1.0
MW-3	5-Mar-02	8.5	8	2	40.8662689	124.1530739	8.32	7.87	2.0 – 8.0	0.01	1.5 – 8.5	1.0 – 1.5	0 – 1.0
MW-4	5-Mar-02	8	8	2	40.8662303	124.1533599	7.82	7.39	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-5	7-Mar-02	8	8	2	40.8660945	124.1536734	7.91	7.39	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-6	7-Mar-02	8	8	2	40.8660710	124.1531061	6.78	6.48	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-7	7-Mar-02	8	8	2	40.8659980	124.1531187	6.74	6.39	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-8	8-Mar-02	8	8	2	40.8657492	124.1535343	7.20	6.98	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-9	8-Mar-02	8	8	2	40.8657520	124.1532218	7.01	6.56	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-10	11-Nov-02	9.5	8	2	40.8656910	124.1530670	6.73	6.50	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-11	12-Nov-02	8.5	8	2	40.8655740	124.1533817	7.16	6.93	2.0 – 8.0	0.01	1.5 – 8.5	1.0 – 1.5	0 – 1.0
MW-12	12-Nov-02	9.5	8	2	40.8656625	124.1537231	7.66	7.41	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-14	13-Nov-02	8	8	2	40.8657622	124.1523580	6.25	5.80	2.0 – 8.0	0.01	1.5 – 8.0	1.0 – 1.5	0 – 1.0
MW-17	14-Nov-02	9	8	2	40.8656690	124.1526420	6.11	5.81	2.0 – 8.0	0.01	1.5 – 9.0	1.0 – 1.5	0 – 1.0
MW-18	13-Nov-02	9.5	8	4	40.8657448	124.1531649	6.77	6.57	2.0 – 8.0	0.01	1.5 – 9.5	1.0 – 1.5	0 – 1.0
MW-20 <sup>4</sup>	23-Jan-03	8	7	4	40.8658416	124.1532563	7.57	8.52	3.2 – 6.8	0.01	2.0 – 7.0	1.0 – 2.0	0 – 1.0
MW-21	12-Feb-03	8.3	8.3	0.75	40.8660161	124.1530089	6.76	9.54	2.1 – 8.1	0.01	1.5 – 8.3	1.0 – 1.5	0 – 1.0
<b>Deep Wells</b>													
MW-13D	12-Nov-02	21	20	2	40.8660809	124.1525231	6.91	6.61	15.0 – 20.0	0.01	13.5 – 21.0	12.0 – 13.5	0 – 12.0
MW-15D	13-Nov-02	21	20	2	40.8662658	124.1528255	8.24	7.84	15.0 – 20.0	0.01	14.0 – 21.0	12.0 – 14.0	0 – 12.0
MW-16D	14-Nov-02	21.5	20	2	40.8655571	124.1530363	6.78	6.48	15.0 – 20.0	0.01	14.0 – 21.5	12.0 – 14.0	0 – 12.0
MW-19D	14-Nov-02	21.5	20	2	40.8662419	124.1532744	7.86	7.71	15.0 – 20.0	0.01	14.0 – 21.0	12.0 – 14.0	0 – 12.0

Notes:

1. Construction details for wells MW-1 through MW-9 were obtained from *Report on Recent Hydrogeologic Investigations at Sierra-Pacific Industries, Arcata Division Sawmill*, dated April 19, 2002 prepared by Environet Consulting. Construction details for wells MW-10 through MW-19D were obtained from *Results of the Remedial Investigation for Sierra Pacific Industries – Arcata Division Sawmills, Arcata, California*, dated January 30, 2003, prepared by Environet Consulting. Installation of wells MW-20 and MW-21 documented in this report.
2. Monitoring wells surveyed by Omsberg Suveyors and Company of Eureka California on February 13, 2003; latitude and longitude surveyed relative to North American Datum (NAD) of 1983 and elevations surveyed relative to National Geodetic Vertical Datum (NGVD) of 1929.
3. Surface seal interval consists of the concrete surface completion and a neat cement sanitary seal, if applicable.
4. Well installed on a raised concrete pad of the former green chain. Depth measurements (ft bgs) relative to local ground surface of the concrete pad, which is approximately 1 foot above ground surface of the surrounding grade.

Abbreviations:

ft bgs = feet below ground surface  
ft msl = feet mean sea level

**TABLE 2**  
**SOIL SAMPLE ANALYTICAL RESULTS FOR**  
**pH, TOC, AND CHLORINATED PHENOLS<sup>1</sup>**

Sierra Pacific Industries  
 Arcata Division Sawmill  
 Arcata, California

Sample ID	Date Sampled	Depth (ft bgs)	pH	TOC (mg/kg)	2,4,6-TCP (mg/kg)	2,3,5,6-TCP (mg/kg)	2,3,4,6-TCP (mg/kg)	2,3,4,5-TCP (mg/kg)	PCP (mg/kg)
MW-21-1.5	12-Feb-04	1.5	6.7	925	<1.0	<1.0	<1.0	<1.0	<1.0
MW-21-3.0	12-Feb-04	3.0	6.7	1070	<1.0	<1.0	<1.0	<1.0	4.1
MW-21-5.0	12-Feb-04	5.0	6.8	1040	<1.0	<1.0	<1.0	<1.0	<1.0
MW-21-7.0	12-Feb-04	7.0	6.4	976	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:

1. Alpha Analytical analyzed samples for TOC using EPA Method 9060; for pH using EPA Method 9045B; and for chlorinated phenols by the Canadian Pulp Method (results for chlorinated phenol data reported in wet-weight format).

Abbreviations:

TOC = total organic carbon

2,4,6-TCP = 2,4,6-tetrachlorophenol

2,3,5,6-TCP = 2,3,5,6-tetrachlorophenol

2,3,4,6-TCP = 2,3,4,6-tetrachlorophenol

2,3,4,5-TCP = 2,3,4,5-tetrachlorophenol

PCP = pentachlorophenol

< = Target analyte was not detected at or above the laboratory reporting limit shown.

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram (parts per million)

**TABLE 3**  
**SOIL SAMPLE ANALYTICAL RESULTS FOR**  
**DIOXINS AND FURANS<sup>1</sup>**  
Sierra Pacific Industries  
Arcata Division Sawmill  
Arcata, California

*Concentrations in picograms per gram (pg/g).*

SAMPLE ID	BORING ID	SAMPLE DEPTH (feet bgs)	SAMPLE DATE	LITHOLOGY	2, 3, 7, 8-TCDD	1, 2, 3, 7, 8-PeCDD	1, 2, 3, 4, 7, 8-HxCDD	1, 2, 3, 6, 7, 8-HxCDD	1, 2, 3, 7, 8, 9-HxCDD	1, 2, 3, 4, 6, 7, 8-HpCDD	OCDD	Total Dioxins	2, 3, 7, 8-TCDF	1, 2, 3, 7, 8-PeCDF	2, 3, 4, 7, 8-PeCDF	1, 2, 3, 4, 7, 8-HxCDF	1, 2, 3, 6, 7, 8-HxCDF	2, 3, 4, 6, 7, 8-HxCDF	1, 2, 3, 7, 8, 9-HpCDF	1, 2, 3, 4, 6, 7, 8-HpCDF	OCDF	Total Furans	TOTAL TEQ <sup>2,3</sup>	PERCENT 2,3,7,8-TCDD <sup>4</sup>	
<b>Dry-Weight Results</b>																									
MW-21-1.0	MW-21	1.0	12-Apr-04	sand	<0.132	<0.197	<0.358	1.67 J	0.534 J	83.0	2640	384	<0.0597	<0.387	<0.381	0.289 J	<0.145	0.456 J	<0.103	13.3	0.959 J	54.0	70.2	1.54	0
MW-21-4.5	MW-21	4.5	12-Apr-04	sand	<0.118	<0.135	<0.226	<0.237	<0.212	00.710 J	2.44 J	1.31 J	<0.0538	<0.173	<0.177	<0.0561	<0.0695	<0.0871	<0.0959	<0.0878	<0.0922	<0.409	0.146 J	0.00734	0
<b>Wet-Weight Results</b>																									
MW-21-1.0	MW-21	1.0	12-Apr-04	sand	<0.114	<0.170	<0.308	1.43 J	0.460 J	71.4	2270	331	<0.0513	<0.333	<0.328	0.248 J	<0.124	0.392 J	<0.0890	11.5	0.826 J	46.5	60.5	1.32	0
MW-21-4.5	MW-21	4.5	12-Apr-04	sand	<0.0989	<0.113	<0.189	<0.199	<0.178	0.595 J	2.05 J	1.10 J	<0.0451	<0.145	<0.148	<0.0470	<0.0582	<0.0730	<0.0803	<0.0735	<0.0772	<0.342	0.122 J	0.00615	0
				TEF <sup>5</sup> :	1	1	0.1	0.1	0.1	0.01	0.0001	--	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.0001	--	--	--

Notes:

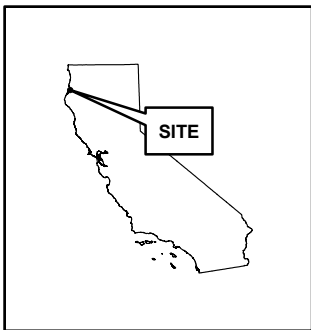
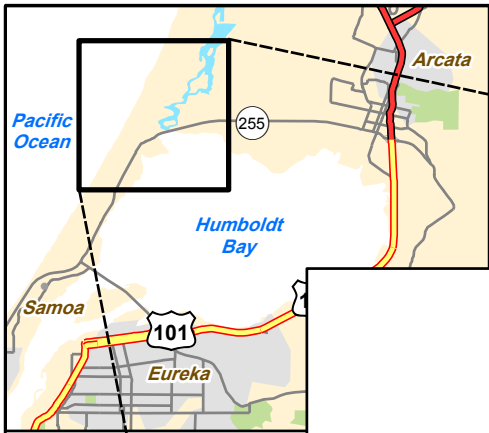
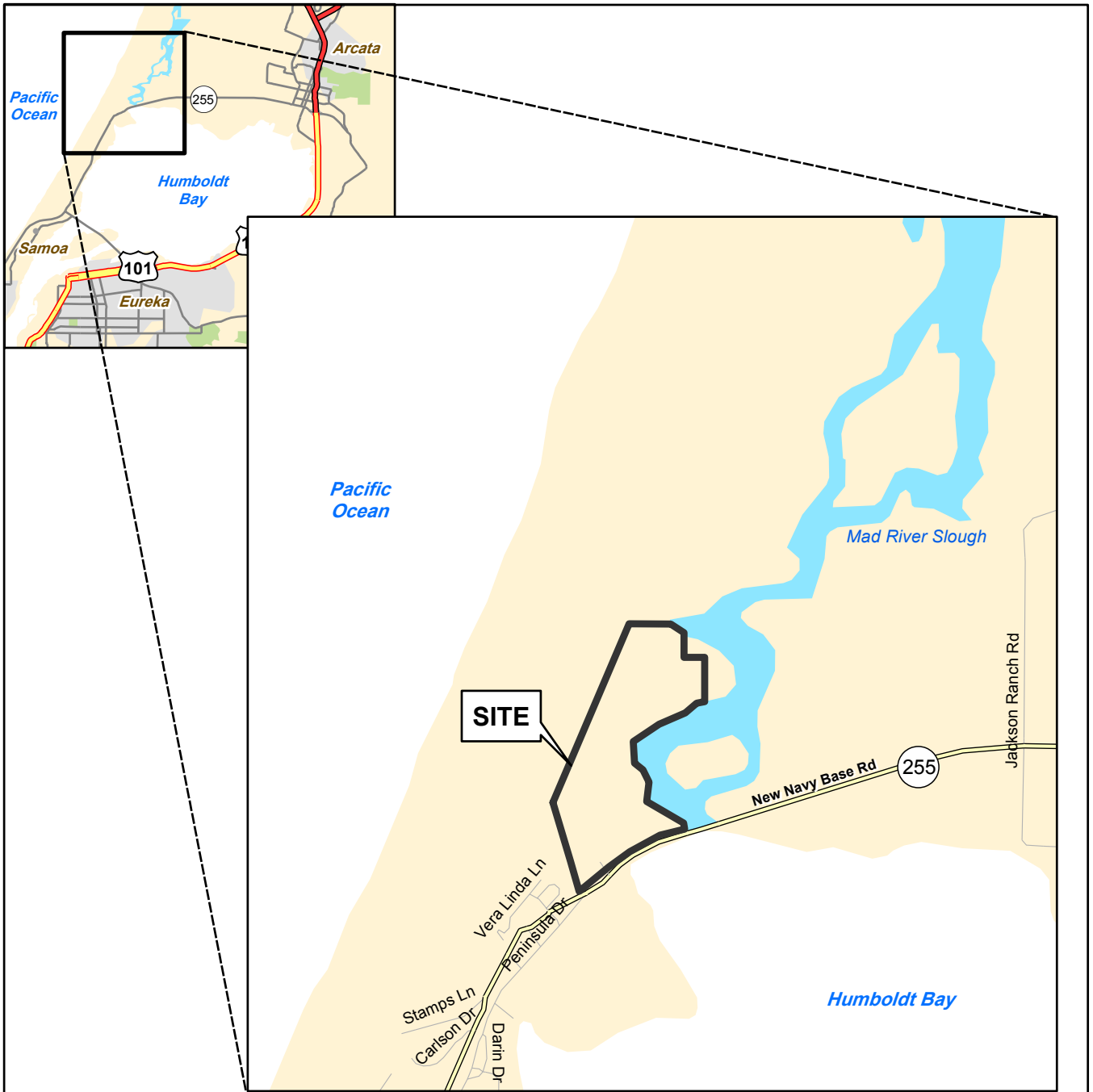
1. Frontier Analytical Laboratory analyzed samples for dioxins and furans using EPA Method 1613.
2. Calculated as the sum of congener concentrations after each has been multiplied by its TEF.
3. Concentrations not detected above the laboratory reporting limit were assigned a concentration of 0 pg/g to calculate TEQ.
4. Calculated by dividing the concentration of 2,3,7,8-TCDD by the Total TEQ (multiplied by 100). When the concentration of 2,3,7,8-TCDD was not detected, it was assigned a concentration of 0 pg/g for this calculation.
5. Toxicity equivalency factor (unitless) from the World Health Organization, 1997 (WHO-97), adopted from F.X.R. van Leeuwen, 1997.

Abbreviations:

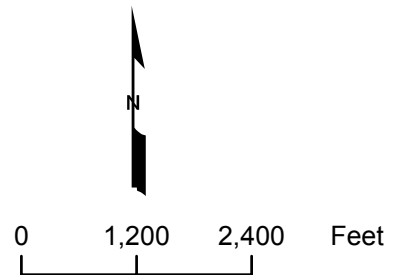
TCDD = tetrachlorodibenzo-p-dioxin  
PeCDD = pentachlorodibenzo-p-dioxin  
HxCDD = hexachlorodibenzo-p-dioxin  
HpCDD = heptachlorodibenzo-p-dioxin  
OCDD = octachlorodibenzo-p-dioxin  
TCDF = tetrachlorodibenzofuran  
PeCDF = pentachlorodibenzofuran  
HxCDF = hexachlorodibenzofuran  
HpCDF = heptachlorodibenzofuran  
OCDF = octachlorodibenzofuran  
TEQ = toxicity equivalence  
TEF = toxicity equivalency factor (unitless)  
EPA = U.S. Environmental Protection Agency  
bgs = below ground surface  
pg/g = picograms per gram  
-- = not applicable  
< = target analyte was not detected at or above the laboratory reporting limit shown  
J = concentration detected was below the calibration range

# **FIGURES**

---



California



S:\9300\9329\task\_05\04\_0311\_mwr\fig\_01.mxd



SITE LOCATION MAP  
Sierra Pacific Industries  
Arcata Division Sawmill  
Arcata, California

Project No.  
9329

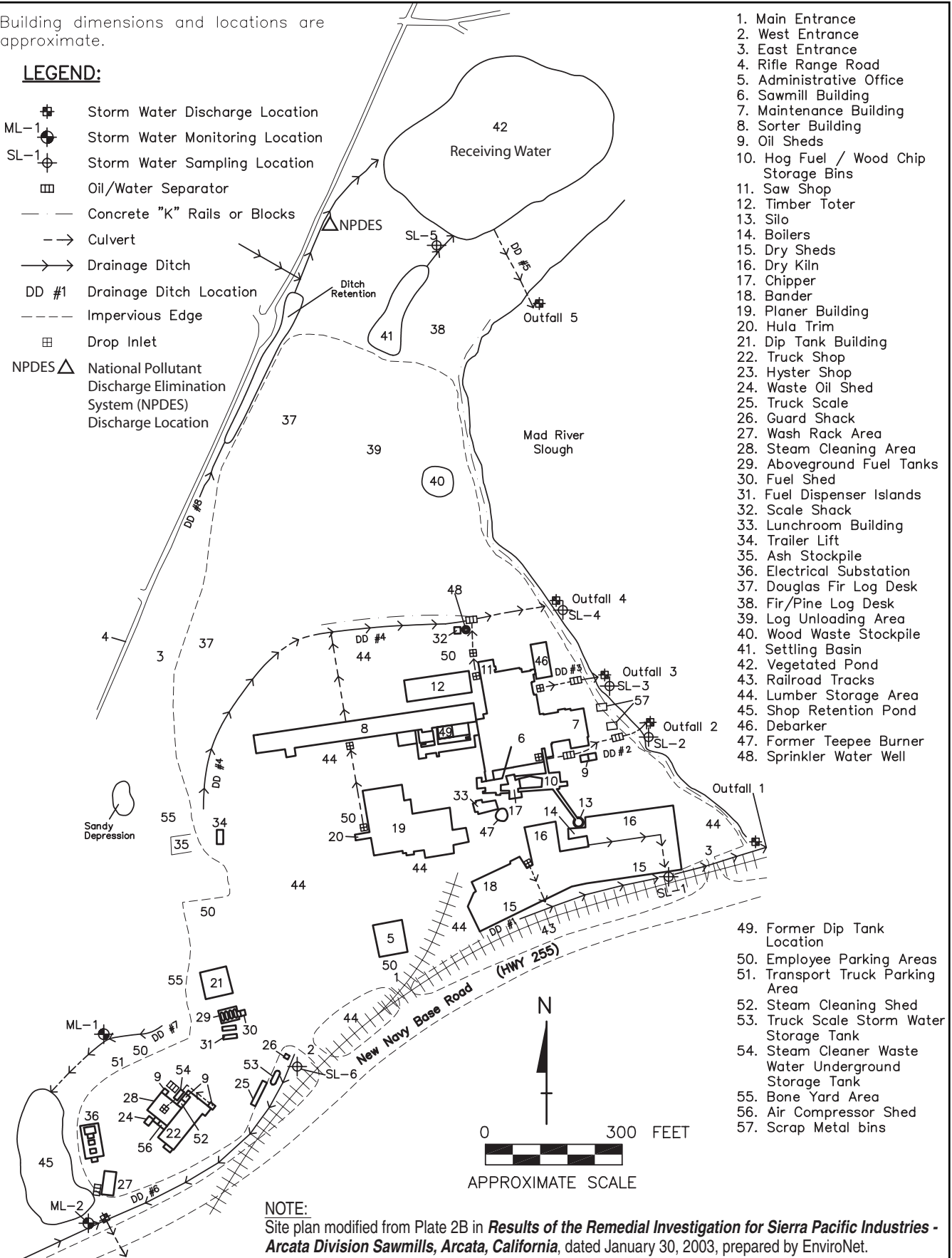
Figure No.  
**1**

Building dimensions and locations are approximate.

**LEGEND:**

- ⊕ Storm Water Discharge Location
- ML-1 ⊕ Storm Water Monitoring Location
- SL-1 ⊕ Storm Water Sampling Location
- ▣ Oil/Water Separator
- Concrete "K" Rails or Blocks
- - -> Culvert
- Drainage Ditch
- DD #1 Drainage Ditch Location
- - - Impervious Edge
- ⊕ Drop Inlet
- NPDES Δ National Pollutant Discharge Elimination System (NPDES) Discharge Location

1. Main Entrance
2. West Entrance
3. East Entrance
4. Rifle Range Road
5. Administrative Office
6. Sawmill Building
7. Maintenance Building
8. Sorter Building
9. Oil Sheds
10. Hog Fuel / Wood Chip Storage Bins
11. Saw Shop
12. Timber Toter
13. Silo
14. Boilers
15. Dry Sheds
16. Dry Kiln
17. Chipper
18. Bander
19. Planer Building
20. Hula Trim
21. Dip Tank Building
22. Truck Shop
23. Hyster Shop
24. Waste Oil Shed
25. Truck Scale
26. Guard Shack
27. Wash Rack Area
28. Steam Cleaning Area
29. Aboveground Fuel Tanks
30. Fuel Shed
31. Fuel Dispenser Islands
32. Scale Shack
33. Lunchroom Building
34. Trailer Lift
35. Ash Stockpile
36. Electrical Substation
37. Douglas Fir Log Desk
38. Fir/Pine Log Desk
39. Log Unloading Area
40. Wood Waste Stockpile
41. Settling Basin
42. Vegetated Pond
43. Railroad Tracks
44. Lumber Storage Area
45. Shop Retention Pond
46. Debarker
47. Former Teepee Burner
48. Sprinkler Water Well

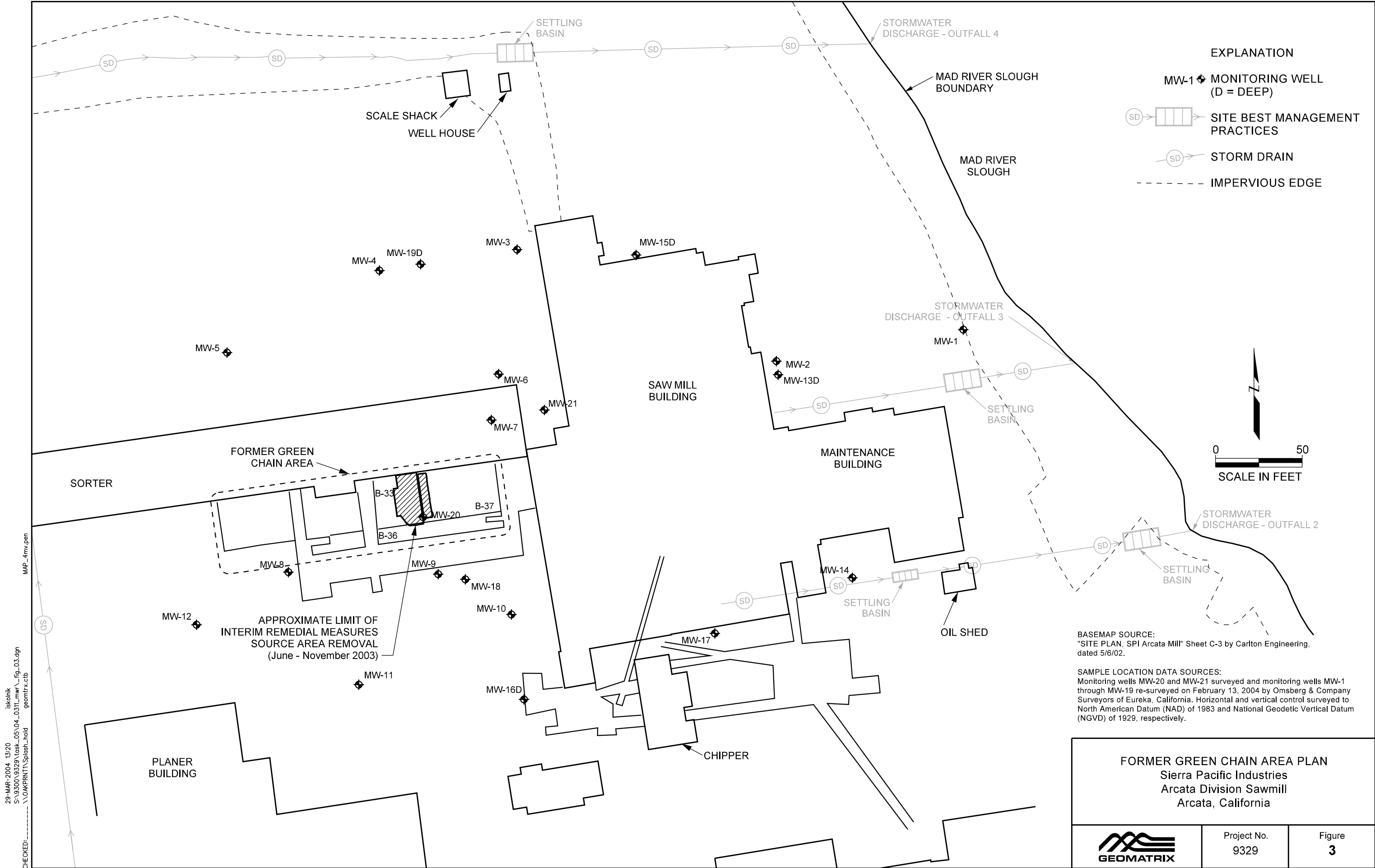


S:\9329\9329\task\_05\04\_0311\_mwr\_fig\_02.ai

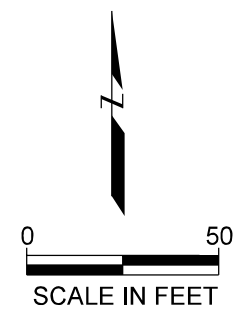


**SITE PLAN**  
 Sierra Pacific Industries  
 Arcata Division Sawmill  
 Arcata, California

Project No. 9329
Figure <b>2</b>



- EXPLANATION**
- MW-1 ◆ MONITORING WELL (D = DEEP)
  - SD → [ ] SITE BEST MANAGEMENT PRACTICES
  - SD → [ ] STORM DRAIN
  - - - - IMPERVIOUS EDGE

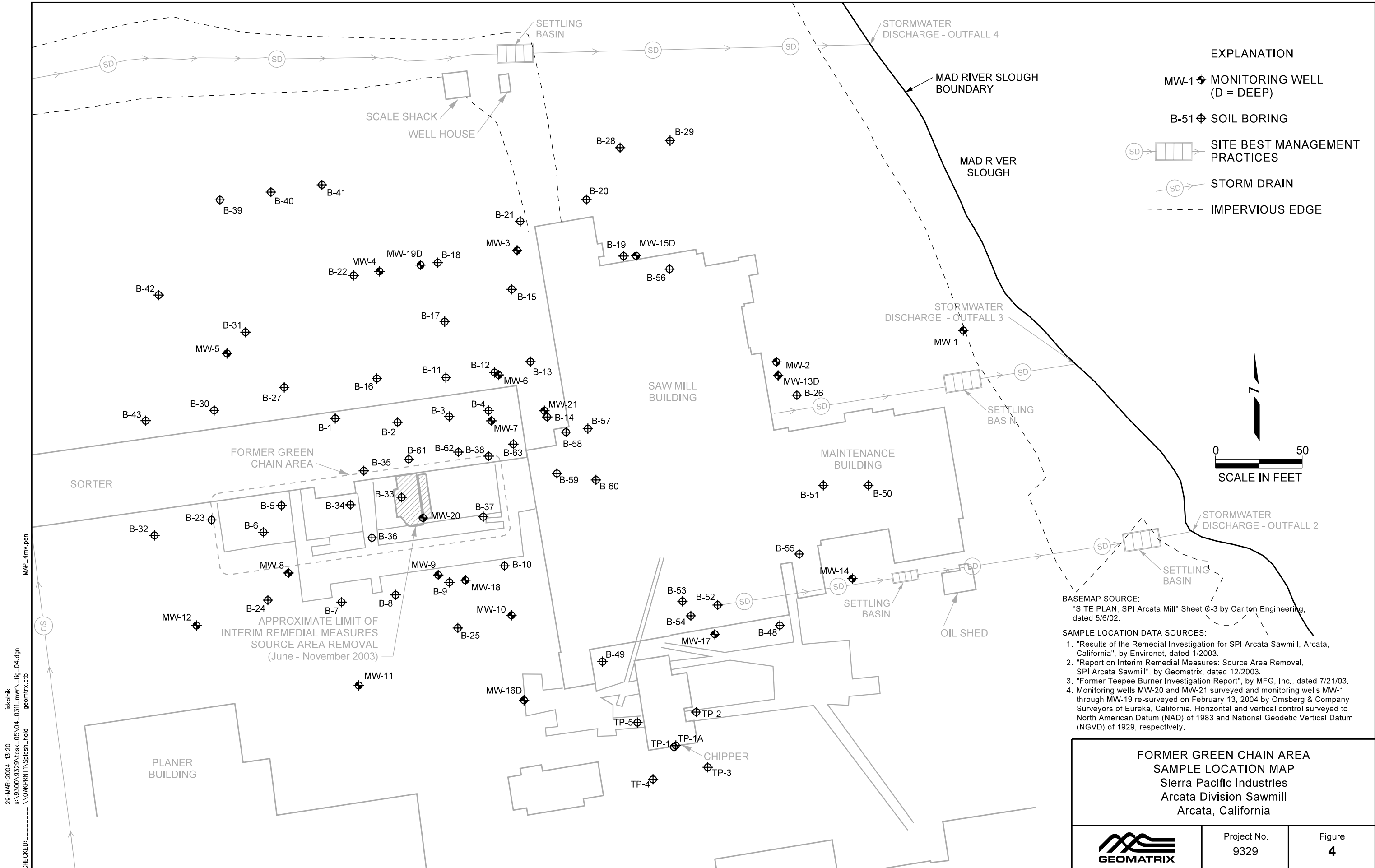


BASEMAP SOURCE:  
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

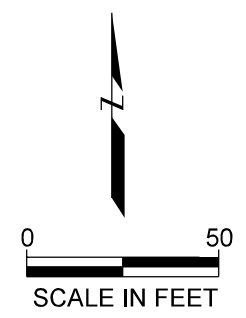
SAMPLE LOCATION DATA SOURCES:  
Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

<b>FORMER GREEN CHAIN AREA PLAN</b> Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
	Project No. 9329	Figure <b>3</b>

29-MAR-2004 13:20 iskonik  
 S:\9300\9329\task\_05\04\_0311\_mwr\_fig\_03.dgn  
 CHECKED: \\OAMPRT1\Splash\_hold geomtrix.ctb



- EXPLANATION**
- MW-1  $\oplus$  MONITORING WELL (D = DEEP)
  - B-51  $\oplus$  SOIL BORING
  - SD  $\rightarrow$  SITE BEST MANAGEMENT PRACTICES
  - SD  $\rightarrow$  STORM DRAIN
  - - - IMPERVIOUS EDGE



BASEMAP SOURCE:  
"SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

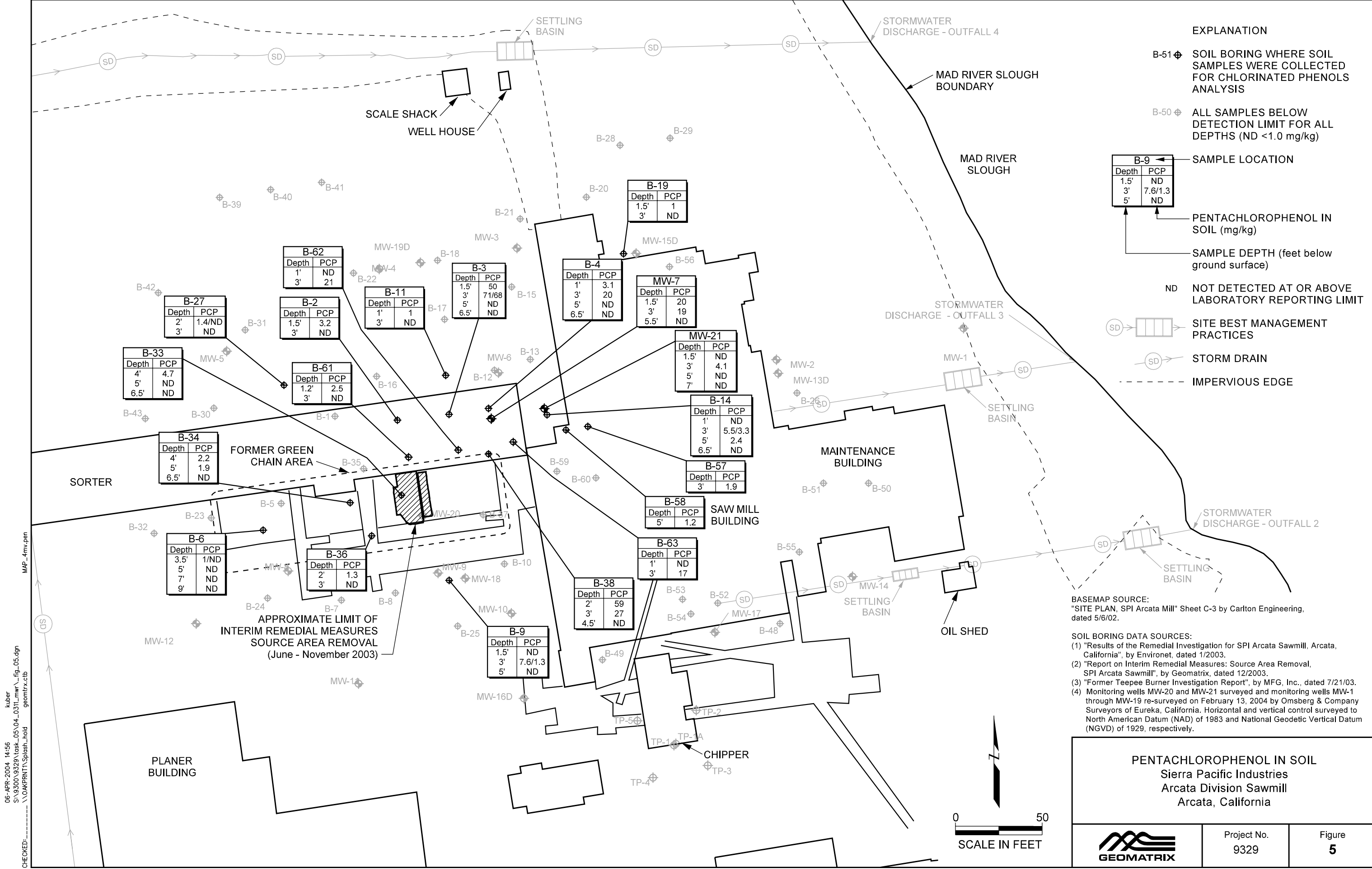
SAMPLE LOCATION DATA SOURCES:

1. "Results of the Remedial Investigation for SPI Arcata Sawmill, Arcata, California", by Environet, dated 1/2003.
2. "Report on Interim Remedial Measures: Source Area Removal, SPI Arcata Sawmill", by Geomatrix, dated 12/2003.
3. "Former Teepee Burner Investigation Report", by MFG, Inc., dated 7/21/03.
4. Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

<b>FORMER GREEN CHAIN AREA SAMPLE LOCATION MAP</b> Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
	Project No. 9329	Figure <b>4</b>

29-MAR-2004 13:20 iskolnik  
 s:\9300\9329\task\_05\04\_0311\_mw\_fig\_04.dgn  
 CHECKED: \OAKPRIT\Splash\_hold geomtrx.ctb MAP\_4.mv.pen






- EXPLANATION**
- B-51 ⊕ SOIL BORING WHERE SOIL SAMPLES WERE COLLECTED FOR CHLORINATED PHENOLS ANALYSIS
  - B-50 ⊕ ALL SAMPLES BELOW DETECTION LIMIT FOR ALL DEPTHS (ND <1.0 mg/kg)
- | B-9   |         | SAMPLE LOCATION |         |
|-------|---------|-----------------|---------|
| Depth | PCP     | Depth           | PCP     |
| 1.5'  | ND      | 1.5'            | ND      |
| 3'    | 7.6/1.3 | 3'              | 7.6/1.3 |
| 5'    | ND      | 5'              | ND      |
- ND NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
  - SD ⊕ SITE BEST MANAGEMENT PRACTICES
  - SD ⊕ STORM DRAIN
  - IMPERVIOUS EDGE

**BASEMAP SOURCE:**  
 "SITE PLAN, SPI Arcata Mill" Sheet C-3 by Carlton Engineering, dated 5/6/02.

**SOIL BORING DATA SOURCES:**

- (1) "Results of the Remedial Investigation for SPI Arcata Sawmill, Arcata, California", by Environet, dated 1/2003.
- (2) "Report on Interim Remedial Measures: Source Area Removal, SPI Arcata Sawmill", by Geomatrix, dated 12/2003.
- (3) "Former Teepee Burner Investigation Report", by MFG, Inc., dated 7/21/03.
- (4) Monitoring wells MW-20 and MW-21 surveyed and monitoring wells MW-1 through MW-19 re-surveyed on February 13, 2004 by Omsberg & Company Surveyors of Eureka, California. Horizontal and vertical control surveyed to North American Datum (NAD) of 1983 and National Geodetic Vertical Datum (NGVD) of 1929, respectively.

<b>PENTACHLOROPHENOL IN SOIL</b> Sierra Pacific Industries Arcata Division Sawmill Arcata, California		
 <b>GEOMATRIX</b>	Project No. 9329	Figure <b>5</b>



06-APR-2004 14:56 Kuber  
 S:\9300\9329\Task\_05\04\_0311\_mwr\_fig\_05.dgn  
 \\\AKPRNT1\Splash\_hold geomtrr.cib  
 CHECKED:



## **APPENDIX A**

---

# **Permits – Humboldt County Division of Environmental Health**

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

Facility ID # 1 NHU 526 Permit # 27-J

Facility Name: Sierra Pacific Industries, Arcata Sawmill Division  
 Site Address: 2593 New Navy Base Road, Arcata, CA  
 Site Owner: Sierra Pacific Industries Telephone: 530-378-8000  
 Address: P.O. Box 496028 Redding, CA 96049-6028 AP#: \_\_\_\_\_  
 RP Name: Sierra Pacific Industries - Bob Ehery Telephone: 530-378-8000  
 Address: P.O. Box 496028 Redding, CA 96049-6028  
 Consultant: Geomatrix Consultants, Inc. - Ross Steenson Telephone: (510) 663-4107  
 Address: 2101 Webster Street, 12th Floor Oakland, CA 94612 Reg.#/Type: \_\_\_\_\_  
 Driller: Fisch Environmental Exploration Services Telephone: 209-772-3570  
 Address: 399 Sheris Place, Valley Springs, CA 95252 C-57 Lic.#: \_\_\_\_\_

# On-site		# Off-site	
Wells	Borings	Wells	Borings
1			

Activity:  Construct  Destroy  Repair/Modify Electrode Type: \_\_\_\_\_

Well Type:  Monitoring Well  Injection Well  Vapor Extraction  Geologic Boring  
 Extraction Well  Piezometer  Vapor Point  Soil Gas Survey  
 Vadose Well  Cathodic Protection  Direct Push Boring  Temporary Well Point

Investigation Type:  Site Assessment  Disposal Practice  UST  Other\*  
 Surface Contamination  Surface Impoundment  AST  
 \*Specify: \_\_\_\_\_

Investigation Phase:  Initial  Subsequent  Remediation  Closure

Suspected Contaminants: Chlorinated Phenols, Dioxins/Furans

Disposal/Containment for Soil Cuttings: Asbury/DOT - 55 gallon drums

Disposal/Containment for Rinseate: Asbury/DOT - 55 gallon drums

Disposal/Containment for Development Water: Asbury/DOT - 55 gallon drums

Permits will not be processed with out the following information:

- Scaled Construction Detail
- Detailed Site Plan
- Lead Agency Approval Letter
- Off Site Well Requirements:
  - Legal Right of Entry
  - Off Site Address/Location
  - Encroachment Permit
  - Coastal Zone Permit
- Appropriate Fees
- Copy of Workplan (if not on file at HCDEH)

Proposed Work Date: Week of October 29th, 2003

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

2

Facility ID # 1N HU 526 Permit # 27-J

I hereby agree to comply with all laws, ordinances and regulations of the county of Humboldt and State of California pertaining to water well construction. I will contact the Humboldt County Hazardous Materials Unit at (707) 445-6215 five (5) working days prior to commencing this work. I will furnish to the County of Humboldt, Division of Environmental Health, and the owner a legible copy of the State Water Well Completion Report (form DWR 188) within fifteen (15) days after completion of work to obtain final approval of the well(s). I acknowledge that the application will become a permit ONLY after site approval by the Local Implementing Agency (HCDEH, NCRWQCB, DTSC, EPA). I understand this permit is not transferable and expires one hundred twenty (120) days from the date of issuance.

Certificates of Insurance:

- A currently effective General Liability Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.
- A currently effective Worker's Compensation Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.

[Signature]  
Signature of Well Driller - no proxies - original signature only in blue ink

10/13/03  
Date

- Well identification number and type must be affixed to exterior surface of security structure.
- The applicant is responsible for notifying Underground Services Alert at least 48 hours prior to the scheduled work date.
- A State of California Department of Water resources Well Completion Report (Form DWR 1-88) must be filed within 15 days of completion of work for all well completions and destructions.
- A licensed California C-57 Well Driller is required for all wells and direct push work.

**FOR OFFICE USE ONLY**

Permit Approval: Norman Crawford Date: 10/23/2003

Fee: \$ 220<sup>00</sup> Date: 10/23/2003 Receipt: 219585

Initial Inspection: \_\_\_\_\_ Date: \_\_\_\_\_

Final Inspection: \_\_\_\_\_ Date: \_\_\_\_\_

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

Facility ID # 1NHU526 Permit # 27-K

Facility Name: SIERRA PACIFIC INDUSTRIES, ARCATA DIVISION SAWMILL

Site Address: 2593 NEW NAVY BASE ROAD, ARCATA, CALIFORNIA

Site Owner: (SAME AS ABOVE) CONTACT BOB ELLERY Telephone: (530) 378-8174  
Address: \_\_\_\_\_ AP#: \_\_\_\_\_

RP Name: (SAME AS ABOVE) Telephone: \_\_\_\_\_  
Address: \_\_\_\_\_

Consultant: GEOMATRIX CONSULTANTS, INC. Telephone: (510) 663-4100  
Address: 2101 WEBSTER ST, 12<sup>TH</sup> FLOOR OAKLAND, CA 94612 Reg.#/Type: C.HG. 710

Driller: PRECISION SAMPLING, INC. Telephone: (510) 237-4575  
Address: 1400 SOUTH 50<sup>TH</sup> STREET C-57 Lic.#: 636387

# On-site		# Offsite	
Wells	Borings	Wells	Borings
<u>1</u>	_____	_____	_____

Activity:  Construct  Destroy  Repair/Modify Electrode Type: \_\_\_\_\_

Well Type:  Monitoring Well  Injection Well  Vapor Extraction  Geologic Boring  
 Extraction Well  Piezometer  Vapor Point  Soil Gas Survey  
 Vadose Well  Cathodic Protection  Direct Push Boring  Temporary Well Point

Investigation Type:  Site Assessment  Disposal Practice  UST  Other\*  
 Surface Contamination  Surface Impoundment  AST

\*Specify: SAW MILL FACILITY

Investigation Phase:  Initial  Subsequent  Remediation  Closure

Suspected Contaminants: PENTACHLOROPHENOL & TETRACHLOROPHENOL

Disposal/Containment for Soil Cuttings: 55-GALLON DRUM FOR TEMPORARY STORAGE/DISPOSAL

Disposal/Containment for Rinsate: \_\_\_\_\_

Disposal/Containment for Development Water: \_\_\_\_\_

Permits will not be processed with out the following information:

- Scaled Construction Detail
- Detailed Site Plan
- Lead Agency Approval Letter (ATTACHED EMAIL CORRESPONDENCE)
- Off Site Well Requirements:
  - Legal Right of Entry
  - Off Site Address/Location
  - Encroachment Permit
  - Coastal Zone Permit
- Appropriate Fees
- Copy of Workplan (if not on file at HCDEH)
- Proposed Work Date: FEBRUARY 12, 2004

→ ANTICIPATED TO BE SIMILAR TO OTHER SHALLOW WELLS (SEE EXAMPLE ATTACHED)  
REV. 6/98


HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

Facility ID # 1NHV526 Permit # 27-K

I hereby agree to comply with all laws, ordinances and regulations of the county of Humboldt and State of California pertaining to water well construction. I will contact the Humboldt County Hazardous Materials Unit at (707) 445-6215 five (5) working days prior to commencing this work. I will furnish to the County of Humboldt, Division of Environmental Health, and the owner a legible copy of the State Water Well Completion Report (form DWR 188) within fifteen (15) days after completion of work to obtain final approval of the well(s). I acknowledge that the application will become a permit ONLY after site approval by the Local Implementing Agency (HCDEH, NCRWQCB, DTSC, EPA). I understand this permit is not transferable and expires one hundred twenty (120) days from the date of issuance.

**Certificates of Insurance:**

- A currently effective General Liability Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.
- A currently effective Worker's Compensation Certificate of Insurance is on file with this office, endorsed to include the Humboldt County Division of Environmental Health as additional named insured.

 2/2/04  
Signature of Well Driller - no proxies - original signature only in blue ink Date

- Well identification number and type must be affixed to exterior surface of security structure.
- The applicant is responsible for notifying Underground Services Alert at least 48 hours prior to the scheduled work date.
- A State of California Department of Water resources Well Completion Report (Form DWR 1-88) must be filed within 15 days of completion of work for all well completions and destructions.
- A licensed California C-57 Well Driller is required for all wells and direct push work.

**FOR OFFICE USE ONLY**

Permit Approval: Norman Crawford Date: 2/10/2004

Fee: \$240<sup>00</sup> Date: 2/10/2004 Receipt: 219118

Initial Inspection: \_\_\_\_\_ Date: \_\_\_\_\_

Final Inspection: \_\_\_\_\_ Date: \_\_\_\_\_



## **APPENDIX B**

---

# **Boring Logs, Well Construction Details, and Well Development Records**

PROJECT: PROJECT NAME Project Location More Project Location		<b>Boring Log Explanation</b>	
BORING LOCATION:		ELEVATION AND DATUM:	
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH:	MEASURING POINT:
DRILLING EQUIPMENT:		DEPTH TO WATER:	FIRST                      COMPL.
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES				OVM Reading (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample	Blows/ Foot			NAME (USCS Symbol): color, moist, % by weight., plast., consistency, structure, cementation, react. w/HCl. geo. inter.	
Surface Elevation							
Notes							
					<ol style="list-style-type: none"> <li>1. Soil descriptions are based on the Unified Soil Classification System (USCS). ASTM D2488-90 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" used for guidance to describe soils and provide USCS Names and Symbols.</li> <li>2. Soil color described according to Munsell Color Chart.</li> <li>3. Dashed lines separating soil strata represent inferred boundaries between sampled intervals that may be abrupt or gradual transitions. Solid lines represent approximate boundaries observed within sample intervals.</li> <li>4. OVM = organic vapor meter, reading in parts per million.</li> <li>5. Odor, if noted, is subjective and not necessarily indicative of specific compounds or concentrations</li> </ol>		
					Interval of recovered soil core collected with split-barrel		
					Interval of recovered soil core collected with split-spoon		
					Interval of no recovery		
	B1-4				Sample collected for chemical analysis and sample identification		

B-1 (3/97)

Project No. #	<b>Geomatrix Consultants</b>	Figure #
---------------	------------------------------	----------

DrawingNo.



PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California		<b>Log of Well No. MW-20</b>	
BORING LOCATION: N: 40.8658416; E: 124.1532563 (NAD 1983)		TOP OF CASING ELEVATION AND DATUM: 8.52' MSL (NGVD 1929)	
DRILLING CONTRACTOR: Fisch Environmental Exploration Services		DATE STARTED: 1/23/04	DATE FINISHED: 1/23/04
DRILLING METHOD: NA*		TOTAL DEPTH (ft.): 8.0	SCREEN INTERVAL (ft.): 3.2-6.8
DRILLING EQUIPMENT: NA*		DEPTH TO WATER (ft.): 2.25	COMPL. NA CASING: 4" Sch. 40 PVC
SAMPLING METHOD: NA		LOGGED BY: B. Thompson	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: B. Thompson	REG. NO. C.HG. 710

DEPTH (feet)	SAMPLES				OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.  Surface Elevation: 7.57' MSL (NGVD 1929)**	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample	Blows/ Foot				
1						CONCRETE(to be paved) POORLY GRADED SAND (SP): light olive gray (5Y 6/2), moist, 95% fine to medium sand, 5% nonplastic fines [FILL; EXCAVATION BACKFILL]	
2					wet		
3							
4							
5							
6							
7							
8						Bottom of former excavation approximately 8.0 feet	
9							
10							
11							
12							
13							
14							
15							

\* Well installed within 12" diameter Schedule 40 PVC pipe that was placed within excavation prior to backfill. Pipe removed during the well installation.

\*\* Ground surface elevation at top of concrete pad, approximately 1 foot above ground surface of surrounding grade.

PROJECT: SIERRA PACIFIC INDUSTRIES Arcata, California		<b>Log of Well No. MW-21</b>	
BORING LOCATION: N: 40.8660161; E: 124.1530089 (NAD 1983)		TOP OF CASING ELEVATION AND DATUM: 9.54' MSL (NGVD 1929)	
DRILLING CONTRACTOR: Precision Sampling Incorporated		DATE STARTED: 2/12/04	DATE FINISHED: 2/12/04
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 8.0	SCREEN INTERVAL (ft.): 2.1-8.1
DRILLING EQUIPMENT: DA-II		DEPTH TO WATER (ft.): 1.0	COMPL. NA
SAMPLING METHOD: Enviro-core sampling system [4' x 1.5"]		LOGGED BY: B. Thompson	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: B. Thompson	REG. NO. C.HG. 710

DEPTH (feet)	SAMPLES			OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.  Surface Elevation: 6.76' MSL (NGVD 1929)	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
	Sample No.	Sample	Blows/Foot			
1	MW-21-1.0	█			CONCRETE	<p>Stove pipe well box Concrete Bentonite chip seal #2/16 filter pack sand 0.75" diameter Schedule 40 PVC casing Prepack well screen. 1.5" diameter outer &amp; 0.75" diameter inner Schedule 40 PVC, 0.010" slot 2.25" diameter borehole Schedule 40 PVC endcap</p> <p>OVM = Thermo Environmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.</p>
2	MW-21-1.5	█			POORLY GRADED SAND (SP): dark greenish gray (10Y 4/1 to 5GY 4/1), wet, 95% fine to medium sand, 5% nonplastic fines	
3	MW-21-3.0	█		0		
4	MW-21-4.5	█				
5	MW-21-5.0	█		0		
6		█				
7	MW-21-7.0	█		0		
8		█			Bottom of boring at 8.0 feet	
9						
10						
11						
12						
13						
14						
15						

OAKWELLV\_PPACTOC(5/03)



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: <u>MW-20</u>	Initial Depth to Water: <u>2.23' (TOC)</u>
Sample ID: <u>NA</u> Duplicate ID: <u>NA</u>	Depth to Water after Sampling: _____
Sample Depth: <u>NA</u>	Total Depth to Well: <u>6.63' (TOC)</u>
Project and Task No.: <u>922502 - HSL 5</u>	Well Diameter: <u>4"</u>
Project Name: <u>SPI</u>	1 Casing/Borehole Volume: <u>2.87</u> (Circle one)
Date: <u>2/12/04</u>	<sup>10</sup> Casing/Borehole Volumes: <u>28.7</u> (Circle one)
Sampled By: <u>B. Thompson</u>	Total Casing/Borehole Volumes Removed: <u>85 gallons</u>
Method of Purging: <u>DIAPHRAGM PUMP</u>	
Method of Sampling: <u>NA</u>	

Time	Depth	Sample	Initial	Final	Flow	NTU	Notes
14:46							MEASURE T.D. + D.T.W
14:49							START SURGING WELL *
15:07							STOP SURGING WELL
15:30	7'	NA	INITIAL	14.1	6.51	405	LT. GRAY CLOUD MED. NTU
15:56	7'	NA	5.0	12.3	7.00	431	" "
16:02	7'	NA	12.0	12.0	6.97	377	" "
16:09	3' to 5'	NA	25.0	12.0	7.08	379	" "
16:23	3' to 7'	NA	45.0	12.0	6.89	392	PALL GRAY CLOUD MED. NTU
16:54	3' to 7'	NA	65.0	11.8	7.04	398	SLIGHTLY CLOUDY, LOW NTU
17:24	7'	NA	85.0	11.8	6.96	398	VISIBLY CLEAR

pH MEASUREMENT CALIBRATION				Model or Unit No.: # 1
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C		1		
Instrument Reading		6.92	10.04	

ELECTRICAL CONDUCTIVITY CALIBRATION			Model or Unit No.: # 1
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C	
Field Temperature °C			
Instrument Reading	1411		

TURBIDITY CALIBRATION			Notes: * 4" BITING THROUGH SCREEN DIP ACROSS WELL SCREEN ** TURBIDITY METER NOT WORKING. TURBIDITY BASED ON VISUAL OBSERVATION.
Standard Solution	468 mV	Salinity %	
Field Temperature °C		Altitude	
Instrument Reading		Instrument Reading	
Model or Unit No.:		Model or Unit No.:	
Ag/AgCl Electrode (SSCE)			



# WELL SAMPLING AND/OR DEVELOPMENT RECORD

Well ID: MW-21 Initial Depth to Water: 3.69  
 Sample ID: NA Duplicate ID: NA Depth to Water after Sampling: \_\_\_\_\_  
 Sample Depth: NA Total Depth to Well: 10.94  
 Project and Task No.: 9329.000 TASK # 5 Well Diameter: 0.75" (O.D); ~1/2" (I.D)  
 Project Name: SIERRA PACIFIC INDUSTRIES **1** Casing/Borehole Volume: 0.07 gal  
 Date: 2/13/04 (Circle one)  
 Sampled By: P. THORNTON **10** Casing/Borehole Volumes: 0.7 gal  
 Method of Purging: PERISTALTIC PUMP (Circle one)  
 Method of Sampling: NA Total Casing/Borehole Volumes Removed: 3 gallons



09:41								MEASURE T.D. + D.T.W.
09:45								START SURGING WELL*
09:57								END SURGING WELL
11:24	8' BGS	500 ml/sec	0.5	11.3	6.53	1129		GREENISH GRAY, MED-HIGH NTU
11:28	"	"	1.0	11.3	6.59	1081		LT GREENISH GRAY; LOW-MED NTU
11:34	2' TO 8' BGS	"	1.5	11.2	6.66	1036		GREENISH GRAY TO SLIGHTLY CLOUDY; HIGH TO V. LOW NTU AS TURBINA MOVED TO PUMP AT VARIABLE DEPTHS
11:41	2' TO 8' BGS	"	2.5	11.4	6.64	1059		SLIGHTLY CLOUDY TO VISIBLY CLEAR
11:49	5' BGS	"	3.0	11.3	6.65	1018		VISIBLY CLEAR

PH OR ION T.D. (Standard)				Model or Unit No.: # 1
Buffer Solution	pH 4.0	pH 7.0	pH 10.0	
Field Temperature °C		17.1	17.0	
Instrument Reading		7.03	10.11	
SPECIFIC ELECTRICAL CONDUCTANCE CALIBRATION				Model or Unit No.: # 1
KCL Solution (µS/cm=µmhos/cm)	1413 at 25°C	12880 at 25°C		
Field Temperature °C	16.8			
Instrument Reading	1420			
P.D.P. (mV/PP)		DISOXYGEN CALIBRATION		Notes:
Standard Solution	468 mV	Salinity %		* WELL SURGED WITH 1/2" SWAB
Field Temperature °C		Altitude		** TURBIDITY METER NOT WORKING. TURBIDITY BASED ON VISUAL OBSERVATIONS.
Instrument Reading		Instrument Reading		
Model or Unit No.:		Model or Unit No.:		
Ag/AgCl Electrode (SSCE)				



## **APPENDIX C**

---

# **Laboratory Analytical Reports and Chain-of-Custody Records**

FILE 9329



alpha

Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

RECEIVED  
3/18/2004

01 March 2004

Geomatrix Consultants  
Attn: Ross Steenson  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
RE: SPI - (GeoMatrix) Task 5  
Work Order: A402360

TASK 5  
MW-21 CONSTRUCTION  
SOIL SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 02/13/04 14:13. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sheri Speaks

Sheri L. Speaks  
Project Manager



Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

### CHEMICAL EXAMINATION REPORT

Page 1 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number A402360	Receipt Date/Time 02/13/2004 14:13	Client Code GEOMAT	Client PO/Reference
-------------------------	---------------------------------------	-----------------------	---------------------

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-21-1 5	A402360-01	Soil	02/12/04 11 13	02/13/04 14 13
MW-21-3 0	A402360-02	Soil	02/12/04 11 19	02/13/04 14 13
MW-21-5.0	A402360-03	Soil	02/12/04 11.28	02/13/04 14 13
MW-21-7 0	A402360-04	Soil	02/12/04 11 37	02/13/04 14 13
MW-21-1 0	A402360-05	Soil	02/12/04 11 12	02/13/04 14 13
MW-21-4 5	A402360-06	Soil	02/12/04 11 26	02/13/04 14 13

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri L. Speaks*

Sheri L. Speaks  
Project Manager

3/1/04



Alpha Analytical Laboratories Inc

e-mail clientservices@alpha-labs.com

208 Mason St. Ukiah, California 95482

Phone (707) 468-0401 • Fax (707) 468-5267

**CHEMICAL EXAMINATION REPORT**

Page 2 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No. 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number A402360      Receipt Date/Time 02/13/2004 14 13      Client Code GEOMAT      Chent PO/Reference

**Alpha Analytical Laboratories, Inc.**

METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
<b>MW-21-1.5 (A402360-01)</b>		<b>Sample Type: Soil</b>			<b>Sampled: 02/12/04 11:13</b>		
<b>Organic Carbon by 9060</b>							
<b>Total Organic Carbon</b>	EPA 9060	AB42415	02/24/04	02/29/04	1	<b>925 mg/kg</b>	<b>1.00</b>
<b>Chlorinated Phenols by Canadian Pulp Method</b>							
2,4,6-Trichlorophenol	EnvCan	AB42616	02/26/04	02/27/04	1	ND mg/kg	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
<i>Surrogate Tribromophenol</i>	"	"	"	"	"	76.6 %	23-140

**Conventional Chemistry Parameters by APHA/EPA Methods**

**pH**      EPA 9045B      AB41716      02/17/04      02/17/04      1      **6.7 pH Units**      **1.0**

**MW-21-3.0 (A402360-02)      Sample Type: Soil      Sampled: 02/12/04 11:19**

<b>Organic Carbon by 9060</b>							
<b>Total Organic Carbon</b>	EPA 9060	AB42415	02/24/04	02/29/04	1	<b>1070 mg/kg</b>	<b>1.00</b>
<b>Chlorinated Phenols by Canadian Pulp Method</b>							
2,4,6-Trichlorophenol	EnvCan	AB42616	02/26/04	02/27/04	1	ND mg/kg	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
<b>Pentachlorophenol</b>	"	"	"	"	"	<b>4.1 "</b>	<b>1.0</b>
<i>Surrogate Tribromophenol</i>	"	"	"	"	"	73.2 %	23-140

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri Speaks*

Sheri L. Speaks  
Project Manager

3/1/04





Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

**CHEMICAL EXAMINATION REPORT**

Page 3 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402360	02/13/2004 14.13	GEOMAT	

**Alpha Analytical Laboratories, Inc.**

METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
<b>MW-21-3.0 (A402360-02)</b>		<b>Sample Type: Soil</b>			<b>Sampled: 02/12/04 11:19</b>		
<b>Conventional Chemistry Parameters by APHA/EPA Methods</b>							
pH	EPA 9045B	AB41716	02/17/04	02/17/04	1	6.7 pH Units	1.0
<b>MW-21-5.0 (A402360-03)</b>		<b>Sample Type: Soil</b>			<b>Sampled: 02/12/04 11:28</b>		
<b>Organic Carbon by 9060</b>							
Total Organic Carbon	EPA 9060	AB42415	02/24/04	02/29/04	1	1040 mg/kg	1.00
<b>Chlorinated Phenols by Canadian Pulp Method</b>							
2,4,6-Trichlorophenol	EnvCan	AB42616	02/26/04	02/27/04	1	ND mg/kg	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
Surrogate Tribromophenol	"	"	"	"		71.4 %	23-140
<b>Conventional Chemistry Parameters by APHA/EPA Methods</b>							
pH	EPA 9045B	AB41716	02/17/04	02/17/04	1	6.8 pH Units	1.0
<b>MW-21-7.0 (A402360-04)</b>		<b>Sample Type: Soil</b>			<b>Sampled: 02/12/04 11:37</b>		
<b>Organic Carbon by 9060</b>							
Total Organic Carbon	EPA 9060	AB42415	02/24/04	02/29/04	1	976 mg/kg	1.00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri Speaks*

Sheri L. Speaks  
Project Manager

3/1/04



Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

**CHEMICAL EXAMINATION REPORT**

Page 4 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402360	02/13/2004 14 13	GEOMAT	

**Alpha Analytical Laboratories, Inc.**

METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
<b>MW-21-7.0 (A402360-04)</b>		<b>Sample Type: Soil</b>			<b>Sampled: 02/12/04 11:37</b>		
<b>Chlorinated Phenols by Canadian Pulp Method</b>							
2,4,6-Trichlorophenol	EnvCan	AB42616	02/26/04	02/27/04	1	ND mg/kg	1.0
2,3,5,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,6-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
2,3,4,5-Tetrachlorophenol	"	"	"	"	"	ND "	1.0
Pentachlorophenol	"	"	"	"	"	ND "	1.0
<i>Surrogate Tribromophenol</i>	"	"	"	"		61.8 %	23-140
<b>Conventional Chemistry Parameters by APHA/EPA Methods</b>							
pH	EPA 9045B	AB41716	02/17/04	02/17/04	1	6.4 pH Units	1.0

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri Speaks*

Sheri L. Speaks  
Project Manager

3/1/04



Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

**CHEMICAL EXAMINATION REPORT**

Page 5 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number A402360	Receipt Date/Time 02/13/2004 14 13	Client Code GEOMAT	Client PO/Reference
-------------------------	---------------------------------------	-----------------------	---------------------

SourceResult  
**Organic Carbon by 9060 - Quality Control**

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch AB42415 - General Prep</b>										
<b>Blank (AB42415-BLK1)</b>				Prepared 02/24/04 Analyzed 02/29/04						
Total Organic Carbon	ND	1 00	mg/kg							
<b>LCS (AB42415-BS1)</b>				Prepared 02/24/04 Analyzed 02/29/04						
Total Organic Carbon	6720	1 00	mg/kg	6250		108	85-115			
<b>LCS Dup (AB42415-BSD1)</b>				Prepared 02/24/04 Analyzed 02/29/04						
Total Organic Carbon	6590	1 00	mg/kg	6250		105	85-115	1 95	20	
<b>Duplicate (AB42415-DUP1)</b>				<b>Source: A402360-01</b> Prepared 02/24/04 Analyzed 02/29/04						
Total Organic Carbon	1040	1 00	mg/kg		925			11 7	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri L. Speaks*

Sheri L. Speaks  
Project Manager

3/1/04



Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail clientservices@alpha-labs.com • Phone (707) 468-0401 • Fax (707) 468-5267

**CHEMICAL EXAMINATION REPORT**

Page 6 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number A402360	Receipt Date/Time 02/13/2004 14 13	Client Code GEOMAT	Client PO/Reference
-------------------------	---------------------------------------	-----------------------	---------------------

**Chlorinated Phenols by Canadian Pulp Method - Quality Control**

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch AB42616 - Solvent Extraction</b>										
<b>Blank (AB42616-BLK1)</b>				Prepared & Analyzed 02/26/04						
2,4,6-Trichlorophenol	ND	10	mg/kg							
2,3,5,6-Tetrachlorophenol	ND	10	"							
2,3,4,6-Tetrachlorophenol	ND	10	"							
2,3,4,5-Tetrachlorophenol	ND	10	"							
Pentachlorophenol	ND	10	"							
Surrogate Tribromophenol	0 0742		"	0 125		59 4	23-140			
<b>LCS (AB42616-BS1)</b>				Prepared & Analyzed 02/26/04						
2,4,6-Trichlorophenol	ND	10	mg/kg	0 0250			32-116			<b>A-01</b>
2,3,5,6-Tetrachlorophenol	ND	10	"	0 0250			18-80			
2,3,4,6-Tetrachlorophenol	ND	10	"	0 0250			28-89			
2,3,4,5-Tetrachlorophenol	ND	10	"	0 0250			54-85			
Pentachlorophenol	ND	10	"	0 0250			17-85			
Surrogate Tribromophenol	0 0730		"	0 125		58 4	23-140			
<b>LCS Dup (AB42616-BSD1)</b>				Prepared & Analyzed 02/26/04						
2,4,6-Trichlorophenol	0 0169	10	mg/kg	0 0250		67 6	32-116		50	
2,3,5,6-Tetrachlorophenol	0 0139	10	"	0 0250		55 6	18-80		50	
2,3,4,6-Tetrachlorophenol	0 0152	10	"	0 0250		60 8	28-89		50	
2,3,4,5-Tetrachlorophenol	0 0154	10	"	0 0250		61 6	54-85		50	
Pentachlorophenol	0 0202	10	"	0 0250		80 8	17-85		50	
Surrogate Tribromophenol	0 0834		"	0 125		66 7	23-140			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sheri L. Speaks*

Sheri L. Speaks  
Project Manager

3/1/04



Alpha Analytical Laboratories Inc

208 Mason St. Ukiah, California 95482

e-mail [clientservices@alpha-labs.com](mailto:clientservices@alpha-labs.com) • Phone (707) 468-0401 • Fax (707) 468-5267

### CHEMICAL EXAMINATION REPORT

Page 7 of 7

Geomatrix Consultants  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
Attn: Ross Steenson

Report Date: 03/01/04 12:45  
Project No: 9329.000 Task 5  
Project ID: SPI - (GeoMatrix) Task 5

Order Number	Receipt Date/Time	Client Code	Client PO/Reference
A402360	02/13/2004 14 13	GEOMAT	

#### Notes and Definitions

- A-01 The spike was inadvertently omitted during sample preparation and extraction.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- PQL Practical Quantitation Limit



March 16, 2004

RECEIVED  
3/17/2004

**FAL Project ID: 2466 (Addendum)**

TASK 5

MW-21 soil samples  
Wet Weight Addendum +  
DRY WEIGHT ADDENDUM

Mr. Ross Steenson  
Geomatrix Consultants, Inc.  
2101 Webster Street, 12<sup>th</sup> Floor  
Oakland, CA 94612

Dear Mr. Steenson,

Enclosed are the addendum results for Frontier Analytical Laboratory project **2466**. The addendum report contains the wet weight results for the two soil samples we received on 2/18/2004 from Alpha Analytical. The wet weight data sheets have been marked as "Wet Weight" and do not have a % Solids field on them. As per your request, future Geomatrix projects that consist of "solid" samples will be reported in both a wet weight format and a dry weight format.

If you have any questions regarding the addendum to project **2466**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

A handwritten signature in cursive script that reads "Dan Vickers".

Dan Vickers  
Director of Air Toxics

EPA Method 1613  
PCDD/F



FAL ID: 2466-001-SA Date Extracted: 02-23-2004 ICal: pcddfal1-1-27-04 Acquired: 25-FEB-04  
 Client ID: A402360-05 (mw-21-1.0) Date Received: 02-18-2004 GC Column: db5  
 Matrix: Soil Amount: 11.66 g Units: pg/g WHO TEQ: 1.32  
 Batch No.: X0185 Wet Weight Wet Weight

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	0.114	-	-					
1,2,3,7,8-PeCDD	-	0.170	-	-					
1,2,3,4,7,8-HxCDD	-	0.308	-	-					
1,2,3,6,7,8-HxCDD	1.43	-	J	0.143	Total Tetra-Dioxins	1.71	-		4
1,2,3,7,8,9-HxCDD	0.460	-	J	0.0460	Total Penta-Dioxins	11.6	-		3
1,2,3,4,6,7,8-HpCDD	71.4	-	-	0.714	Total Hexa-Dioxins	75.5	-		5
OCDD	2270	-	-	0.227	Total Hepta-Dioxins	242	-		2
2,3,7,8-TCDF	-	0.0513	-	-					
1,2,3,7,8-PeCDF	-	0.333	-	-					
2,3,4,7,8-PeCDF	-	0.328	-	-					
1,2,3,4,7,8-HxCDF	0.248	-	J	0.0248					
1,2,3,6,7,8-HxCDF	-	0.124	-	-					
2,3,4,6,7,8-HxCDF	0.392	-	J	0.0392	Total Tetra-Furans	0.655	-		3
1,2,3,7,8,9-HxCDF	-	0.0890	-	-	Total Penta-Furans	2.01	-	J	1
1,2,3,4,6,7,8-HpCDF	11.5	-	-	0.115	Total Hexa-Furans	15.2	-		7
1,2,3,4,7,8,9-HpCDF	0.826	-	J	0.00826	Total Hepta-Furans	42.6	-		4
OCDF	46.5	-	-	0.00465					

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	102	25.0 - 164	
13C-1,2,3,7,8-PeCDD	93.5	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	100	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	113	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	94.4	23.0 - 140	
13C-OCDD	84.5	17.0 - 157	
13C-2,3,7,8-TCDF	104	24.0 - 169	
13C-1,2,3,7,8-PeCDF	96.6	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.5	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	117	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	120	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	115	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	107	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	112	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	120	26.0 - 138	
13C-OCDF	84.2	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 86.8 35.0 - 197

Analyst: 8  
 Date: 3/16/04

Reviewed by: DN  
 Date: 3/16/2004

EPA Method 1613  
PCDD/F



FAL ID: 2466-002-SA Date Extracted: 02-23-2004 ICal: pccdfal1-1-27-04 Acquired: 25-FEB-04  
 Client ID: A402360-06 (mw-21-4.5) Date Received: 02-18-2004 GC Column: db5  
 Matrix: Soil Amount: 12.00 g Units: pg/g WHO TEQ: 0.00615  
 Batch No.: X0185 Wet Weight Wet Weight Wet Weight

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	0.0989	-	-					
1,2,3,7,8-PeCDD	-	0.113	-	-					
1,2,3,4,7,8-HxCDD	-	0.189	-	-					
1,2,3,6,7,8-HxCDD	-	0.199	-	-	Total Tetra-Dioxins	-	0.0989		0
1,2,3,7,8,9-HxCDD	-	0.178	-	-	Total Penta-Dioxins	-	0.113		0
1,2,3,4,6,7,8-HpCDD	0.595	-	J	0.00595	Total Hexa-Dioxins	-	0.199		0
OCDD	2.05	-	J	0.000205	Total Hepta-Dioxins	1.10	-	J	2
2,3,7,8-TCDF	-	0.0451	-	-					
1,2,3,7,8-PeCDF	-	0.145	-	-					
2,3,4,7,8-PeCDF	-	0.148	-	-					
1,2,3,4,7,8-HxCDF	-	0.0470	-	-	Total Tetra-Furans	0.122	-	J	1
1,2,3,6,7,8-HxCDF	-	0.0582	-	-	Total Penta-Furans	-	0.148		0
2,3,4,6,7,8-HxCDF	-	0.0730	-	-	Total Hexa-Furans	-	0.0803		0
1,2,3,7,8,9-HxCDF	-	0.0803	-	-	Total Hepta-Furans	-	0.0772		0
1,2,3,4,6,7,8-HpCDF	-	0.0735	-	-					
1,2,3,4,7,8,9-HpCDF	-	0.0772	-	-					
OCDF	-	0.342	-	-					

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	99.6	25.0 - 164	
13C-1,2,3,7,8-PeCDD	104	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	98.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	109	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	99.5	23.0 - 140	
13C-OCDD	77.0	17.0 - 157	
13C-2,3,7,8-TCDF	95.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	102	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.4	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	120	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	122	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	103	29.0 - 147	
13C-1,2,3,7,8,9-HxCDF	108	28.0 - 136	
13C-1,2,3,4,6,7,8-HpCDF	120	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	134	26.0 - 138	
13C-OCDF	92.0	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 85.6 35.0 - 197

Analyst: JS

Date: 3/16/04

Reviewed by: DPV

Date: 3/16/2004



---

## Qualifier Reference Guide

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J<sup>‡</sup> Analyte concentration is below calibration range
- M Maximum possible concentration
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection
- Analyte Not Detected

<sup>‡</sup> “J” values are equivalent to DNQ (detected but not quantified) for California Toxics Rule (CTR)/National Pollutant Discharge Elimination System (NPDES) samples

**EPA Method 1613/8290 Solid MDL  
(Soxhlet/SDS Extraction)**



Analyte	ML	MDL
2,3,7,8-TCDD	0.500	0.132
1,2,3,7,8-PeCDD	2.50	0.213
1,2,3,4,7,8-HxCDD	2.50	0.321
1,2,3,6,7,8-HxCDD	2.50	0.364
1,2,3,7,8,9-HxCDD	2.50	0.315
1,2,3,4,6,7,8-HpCDD	2.50	0.328
OCDD	5.00	0.832
2,3,7,8-TCDF	0.500	0.108
1,2,3,7,8-PeCDF	2.50	0.252
2,3,4,7,8-PeCDF	2.50	0.236
1,2,3,4,7,8-HxCDF	2.50	0.101
1,2,3,6,7,8-HxCDF	2.50	0.0991
1,2,3,7,8,9-HxCDF	2.50	0.101
2,3,4,6,7,8-HxCDF	2.50	0.122
1,2,3,4,6,7,8-HpCDF	2.50	0.140
1,2,3,4,7,8,9-HpCDF	2.50	0.168
OCDF	5.00	0.594

Project 2330, Extracted 11/25/03; analyzed 12/01/03. Based on 10g sample, pg/g.

EPA Method 1613  
PCDD/F



FAL ID: 2466-001-MB  
Client ID: Method Blank  
Matrix: Soil  
Batch No. X0185

Date Extracted: 02-23-2004  
Date Received: NA  
Amount: 10.00 g

ICal: pcdffal1-1-27-04  
GC Column: DB5  
Units: pg/g

Acquired: 02-25-2004  
WHO TEQ: 0.00

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	0.133	-	-					
1,2,3,7,8-PeCDD	-	0.258	-	-					
1,2,3,4,7,8-HxCDD	-	0.342	-	-					
1,2,3,6,7,8-HxCDD	-	0.399	-	-	Total Tetra-Dioxins	- 0.133			0
1,2,3,7,8,9-HxCDD	-	0.355	-	-	Total Penta-Dioxins	- 0.258			0
1,2,3,4,6,7,8-HpCDD	-	0.479	-	-	Total Hexa-Dioxins	- 0.399			0
OCDD	-	1.05	-	-	Total Hepta-Dioxins	- 0.479			0
2,3,7,8-TCDF	-	0.0876	-	-					
1,2,3,7,8-PeCDF	-	0.318	-	-					
2,3,4,7,8-PeCDF	-	0.293	-	-					
1,2,3,4,7,8-HxCDF	-	0.172	-	-					
1,2,3,6,7,8-HxCDF	-	0.222	-	-					
2,3,4,6,7,8-HxCDF	-	0.253	-	-					
1,2,3,7,8,9-HxCDF	-	0.284	-	-	Total Tetra-Furans	- 0.0876			0
1,2,3,4,6,7,8-HpCDF	-	0.175	-	-	Total Penta-Furans	- 0.439			0
1,2,3,4,7,8,9-HpCDF	-	0.166	-	-	Total Hexa-Furans	- 0.284			0
OCDF	-	0.688	-	-	Total Hepta-Furans	- 0.175			0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	59.5	25.0 - 164	
13C-1,2,3,7,8-PeCDD	62.4	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	57.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	64.8	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	58.1	23.0 - 140	
13C-OCDD	49.4	17.0 - 157	
13C-2,3,7,8-TCDF	59.5	24.0 - 169	
13C-1,2,3,7,8-PeCDF	62.0	24.0 - 185	
13C-2,3,4,7,8-PeCDF	61.7	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	70.8	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	70.2	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	66.0	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	66.9	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	67.5	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	79.0	26.0 - 138	
13C-OCDF	59.5	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 53.9 35.0 - 197

Analyst *[Signature]*  
Date 2/26/04

Reviewed By *[Signature]*  
Date: 2/27/2004

EPA Method 1613  
PCDD/F



FAL ID 2466-001-OPR  
Client ID: OPR  
Matrix Soil  
Batch No: X0185

Date Extracted: 02-23-2004  
Date Received: NA  
Amount: 10.00 g

ICal pcdcfal1-1-27-04  
GC Column: DB5  
Units: ng/ml

Acquired: 02-25-2004  
WHO TEQ: NA

Compound	Conc	QC Limits
2,3,7,8-TCDD	11.0	6.70 - 15.8
1,2,3,7,8-PeCDD	58.8	35.0 - 71.0
1,2,3,4,7,8-HxCDD	53.3	35.0 - 82.0
1,2,3,6,7,8-HxCDD	58.0	38.0 - 67.0
1,2,3,7,8,9-HxCDD	49.3	32.0 - 81.0
1,2,3,4,6,7,8-HpCDD	57.1	35.0 - 70.0
OCDD	116	78.0 - 144
2,3,7,8-TCDF	11.5	7.50 - 15.8
1,2,3,7,8-PeCDF	63.0	40.0 - 67.0
2,3,4,7,8-PeCDF	63.7	34.0 - 80.0
1,2,3,4,7,8-HxCDF	60.7	36.0 - 67.0
1,2,3,6,7,8-HxCDF	60.4	42.0 - 65.0
2,3,4,6,7,8-HxCDF	61.1	35.0 - 78.0
1,2,3,7,8,9-HxCDF	59.5	39.0 - 65.0
1,2,3,4,6,7,8-HpCDF	59.3	41.0 - 61.0
1,2,3,4,7,8,9-HpCDF	59.1	39.0 - 69.0
OCDF	125	63.0 - 170

Internal Standards	% Rec	QC Limits
13C-2,3,7,8-TCDD	102	20.0 - 175
13C-1,2,3,7,8-PeCDD	100	21.0 - 227
13C-1,2,3,4,7,8-HxCDD	106	21.0 - 193
13C-1,2,3,6,7,8-HxCDD	118	25.0 - 163
13C-1,2,3,4,6,7,8-HpCDD	99.3	26.0 - 166
13C-OCDD	75.2	13.0 - 198
13C-2,3,7,8-TCDF	94.0	22.0 - 152
13C-1,2,3,7,8-PeCDF	99.6	21.0 - 192
13C-2,3,4,7,8-PeCDF	86.0	13.0 - 328
13C-1,2,3,4,7,8-HxCDF	123	19.0 - 202
13C-1,2,3,6,7,8-HxCDF	131	21.0 - 159
13C-2,3,4,6,7,8-HxCDF	95.1	22.0 - 176
13C-1,2,3,7,8,9-HxCDF	106	17.0 - 205
13C-1,2,3,4,6,7,8-HpCDF	126	21.0 - 158
13C-1,2,3,4,7,8,9-HpCDF	128	20.0 - 186
13C-OCDF	91.1	13.0 - 198

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	86.7	31.0 - 191

Analyst J  
Date 2/24/04

Reviewed By DN  
Date 3/1/2004

EPA Method 1613  
PCDD/F



FAL ID: 2466-001-SA  
Client ID: A402360-05  
Matrix: Soil  
Batch No. X0185

Date Extracted 02-23-2004  
Date Received: 02-18-2004  
Amount: 10.03 g  
% Solids: 86.0  
**(DRY WEIGHT)**

ICal: pcdffal1-1-27-04  
GC Column: DB5  
Units: pg/g

Acquired: 02-25-2004  
WHO TEQ: 1.54

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	0.132	-	-					
1,2,3,7,8-PeCDD	-	0.197	-	-					
1,2,3,4,7,8-HxCDD	-	0.358	-	-					
1,2,3,6,7,8-HxCDD	1.67	-	J	0.167	Total Tetra-Dioxins	1.99	-		4
1,2,3,7,8,9-HxCDD	0.534	-	J	0.0534	Total Penta-Dioxins	13.5	-		3
1,2,3,4,6,7,8-HpCDD	83.0	-	-	0.830	Total Hexa-Dioxins	87.7	-		5
OCDD	2640	-	-	0.264	Total Hepta-Dioxins	281	-		2
2,3,7,8-TCDF	-	0.0597	-	-					
1,2,3,7,8-PeCDF	-	0.387	-	-					
2,3,4,7,8-PeCDF	-	0.381	-	-					
1,2,3,4,7,8-HxCDF	0.289	-	J	0.0289					
1,2,3,6,7,8-HxCDF	-	0.145	-	-					
2,3,4,6,7,8-HxCDF	0.456	-	J	0.0456					
1,2,3,7,8,9-HxCDF	-	0.103	-	-	Total Tetra-Furans	0.762	-		3
1,2,3,4,6,7,8-HpCDF	13.3	-	-	0.133	Total Penta-Furans	2.33	-	J	1
1,2,3,4,7,8,9-HpCDF	0.959	-	J	0.00960	Total Hexa-Furans	17.6	-		7
OCDF	54.0	-	-	0.00540	Total Hepta-Furans	49.5	-		4

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	102	25.0 - 164	
13C-1,2,3,7,8-PeCDD	93.5	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	100	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	113	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	94.4	23.0 - 140	
13C-OCDD	84.5	17.0 - 157	
13C-2,3,7,8-TCDF	104	24.0 - 169	
13C-1,2,3,7,8-PeCDF	96.6	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.5	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	117	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	120	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	115	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	107	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	112	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	120	26.0 - 138	
13C-OCDF	84.2	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 86.8 35.0 - 197

Analyst: J  
Date: 2/22/04

Reviewed By: DPV  
Date: 2/27/2004

EPA Method 1613  
PCDD/F



FAL ID. 2466-002-SA  
Client ID. A402360-06 (mw-21-45)  
Matrix: Soil  
Batch No: X0185

Date Extracted: 02-23-2004  
Date Received: 02-18-2004  
Amount: 10.06 g  
% Solids 83.8  
(DRY WEIGHT)

ICal pccdfal1-1-27-04  
GC Column: DB5  
Units: pg/g

Acquired: 02-25-2004  
WHO TEQ: 0.00734

Compound	Conc	DL	Qual	WHO Tox	Compound	Conc	DL	Qual	#Hom
2,3,7,8-TCDD	-	0.118	-	-					
1,2,3,7,8-PeCDD	-	0.135	-	-					
1,2,3,4,7,8-HxCDD	-	0.226	-	-					
1,2,3,6,7,8-HxCDD	-	0.237	-	-	Total Tetra-Dioxins	- 0.118			0
1,2,3,7,8,9-HxCDD	-	0.212	-	-	Total Penta-Dioxins	- 0.135			0
1,2,3,4,6,7,8-HpCDD	0.710	-	J	0.00710	Total Hexa-Dioxins	- 0.237			0
OCDD	2.44	-	J	0.000244	Total Hepta-Dioxins	1.31	-	J	2
2,3,7,8-TCDF	-	0.0538	-	-					
1,2,3,7,8-PeCDF	-	0.173	-	-					
2,3,4,7,8-PeCDF	-	0.177	-	-					
1,2,3,4,7,8-HxCDF	-	0.0561	-	-					
1,2,3,6,7,8-HxCDF	-	0.0695	-	-					
2,3,4,6,7,8-HxCDF	-	0.0871	-	-					
1,2,3,7,8,9-HxCDF	-	0.0959	-	-	Total Tetra-Furans	0.146	-	J	1
1,2,3,4,6,7,8-HpCDF	-	0.0878	-	-	Total Penta-Furans	- 0.177			0
1,2,3,4,7,8,9-HpCDF	-	0.0922	-	-	Total Hexa-Furans	-0.0959			0
OCDF	-	0.409	-	-	Total Hepta-Furans	-0.0922			0

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	99.6	25.0 - 164	
13C-1,2,3,7,8-PeCDD	104	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	98.2	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	109	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	99.5	23.0 - 140	
13C-OCDD	77.0	17.0 - 157	
13C-2,3,7,8-TCDF	95.2	24.0 - 169	
13C-1,2,3,7,8-PeCDF	102	24.0 - 185	
13C-2,3,4,7,8-PeCDF	93.4	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	120	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	122	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	103	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	108	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	120	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	134	26.0 - 138	
13C-OCDF	92.0	17.0 - 157	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 85.6 35.0 - 197

Analyst [Signature]  
Date: 2/26/04

Reviewed By [Signature]  
Date: 2/27/04

# Chain-of Custody Record

014977

Date 2-12-04

Page 1 of 2

Project No 9329 000 TASK 5

## ANALYSES

## REMARKS

Samplers (Signature)

*B. Thompson*

Additional Comments

SPI ARCATA  
SOIL SAMPLES  
MW-21

Date Time Sample Number

EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal VOCs only)	EPA Method 8021 (BETX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 SIM (PAHS only)	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	CHLORINATED PHENOLS	TOTAL ORGANIC CARBON (TOC)	pH	Soil (S), Water (W), Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No of Containers
-----------------------------	---------------------------------	-----------------------------	-----------------	-----------------------------	---------------------------------	-------------------------	-----------------------	--------------------------	--------------------	---------------------	----------------------------	----	--	----------	-----------	--------	------------------

2-12-04	11:13	MW-21-1.5								X	X	X	S	-	-	Y	1
2-12-04	11:19	MW-21-3.0								X	X	X	S	-	-	Y	1
2-12-04	11:28	MW-21-5.0								X	X	X	S	-	-	Y	1
2-12-04	11:37	MW-21-7.0								X	X	X	S	-	-	Y	1

ANALYZE SOIL SAMPLES FOR CHLORINATED PHENOLS USING THE CANADIAN PULM METHOD, TOTAL ORGANIC CARBON USING EPA METHOD 415.1 AND pH USING EPA METHOD 9045.  
CALL BRIAN THOMPSON OR ROSS STEENSON AT (510) 663-4100 WITH QUESTIONS

LCS OUT OF CONTROL ON CHLORINATED PHENOLS SOIL BATCH. SPOKE TO ROSS STEENSON ABOUT HOW TO REPORT DATA - REPORT WITH FLAGS. MW 2.27 04 10AM

Laboratory: ALPHA ANALYTICAL  
Turnaround Time: STANDARD  
Results to: B. THOMPSON  
Total No of Containers: 4/6

Relinquished by (Signature) <i>B. Thompson</i>	Date: 2/13/04	Relinquished by (Signature) <i>T. DALY</i>	Date: 2/13/04	Relinquished by (Signature)	Date
Printed Name BRIAN THOMPSON	Time: 10:55	Printed Name T. DALY	Time: 14:13	Printed Name	Time
Company GEOMETRIX		Company ALPHA LABS		Company	
Received by <i>T. DALY</i>	Date: 2/13/04	Received by <i>Shari Speaks</i>	Date: 2/13/04	Received by	Date
Printed Name T. DALY	Time: 10:55	Printed Name SHARI SPEAKS	Time: 14:13	Printed Name	Time
Company ALPHA LABS		Company ALPHA		Company	

Method of Shipment: COURIER PICK-UP  
Laboratory Comments and Log No: 22  
Geomatrix Consultants  
2101 Webster Street, 12th Floor • Oakland, CA 94612  
Phone 510-663-4100 Fax 510-663-4141

# Chain-of Custody Record

014978

Date 2-12-04

Page 2 of 2

Project No 9329.000 TASK 5

## ANALYSES

## REMARKS

Samplers (Signature.)

*B. Thompson*

Additional Comments

SPI ARCATO  
SOIL SAMPLES  
MW-21

Date	Time	Sample Number
2-12-04	11:12	MW-21-1.0
2-12-04	11:26	MW-21-4.5

EPA Method 8021 (Full Scan)	EPA Method 8021 (Hal. VOCs only)	EPA Method 8021 (BTEX only)	EPA Method 8260	EPA Method 8270 (Full Scan)	EPA Method 8270 SIM (PAHS only)	Method 8015m (Gasoline)	Method 8015m (Diesel)	Method 8015m (Motor Oil)	Silica Gel Cleanup	DIOXINS/FURANS	Soil (S), Water (W) Vapor (V), or Other (o)	Filtered	Preserved	Cooled	No of Containers
A4023605										X	S	-	-	Y	1
										X	S	-	-	Y	1

ANALYZE SOIL SAMPLES FOR DIOXINS AND FURANS BY EPA METHOD 1631.

CALL BILLY THOMPSON OR ROSS STEVENSON AT (510) 663-4100 WITH QUESTIONS

Laboratory

Alpha Analytical

Turnaround Time

STANDARD

Results to:

B. Thompson

Total No of Containers

2/6

Relinquished by (Signature)

*B. Thompson*

Date

2-13-04

Relinquished by (Signature)

*T. DALY*

Date

2/13/04

Relinquished by (Signature)

Date

Method of Shipment

COURIER PICK-UP

Printed Name

Brian Thompson

Time

10:55

Printed Name

T. DALY

Time

14:13

Printed Name

Time

Laboratory Comments and Log No

Company

GEOMETRIX

Company

Alpha Labs

Received by

*T. DALY*

Date

2/13/04

Received by

Sheri Speaks

Date

2/13/04

Received by

Date

2.2

Printed Name

T. DALY

Time

10:55

Printed Name

Sheri Speaks

Time

14:13

Printed Name

Time

Company

Alpha Labs

Company

Alpha

**Geomatrix Consultants**  
2101 Webster Street, 12th Floor • Oakland, CA 94612  
Phone 510-663-4100 Fax 510-663-4141



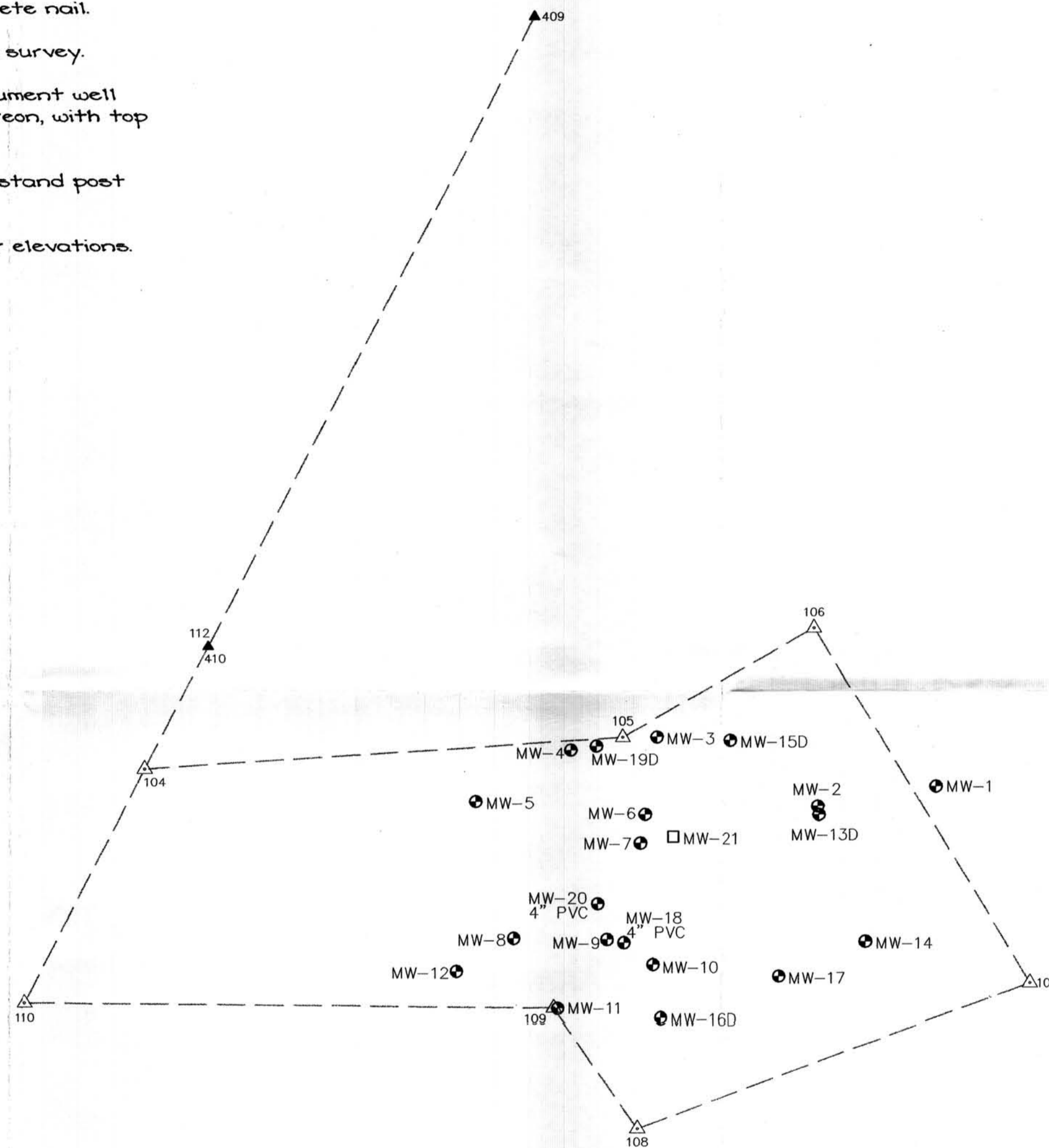
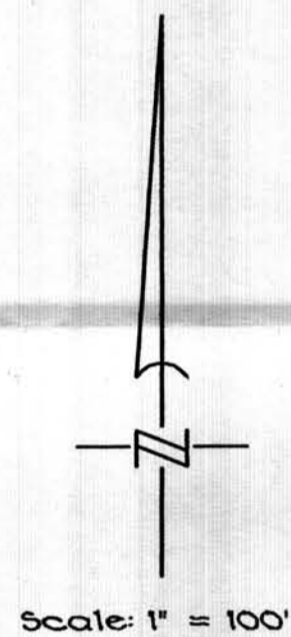
## **APPENDIX D**

---

# **Topographic Plat and Monitor Well (Survey) Data**

**LEGEND**

- | SYMBOL | INDICATES  |
|--------|--|
| ▲      | Previous control point, found concrete nail.   |
| △      | Control point nail & shiner set this survey.   |
| ⊙      | Monitor well, 2" PVC pipe inside monument well with lid unless otherwise noted hereon, with top of pipe elevation. |
| □      | Monitor well 3/4" PVC pipe inside 4x4 stand post with lid cap.   |
| ▲      | Bench mark as noted and basis for elevations.  |



**MONITOR WELL DATA**

Monitor Well	Northing	Easting	Latitude	Longitude	Elevation	Ground
MW-1	2206125.91	5966526.44	40.8661595	124.1521395	6.34	6.8
MW-2	2206107.76	5966418.62	40.8661024	124.1525276	6.26	7.1
MW-3	2206172.11	5966269.08	40.8662689	124.1530739	7.87	8.3
MW-4	2206159.98	5966189.64	40.8662303	124.1533599	7.39	7.8
MW-5	2206112.66	5966101.76	40.8660945	124.1536734	7.39	7.9
MW-6	2206100.26	5966258.39	40.8660710	124.1531061	6.48	6.8
MW-7	2206073.73	5966254.26	40.8659980	124.1531187	6.39	6.7
MW-8	2205985.98	5966137.13	40.8657492	124.1535343	6.98	7.2
MW-9	2205984.84	5966223.56	40.8657520	124.1532218	6.56	7.0
MW-10	2205961.59	5966265.80	40.8656910	124.1530670	6.50	6.7
MW-11	2205921.10	5966177.74	40.8655740	124.1533817	6.93	7.2
MW-12	2205955.66	5966084.14	40.8656625	124.1537231	7.41	7.7
MW-13D	2206099.89	5966419.66	40.8660809	124.1525231	6.61	6.9
MW-14	2205982.72	5966462.45	40.8657622	124.1523580	5.80	6.3
MW-15D	2206169.03	5966337.72	40.8662658	124.1528255	7.84	8.2
MW-16D	2205912.61	5966273.09	40.8655571	124.1530363	6.48	6.8
MW-17	2205950.68	5966383.11	40.8656690	124.1526420	5.81	6.1
MW-18	2205981.85	5966239.22	40.8657448	124.1531649	6.57	6.8
MW-19D	2206163.64	5966213.40	40.8662419	124.1532744	7.71	7.9
MW-20	2206017.72	5966214.82	40.8658416	124.1532563	8.52	7.6
MW-21	2206079.61	5966284.77	40.8660161	124.1530089	9.54	6.8
BM-111	2205758.19	5966974.30	40.8651806	124.1504879	11.55	11.55

Coordinate values are NAD 83 based on control and aerial mapping survey and points established by Carlton Engineering, Inc. Elevation datum is NGVD 29 based on bench mark J-735 RESET 1970 shown hereon.

**CLIENT**

Geomatrix Consultants, Inc.  
2101 Webster Street, 12th Floor  
Oakland, CA 94612  
(510) 663-4141

**SURVEYOR / ENGINEER**

Omsberg & Company  
304 'N' Street  
Eureka, CA 95501  
(707) 443-8651

111 ▲ Bench Mark - 2" brass cap stamped "J-735 RESET 1970" in top of railroad bridge pillar @ southwest corner of bridge. Elevation = 11.55'

**SURVEYOR'S STATEMENT**

This map was prepared by me or under my direction and is based upon a field survey performed on February 13, 2004 at the request of Sierra Pacific Industries. This survey is for the purpose of locating topographic features as shown hereon.

*Kenneth J. Omsberg, Jr.*  
KENNETH J. OMSBERG, Jr., L.S. 4446  
License expires 9-30-05  
Date 3-26-04



**SIERRA PACIFIC INDUSTRIES - MILL SITE**  
**2293 SAMOA ROAD ARCATA, CA**

APN 506-061-028, 506-181-006 & 028

Bar is one inch on original drawing  If not one inch on this sheet, adjust scales accordingly	<b>OMSBERG &amp; COMPANY</b> 304 'N' Street Eureka, California 95501 Telephone (707) 443-8651 Fax: 443-0422 SURVEYORS PLANNERS ENGINEERS	DESIGNED BY DATE	<b>TOPOGRAPHIC PLAT</b> For <b>GEOMATRIX CONSULTANTS, INC.</b> in the unincorporated area of Humboldt County NW 1/4 of Section 35, T.6N, R.1W, H.M.	SCALE 1" = 100'
		DRAWN BY DATE J. Sousa 2/26/04 CHECKED BY DATE		JOB NO. 04-405-9 SHEET OF 1 1