

# ALTA GEOSCIENCES, Inc.

*Environmental & Geotechnical Solutions*

February 10, 2003

Mr. Yoshiro Tokiwa  
US EPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

Alameda County  
FEB 18 2003  
Environmental Health

Re: 2002 Groundwater Sampling and Analysis Report  
Westinghouse Emeryville Site, Emeryville, California

Dear Mr. Tokiwa:

Enclosed is the 2002 Groundwater Sampling and Analysis Report for the Westinghouse Emeryville Site in Emeryville, California. This report is submitted on behalf of Viacom Inc. (successor to Westinghouse Electric Corporation). Also enclosed is a complete copy of this document in Adobe PDF format on CD.

If you have any questions, please feel free to contact me at your earliest convenience.

Sincerely,  
**ALTA Geosciences, Inc.**



Alex Tula, R.G.  
Principal Consultant

Enclosure: 2002 Groundwater Sampling and Analysis Report with CD

cc: Mr. Richard K. Smith – Viacom, Inc.  
Ms. Susan Hugo – Alameda County Health Department  
Mr. Victor Pal – Regional Water Quality Control Board

**ALTA** GEOSCIENCES, Inc.

*Environmental & Geotechnical Solutions*

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**2002  
GROUNDWATER SAMPLING  
AND ANALYSIS REPORT**

**Westinghouse/Viacom Emeryville Site  
Emeryville, California**

*Prepared for:*  
**Viacom Corporation**

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## **1.0 INTRODUCTION**

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### **1.1 PURPOSE AND SCOPE**

This report presents the results of the September 2002 annual groundwater monitoring event for the Westinghouse Emeryville Site (Site), located in Emeryville, California. This report has been prepared by Alta Geosciences, Inc., on behalf of Viacom Corporation (successor by corporate merger to CBS and formerly known as Westinghouse Electric Corporation). Monitoring is required by the Second Amendment to the Consent Agreement and Final Order between Westinghouse and the U.S. Environmental Protection Agency (USEPA), Region 9, dated August 16, 1985. Groundwater monitoring is required only for Polychlorinated Biphenyls (PCBs), for the purpose of assessing potential PCB impacts to Site Groundwater.

Staff from ALTA Geosciences, Inc. performed field work for this event on September 7<sup>th</sup> through 9<sup>th</sup>, 2002. Groundwater elevations were determined in eighteen wells and piezometers, and groundwater samples were collected from fourteen wells. Analytical testing was performed on these samples for PCBs at a California Certified Testing Laboratory. Data analysis and production of this report were under the direct supervision of an ALTA Geosciences, Inc. Environmental Geotechnology Engineer.

### **1.2 ORGANIZATION OF REPORT**

This report presents Site information and background data in sufficient detail to identify the project and place the monitoring work in perspective. Previous groundwater monitoring work was completed by Engineering Science, Inc. from April 1986 to February 1990, EMCON from March 1991 to May 1996 and ALTA Geosciences, Inc. from April 1997 to the present. Groundwater elevation data and analytical data for PCBs from this prior work has been retained in summary tables in this report, and updated with the July 1999 data developed by ALTA Geosciences, Inc. Groundwater elevations were analyzed to develop groundwater contour maps for both shallow and deep wells. Groundwater contour maps are presented as Figures 3-1 and 3-2. The Appendices present copies of field and analytical data, as well as a quality control analysis of the analytical data.

## **2.0**

### **SITE BACKGROUND AND PHYSICAL SETTING**

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#### **2.1 SITE LOCATION AND DESCRIPTION**

The project is located at 5899 Peladeau Street in the City of Emeryville, California, on the east side of the San Francisco Bay (Figure 2-1, Site Location Map). The portion of the Westinghouse/Viacom Emeryville property in which groundwater monitoring is completed is about 6 acres, in the NE portion of the property. The subject area is 40 percent covered with high-rise buildings, and 50 percent covered with asphalt concrete (streets and an engineered cap, see below). Remaining portions of the site are landscaped, undeveloped, or under construction and covered with gravel. The site was formerly fenced on all sides with a 6-foot high steel chainlink fence, however, following construction of surrounding features and paving of the TSCA Cell, fencing is only present on the north and west sides of the TSCA landfill.

#### **2.2 HISTORY OF SITE ACTIVITIES**

This property was formerly the site of an electrical apparatus service facility, which serviced and manufactured transformers and other electrical equipment in addition to fulfilling administrative and engineering functions for their service district. Westinghouse ceased using the facility for work on electrical apparatus in 1982 and stopped using the facility for all work in 1992. Original buildings on the Site were demolished and for several years only concrete floor slabs and foundations, plus outside pavements remained from the original facility. About five years ago, work started on several new buildings, which now occupy the former Westinghouse facility site.

Some of the manufacturing and service functions at the Westinghouse facility involved handling, storing, and/or using fluids containing or impacted with Polychlorinated Biphenyls (PCBs), volatile organic compounds (VOCs), hydrocarbon products such as gasoline and diesel, and mineral or hydraulic oils. Investigations conducted on the Site identified the above compounds as present in the groundwater and in some soils on the Site.

In 1984, WEC entered into a Consent Agreement and Final Order with the U.S. Environmental Protection Agency (EPA), Region 9 regarding the Site. As part of this Order, a slurry wall was constructed in 1985 in the northwest portion of the property to limit the lateral migration of impacted groundwater beneath the Site. PCB-impacted soil from areas surrounding the containment cell was consolidated into the cell, and an engineered cap of geomembrane and asphalt concrete was placed over the top.

At the request of the California Regional Water Quality Control Board, a site specific Baseline Human Health Risk Assessment (HHRA, SOMA, 1996) was performed for the former Westinghouse facility site east of the capped area and west of Peladeau Street. This facility area extends south to Powell Street. Although this assessment focussed on the adjacent portions of the facility, the groundwater fate and transport modeling included the capped area. The groundwater fate and transport modeling showed no significant contaminants of concern to be migrating from the capped area. Based on the results of this HHRA, a soil remediation for PCBs was performed in the former service yard area at the north end of the former facility on the northeast side of the capped area (see Figure 3-1). The results of this soil remediation are summarized in *Completion Report, Site Remediation, Westinghouse Emeryville Site; Emeryville, CA.* (ALTA Geosciences, Inc. (ALTA) 1996). Following approval by the RWQCB, the parcels encompassing the former facility and the service yard were sold to a land developer (the capped area was retained by Viacom Inc.).

In 1998 through 2001, two multistory office buildings were being built on the former Westinghouse facility site which had been sold (east of the capped area and west of Peladeau Street and south to Powell Street). Parking lot improvements including earthwork and paving were being constructed in the summer of 1999. This included repaving the TSCA cap with 4-8 inches of asphalt concrete and the extension of Landregen Street northward through the Site. After these paving operations, well boxes had to be raised, and the well piping extended to allow access. In 2000, portions of the Heritage Square Parking Lots, located east and north of the former Westinghouse service yard, received soils remediation.

### **2.3 WELL CONSTRUCTION**

In March 1983 nine wells, which had been constructed as part of an investigation of the Site, were sampled. PCBs were detected in five of these wells and VOCs in eight. These findings, along with related findings regarding PCB impacts to soils on the Site, lead to the construction in September and October 1985 of the slurry wall and engineered cap mentioned above. This construction destroyed all but one of the original monitoring wells, which was subsequently given the designation of D-6, and was in use until 1999 when it was destroyed by building construction. In 1986, as part of the Consent Agreement and Final Order between Westinghouse and the USEPA, a post-construction groundwater monitoring program was initiated with the installation and sampling of thirteen additional wells. The stated purpose of this program was to assess and monitor PCB concentrations in the Site groundwater. Initially monitoring was done by Engineering Science, Inc. every two months. Starting in 1991, monitoring performed by EMCON was done semiannually, and presently, monitoring performed by ALTA Geosciences, Inc. is required annually.

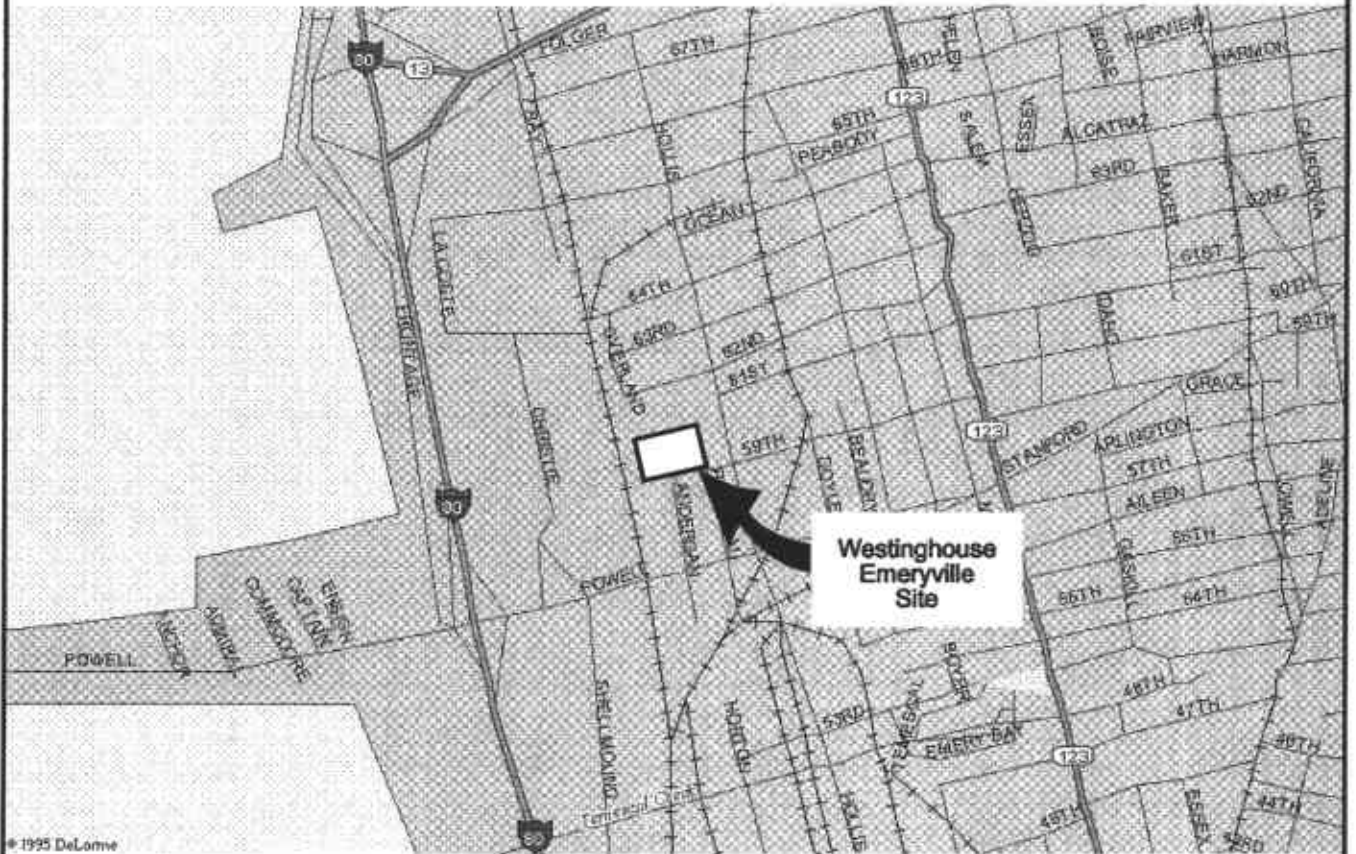
Because of damage during construction on the adjacent AMTRAK station, several wells have had to be repaired, and two wells, S-2 and D-2 had to be abandoned and replaced with S-2R and D-2R. At present the monitoring well network contains eight shallow wells (S-1, S-2R, and S-3 through S-8) which are screened approximately

9.5 to 24.5 feet below the ground surface. Also included in the monitoring network are six deep wells (D-1, D-2R, and D-3 through D-6), which are screened approximately between 25 and 40 feet below the surface. Two shallow and two deep piezometers are located within the slurry wall/capped area and are monitored for water depth only. All wells and piezometers are constructed with 2-inch diameter PVC casings. The surface completions vary because of construction at different times and because of differing local site conditions. Some wells have rectangular steel boxes approximately 2-1/2 feet tall, and some wells have flush completions and metal lids (especially in paved areas). The original D-6 and S-6 wells were destroyed by construction activities, probably sometime in 1998 or 1999. These were replaced in May 2001.

## **2.4 SITE INSPECTIONS**

A site inspection was performed in September 2002, in conjunction with the groundwater monitoring activities. Site fencing on the north, south, and west sides of the Site was in place and in good condition. The TSCA Cell is now used for AMTRAK station parking and by the surrounding office buildings for their workers. Access to the capped area is no longer restricted to the public. The TSCA cell pavement is in excellent condition.





Westinghouse Emeryville Site

**LOCATION MAP**

**FIGURE 2-1**

***ALTA Geosciences, Inc.***

### **3.0**

## **MAY 2001 GROUNDWATER SAMPLING AND ANALYSIS**

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### **3.1 GROUNDWATER MONITORING LEVELS – SEPTEMBER 2002**

The depth to groundwater in each well was measured to the nearest 0.01 foot using an electronic well sounder. The September 2002 water depths and elevations (MSL) are shown in Table 3-1 (located at end of section). Figures 3-1 and 3-2 contain geologically interpreted groundwater contours in those portions of the Site where sufficient information is available to allow interpretation. Contours are intended to be a qualitative expression of the general head potential and direction of groundwater flow at the Site. The depth to water in the wells is also shown on these two figures (in parentheses, next to the well numbers). Since the groundwater inside the slurry wall is disconnected from the general groundwater flow, the elevations in the piezometers inside the slurry wall are not used to develop the contours. In 2002, the water levels were generally consistent with the levels measured in 2001.

Table 3-2 (located at end of section) contains historical groundwater elevation data since April 1986. The latest data was placed near the bottom of the table. Groundwater levels are generally within the range of values previously seen on this site.

### **3.2 SAMPLING PROCEDURES**

Groundwater samples were collected from 14 Site monitoring wells on 7-9 September 2002 for analytical laboratory testing. To obtain a sample representative of the surrounding formation, each well was purged using a low-flow technique to reduce interference associated with turbidity.

#### **Measurement**

Fluid level measurements in each monitoring well were completed with a flat tape water level meter to indicate depth to groundwater relative to the top of the well casings. Inspection of the tape after use at each well did not reveal the presence of floating oil.

#### **Sampling**

Sampling equipment consisted of a portable 12 Volt submersible pump (ES-40), discharging through Teflon-lined Tygon tubing to the surface. The tubing at the surface was connected to a flow meter to regulate flow at ½ to 2 liters per minute. Water analyses during sampling were made using an Orbeco-Hellige Model 966 Turbidimeter, and Oakton WD-35607 conductivity and temperature meter. All meters were calibrated the days of use.

Wells were purged at a rate of 1/2 liter per minute to 2 liters per minute with the submersible pump set above the screened interval. The rate selected for a given well depended on the amount of screened depth and past records of well

performance, with the aim of maintaining submergence of the pump throughout the purging/sampling process. The parameters temperature, conductivity, and turbidity were monitored and recorded at intervals throughout the purging process.

Prior to groundwater sampling, each well was purged until conductivity and temperature readings stabilized within 10 percent, with a low turbidity, where possible (see Table 3-1). The samples were dispensed directly into laboratory provided containers. Each sample was appropriately labeled and stored on ice at approximately 4°C from the time of collection through the time of delivery to the laboratory, and chain of custody procedures were followed to ensure sample integrity.

**Table 3-3  
Groundwater Field Parameters at Time of Sampling**

Field Parameters	SAMPLING LOCATION													
	D-1	D-2R	D-3 (*1)	D-4	D-5	D-6	S-1	S-2R	S-3	S-4	S-5	S-6	S-7	S-8
Temperature (°C)	22.1	24.2	20.3	21.5	18.5	22.4	24.8	24.3	21.5	25.1	18.4	24.0	25.1	22.1
Conductivity (uS)	540	513	654	695	527	633	469	544	794	535	662	592	610	627
Turbidity (NTU)	0.75	0.4	0.6	2.6	0.4	4.5	2.0	3.2	0.6	3.47	4.3	0.75	1.5	3.9

\*Notes:

1. Environmental Sample D-3 enlarged for use as MS/MSD sample.

**Decontamination Procedures**

All sampling equipment was decontaminated between each monitoring well location to avoid cross-contamination. The entire pump and hose assembly was immersed in an alconox detergent solution and allowed to circulate for at least 2 minutes. The assembly was then immersed in fresh tap water and run for another 2 minutes.

**Purge Water Storage**

All purge water was stored in 55 gallon open-top drums at the site. The drums were closed with sealed lids, bolted, and appropriately labeled.

**Documentation**

Record keeping documentation for the samples included the use of the following:

- Fluid level measurement form; to record depth to fluid in each well.
- Groundwater sampling form; to record method of collection, purge volume, parameters pH, cond, temp., turbidity and general observations.
- Labels to identify individual samples; with well #, project name, date, time, samplers name and type of preservation (if any).
- Chain-of-custody record sheets; to document possession and transfer of samples and specify analysis requested.
- Field report form; Describing general site conditions, well integrity and condition of the asphalt cap.

Field records are included in Table 3-3 and the Chain of Custody forms are filed following the analytical data sheets in Appendix A.

### **3.3 ANALYTICAL PROCEDURES**

Eighteen samples from twelve wells, including a matrix spike and matrix spike duplicate, environmental duplicate and field rinse blank, were analyzed by Entech Analytical Labs, Inc., Santa Clara, California. All samples were analyzed by EPA Method 8082 for PCBs. Results were reported for seven Aroclors, with a reporting limit of one-tenth microgram per liter (0.1 parts per billion) for all Aroclors

### **3.4 ANALYTICAL RESULTS**

Testing results indicate no detectable PCBs in all 14 wells. Historical analytical results are shown, along with the latest results on Table 3-4 for the deep wells and Table 3-5 (located at end of section) for the shallow wells. Laboratory analysis certificates are contained in Appendix A.

### **3.5 QUALITY ASSURANCE/QUALITY CONTROL**

Appendix C contains a Data Quality Assurance Review of the laboratory reports. This review may be summarized as follows:

Holding Times -- all acceptable  
Method Blanks -- two analyzed, no PCBs detected  
Matrix Spike Recovery -- %R is acceptable  
Blank Spike Recovery -- %R is acceptable  
Precision -- RPD is acceptable  
Completeness -- completeness is acceptable  
Surrogate Recovery -- %R for DCB acceptable,

See Appendix B for discussion of these parameters.

The requested detection limits for all aroclors was 0.1µg/L. The laboratory reporting limits for all Aroclors was 0.1 µg/L.

**Table 3-1  
Groundwater Levels in September 2002**

WELL NUMBER	TOC ELEVATION (Feet, MSL)	DEPTH TO WATER (Feet)	WATER ELEVATION (Feet, MSL)
D-1	16.17	5.95	10.22
D-2R	14.45	5.98	8.47
D-3	14.13	6.29	7.84
D-4	15.00	5.44	9.56
D-5	13.32	3.98	9.34
D-6	14.08(*1)	3.28	10.8 (est)
S-1	15.99	7.64	8.35
S-2R	14.46	7.45	7.01
S-3	14.04	6.45	7.59
S-4	15.04	5.25	9.79
S-5	13.36	4.74	8.62
S-6	14.71(*1)	4.21	10.30 (est)
S-7	12.28	4.84	7.44
S-8	15.57	7.34	8.23
P-1	16.59	6.44	10.15
P-2	16.53	6.35	10.18
P-3	15.48	5.21	10.27
P-4	15.30	5.08	10.22

Notes: \*1 New well, TOC not yet surveyed; water elevation is estimated.

**Table 3-2  
Groundwater Elevation Data (Ft, MSL)<sup>1</sup>**

Date	MONITORING WELLS						
	D-1	D-2	D-2R	D-3	D-4	D-5	D-6
04/86	9.19	9.01	-	8.29	10.51	9.72	11.16
06/86	8.98	7.99	-	7.75	9.84	9.37	10.56
08/86	8.75	7.95	-	7.35	9.30	9.25	10.24
10/86	8.82	8.16	-	7.62	9.63	9.30	10.42
12/86	8.47	7.60	-	7.29	9.10	8.94	9.74
02/87	9.09	9.04	-	8.35	10.64	9.61	10.77
04/87	9.20	8.33	-	8.17	10.49	9.62	10.98
06/87	8.73	7.75	-	7.73	9.55	9.19	10.60
08/87	8.59	7.55	-	7.15	9.19	9.12	10.77
10/87	8.47	7.37	-	6.92	9.06	8.99	10.64
12/87	9.10	8.72	-	7.87	10.56	9.57	10.92
02/88	9.38	8.76	-	8.61	10.69	9.71	11.36
04/88	8.64	7.85	-	7.55	9.84	9.13	10.45
06/88	8.69	8.00	-	7.70	9.96	9.26	10.53
08/88	8.57	7.71	-	7.45	9.58	9.05	10.67
10/88	8.36	7.31	-	6.71	8.97	8.91	10.32
12/88	7.50	8.03	-	7.72	10.03	9.17	10.48
02/89	8.82	8.13	-	7.78	10.19	9.21	10.66
04/89	9.08	8.31	-	8.44	10.39	9.60	10.93
06/89	8.64	7.67	-	7.56	9.37	9.11	10.67
08/89	8.42	7.51	-	7.04	8.94	9.17	10.58
10/89	8.57	7.74	-	7.25	9.05	9.12	10.59
12/89	8.01	8.23	-	7.88	10.04	9.56	10.85
02/90	9.15	8.75	-	8.10	10.47	9.72	11.19
03/20/91	9.20	9.33	-	8.03	FW <sup>2</sup>	9.67	11.13
04/04/91	9.26	8.32	-	8.16	10.58	9.67	11.21
09/11/91	8.57	7.36	-	6.90	9.13	9.07	10.72
03/16/92	9.42	8.82	-	8.33	10.47	9.91	11.95
09/21/92	8.47	7.28	-	6.66	8.15	8.87	9.83
03/22/93	9.22	8.33	-	8.24	10.00	9.41	11.20
09/21/93	NS <sup>3</sup>	NA <sup>9</sup>	-	7.23	NS	8.98	10.23
05/17/94	4.31	NA	-	7.89	8.07	9.62	11.73
11/15/94	4.41	NA	-	8.25	8.55	9.79	11.93
05/23/95	9.08	NA	8.52	8.18	11.41	9.56	11.62
11/28/95	8.31	NA	8.25	7.07	8.79	8.42	10.10
05/16/96	9.05	NA	9.03	8.03	12.07	9.65	11.07
04/21/97	8.91	NA	8.87	7.88	10.87	9.53	12.02
05/13/98	9.45	NA	9.43	8.53	11.04	10.10	12.26
7/30/99	9.87	NA	8.62	7.58	9.00	9.27	NA <sup>8</sup>
5/12/01	10.27	NA	8.80	7.78	9.54	9.5	NA <sup>10</sup>
9/8/02	10.22	NA	8.47	7.84	9.56	9.34	10.8 (est)
TOC <sup>4</sup> Elev.	16.17 <sup>5</sup>	11.20	14.45 <sup>6</sup>	14.13 <sup>5,9</sup>	15.00 <sup>9</sup>	13.32 <sup>9</sup>	Missing

**Table 3-2  
Groundwater Elevation Data  
(Ft, MSL)<sup>1</sup>(Continued)**

Date	Monitoring Wells								
	S-1	S-2	S-2R	S-3	S-4	S-5	S-6	S-7	S-8
04/86	8.88	9.66	-	7.96	10.65	10.28	11.41	9.94	9.70
06/86	7.16	7.54	-	7.52	9.92	9.45	10.58	8.69	9.20
08/86	6.59	6.98	-	7.02	9.36	8.83	10.16	7.54	8.30
10/86	7.23	7.62	-	7.23	9.77	9.56	10.40	8.92	8.66
12/86	6.55	6.38	-	6.89	9.08	8.84	9.83	9.70	8.24
02/87	9.56	9.85	-	7.69	10.78	10.38	11.45	9.73	9.89
04/87	8.08	7.77	-	8.09	10.57	9.90	11.13	9.22	9.98
06/87	6.72	6.78	-	5.17	9.66	9.32	10.89	8.01	8.59
08/87	6.25	6.22	-	6.77	9.32	9.35	11.10	6.77	7.85
10/87	5.84	5.88	-	6.48	9.11	9.25	11.13	6.23	7.52
12/87	8.92	9.17	--	7.94	10.94	10.67	11.69	9.25	9.64
02/88	8.81	8.65	-	8.27	10.73	10.05	11.40	9.60	10.06
04/88	7.07	7.06	-	7.30	9.85	9.33	10.72	8.09	9.19
06/88	7.22	7.19	-	7.64	10.03	9.15	10.74	8.36	9.46
08/88	6.51	6.53	-	7.02	9.48	9.07	10.89	7.03	8.19
10/88	5.98	5.92	-	6.44	8.86	8.67	10.57	6.45	7.67
12/88	7.81	7.35	--	7.51	10.17	9.66	10.73	8.76	9.15
02/89	8.09	7.60	-	7.87	10.31	9.74	10.91	9.21	9.73
04/89	8.30	7.90	-	7.96	10.49	9.93	11.05	9.32	10.12
06/89	6.99	6.97	-	6.23	9.83	9.31	11.04	7.73	8.69
08/89	6.49	6.45	-	6.83	9.30	8.91	10.91	6.81	7.92
10/89	6.80	6.72	-	7.13	9.81	9.61	10.85	8.24	8.63
12/89	8.03	7.53	-	7.60	10.20	9.71	10.96	8.96	9.19
02/90	9.06	8.86	-	7.86	10.77	10.08	11.38	10.05	9.79
03/20/91	9.52	9.78	-	8.17	FW	10.74	12.11	10.11	9.99
04/04/91	8.54	7.83	-	8.00	10.61	10.15	11.27	9.46	9.84
09/11/91	6.12	6.06	-	6.62	9.30	8.90	10.82	7.23	9.02
03/16/92	9.00	8.66	-	8.17	11.06	10.62	12.35	10.08	6.54
09/21/92	5.82	5.68	-	6.30	8.23	8.90	9.77	6.08	4.96
03/22/93	8.68	7.78	-	8.10	10.82	9.22	11.25	9.62	9.61
09/21/93	NS	NA	-	7.01	NS	8.03	10.13	6.28	NS
05/17/94	3.23	NA	-	7.78	8.60	10.13	11.70	7.96	4.69
11/15/94	3.63	NA	-	7.99	9.26	10.77	12.47	8.35	4.83
05/23/95	7.11	NA	7.28	7.78	11.39	9.87	11.60	8.04	9.34
11/28/95	6.18	NA	6.10	7.01	8.93	9.07	10.19	6.04	8.17
05/16/96	8.28	NA	8.54	7.79	12.99	10.80	12.82	8.09	9.96
04/21/97	7.15	NA	7.16	7.72	11.07	10.40	12.25	7.65	9.67
05/13/98	7.79	NA	7.95	8.38	11.2	10.37	12.49	8.07	9.47
7/30/99	8.39	NA	7.33	6.66	9.09	8.66	NA <sup>8</sup>	7.50	8.27
5/12/01	8.50	NA	7.21	7.72	9.60	8.76	NA <sup>10</sup>	6.59	8.42
9/8/02	8.35	NA	7.01	7.59	9.79	8.62	10.3 (est)	7.44	8.23
TOC <sup>4</sup> Elev.	15.99 <sup>5</sup>	10.46	14.46 <sup>6</sup>	14.04 <sup>9</sup>	15.04 <sup>9</sup>	13.36 <sup>9</sup>	Missing	12.28	15.57

**Table 3-2  
Groundwater Elevation Data  
(Ft, MSL)<sup>1</sup>  
(Continued)**

Date	Piezometers			
	P-1	P-2	P-3	P-4
04/86	NR <sup>7</sup>	NR	NR	NR
06/86	NR	NR	NR	NR
08/86	6.19	6.31	4.86	4.80
10/86	6.48	6.67	5.27	5.23
12/86	7.16	7.15	5.81	5.72
02/87	7.29	7.13	5.94	5.83
04/87	7.35	6.95	6.06	5.57
06/87	8.74	6.79	5.39	5.34
08/87	6.57	6.67	5.21	5.18
10/87	6.84	6.90	5.55	5.45
12/87	7.09	6.94	5.64	5.60
02/88	7.34	7.33	6.26	5.99
04/88	7.13	7.17	5.92	5.86
06/88	6.84	6.87	5.63	5.43
08/88	8.34	6.59	5.27	5.13
10/88	9.19	6.95	5.55	5.49
12/88	7.20	7.21	5.91	5.72
02/89	7.46	7.38	FW	5.67
04/89	7.29	7.14	5.87	5.72
06/89	6.75	6.84	5.46	5.03
08/89	6.51	6.64	5.19	5.16
10/89	6.75	6.94	5.48	5.30
12/89	6.72	6.77	5.49	5.21
02/90	7.15	7.00	5.81	5.82
03/20/91	8.75	8.95	8.95	8.93
04/04/91	8.94	8.97	8.90	9.00
09/11/91	9.53	9.53	9.58	9.54
03/16/92	9.23	9.28	9.23	9.27
09/21/92	9.51	9.46	9.43	9.57
03/22/93	9.47	9.45	9.43	9.47
09/21/93	9.71	9.74	9.77	9.79



**Table 3-2  
Groundwater Elevation Data  
(Ft, MSL)<sup>1</sup>  
(Continued)**

Date	Piezometers			
	P-1	P-2	P-3	P-4
05/17/94	10.96	9.99	9.97	10.01
11/15/95	9.47	9.53	9.49	9.62
05/23/95	10.54	10.57	10.55	10.62
11/28/95	9.19	9.18	9.23	9.20
05/16/96	10.76	10.72	10.80	10.82
04/21/97	10.25	10.12	10.28	10.21
05/13/98	11.10	11.10	11.19	11.22
7/30/99	10.54	10.63	10.68	10.62
5/12/01	10.07	10.13	10.21	10.12
09-08-02	10.15	10.18	10.27	10.22
TOC <sup>4</sup> Elevations	16.59 <sup>9</sup>	16.53 <sup>9</sup>	15.48 <sup>9</sup>	15.30 <sup>9</sup>
1	ft, MSL = feet relative to mean sea level. All data from April 1986 to February 1990 were taken from the ESI report of February 23, 1990, and were calculated from ESI monitoring well elevations (top of steel casing). Groundwater elevation data beginning with March 1991 were calculated from April 2, 1991, well elevation survey data.			
2	FW = flooded well; water was detected at or above the top of the well casing.			
3	NS = not surveyed.			
4	TOC = top of casing; TOC elevations were surveyed by EMCON on April 2, 1991.			
5	Elevation resurveyed by EMCON on June 14, 1995.			
6	Elevation surveyed by EMCON on June 14, 1995.			
7	NR = not recorded.			
8	NA = not accessible; well covered with concrete.			
9	Area paved in June 1999, well casing extended to allow access; elevation shown is new TOC			
10	New well Installed 5/11/01. Casing survey not completed; elevations not available.			

**Table 3-4  
Analytical Results<sup>1</sup>  
Deep Wells (µg/l)<sup>2</sup>**

Polychlorinated Biphenyls (PCBs) As Total Aroclors							
Monitoring Wells							
Date	D-1	D-2	D-2R	D-3	D-4	D-5	D-6
04/86	ND <sup>3</sup>	ND	-	ND	ND	ND	14.3
06/86	ND	ND	-	ND	ND	ND	1.8
08/86	0.1	ND	-	ND	ND	0.2	6.7
10/86	ND	ND	-	ND	ND	ND	3.2
12/86	ND	ND	-	ND	ND	0.8	8.4
02/87	ND	ND	-	ND	ND	0.5	5.5
04/87	ND	ND	-	ND	0.3	ND	1.9
06/87	ND	ND	-	ND	ND	0.2	6.0
08/87	0.4	ND	-	ND	ND	ND	3.1
10/87	0.1	ND	-	ND	0.2	0.3	4.4
12/87	ND	ND	-	0.1	ND	0.5	1.8
02/88	ND	0.1	-	ND	ND	0.4	0.6
04/88	ND	ND	-	ND	ND	1.9	1.6
06/88	ND	0.1	-	ND	ND	1.5	3.2
08/88	ND	1.5	-	ND	ND	0.7	4.9
10/88	ND	1.8	-	0.3	0.2	31.0	1.4
12/88	ND	0.3	-	0.4	ND	5.2	21.9
02/89	ND	0.3	-	0.3	ND	2.8	8.0
04/89	ND	0.2	-	ND	ND	2.1	8.8
06/89	ND	0.7	-	ND	ND	0.5	3.9
08/89	ND	ND	-	ND	0.2	5.3	4.2
10/89	ND	0.1	-	0.4	ND	2.7	8.4
12/89	ND	0.3	-	ND	ND	3.0	6.7
02/90	ND	0.2	-	0.2	ND	5.0	4.5
03/91	<0.1 <sup>4</sup>	0.2	-	0.1	<0.1	0.2	1.0
09/91	<0.1	<0.1	-	<0.1	<0.1	<0.2	0.4
03/92	<0.1	<0.1	-	<0.1	<0.1	<0.1	0.2
09/92	<0.1	<0.1	-	<0.1	<0.1	0.2	0.3
03/93	0.1	<0.1	-	<0.1	<0.1	<0.1	0.5
09/93	NS <sup>5</sup>	NS <sup>5</sup>	-	<0.1	NS	0.1	0.3
05/94	NA <sup>6</sup>	NS <sup>5</sup>	-	<0.1	<0.1	<0.1	0.4
11/94	NA <sup>6</sup>	NS <sup>5</sup>	-	<0.1	<0.1	<0.1	0.8
05/95	<0.1	NS <sup>5</sup>	<0.1	<0.1	0.1	<0.1	<0.1
11/95	<1	NS <sup>5</sup>	<1	<1	<1	<1	<1
05/96	<0.1	NS <sup>5</sup>	<0.1	<0.1	<0.1	0.5	<0.1
04/97	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1
05/98	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1
07/99	<0.5	AB <sup>7</sup>	<0.5	<0.5	<0.5	<0.5	NA
05/01 <sup>8</sup>	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1
09/02	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1

1. All data from April 1986 to February 1990 were taken from the ESI report of February 23, 1990
2. µg/l = micrograms per liter
3. ND = not detected at or above the method reporting limit
4. < = not detected at or above the specified method reporting limit
5. NS = not sampled
6. NA = not accessible.
7. AB = Well abandoned during Amtrak Station construction
8. Laboratory reporting limit was 1.0 ug/l with J flagged values between 0.1 ug/l and 1.0 ug/l

**Table 3-5  
Analytical Results<sup>1</sup>  
Shallow Wells (µg/l)<sup>2</sup>**

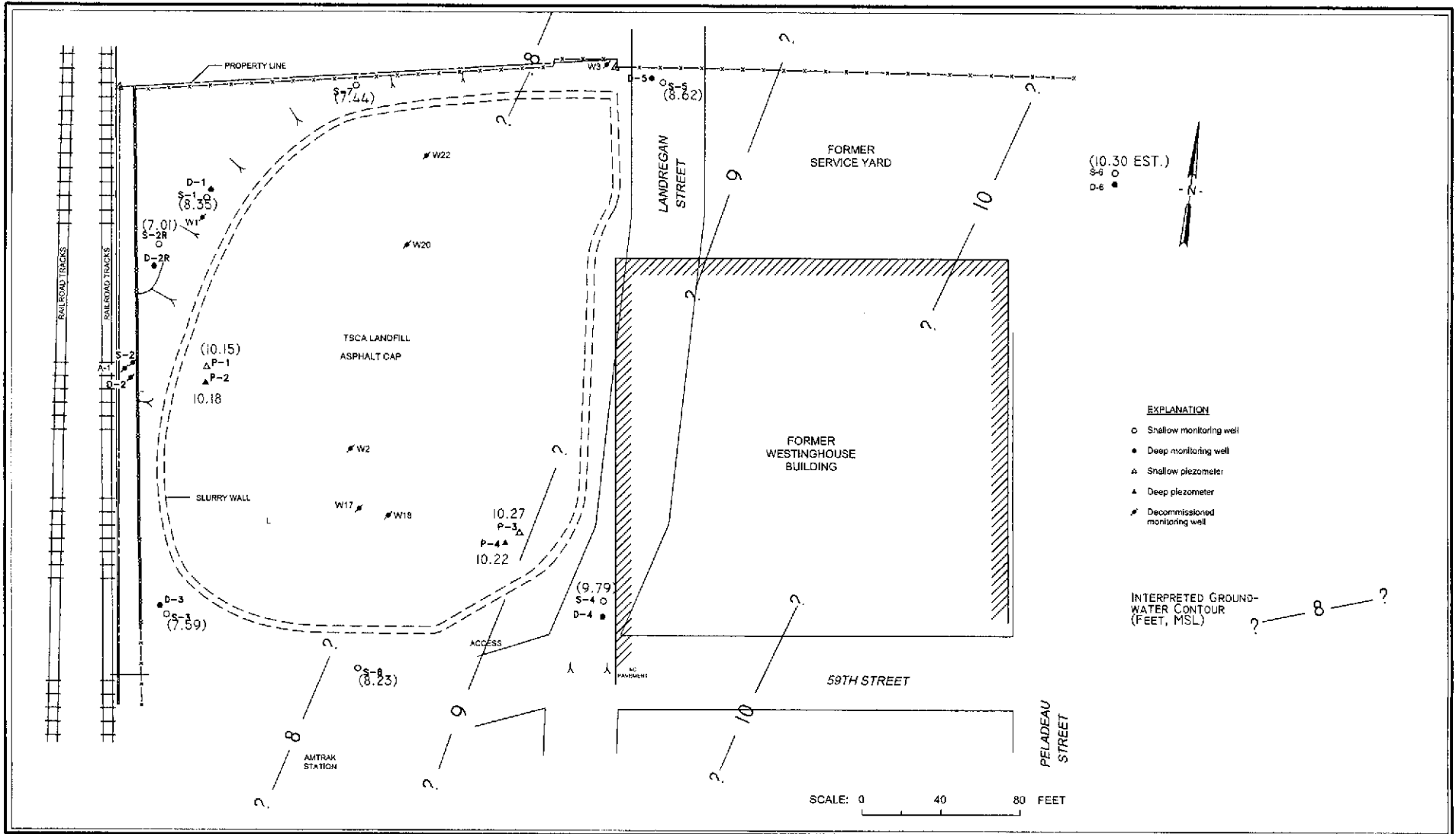
Polychlorinated Biphenyls (PCBs) as Total Aroclors									
Date	Monitoring Wells								
	S-1	S-2	S-2R	S-3	S-4	S-5	S-6	S-7	S-8
04/86	ND <sup>3</sup>	ND	-	4.0	ND	ND	ND	ND	ND
06/86	0.8	0.8	-	1.4	0.8	1.9	1.4	1.5	0.7
08/86	0.7	0.2	-	0.1	0.3	0.5	2.7	2.4	0.9
10/86	0.9	0.7	-	0.3	0.3	1.6	2.2	0.5	0.8
12/86	0.8	0.5	-	0.5	0.5	0.7	2.6	2.4	2.3
02/87	0.8	0.3	-	0.3	0.2	0.2	0.1	1.1	0.4
04/87	0.6	0.2	-	0.9	0.3	0.4	1.8	0.4	0.1
06/87	0.3	0.3	-	ND	ND	0.4	1.3	0.3	0.2
08/87	ND	ND	-	ND	ND	0.7	1.2	0.7	ND
10/87	0.2	0.1	-	ND	0.1	0.3	2.4	0.4	ND
12/87	0.3	ND	-	ND	ND	0.5	1.3	0.8	0.3
02/88	0.8	ND	-	ND	0.2	0.5	1.8	6.9	0.5
04/88	0.2	0.2	-	0.2	ND	0.9	2.1	1.6	0.2
06/88	0.2	0.1	-	0.1	ND	5.7	2.1	1.3	0.1
08/88	0.3	ND	-	ND	1.2	1.9	1.2	1.3	ND
10/88	0.4	ND	-	0.3	ND	4.4	0.7	4.0	0.2
12/88	0.3	0.2	-	ND	ND	1.5	6.0	0.4	ND
02/89	0.3	0.2	-	ND	ND	1.7	5.0	1.2	1.1
04/89	0.5	ND	-	0.1	ND	0.8	1.0	1.2	0.2
06/89	0.6	0.2	-	ND	ND	0.3	1.1	0.5	ND
08/89	19.0	0.2	-	0.1	0.2	2.9	4.3	0.6	ND
10/89	0.2	0.2	-	1.5	ND	4.0	1.8	2.7	0.4
12/89	0.3	ND	-	0.6	ND	4.0	2.8	1.9	0.9
02/90	0.6	ND	-	0.5	ND	2.2	1.0	0.9	0.1
03/91	0.6	0.3	-	0.5	0.1	1.0	0.2	3.0	<0.1 <sup>4</sup>
09/91	1.4	0.3	-	0.6	0.2	1.0	0.2	1.6	<0.1
03/92	0.4	<0.1	-	0.2	<0.1	0.2	0.2	0.4	<1 <sup>5</sup>
09/92	0.5	0.2	-	<0.1	0.2	0.7	0.4	0.4	<0.1
03/93	<0.1	0.4	-	<0.1	<0.1	0.4	<0.1	0.8	<0.1
09/93	NS <sup>6</sup>	NS <sup>6</sup>	-	<0.1	NS	0.3	0.2	0.6	NS
05/94	0.2	NS <sup>6</sup>	-	<0.1	<0.1	0.2	0.2	0.2	<0.1
11/94	0.1	NS <sup>6</sup>	-	<0.1	<0.1	0.2	0.2	0.2	<0.1

1. All data from April 1986 to February 1990 were taken from the ESI report of February 23, 1990
2. µg/l= micrograms per liter
3. ND = not detected at or above the method reporting limit
4. < = not detected at or above the specified method reporting limit
5. Elevated method reporting limit due to matrix interference
6. NS = not sampled
7. AB = Well abandoned during Amtrak Station construction

**Table 3-5  
Analytical Results<sup>1</sup>  
Shallow Wells (µg/l)<sup>2</sup>  
(Continued)**

Polychlorinated Biphenyls (PCBs) as Total Aroclors									
Date	Monitoring Wells								
	S-1	S-2	S-2R	S-3	S-4	S-5	S-6	S-7	S-8
05/95	0.6	NS <sup>6</sup>	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1
11/95	<1	NS <sup>6</sup>	<1	<1	<1	<1	<1	<1	<1
05/96	<0.1	NS <sup>6</sup>	<0.1	<0.1	<0.1	0.8	<0.1	<0.1	<0.1
04/97	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
05/98	<0.1	AB <sup>7</sup>	<0.1	0.13	<0.1	0.13	<0.1	<0.1	<0.1
7/99	<0.5	AB <sup>7</sup>	<0.5	<0.5	<0.5	<0.5	NA	<0.5	<0.5
5/01 <sup>8</sup>	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9/01	<0.1	AB <sup>7</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

1. All data from April 1986 to February 1990 were taken from the ESI report of February 23, 1990  
2. µg/l= micrograms per liter  
3. ND = not detected at or above the method reporting limit  
4. < = not detected at or above the specified method reporting limit  
5. Elevated method reporting limit due to matrix interference  
6. NS = not sampled  
7. AB = Well abandoned during Amtrak Station construction  
8. Laboratory reporting limit was 1.0 ug/l with J flagged values between 0.1 ug/l and 1.0 ug/l



REV.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	DATE

**ALTA GEOSCIENCES, INC.**  
 Environmental & Geotechnical Solutions  
 Bothell, Washington

**GROUNDWATER MONITORING  
 REPORT SEPTEMBER 2002**

**WESTINGHOUSE EMERYVILLE SITE  
 VIACOM CORPORATION**  
 Emeryville, California

**GROUNDWATER CONTOUR MAP  
 SHALLOW WELL SET**

**FIGURE  
 NO.**

**3-1**



**4.0**

**CONCLUSION**

---

Sampling and testing for annual groundwater monitoring at the Westinghouse Emeryville Site were completed in September 2002. All samples were non-detect for PCBs. Groundwater levels were determined to be within the historic range of levels for this Site.

**5.0**

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SOMA Environmental Engineering, Inc., 1996. Baseline Human Health Risk Assessment For The Former Westinghouse Electric Corporation Facility, 5899 Peladeau Street, Emeryville, California, March 15, 1996.

U.S. Environmental Protection Agency (EPA). 1986. Test Methods for Evaluation of Solid Waste, Vol II: Field Manual Physical/Chemical Methods (SW-846). Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C. November 1986.



**APPENDIX A  
ANALYTICAL TESTING RESULTS**

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# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Alta Geosciences

22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153

Lab Sample ID: 31153-001

Client Sample ID: S-1

Sample Time: 4:10 PM

Sample Date: 9/7/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
						Surrogate	Surrogate Recovery		Control Limits (%)	
						Decachlorobiphenyl	117.6		42 - 127	

Order ID: 31153

Lab Sample ID: 31153-002

Client Sample ID: D-1

Sample Time: 4:55 PM

Sample Date: 9/7/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
						Surrogate	Surrogate Recovery		Control Limits (%)	
						Decachlorobiphenyl	118.2		42 - 127	

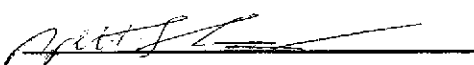
DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Alta Geosciences

22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153	Lab Sample ID: 31153-003	Client Sample ID: S2R								
Sample Time: 5:45 PM	Sample Date: 9/7/2002	Matrix: Liquid								
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						119.5			42 - 127	

Order ID: 31153	Lab Sample ID: 31153-004	Client Sample ID: D2R								
Sample Time: 6:10 PM	Sample Date: 9/7/2002	Matrix: Liquid								
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						106.4			42 - 127	

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Alta Geosciences

22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153

Lab Sample ID: 31153-005

Client Sample ID: S-4

Sample Time: 7:00 AM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A

Surrogate	Surrogate Recovery	Control Limits (%)
Decachlorobiphenyl	91.7	42 - 127

Order ID: 31153

Lab Sample ID: 31153-006

Client Sample ID: D-4

Sample Time: 7:30 AM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A

Surrogate	Surrogate Recovery	Control Limits (%)
Decachlorobiphenyl	93.8	42 - 127

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandroek, QA/QC Manager

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Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153

Lab Sample ID: 31153-007

Client Sample ID: D-5

Sample Time: 8:15 AM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						104.1			42 - 127	

Order ID: 31153

Lab Sample ID: 31153-008

Client Sample ID: S-5

Sample Time: 8:30 AM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						98.0			42 - 127	

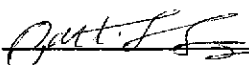
DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandroek, QA/QC Manager

Environmental Analysis Since 1983

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Alta Geosciences

22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153		Lab Sample ID: 31153-009				Client Sample ID: S-8				
Sample Time: 9:35 AM		Sample Date: 9/8/2002				Matrix: Liquid				
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						93.5			42 - 127	

Order ID: 31153		Lab Sample ID: 31153-010				Client Sample ID: S-3				
Sample Time: 10:40 AM		Sample Date: 9/8/2002				Matrix: Liquid				
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						107.4			42 - 127	

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandrock, QA/QC Manager

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Alta Geosciences

22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153

Lab Sample ID: 31153-011

Client Sample ID: S-9

Sample Time: 12:15 PM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
				Surrogate		Surrogate Recovery		Control Limits (%)		
				Decachlorobiphenyl		102.0		42 - 127		

Order ID: 31153

Lab Sample ID: 31153-012

Client Sample ID: S-7

Sample Time: 1:00 PM

Sample Date: 9/8/2002

Matrix: Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
				Surrogate		Surrogate Recovery		Control Limits (%)		
				Decachlorobiphenyl		97.9		42 - 127		

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandroek, QA/QC Manager

Environmental Analysis Since 1983

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22833 Bothell-Everett Hwy Suite 102-1168

Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153	Lab Sample ID: 31153-013	Client Sample ID: S-6								
Sample Time: 2:20 PM	Sample Date: 9/8/2002	Matrix: Liquid								
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						99.5			42 - 127	

Order ID: 31153	Lab Sample ID: 31153-014	Client Sample ID: D-6								
Sample Time: 3:00 PM	Sample Date: 9/8/2002	Matrix: Liquid								
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						90.9			42 - 127	

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
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Bothell, WA 98021

Attn: Alex Tula

Date: 9/16/02

Date Received: 9/9/2002

Project Name: Westinghouse

Project Number:

P.O. Number: Westinghouse

Sampled By: RL Quine

## Certified Analytical Report

Order ID: 31153		Lab Sample ID: 31153-015				Client Sample ID: Rinsate				
Sample Time: 3:30 PM		Sample Date: 9/8/2002				Matrix: Liquid				
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						118.0			42 - 127	

Order ID: 31153		Lab Sample ID: 31153-016				Client Sample ID: S-3				
Sample Time: 8:15 AM		Sample Date: 9/9/2002				Matrix: Liquid				
Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Aroclor 1016	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1221	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1232	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1242	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1248	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1254	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1260	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1262	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Aroclor 1268	ND		1	0.1	0.1	µg/L	9/11/2002	9/11/2002	PW7177A	EPA 8082A
Surrogate						Surrogate Recovery			Control Limits (%)	
Decachlorobiphenyl						110.1			42 - 127	

DF = Dilution Factor

ND = Not Detected

DLR = Detection Limit Reported

PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

  
Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

# Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

## Quality Control Results Summary

QC Batch #: PW7177A  
Matrix: Liquid

Units: µg/L  
Date Analyzed: 9/11/2002

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
<b>Test:</b> EPA 8082A											
Aroclor 1260	EPA 8082A	ND		0.2		0.2007	LCS	100.3			21.0 - 127.0
			<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					
			Decachlorobiphenyl	119.7		42 - 127					
<b>Test:</b> EPA 8082A											
Aroclor 1260	EPA 8082A	ND		0.2		0.2002	LCSD	100.1	0.25	30.00	21.0 - 127.0
			<b>Surrogate</b>	<b>Surrogate Recovery</b>		<b>Control Limits (%)</b>					
			Decachlorobiphenyl	122.1		42 - 127					



# Entech Analytical Labs, Inc.

3334 Victor Court  
Santa Clara, CA 95054

(408) 588-0200  
(408) 588-0201 - Fax

# Chain of Custody / Analysis Request

Attention to: <b>Alex Tula</b>	Phone No.: <b>425 485 1053</b>	Purchase Order No.:	Send Invoice to (if Different)	Phone
Company Name: <b>ALTA Geosciences</b>	Fax No.: <b>206-239 2093</b>	Project Number:	Company	
Mailing Address: <b>22833 Bothell- Everett Hwy Suite 102-1168</b>	Project Name: <b>Westmy house</b>	Billing Address (# Different)		
City: <b>Bothell</b>	State: <b>WA</b>	Zip: <b>98021</b>	Project Location: <b>Emery Vlle</b>	City: State Zip

Sampler: <b>RL Quine</b>	Turn Around Time: Same Day <input type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	<input type="checkbox"/> Volatile Organics by GC/MS: From 113 <input type="checkbox"/> Fuel Oxygenates by GC/MS: 8240 <input type="checkbox"/> MTBE by GC/MS: 8260B <input type="checkbox"/> Pesticides: 8061 <input type="checkbox"/> Halogenated or Aromatic Volatiles: 801/8010 <input type="checkbox"/> TPH as Gas/BTEX: 802/8020 <input type="checkbox"/> Base/Neutral/Acid Organics: 8270 <input type="checkbox"/> Fuel Scan <input type="checkbox"/> Diesel <input type="checkbox"/> w/ Shop Standard Cleanup <input type="checkbox"/> w/ Shop Column Cleanup <input type="checkbox"/> TPH <input type="checkbox"/> Oil & Grease <input type="checkbox"/> <input type="checkbox"/> THM (502-2) <input type="checkbox"/> Metals - Circle Below <input type="checkbox"/> Total <input type="checkbox"/> Dissolved <input type="checkbox"/>
Date: <b>9-8-02</b>		

Order ID:		Sampling		Matrix	Composite	Grab	Containers	Preservative											Remarks
Client ID	Laboratory No.	Date	Time																
S-6	31153-013	9-8	1420	W		✓	2	NO											
D-6	014		1500	W		✓	2												
Rinsate	015		1530	W		✓	2												
S-3	0167	9-9	0815	W		✓	2												Environment
S-3-MS		"	↓	W		✓	2												Matrix Spike
S-3-MSD		"	↓	W		✓	2												Matrix Spike

Relinquished by: <b>Richard Quine</b>	Received by: <b>Joseph Machado</b>	Date: <b>9/9/02</b>	Time: <b>955</b>
Relinquished by:	Received by:	Date:	Time:
Relinquished by:	Received by:	Date:	Time:
Relinquished by:	Received by:	Date:	Time:

**Special Instructions or Comments**  NPDES Detection Limits

PCB reporting limit 0.1 µg/L  
MS/MSD on environmental sample S-3

Metals: Al, As, Sb, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Si, Ag, Na, Se, Sr, Tl, Sn, Ti, V, Zn, W: CAM-17  Plating  PPM-13  LUFT-5

**APPENDIX B  
DATA QUALITY ASSURANCE REVIEW**

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**GROUNDWATER SAMPLES: POLYCHLORINATED BIPHENYLS (PCBs)  
DATA QUALITY ASSURANCE REVIEW  
(ENTECH LABORATORY NUMBERS 31153-001- 31153-016)**

Upon receipt from Columbia Analytical Services (CAS) laboratory, all PCB analytical results underwent a Quality Assurance (QA) review of laboratory handling procedures. In addition to sample results, the laboratory data reports included Quality Control (QC) data for blank, laboratory control sample (i.e., blank spike), surrogate, matrix spike, and matrix spike duplicate results.

**SAMPLE ANALYSIS**

CAS performed PCB analyses using EPA Test Method 8082 as promulgated in *Test Methods for Evaluating Solid Waste, USEPA SW846*.

**HOLDING TIMES**

Holding times for all groundwater samples were assessed relative to the following SW846 holding times:

- o A sample must be extracted within seven days from the date and time of sample collection;
- o A sample must be analyzed within 40 days from the date of extraction; and
- o All samples must be shipped in an iced chest to the laboratory and stored at 4°C until they are extracted.

Eighteen groundwater samples (including MS/MSD and Field duplicates) were collected between September 7<sup>th</sup> and 9<sup>th</sup>, 2002. Entech received the samples on 9 September 2002. All samples were transported in an iced chest and were stored at 4°C until extraction. Entech extracted and analyzed PCB samples on September 11, 2002. All holding times are acceptable.

**BLANK ANALYSIS**

Method blank analysis is performed to determine the extent of laboratory contamination of samples. Method blank criteria require that no PCBs be detected in the blank. One method blank was analyzed. PCBs were not detected in the blank.

**ACCURACY**

## **ALTA GEOSCIENCES, Inc.**

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Accuracy was assessed by evaluating surrogates, blank spikes, and matrix spike recoveries. Each sample and QC sample is spiked with a surrogate compound. Each matrix spike (MS) and matrix spike duplicate (MSD) was prepared by spiking a groundwater sample with a known concentration of Decachlorobiphenyl (DCB). Acceptable QC recovery limits for DCB are 42-127%. The MS recovery of DCB was 119.6 for the MS and 125.6 for the MSD sample. All values are with acceptable limits.

A laboratory control sample (LCS) is prepared by spiking a laboratory-prepared aqueous sample with known concentrations of Decachlorobiphenyl. The Acceptable QC recovery limits for DCB are 42-127%. The reported percent recovered for the LCS sample was 119.7, and for the duplicate LCSD sample it was 122.1. All %Rs were acceptable for the control samples.

### **Surrogate Recovery**

Groundwater samples were spiked with the surrogate compound Decachlorobiphenyl (DCB). The project QC limits for percent surrogate recovery (%R) of DCB are 42% to 127%.

DCB %Rs ranged from 90.1% to 119.3%. The associated method blanks and laboratory control sample exhibited surrogate recoveries and target analytes within acceptable QC limits. All %Rs were acceptable for all samples.

### **PRECISION**

Precision is expressed as the relative percent difference (RPD) between the MS and the MSD. The project required MS/MSD RPD control limit is 50%. The RPD for DCB was 5 %, well within acceptable limits.

### **COMPOUND IDENTIFICATION**

PCBs were detected using a gas chromatograph equipped with an electron capture detector (ECD). The identity of a detected compound was determined by comparison of a standard's retention times and its chromatographic trace with that of the sample detected compound.

The requested detection limits for all aroclors was 0.1µg/L. The laboratory reporting limits for all Aroclors was 0.1 µg/L.

### **COMPLETENESS**

## **ALTA GEOSCIENCES, Inc.**

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Completeness is a measure of the amount of valid sample data obtained from the measurement system compared to the amount of sample data that were analyzed. Valid results are those results which meet or exceed quality control criteria and satisfy quality assurance objectives. The percent completeness is compared to a goal of 80%.

Completeness for the data set was 100%. The completeness is acceptable.