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Geo Plexus, Inc.

Health & Safety Training • Geo/Environmental Personnel • Engineering Geology Consultants • Environmental Management Consultants

January 22, 1997

Walsh Pacific Construction
EBMUD Adeline Maintenance Facility
2130-A Adeline Street
Oakland, CA 94607
Attn.: Mr. Mike Perotti

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WALSH PACIFIC

Subject: Subsurface Investigation Report and Response to Agency Comments on Addendum No. 2 to Materials Management Plan for EBMUD Adeline Maintenance Facility, Oakland, CA

Reference: (a) Addendum No. 2 to Materials Management Plan for EBMUD Adeline Maintenance Facility, Oakland, CA prepared by Geo Plexus, Inc., dated September 12, 1996
(b) Materials Management Plan for EBMUD Adeline Maintenance Facility, Oakland, CA, prepared by Geo Plexus, Inc., dated January 18, 1996

Dear Mr. Perotti

As requested and authorized, Geo Plexus, Incorporated is pleased to provide the attached Subsurface Investigation Report and Response to Agency Comments on Addendum No. 2 to the Materials Management Plan (MMP), reference (a), for the Phase 2 and Phase 3 construction sites at the EBMUD Adeline Maintenance Center (AMC). References (a) and (b) present the general site history and environmental issues for the project, an evaluation of human and environmental risks associated with the known soil contaminates, remedial action criteria for the planned construction phases, and phase-specific guidelines to be implemented to complete the earthwork associated with the construction.

The attached report summarizes the investigation activities, analytical testing program, and findings of the investigation to further define and evaluate the known environmental site conditions for the AMC Phase 2 and Phase 3 construction sites. The document also includes a Response to Alameda County Department of Environmental Health comments on the RBCA Tier 1 evaluation presented in reference (a).

Should you require additional information or need clarification of any information presented in this document, please contact our office.

Respectfully submitted,
Geo Plexus, Incorporated

Kimberly F. Leeds,
President

David C. Glick, CEG 1338, HG 32
Director, Geologic and Environmental Services

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GEOLOGIST
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cc: C95041

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Submittal Transmittal

Walsh Pacific Construction
Adeline Maintenance Center
WPC project #9572
2130-A Adeline Street
Oakland, CA 94607

Submittal No.: 229-01125 Rev 0
Transmittal Date: 1/30/97
Printed on: 1/30/97

Transmitted To
David Tsztoo East Bay Municipal Utility District 2130 Adeline Street Oakland , CA 94607 Tel: 510-287-1085 Fax: 510-835-8729

C624
1226
437-7304 pgr.

Date	Qty	Submittal Package Action	
1/30/97	4		
Submitted By		**Transmitted For**	**Delivered By**
Melissa Catudan		Record	Hand

Submittal Package No.	Description	Trade
229-01125 Rev 0	Blk 2: Subsurface Investig. Report	Hazardous Conditions

Submittal Items	Description	Notes	Item Action
4 folders	Blk 2: Subsurface Invest. Report		

Remarks	Copies To
Submitted to District for Record	

EAST BAY MUNICIPAL DISTRICT
ADELINE MAINTENANCE CENTER

POSITION	ACTION	INFORMATION
Project Manager	D-L	
Construction Manager		
Resident Engineer	Have the full copy	
Office Engineer		
Inspector		

Eileen Tanke
DATE: RECEIVED OCT
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SUBSURFACE INVESTIGATION REPORT AND RESPONSE TO AGENCY COMMENTS ON ADDENDUM No. 2 TO MATERIALS MANAGEMENT PLAN for EAST BAY MUNICIPAL UTILITY DISTRICT ADELINE MAINTENANCE CENTER 1200 21st STREET OAKLAND, CALIFORNIA

prepared for:

Walsh Pacific Construction
EBMUD Adeline Maintenance Facility
2130-A Adeline Street
Oakland, California

and

Special Projects Division
Engineering Department
East Bay Municipal Utility District
375 Eleventh Street
Oakland, California

January 22, 1997

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SUBSURFACE INVESTIGATION REPORT AND RESPONSE TO AGENCY COMMENTS ON ADDENDUM No. 2 TO MATERIALS MANAGEMENT PLAN for EAST BAY MUNICIPAL UTILITY DISTRICT ADELINE MAINTENANCE CENTER 1200 21st STREET OAKLAND, CALIFORNIA

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APPENDICES

Appendix A - Boring Permit and Logs
Appendix B - Analytical Test Data - Supplemental Investigation
Appendix C - Revised RBCA Tier-1 Analysis

SUBSURFACE INVESTIGATION REPORT AND RESPONSE TO AGENCY COMMENTS ON ADDENDUM No. 2 TO MATERIALS MANAGEMENT PLAN for EAST BAY MUNICIPAL UTILITY DISTRICT ADELINE MAINTENANCE CENTER 1200 21st STREET OAKLAND, CALIFORNIA

FIGURES

ACRONYMS

AMC	Adeline Maintenance Center
ASTM	American Society for Testing and Materials
BTEX	Volatile Aromatic Compounds (Benzene, Toluene, Ethyl benzene and Xylene)
DHS	State of California Department of Health Services
DTSC	State of California Department of Toxic Substance Control
EBMUD	East Bay Municipal Utility District
EPA	U.S. Environmental Protection Agency
FID	Flame Ionizing Detector
HVOC	Halogenated Volatile Organic Compounds
LUST	Leaking Underground Storage Tank
MMP	Materials Management Plan
OVA	Organic Vapor Analyzer
OVM	Organic Vapor Meter
PID	Photoionization Detector
RBCA	Risk-Based Corrective Action
RBSL	Risk-Based Screening Levels
RCRA	Resource Conservation and Reclamation Act
RWQCB	State of California Regional Water Quality Control Board
STLC	Soluble Threshold Limit Concentration
TPH gas	Total Petroleum Hydrocarbons as gasoline
TPH diesel	Total Petroleum Hydrocarbons as diesel
TTLC	Total Threshold Limit Concentrations
UST	Underground Storage Tank
WPC	Walsh Pacific Construction
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compounds

SUBSURFACE INVESTIGATION REPORT AND RESPONSE TO AGENCY COMMENTS ON ADDENDUM No. 2 TO MATERIALS MANAGEMENT PLAN for EAST BAY MUNICIPAL UTILITY DISTRICT ADELINE MAINTENANCE CENTER 1200 21st STREET OAKLAND, CALIFORNIA

1.0 INTRODUCTION

The following responds to comments from the Alameda County Health Agency regarding Addendum 2 to the Materials Management Plan (MMP) for the East Bay Municipal Utility District (EBMUD) Adeline Maintenance Center (AMC). Agency comments are outlined in two letters dated October 10 and November 19, 1996, respectively. In addition, the following presents and discusses the results of supplemental site investigation activities conducted in accordance with Addendum 2. The site investigation activities were completed in October, 1996.

The following provides project background information, summarizes the Agency comments, presents the results of the previous and supplemental site investigation activities and addresses the Agency comments with respect to the additional site information.

1.1 Background

EBMUD is constructing a new Adeline Maintenance Center (AMC) at the site of the existing AMC. The AMC site comprises four city blocks, as shown in Figure 1. Walsh Pacific Construction (WPC) has been retained by EBMUD as the design/build contractor for the AMC project which includes demolition of several existing structures, the construction of 5 new buildings, and remodeling of 2 buildings. The construction project will be completed in 3-phases over a 2-year period ending approximately April, 1998. Phase-1 of construction is currently in progress and Phase-2 is scheduled to begin in December, 1996. Phase-3 of the construction is scheduled to begin in October, 1977. Figure 2 illustrates the Phase 2 and Phase 3 construction areas, the location of the existing structures, and the location of the planned structures.

1977?! How? Time warp?

Alameda County Health Agency is the lead regulatory agency providing oversight of environmental investigations and remedial activities conducted at the site.

The MMP for the EBMUD AMC was prepared by Geo Plexus, Inc., (dated January 18, 1996) and presented: the general history of the project site, a Tier-1 Risk-Based Corrective Action (RBCA) evaluation of human and environmental risks associated with the known soil contaminates, remedial action criteria for the planned construction phases, and phase-specific guidelines to be implemented to complete the earthwork associated with the construction.

Addendum No. 1 was prepared to incorporate responses to Alameda County Health Agency comments on the MMP and to address additional characterization and proposed remedial action for the Phase-1 construction site.

Addendum No. 2 to the MMP was prepared by Geo Plexus, Inc. (dated September 12, 1996) to present the work plan for supplemental investigation activities to further define the extent of soil contamination above the threshold criteria in areas included in the Phase 2 and Phase 3 construction. Addendum No. 2 also included a RBCA Tier 1 evaluation for volatile organic and polynuclear aromatic compounds known to be present or anticipated to be encountered in the Phase 2 and 3 construction areas which were not addressed in the MMP or Addendum No. 1.

Addendum No. 2 was forwarded to Alameda County Health Agency on October 1, 1996 and comments were received on October 10 and November 19, 1996, respectively. The comments primarily addressed:

- Residual benzene contamination adjacent to West Grand Avenue, associated with the former underground fuel storage tanks, removed in 1994;
- Delineation of potential contamination associated with the waste oil underground storage tank and adjacent to boring 2-7;
- The criteria for conducting metals analysis on soil samples from construction Phase 2 and Phase 3;
- Clarification on RBCA Tier-1 threshold criteria for ethylbenzene; and
- Use of the most conservative exposure pathways in setting threshold criteria for residual contamination left beneath the footprint of new buildings.

1.2 Previous Site Investigation Activities

The following summarizes site soil analytical data collected during the removal of the underground fuel tanks at the former service station in 1994 and completion of a Preliminary Site Assessment in 1995. These data are more completely described in the following reports:

General Environmental Management Services, 1994, "Interim Remedial Action Summary Report for EBMUD Facility located at 1200 21st Street, Oakland, CA";

Geo Plexus, Inc., 1995, "Preliminary Site Assessment Report for Adeline Maintenance Facility", prepared for East Bay Municipal Utility District.

Six underground storage tanks were excavated and removed from the former gasoline service station located within the Phase 2 construction area in November, 1994 (see Figure 3). The excavation extended vertically to a depth of 13- to 16-feet below the ground surface and laterally to the excavation boundaries indicated on Figure 4. The final excavation sample locations are also indicated on Figure 4.

Table 1 presents the analytical test data for the excavation samples:

TABLE 1

1994 TANK EXCAVATION SAMPLES
SUMMARY OF ANALYTICAL TEST DATA
(Concentrations in parts per million)

Sample No.	TPHgas	TPHdiesel	Oil&Grease	Benzene	Toluene	Ethylbenzene	Xylene
111	24	24	ND	0.3	0.028	0.15	0.50
112	13	ND	NA	0.028	0.015	0.19	0.33
113	22	13	NA	0.29	0.025	0.73	1.0
114	6.1	ND	NA	1.5	0.14	0.17	0.86
125	ND	ND	ND	ND	ND	ND	ND
126	ND	ND	ND	ND	ND	ND	0.009
127	11	ND	ND	0.054	0.59	0.80	0.14
128	420	440	10	0.58	0.48	ND	3.1
129	ND	ND	ND	ND	ND	ND	ND
130	ND	ND	ND	ND	ND	ND	ND
131	9.1	ND	ND	0.065	0.007	ND	0.076
132	57	ND	ND	0.18	0.026	ND	0.17
133	790	30	88	0.85	0.94	ND	3.1
134	380	NA	ND	3.5	2.3	3.3	13
135	430	NA	75	2.9	0.79	1.8	3.0
136	77	NA	ND	2.7	0.33	0.25	0.17
137	9.4	NA	ND	0.041	0.014	ND	0.10
138	310	NA	130	<0.02	0.36	<0.02	2.4
139	57	NA	ND	0.22	0.14	0.10	0.13
140	1400	NA	680	10	1.1	2.9	5.9
141	18	NA	ND	0.075	0.023	ND	0.18
142	2000	NA	900	<0.5	6.6	6.3	20
143	2800	NA	540	16	18	28	14

Notes: **Bold Sample Numbers** indicate sample located within proposed AMC building footprint.
ND - Constituent not detected
NA - Constituent not analyzed

The preliminary site assessment was performed by Geo Plexus, Inc. in 1995 and included advancing 6 borings (B2-1, B2-3, B2-4, B2-5, B2-7, and B2-8) within the Phase 2 project site and 3 borings (B3-2, B3-3, and B3-4) within the Phase 3 project site (see Figure 5). Tables 2 and 3 present a summary of the analytical test data for the 1995 investigation:

TABLE 2

1995 PRELIMINARY SITE ASSESSMENT
SUMMARY OF ANALYTICAL TEST DATA

(Concentrations in parts per million)

Sample No.	TPHgas	TPHdiesel	Oil&Grease	Benzene	Toluene	Ethylbenzene	Xylene
EB2-1-S1	ND	ND	ND	ND	ND	ND	ND
EB2-1-S2	ND	NA	NA	ND	ND	ND	ND
EB2-3-S2	ND	ND	NA	ND	ND	ND	ND
EB2-4-S1	NA	ND	NA	NA	NA	NA	NA
EB2-7-S1	130	6400	24000	0.43	2.4	2.7	6.5
EB2-7-S2	ND	ND	ND	0.008	0.014	0.005	0.029
EB2-8-S2	NA	1.9	ND	NA	NA	NA	NA
EB3-2-S1	ND	ND	ND	ND	ND	ND	ND
EB3-3-S1	29	2200	1800	0.012	0.019	0.021	0.17
EB3-3-S2	63	2300	13000	0.011	0.010	ND	0.42
EB3-4-S1	ND	2.8	ND	ND	ND	ND	ND

Notes: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint.
ND - Constituent not detected
NA - Constituent not analyzed

TABLE 3

1995 PRELIMINARY SITE ASSESSMENT
ANALYTICAL TESTING - SOIL DATA

(Concentrations in parts per billion)

Sample No.	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	1,1-Dichloro ethane	cis 1,2-Dichloro ethene	Tetrachloro ethane	1,1,1-Trichloro ethane	Trichloro ethene
EB2-1-S1	ND	ND	ND	ND	ND	ND	ND	ND
EB2-1-S2	ND	ND	ND	ND	ND	ND	ND	ND
EB2-3-S1	ND	ND	ND	ND	ND	ND	ND	ND
EB2-4-S1	ND	ND	ND	ND	ND	ND	ND	ND
EB2-4-S2	ND	ND	ND	ND	ND	ND	ND	ND
EB2-5-S1	ND	ND	ND	ND	ND	ND	ND	ND
EB2-5-S2	ND	ND	ND	ND	ND	ND	ND	ND
EB2-7-S1	98	ND	30	210	ND	1900	540	870
EB2-8-S2	ND	ND	ND	ND	ND	ND	ND	ND
EB3-3-S1	ND	ND	ND	ND	ND	68	ND	ND
EB3-3-S2	ND	ND	ND	ND	ND	ND	ND	ND
EB3-4-S1	ND	ND	ND	ND	ND	ND	ND	ND

Note: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint
ND - Constituent not detected

2.0 SUPPLEMENTAL INVESTIGATION

Supplemental investigation activities were performed as outlined in Addendum No. 2 to determine/verify the limits of known/suspected soil contamination and to reduce the uncertainty of remediation requirements for the Phase 2 and Phase 3 construction areas. The investigation was completed in October, 1996 and included advancing 15 soil borings at the locations indicated on Figure 6. The borings were located to delineate residual contamination in the vicinity of the former underground fuel storage tanks and the existing waste oil tank and to characterize the soil beneath the footprint of the planned shops building. In response to the Agency comment regarding the waste oil tank, borings B-9 and B-10 were located at the waste oil tank near previous boring 2-7 for the specific purpose of delineating any contamination associated with the waste oil tank. The borings encountered the tank backfill and underlying soil. The tank is located within the footprint of the proposed stores building. The tank will be removed and any soil containing contaminants above the established threshold criteria will be excavated during phase 3 AMC construction. The waste oil tank is shown on Figure 6.

2.1 Subsurface Borings and Soil Samples

The borings were advanced by Gregg Drilling and by Precision Sampling, State of California Licensed Drilling Contractors, and were logged under the supervision of a State of California Certified Engineering Geologist. An Alameda County (Zone 7) Soil Boring Permit was obtained prior to drilling. The boring permit and boring logs are presented in Appendix A.

The soil borings advanced by Gregg Drilling used an eight-inch, nominal diameter, continuous flight hollow stem auger.

The soil borings advanced by Precision Sampling used a limited-access, portable pneumatic drive assembly which advanced a double casing system with a split barrel sampler as the inside casing. The inner casing contained stainless steel tubes to retain the soil samples. The casings were driven into the soil in three-foot intervals. The sample casing was removed following each drive and replaced with a new sampler prior to advancing the boring. This drilling method achieved a "continuous core" of the soil materials for observation and sampling in lieu of 5-foot interval samples from conventional auger drilling.

All drilling and sampling equipment were thoroughly steam cleaned before drilling began to prevent the introduction of off-site contamination and steam cleaned again between the borings to prevent cross contamination. Sampling equipment was cleaned between sample events using a phosphate-free detergent bath and double rinsed to prevent cross

Sample liners from the borings which were identified as representative of the subsurface conditions were retained for analytical testing. The soil samples were immediately sealed in the tubes/liners and properly labeled including: the date, time, boring location, depth interval, and project number. The samples were placed immediately into a chilled cooler (maintained at 3-5° C with dry ice) for transport to the laboratory under chain-of-custody documentation.

The drill cuttings and soil samples obtained from the boring were screened with a photo-ionization detector (PID) for volatile emissions and were monitored to observe moisture changes in the soils. PID recordings are included on the boring logs.

Soil cuttings from the boring were placed in 55-gallon containers and remain stored on-site pending disposal. The rinsate water derived from the boring/cleaning was also contained in 55-gallon containers and remain stored on-site.

2.2 Grab Water Samples

To assess the options for containment and disposal of perched ground water encountered during excavation of the building foundations, "grab" samples of water encountered in the borings were obtained through the use of disposable teflon bailers lowered into the selected borings. The water contained in the bailers was decanted directly into sterile 40-ml. vials and 1-liter jars with Teflon lined screw caps.

The water samples were immediately sealed in the vials/jars and properly labeled including: the date, time, sample location, project number, and indication of any preservatives added to the sample. The samples were placed immediately into a chilled cooler and maintained at 3-5° C for transport to the laboratory under chain-of-custody documentation.

2.3 Boring Backfill

The borings were backfilled to the ground surface with a neat-cement slurry with 5% bentonite added.

2.4 Analytical Testing Schedule

The soil and ground water samples were submitted to and tested by McCampbell Analytical, a State of California, Department of Health Services certified testing laboratory. Analytical testing was scheduled and performed in accordance with the State of California, Regional Water Quality Control Board, and Alameda County Environmental Health Department guidelines. The testing included the following:

- Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015;
- Total Petroleum Hydrocarbons as diesel by Method GCFID 3550/8015;
- Volatile Aromatics (BTEX) and MTBE by EPA Method 8020;
- Oil and Grease Compounds by EPA Method 5520;
- Volatile Halogenated Compounds by EPA Method 8010;
- Polynuclear Aromatic Compounds by EPA Method 8100; and
- LUFT Metals by EPA Method 6000 series.

These analytes were selected based on the results of previous site investigation activities that indicated TPH-gasoline, TPH-diesel, BTEX, Oil and Grease, Volatile Organics and PNA's may be present in subsurface soils. The analytical test data and chain-of-custody documents are included as Appendix B.

2.5 Analytical Test Results

Tables 4, 5, and 6 present a summary of the analytical test data for the soil samples:

TABLE 4

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - SOIL DATA

(Concentrations in parts per million)

ESLs 400 500 1000 0.38 9.3 32 11 5.6

Sample No.	TPHgas	TPHdiesel	Oil&Grease	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
B-1, 5-6'	ND	NA	NA	0.016	0.007	0.009	0.012	ND
B-1, 10-11.5'	ND	NA	NA	0.007	0.012	ND	0.010	ND
B-1, 15-16.5'	ND	NA	NA	ND	ND	ND	ND	ND
B-2, 5-6'	1.1	3.0	ND	ND	ND	ND	0.013	ND
B-2, 10-11.5'	ND	1.6	ND	ND	ND	ND	ND	ND
B-2, 15-16.5'	ND	ND	NA	ND	ND	ND	ND	ND
B-3, 5-6'	87	(620)	X (1300)	ND	0.061	0.075	0.39	ND
B-3, 10-11.5'	ND	2.3	NA	ND	ND	ND	ND	ND
B-4, 5-6'	29	34	ND	0.063	0.048	0.053	0.17	<0.08
B-4, 10-11.5'	ND	ND	NA	ND	ND	ND	0.012	ND
B-5, 5-6'	1.1	ND	ND	ND	ND	ND	0.012	ND
B-5, 10-11.5'	ND	4.6	ND	ND	ND	ND	ND	ND
B-6, 5-6'	ND	ND	NA	ND	ND	ND	ND	ND
B-7, 5-6'	88	260	170	0.035	0.10	0.11	0.55	<0.2
B-7, 10-11.5'	ND	ND	ND	0.040	0.007	ND	ND	ND
B-8, 5-6'	ND	ND	NA	ND	ND	ND	ND	ND
B-9, 5-6'	X 360	X (7000)	X (54000)	(0.85)	X 9.3	X 3.6	X (20)	<0.8
B-9, 10-11.5'	ND	4.3	ND	ND	ND	ND	ND	ND
B-9, 15-16.5'	ND	NA	NA	ND	ND	ND	ND	ND
B-10, 5-6'	X 380	X (15000)	X (64000)	(0.55)	X 6.7	X 11	X (69)	<0.4
B-10, 10-11.5'	ND	1.4	ND	ND	ND	ND	ND	ND

Notes: **Bold Sample Numbers** indicate sample located within proposed AMC building footprint.
ND indicates constituent not detected.
NA indicates constituent not analyzed.

X = exceed the agreed upon CLs,

TABLE 4 (cont'd)

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - SOIL DATA

(Concentrations in parts per million)

400 500 1000 0.38 9.3 32 11 5.6

Sample No.	TPHgas	TPHdiesel	Oil&Grease	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
B-11, 5-6'	NA	NA	ND	NA	NA	NA	NA	NA
B-12, 3.5-4'	4.2	X (1200)	X (11000)	0.010	0.013	ND	0.038	ND
B-12, 9-9.5'	ND	NA	NA	ND	ND	ND	ND	ND
B-13, 5-5.5'	12	X (1800)	X (13000)	0.006	0.012	0.010	0.10	<0.06
B-13, 9-9.5'	ND	NA	NA	ND	0.012	ND	0.011	ND
B-14, 4-5.5'	35	57	180	0.23	0.080	0.16	0.48	<0.2
B-14, 8-8.5'	110	99	NA	ND	ND	0.064	0.44	<0.15
B-14,12.5-13'	ND	NA	NA	0.007	ND	ND	ND	0.005
B-15, 4-4.5'	(530)	(5700)	190	X (1.8)	1.3	0.76	4.5	<3.5
B-15, 8.5-9'	1.6	4.2	NA	0.018	0.013	ND	0.016	ND

Notes: **Bold Sample Numbers** indicate sample located within proposed AMC building footprint.
ND indicates constituent not detected.
NA indicates constituent not analyzed.

TABLE 5

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - SOIL DATA

(Concentrations in parts per billion)

Sample No.	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	1,1-Dichloro ethane	cis 1,2-Dichloro ethene	Tetrachloro ethane	1,1,1-Trichloro ethane	Trichloro ethene
ESLs	1.6	7.4	0.13	0.89	3.6	6.925	7.8	0.73
B2, 5-6.5'	ND	ND	ND	ND	ND	ND	ND	ND
B3, 5-6.5'	ND	ND	ND	ND	ND	ND	ND	ND
B5, 5-6.5'	ND	ND	ND	ND	ND	ND	ND	ND
B9, 5-6.5'	<100	<100	<100	X (220)	<100	(3700)	X (1700)	X (1700)
B9, 10-11.5'	ND	ND	ND	ND	ND	ND	ND	ND
B10, 5-6.5'	(990)	(74)	(280)	X (830)	X (90)	(2600)	X (550)	<50
B10, 10-11.5'	ND	ND	ND	ND	ND	ND	ND	ND
B-115-6.5'	ND	ND	ND	ND	ND	ND	ND	ND
B12, 3.5-4'	ND	ND	ND	ND	ND	ND	ND	X (5.2)
B12, 9-9.5'	ND	ND	ND	ND	ND	ND	ND	ND
B13, 5-5.5'	ND	ND	ND	ND	ND	34	ND	X (5.4)
B13, 9-9.5'	ND	ND	ND	ND	ND	ND	ND	ND

Notes: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint.
ND indicates constituent not detected.

TABLE 6

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - SOIL DATA
(Concentrations in parts per million)

Sample No.	Cadmium	Chromium	Lead	Nickel	Zinc
B9, 5-6.5'	ND	20	ND	12	36
B9, 10-11.5'	ND	36	ND	22	32
B10, 5-6.5'	ND	30	4.3	34	34
B12, 3.5-4'	ND	38	80	38	66
B13, 5-5.5'	ND	61	64	48	77

Notes: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint.
ND indicates constituent not detected.

Tables 7 and 8 present the analytical test data for the samples of perched water:

TABLE 7

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - WATER DATA
(Concentrations in parts per billion)

Sample No.	TPHgas	TPHdiesel	Oil&Grease	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
B1	ND	NA	NA	ND	ND	ND	ND	ND
B2	200	720	ND	ND	ND	0.50	1.2	130
B3	220	NA	NA	ND	ND	ND	1.1	<6
B5	300	280	ND	ND	ND	ND	2.7	ND
B9	380	16000	8.4	19	27	8.5	58	210
B14	2900	59000	56	52	7.3	8.3	21	<15

Notes: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint.
ND indicates constituent not detected.
NA indicates constituent not analyzed.

TABLE 8

1996 SUPPLEMENTAL INVESTIGATION
ANALYTICAL TESTING - WATER DATA

(Concentrations in parts per billion)

ESLs — 47 — 1120 — 62 — 360

Sample No.	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	1,1-Dichloro ethane	cis 1,2-Dichloro ethene	Tetrachloro ethane	1,1,1-Trichloro ethane	Trichloro ethene
B5	ND	ND	ND	ND	ND	ND	ND	ND
B9	ND	ND	ND	18	ND	2.8	1.7	2.6
B14	ND	ND	ND	ND	ND	ND	ND	ND

Notes: **Bold Sample Numbers** indicate sample location within proposed AMC building footprint.
ND indicates constituent not detected.

3.0 ANALYSIS AND DISCUSSION

To assess the potential health risk of VOC's and PNA's for the AMC Phase 2 and Phase 3 construction sites, an additional risk based corrective action analysis was performed in accordance with the procedures presented in ASTM E 1739-95. This analysis was performed using a commercially available, automated process known as "Tier 2 RBCA Tool Kit" published by Groundwater Services, Inc. This evaluation maintained the "commercial" health risk of 1×10^{-4} as established in the MMP and included the VOC and PNA constituents known or anticipated to be present at the AMC site. The exposure pathways considered in Addendum No. 2 included:

- soil contact for construction workers;
- soil ingestion;
- volatilization of soil gasses to indoor air;
- volatilization of soil gasses to outdoor air; and
- contaminant leaching to ground water.

In accordance with Agency comments, two additional exposure pathways were included in the revised analysis assuming the presence of contaminated "perched" water beneath building footprints:

- volatilization of soil gasses to indoor air; and
- volatilization of soil gasses to outdoor air.

In addition, 1,2-Dichlorobenzene and cis 1,2-Dichlorobenzene were included in the revised RBCA Tier-1 analysis (included as Appendix C) to evaluate additional constituents detected in the supplemental investigation. Anthracene and Methylene Chloride were included to comply with Agency request for inclusion in the analysis for consistency with the ASTM Standard.

In response to Agency comments, we have contacted Groundwater Services, Inc. (provider of the RBCA Tier-1 analysis used in this evaluation) to determine the reason that the ethylbenzene value of 130 ppm calculated in the "soil-leachate to protect ground water" analysis differs from the value of 1,610 ppm in the "Look-Up Table X2.1" published in the ASTM Standard. It is our understanding (based on conversations with Groundwater Services, Inc. personnel and Appendix 2 of the software documentation) that the ASTM Standard provides for calculation of two scenarios for each constituent (based on depth to water) and that the most conservative value calculated is used as threshold criteria, with the exception of ethylbenzene which only uses one scenario (deep water table conditions). Groundwater Services, Inc. personnel indicate that the software application maintains the two-scenario test for all constituents including ethylbenzene (as approved by ASTM and authorized by the Standard) which can produce more conservative values than would be achieved by using the ASTM Standard "Look-Up Table". Values for ethylbenzene similar to the values in the "Look-up Table" can reportedly be simulated by increasing the depth to ground water to over 99-feet. We have not forced this calculation and have selected the more conservative value calculated by the software for site conditions.

Evaluation of the Risk Based Screening Levels (RBSL's) assuming exposure from volatilization of contaminants from perched water to indoor or outdoor air indicated that these pathways were less conservative than the leaching to groundwater exposure pathway.

The revised analysis indicated that the most conservative risk valves are derived assuming an exposure pathway of contaminant leaching to groundwater. In accordance with the MMP, these values are applied to the areas outside the footprints of proposed new buildings. State of California Water Quality Control Board Tri-Regional guideline criteria will be applied to areas within the footprints of the proposed buildings. In cases where Tri-Regional guidelines do not exist, the RBCA values are applied.

The threshold criteria for the phase 2 and phase 3 AMC construction sites are summarized on Table 9:

TABLE 9

THRESHOLD VALUES FOR SOIL

Constituent	Threshold Values for Within Building Footprint	RBSL Threshold Values for Outside Building Footprint
TPH gas	100 ppm	unlimited
TPH diesel	1,000 ppm	unlimited
Oil & Grease	1,000 ppm	unlimited
Benzene	0.3 ppm	1.67 ppm*
Toluene	0.3 ppm	360 ppm
Ethylbenzene	1 ppm	130 ppm
Xylenes	1 ppm	Res
Napthalene	1 ppm	64 ppm
Benzo(a)pyrene	Res	Res
Anthracene	Res	Res
1,2 Dichlorobenzene	2,300 ppm	2,300 ppm
1,4 Dichlorobenzene	310 ppm	310 ppm
1,1 Dichloroethane	92 ppm	92 ppm
1,2 Dichloroethane	2.5 pm	2.5 pm
cis-1,2 Dichloroethane	6.4 ppm	6.4 ppm
Fluoranthene	Res	Res
Methylene Chloride	12 ppm	12 ppm
Phenanthrene	Res	Res
Pyrene	Res	Res
Tetrachloroethane	8,800 ppm	8,800 ppm
1,1,1-Trichloroethane	330 ppm	330 ppm
1,1,2-Trichloroethane	0.42 ppm	0.42 ppm
Trichloroethene	2.4 ppm	2.4 ppm

Notes: RBSL - Risk Based Screening Level from RBCA Tier 1 Evaluation.
* Value of 5.82 ppm reduced by 29 percent in accordance with RWQCB guidelines.
Res - selected risk level is not exceeded for pure compound present at any concentration.
Constituents added in the revised analysis are indicated in **bold**.

4.0 CONCLUSIONS

4.1 Subsurface Soil Conditions

The soil borings revealed near-uniform subsurface soil conditions consisting of approximately 4- to 6-feet of sandy to silty clay fill material (containing concrete rubble, brick, wood debris, etc.) underlain by stiff to very stiff, silty clay (bay mud deposits) and dense, silty sand (native sediments). Very strong gasoline and diesel odors were encountered in borings EB-11, EB-12, and EB-13 and a visible sheen was observed on the soil samples recovered from boring EB-13.

4.2 Perched Water Conditions

Perched water was encountered within the fill material and at the interface between the fill and native sediments (silty sand or bay mud). The underlying native sediments did not exhibit free water and as such the perched water is not considered to represent ground water conditions.

4.3 Contaminants of Concern Review

The previous and current investigations have identified the presence of petroleum compounds which exceed the established threshold criteria within the footprints of the proposed structures and isolated areas of petroleum compounds which exceed threshold criteria outside of the building footprints.

With the exception of two samples from boring 2-7, which contained TCE at concentrations above RBSL's, no other volatile organics, PNA's, or heavy metals are present in site soils at concentrations exceeding RBSL's.

4.4 Anticipated Excavation Within Building Footprints

Based on the threshold criteria, the surface soils (extending to depths of 6- to 7-feet) in the areas of the former underground tanks (sample locations 114, 133, 134, 135, 136, and 138) and beneath the existing auto shop (borings EB3-3, B-12 and B-13) will be excavated and removed from the project site to mitigate the risk associated with the petroleum compounds.

Similarly, the area in the immediate vicinity of the underground waste oil tank and borings EB-7, B-9, and B-10 will be excavated at the time of the tank removal. The absence of VOC's in the soil collected from borings B-9 and B-10 indicate that the VOC contamination associated with the waste oil tank is limited in lateral extent and primarily associated with the backfill surrounding the tank. As such, the identified risk will be mitigated by removal of the tank and affected soil during phase 3 AMC construction.

See a later report. Some contamination apparently was left after excavation.

4.5 Anticipated Excavation Outside Building Footprints

Comparison of the site soil data to the RBSL's indicate that with the exception of one sample from the area of the 1994 tank excavation (sample 143 obtained for the perimeter of the excavation for the former tanks along West Grand Avenue) and one sample from boring B-15, the concentration of petroleum compounds detected in the project area outside of the building footprints do not exceed RBSL threshold criteria.

Sample 143 was collected from fill material beneath the sidewalk at a depth of 7 feet below the ground surface. The sample collected immediately above 143, sample 142, did not contain detectable benzene and other surrounding samples contained benzene below RBSL's. Furthermore, the recent investigation activities confirmed that petroleum contamination is limited to the fill overlying native bay mud and silty sand sediments. This data suggest that the Benzene detected in sample 143 is of very limited extent and not representative of a continuing source of contamination to perched water in the fill or to groundwater.

4.6 Perched Water Control

Perched water within the planned excavations containing dissolved petroleum compounds and/or volatile organics will be evacuated and appropriately disposed of during construction. The perched water is associated with the fill overlying the native, uncontaminated soils. The fill soils in these areas will be replaced with compacted, less permeable soils mitigating the potential for future migration of perched water beneath the structure and exposure due to off-gassing.

4.7 Excavation Protocols

During phase 2 and 3 AMC construction, the soil excavation process, monitoring and verification sampling will be performed in accordance with the protocols presented in Addendum No. 2 to the MMP. Excavated soil that does not meet threshold criteria will be treated and/or disposed of off-site. The need for and scope of any groundwater investigation or monitoring program will be assessed once the AMC construction is completed.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of the Walsh Pacific Construction and East Bay Municipal Utility District and their authorized representatives. No reliance on this report shall be made by anyone other than the client for whom it was prepared.

We have only observed a small portion of the pertinent soil conditions present at the site. Subsurface conditions across the site have been extrapolated from information obtained from review of existing documents and from the field investigation. The conclusions made herein are based on the assumption that soil conditions do not deviate appreciably from those described in the reports and observed during the field investigation.

Geo Plexus, Incorporated provides consulting services in the fields of Geology and Engineering Geology performed in accordance with presently accepted professional practices. Professional judgments presented herein are based partly on information obtained from review of published documents, partly on evaluations of the technical information gathered, and partly on general experience in the fields of geology and engineering geology.

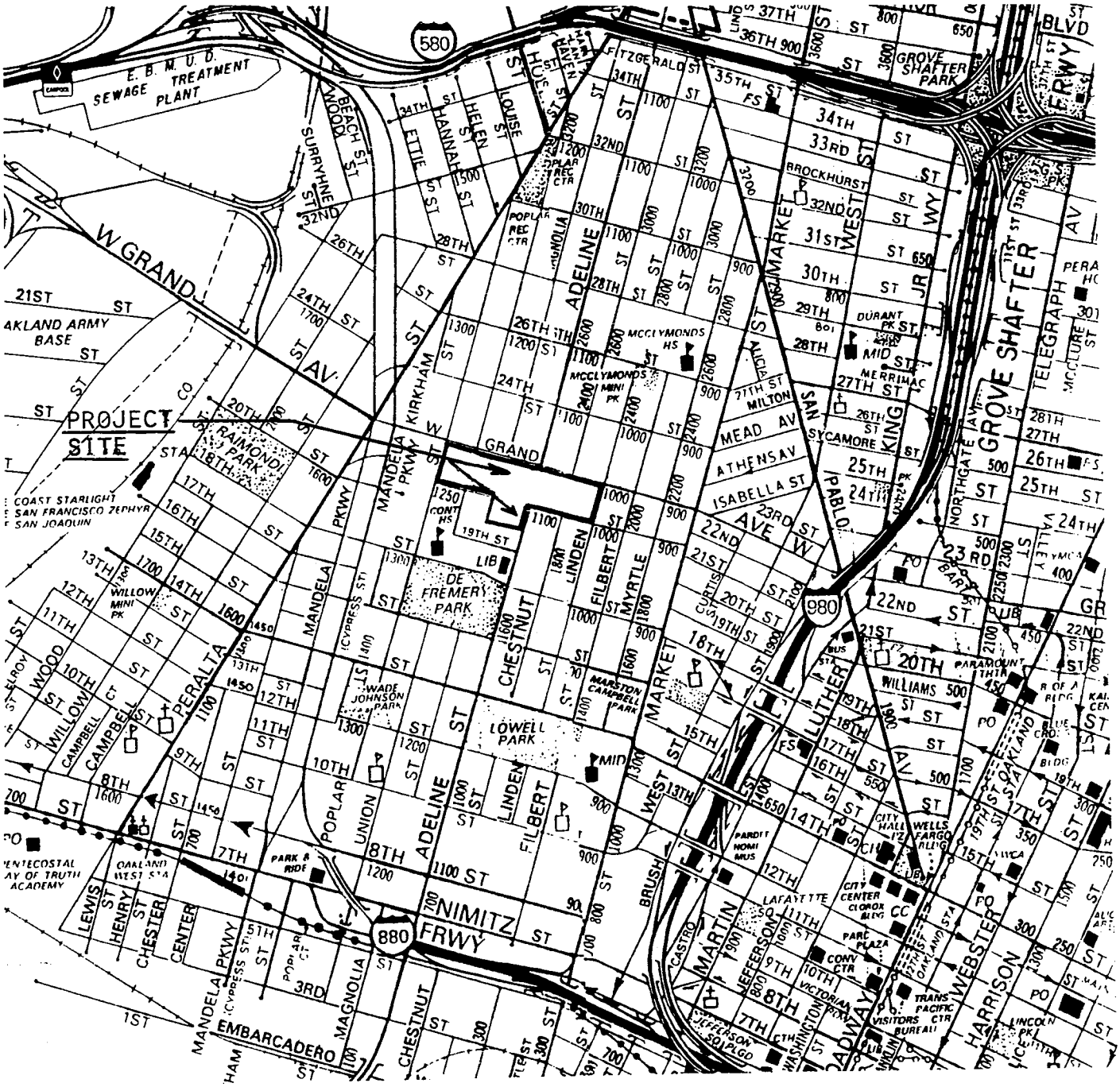
The findings and conclusions presented in this report are based on a preliminary field reconnaissance, a review of previous site investigation reports, on data obtained from the literature research, and on information derived from the subsurface investigation and analytical testing. This assessment did not include an inspection/evaluation for the presence of asbestos products and/or radon gas, or other organic/inorganic compounds not tested for.

This report provides neither certification nor guarantee that the property is free of hazardous substance contamination.

This report has been prepared in accordance with generally accepted methodologies and standards of practice of the area. The personnel performing this assessment are qualified to perform such investigations. No warranty, expressed or implied, is made as to the findings, conclusions and recommendations included in the report.

If you have questions regarding the findings, conclusions, or recommendations contained in this report, please contact us. We appreciate the opportunity to serve you.

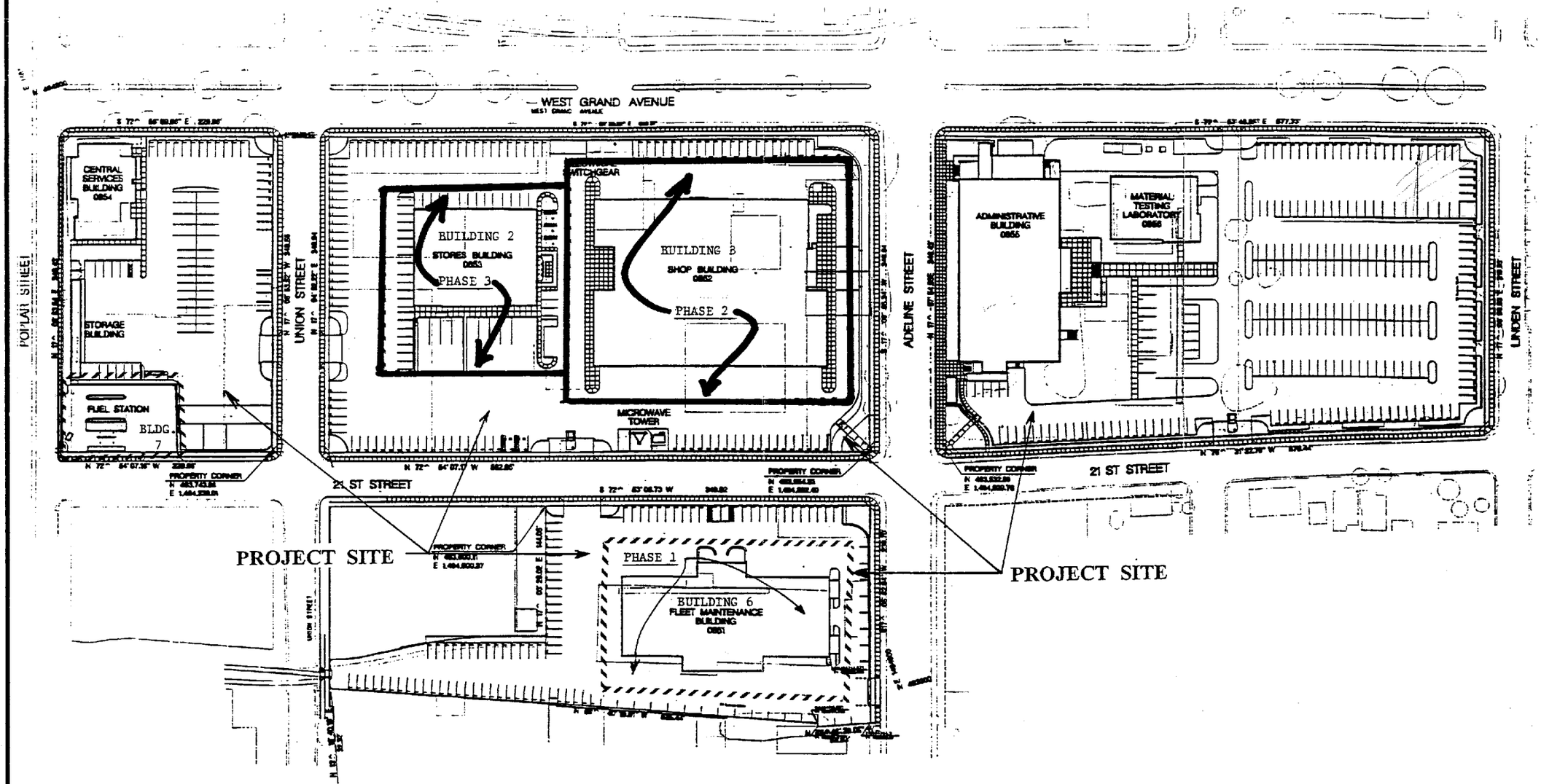
Geo Plexus, Incorporated



Source: Thomas Brothers Maps

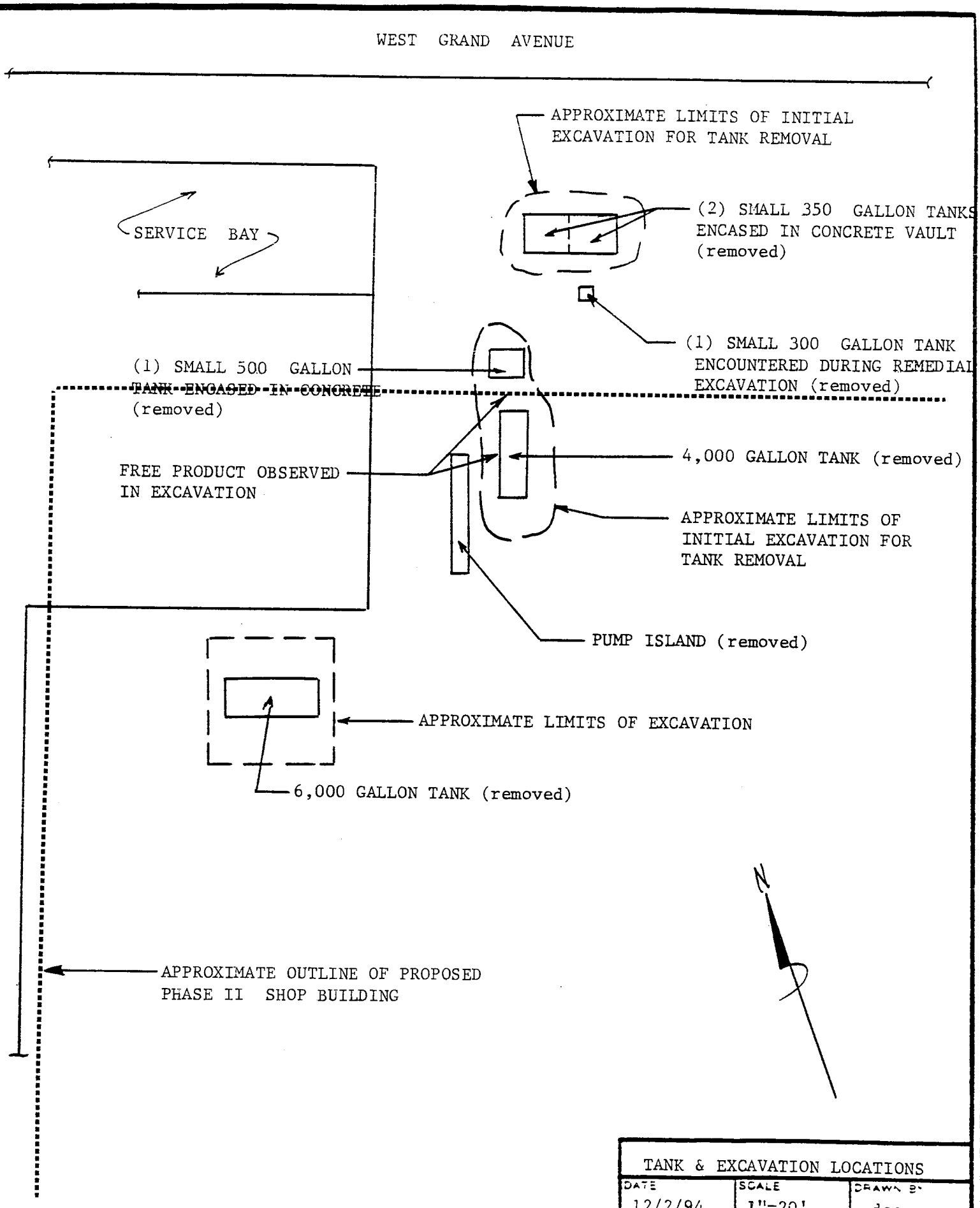
EAST BAY MUD FACILITY		
DATE 11/19/94	SCALE n/a	DRAWN BY dcg
LOCATION PLAN		
	Figure 1	

GeoPlexus, Inc.



CONSTRUCTION PLAN
FIGURE 2

GeoPlexus, Inc.



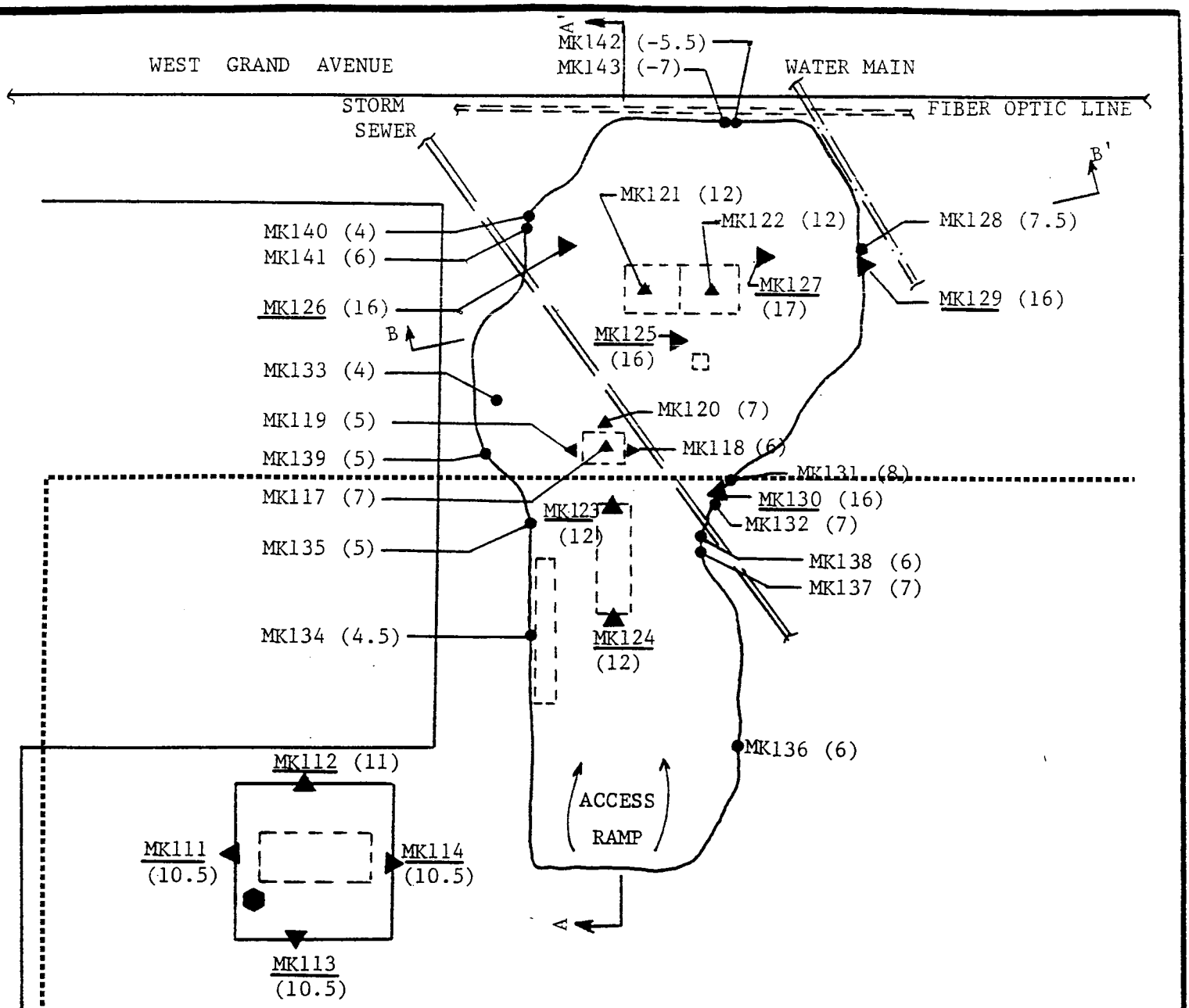
TANK & EXCAVATION LOCATIONS

DATE	SCALE	DRAWN BY
12/2/94	1"=20'	dcg

EBMUD FACILITY

Figure 3

GeoPlexus, Inc.



NOTE:
MK115A,B Water Samples
MK116 Water Sample

LEGEND

- ▲ Shallow Samples (Area Excavated)
- ▲ Final Bottom/Sidewall Samples
- ● Shallow Sidewall Samples (located in remaing shallow zone)

(16) Depth Below Ground Surface of Samples

APPROXIMATE OUTLINE OF PROPOSED PHASE II SHOP BUILDING

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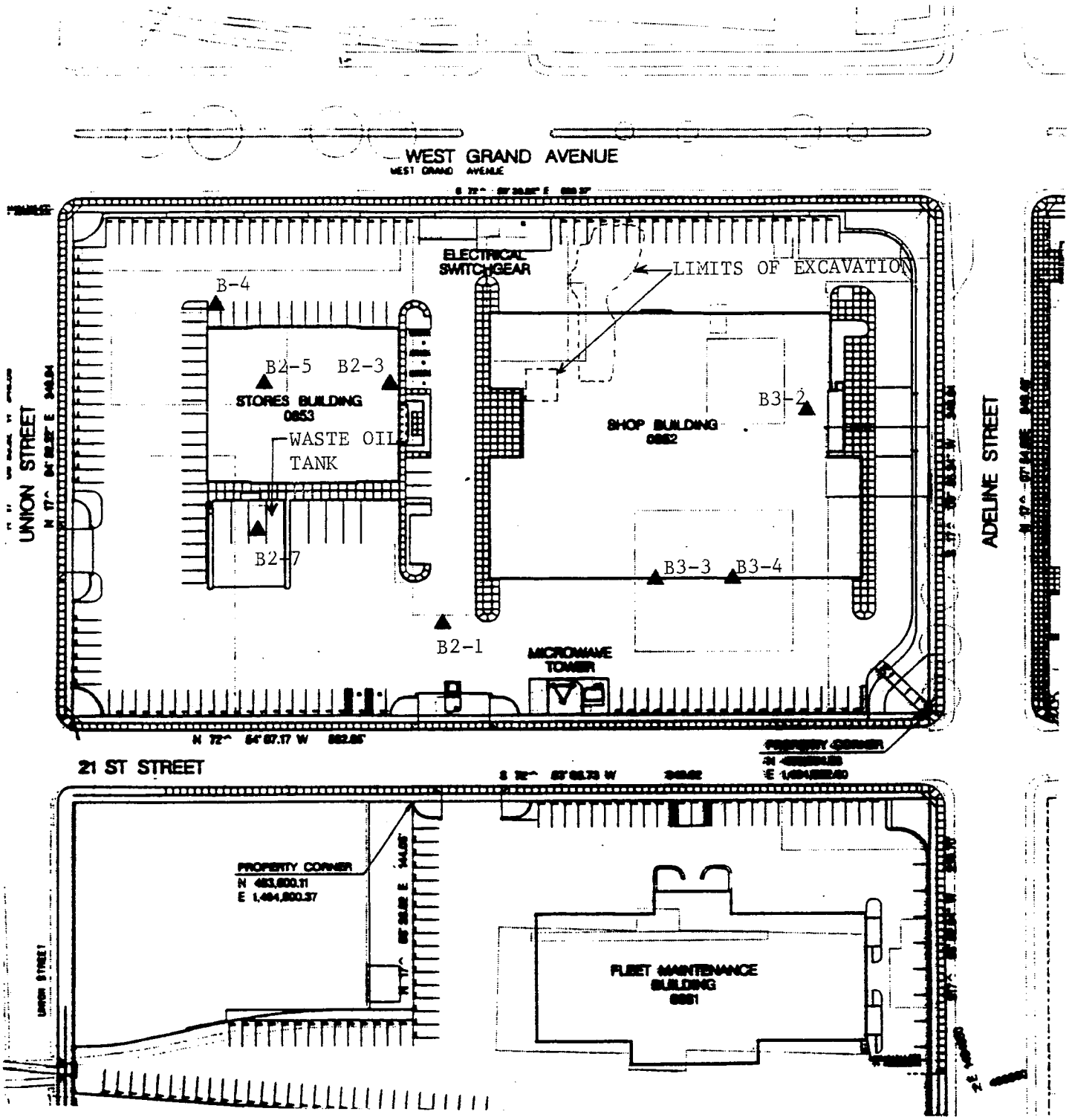
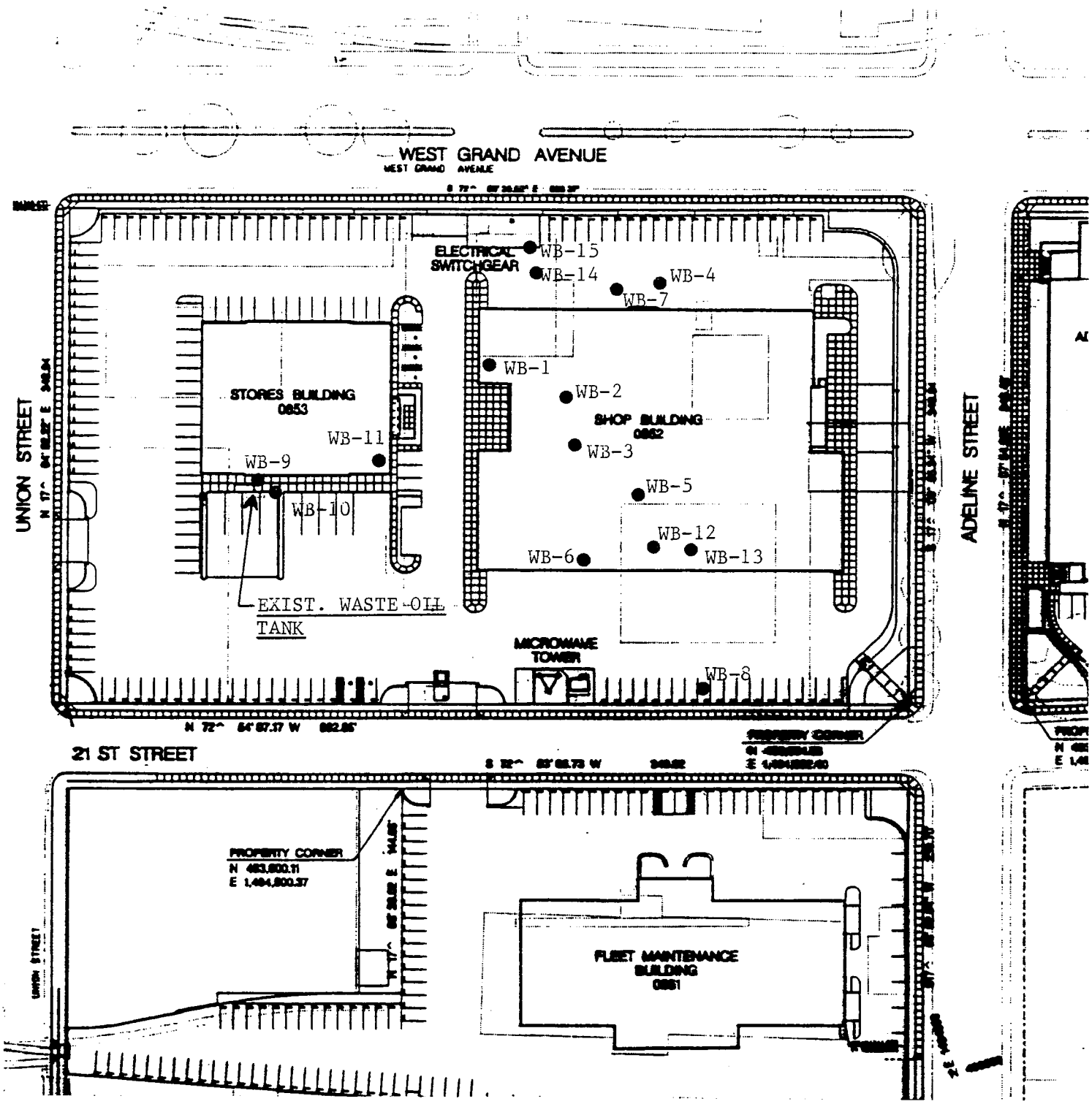
SAMPLE LOCATION PLAN		
DATE 12/2/94	SCALE 1"=20'	DRAWN BY dcg
EBMUD SITE		
	Figure 4	



1995 BORING LOCATIONS		
DATE 12/30/96	SCALE 1"=100'	DRAWN BY dcg
EBMUD SITE		
	Figure 5	

GeoPlexus, Inc.



1996 BORING LOCATIONS		
DATE 12-30-96	SCALE 1"=100'	DRAWN BY dcg
EBMUD SITE		
	Figure 6	

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APPENDIX A

BORING PERMIT AND LOGS

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT EBMUD ADELINE MAINTENANCE CENTER
2130 ADELINE STREET, OAKLAND

CLIENT
Name WALSH PACIFIC CONSTRUCTION/EBMUD
Address 2130-A ADELINE ST Voice 510 4190234
City OAKLAND CA Zip 94607

APPLICANT
Name GEO PLEXUS INC
DAVID GLICK Fax 408 988 0815
Address 190 WYATT DR STE Voice 408 9870210
City SANTA CLARA CA Zip 95054

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	✓
Monitoring	___	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ✓
Cable ___ Other DIRECT PUSH - C57636387

DRILLER'S LICENSE NO. GREGG DRILLING C57-485165

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter ___ in. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings 15, 5 Maximum AVERAGE 20'
Hole Diameter 8, 3 in. Depth 65, 20 ft.

ESTIMATED STARTING DATE 10/21/96
ESTIMATED COMPLETION DATE 10/23/96

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 10/10/96

FOR OFFICE USE

PERMIT NUMBER 96764
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
(1.) A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 24 Oct 96
Wyman Hong

91992

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-21-96

DRILLER Gregg Drilling BORING No. WB-1

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	GRAVEL, gray, dense, dry 1/2-2" gravel	GW					FILL
	SILTY CLAY, green-gray, firm, moist, plastic	CL					
5	SILTY CLAY, gray-green, soft, moist, very plastic, interbedded with thin medium- to-coarse sand stringers, high organic content	CH			S1	6	BAY MUD
	gradation to green-black						moderate H_2S odors
10	very porous along organic material, carbon nodules, iron nodules				S2	2	
15	SANDY CLAY, blue-green, wet, firm, plastic	CH			S3	6	
20							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center

DATE 10-21-96

DRILLER Gregg Drilling

BORING No. WB-2

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SANDY GRAVEL red-brown, dense, dry	GP					FILL
5	SANDY CLAY, blue-green to black, soft, moist, interbedded with thin sand stringers, low organic content, carbon nodules, oil seepage from fractures	CH	350		S1	2	oil seepage along fractures
10	SILTY CLAY, brown-balck, soft, moist, very high organic content, interbedded with thin sand stringers, plastic, very porous along organic material	CH	600		S2	3	BAY MUD moderate H_2S odor
15			230		S3	3	
20							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center

DATE 10-21-96

DRILLER Gregg Drilling

BORING No. WB-3

DEPTH (ft)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SAND AND GRAVEL, red-brown, dense, moist	GP					FILL
5	SILTY CLAY, blue-green to black, soft, moist plastic, interbedded with thin sand stringers moderate organic content, free product (oil) seepage from soil and fractures	CH	100		S1	2	strong oil odors seepage from fractures
10	SILTY CLAY, brown-gray, soft, moist, plastic very high organic content, porous along organic material	CH	350		S2	3	moderate H_2S odors
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-21-96

DRILLER Gregg Drilling BORING No. WB-4

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SANDY GRAVEL, red-gray, dense, dry	GP					FILL
	SILTY CLAY, gray-green, soft, wet, very plastic, black carbon nodules	CH					strong oil odors
5			350		S1	2	
	moderate organic content, very porous						
	SILTY CLAY, gray-brown, firm, moist, plastic moderate organic content	CH					BAY MUD
10			30		S2	5	
15	SANDY CLAY, blue-green, firm, moist	CL	10		S3	7	

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-21-96

DRILLER Gregg Drilling BORING No. WB-5

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	GRAVEL, green-gray, dense, dry	GP					FILL
	SILTY CLAY, dark gray, firm, moist	CL					very strong oil odors
5	SILTY CLAY, blue-green, soft, wet, very plastic, carbon nodules, low organic content	CH	230		S1	3	BAY MUD
							strong H_2S odors
10			460		S2	2	
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-21-96

DRILLER Gregg Drilling BORING No. WB-6

DEPTH (ft)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	GRAVEL AND SAND, red-brown, dense, dry	GP					FILL
	SILTY CLAY, blue-green, soft, moist, very plastic, carbon nodules	CH					
5			120		S1	3	
	SANDY CLAY, dark gray-brown, soft, moist moderate organic content, medium plastic, interbedded with thin sand lenses	CH					BAY MUD
			80		S2	5	
10							
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-21-96

DRILLER Gregg Drilling BORING No. WB-7

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	GRAVEL, gray, dense, dry	GP					FILL
	SILTY CLAY, blue-green, soft, moist	CL					
5	SILTY CLAY, black, soft, wet, very plastic, very high organic content, some sand lenses, oil seepage from pores and fractures	CH	560		S1	2	oil seepage from pores
10			180		S2	4	
	SANDY CLAY, blue-green, firm, wet	CL					
15			80		S3	8	

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center

DATE 10-22-96

DRILLER Gregg Drilling

BORING No. WB-8

DEPTH (ft)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	RUBBLE FILL, concrete, brick, timber						FILL
	SAND, brown, loose, moist	SM					
5	SILTY CLAY, dark gray, firm, moist	CL	60		S1	5	
	SAND, fine-grained, dark gray, loose, wet	SM					
10	SANDY CLAY, blue-gray, firm, moist	CL	40		S2	10	NATIVE
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center

DATE 10-22-96

DRILLER Gregg Drilling

BORING No. WB-9

DEPTH (ft)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SANDY GRAVEL, with concrete rubble, red-brown, dense, damp	GP					FILL
	SANDY CLAY, blue-green, soft, moist	CH					
5			230		S1	4	strong oil odors
	SAND, fine- to medium-grained, black, loose wet	SP					
	SILTY CLAY, blue-green, soft, moist, carbon nodules, small organic fibers	CH					
10			140		S2	2	
	SANDY CLAY, dark gray, firm, moist	CL					
15			80		S3	10	

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-22-96

DRILLER Gregg Drilling BORING No. WB-10

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SAND AND GRAVEL, red-brown, dense, damp	GP					FILL
5	SAND, black, loose, wet, abundant shell fragments	SM	650		S1	3	very strong oil odors raw sewage odors
10	SILTY CLAY, blue-green, soft, moist, black carbon nodules	CL	240		S2	1	NATIVE
15	SANDY CLAY, gray, firm, moist	CL	20		S3	10	

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintance Center DATE 10-22-96

DRILLER Gregg Drilling BORING No. WB-11

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SAND AND GRAVEL, red-brown, dense, dry	GP					FILL
5	SAND, fine- to medium-grained, black, loose abundant shell fragments	SM	650		S1	4	
	SILTY CLAY, gray-green, soft, wet	CH					NATIVE
10			60		S2	2	
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-24-96

DRILLER Precision Sampling BORING No. WB-12

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SILTY CLAY, dark gray, soft, moist	CH					
	CLAYEY SAND, gray-brown, loose, moist	SC	1400		S1		very strong oil odors
5	SILTY CLAY, blue-green, soft, moist, black organic nodules, plastic	CH					
	SAND, medium-grained, dark gray, loose, wet	SM					
	SILTY CLAY, blue-gray, soft, wet, moderate organic content, porous along organic matter	CH	240		S2		
10							
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-24-96

DRILLER Gregg Drilling BORING No. WB-13

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	SILTY CLAY, blue-green, soft, moist, thin sand lenses	CH	1800				very strong oil odors
5	SILTY CLAY, blue-gray, soft, moist, carbon nodules	CH			S1		
	SAND, fine- to medium-grained, loose, wet	SP	250		S2		
10	SILTY CLAY, blue-green, soft, moist	CH					
15							

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FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-24-96

DRILLER Precision Sampling BORING No. WB-14

DEPTH (ft.)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	CLAYEY, SANDY GRAVEL, gray-green, dense, moist	GC					
5	SILTY CLAY, blue-green, soft, moist, high organic content, with thin sand stringers	CH	2100		S1		strong gas odors seepage from soil
	SANDY CLAY, green, soft, moist	CH			S2		
10	SILTY CLAY, gray-green, soft, moist	CH					
	SILTY CLAY, dark gray, soft, moist, high orgnaic content		580		S3		
15							

GeoPlexus, Inc.

FIGURE

BORING LOG

LOCATION EBMUD Adeline Maintenance Center DATE 10-24-96

DRILLER Precisions Sampling BORING No. WB-15

DEPTH (ft)	DESCRIPTION	U.S.C.	OVM/PID	WELL DESIGN	SAMPLE	BLOW COUNT	COMMENTS
	CLAYEY SAND AND GRAVEL, gray-green, dense, moist	GC	2300		S1		very strong gas odors visable sheen on soil
5	CLAYEY SAND, black, loose, wet	SC					
	SILTY CLAY, blue-green, soft, moist	CH					
	CLAYEY SAND, green, loose, wet	SC	1800		S2		
10	SILTY CLAY, dark gray, soft, moist	CH					

GeoPlexus, Inc.

FIGURE

APPENDIX B

CHAIN-OF-CUSTODY FORMS
AND
ANALYTICAL TEST DATA

GeoPlexus, Inc.

CHAIN-OF-CUSTODY AGP290

1900 Wyatt Drive, Suite 1, Santa Clara, California 95054
Phone 408/987-0210 Fax 408/988-0815

PROJECT NUMBER: C95041

PROJECT NAME: WALSH Pacific / EBMUD

Send Report Attention of: DAVID GLICK

Report Due: / /

Verbal Due: / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPH/gas/BTEX/MTBE	TPH-d	5520 Oil & grease	8010	LUFT metals	PNA's	Lab No.
WB1-S1	10/21/96	927		/	Boring WB1 5-6.5'	1 EA	6" BRASS TUBE	✓						07 70407
WB1-S2	↓	933		/	Boring WB1 10-11.5'	↓	↓	✓						08 70408
WB1-S3		938		/	Boring WB1 15-16.5'			✓						09 70409
WB2-S1		1020		/	Boring WB2 5-6.5'			✓	✓	✓	✓		✓	10 70410
WB2-S2		1028		/	Boring WB2 10-11.5'			✓	✓	✓				11 70411
WB2-S3		1033		/	Boring WB2 15-16.5'			✓	✓					12 70412
WB3-S1		1110		/	Boring WB3 5-6.5'			✓	✓	✓				13 70413
WB3-S2		1115		/	Boring WB3 10-11.5			✓	✓					14 70414
WB4-S1		1245		/	Boring WB4 5-6.5'			✓	✓	✓				15 70415
WB4-S2		1249		/	Boring WB4 10-11.5			✓	✓					16 70416
WB4-S3		1303		/	Boring WB4 15-16.5									17 70417 H
WB5-S1	↓	1345		/	Boring WB5 5-6.5	↓	↓	✓	✓	✓	✓		✓	18 70418

ICE/T° X
GOOD CONDITION X
HEAD SPACE ABSENT X
PRESERVATIVE (VOAS | O&G | METALS | OTHER)
APPROPRIATE CONTAINERS X

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/22/96 1900	Ron Hamilton	10/22/96 1900
Ron Hamilton	10/22/96 2045	[signature]	10/22/96 20:45

Remarks: STANDARD TURNAROUND

1 of 3

GeoPlexus, Inc.
1900 Wyatt Drive, Suite 1, Santa Clara, California 95054
Phone 408/987-0210 Fax 408/988-0815

CHAIN-OF-CUSTODY

7453AGP290

PROJECT NUMBER	PROJECT NAME
C95041	WALSH PACIFIC / EBMUD

Send Report Attention of:	Report Due	Verbal Due
DAVID ALICK	/ /	/ /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers		TPHg/BTEX/MTBE	TPHd	5520 Oil & Grease	8010	LUFT Metals	PNA's
WB5-S2	10/21/96	1349		/	BORING WB5 10-11.5	1 EA	6" BRASS TUBE	19	✓	✓	✓			
WB6-S1	↓	1435		/	BORING WB6 5-6.5	↓	↓	20	✓	✓				
WB6-S2	↓	1445		/	BORING WB6 10-11.5	↓	↓	21						
WB7-S1	↓	1524		/	BORING WB7 5-6.5'	↓	↓	22	✓	✓	✓			
WB7-S2	↓	1535		/	BORING WB7 10-11.5	↓	↓	23	✓	✓	✓			
WB7-S3	↓	1540		/	BORING WB7 15-16.5	↓	↓	24						
WB8-S1	10/22/96	830		/	BORING WB8 5-6.5'	↓	↓	25	✓	✓				
WB8-S2	↓	837		/	BORING WB8 10-11.5	↓	↓	26						
WB9-S1	↓	915		/	BORING WB9 5-6.5'	↓	↓	27	✓	✓	✓	✓	✓	✓
WB9-S2	↓	920		/	BORING WB9 10-11.5'	↓	↓	28	✓	✓	✓	✓	✓	✓
WB9-S3	↓	927		/	BORING WB9 15-16.5'	↓	↓	29	✓					
WB10-S1	↓	950		/	BORING WB10 5-6.5'	↓	↓	30	✓	✓	✓	✓	✓	✓

70419
70420
70421
70422
70423
70424
70425
70426
70427
70428
70429
70430

ICE/T° X
GOOD CONDITION X
HEAD SPACE ABSENT X

	VOAS	O&G	METALS	OTHER
PRESERVATIVE				

APPROPRIATE CONTAINERS X

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/22/96 1900	[signature]	10/22/96 1900
[signature]	10/22/96 2045	[signature]	10/22/96 20:45

Remarks: STANDARD TURNAROUND 2 of 3

GeoPlexus, Inc.

CHAIN-OF-CUSTODY

7453AGP290

1900 Wyatt Drive, Suite 1, Santa Clara, California 95054
Phone 408/987-0210 Fax 408/988-0815

PROJECT NUMBER: C95C41

PROJECT NAME: WABA Pacific / EBMUD

Send Report Attention of: David Glick

Report Due: / /

Verbal Due: / /

Type of Analysis

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPH gas/BTEX/MTBE	TPHd	5520 C&F oil & grease	EC/IC	LUFT metals	PNA's	Lab No.
WB10-S2	10/22/96	955		/	Boring WB10 10-11.5'	1 ea	6" brass tube 31	✓ ✓		✓	✓		✓	70431
WB10-S3	↓	1005		/	Boring WB10 15-16.5	↓	↓ 32							70432
WB11-S1	↓	1038		/	Boring WB11 5-6.5'	↓	↓ 33			✓	✓			70433
WB11-S2	↓	1045		/	Boring WB11 10-11.5'	↓	↓ 34							70434
WB1-WS1A	10/21/96	1600		/	Boring WB1 grab water	1 ea	40 ml acidified VOA 35	✓						70435
WB2-WS1A	↓	1605		/	Boring WB2 grab water	↓	↓ 36	✓						70436
WB2-WS2A	↓	1605		/	↓	↓	1 LTR amber		✓	✓				70437
WB3-WS1A	↓	1610		/	Boring WB3 grab water	↓	40 ml acidified VOA 37	✓						70438
WB5-WS1A	↓	1620		/	Boring WB5 grab water	↓	↓ 38	✓			✓			70439
WB5-WS2A	↓	1620		/	↓	↓	1 LTR amber		✓	✓				
WB9-WS1A	10/22/96	1010		/	Boring WB9 grab water	↓	40 ml acidified VOA 39	✓			✓			
WB9-WS2A	↓	1010		/	↓	↓	1 LTR amber		✓	✓				

ICE/T° ✓ PRESERVATIVE X
GOOD CONDITION X APPROPRIATE
HEAD SPACE ABSENT X CONTAINERS X

VOAS | O&G | METALS | OTHER

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/22/96 1900	Ron Hamilton	10/22/96 1900
Ron Hamilton	10/22/96 2045	[signature]	10/22/96 20:45

Remarks: STANDARD TURNAROUND

3 of 3

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/22-10/28/96
	Client P.O:	Date Analyzed: 10/22-10/28/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
70407	WB1-S1	S	ND	ND	0.016	0.007	0.009	0.012	104
70408	WB1-S2	S	ND	ND	0.007	0.012	ND	0.010	106
70409	WB1-S3	S	ND	ND	ND	ND	ND	ND	105
70410	WB2-S1	S	1.1,b	ND	ND	ND	ND	0.013	105
70411	WB2-S2	S	ND	ND	ND	ND	ND	ND	102
70412	WB2-S3	S	ND	ND	ND	ND	ND	ND	105
70413	WB3-S1	S	87,g, j	ND	ND	0.061	0.075	0.39	110#
70414	WB3-S2	S	ND	ND	ND	ND	ND	ND	104
70415	WB4-S1	S	29,g, j	ND< 0.08	0.063	0.048	0.053	0.17	---#
70416	WB4-S2	S	ND	ND	ND	ND	ND	0.012	105
70418	WB5-S1	S	1.1,b,d	ND	ND	ND	ND	0.012	100
70419	WB5-S2	S	ND	ND	ND	ND	ND	ND	98
70420	WB6-S1	S	ND	ND	ND	ND	ND	ND	101
70422	WB7-S1	S	88,g, j	ND< 0.2	0.035	0.10	0.11	0.55	102
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/22-10/28/96
	Client P.O:	Date Analyzed: 10/22-10/28/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
70423	WB7-S2	S	ND	ND	0.040	0.007	ND	ND	96
70425	WB8-S1	S	ND	ND	ND	ND	ND	ND	98
70427	WB9-S1	S	360,g,d	ND< 0.8	0.85	9.3	3.6	20	100
70428	WB9-S2	S	ND	ND	ND	ND	ND	ND	106
70429	WB9-S3	S	ND	ND	ND	ND	ND	ND	105
70430	WB10-S1	S	380,g,d	ND< 0.4	0.55	6.7	11	69	100
70431	WB10-S2	S	ND	ND	ND	ND	ND	ND	102
70435	WB1-WS1A	W	ND	ND	ND	ND	ND	ND	99
70436	WB2-WS1A	W	200,b	130	ND	ND	0.50	1.2	96
70437	WB3-WS1A	W	220,b,d	ND< 6	ND	ND	ND	1.1	100
70438	WB5-WS1A	W	300,b,d	ND	ND	ND	ND	2.7	101
70439	WB9-WS1A	W	380,a,i	210	19	27	8.5	58	103
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

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110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/22-10/28/96
	Client P.O:	Date Analyzed: 10/22-10/28/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
70410	WB2-S1	S	3.0,b/g	102
70411	WB2-S2	S	1.6,g	106
70412	WB2-S3	S	ND	102
70413	WB3-S1	S	620,b/d,g	107
70414	WB3-S2	S	2.3,b/g	110
70415	WB4-S1	S	34,d,g	105
70416	WB4-S2	S	ND	106
70418	WB5-S1	S	ND	107
70419	WB5-S2	S	4.6,b	108
70420	WB6-S1	S	ND	99
70422	WB7-S1	S	260,b/d,g	116#
70423	WB7-S2	S	ND	101
70425	WB8-S1	S	ND	100
70427	WB9-S1	S	7000,g,b	107
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/22-10/28/96
	Client P.O:	Date Analyzed: 10/22-10/28/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
70428	WB9-S2	S	4.3,g	108
70430	WB10-S1	S	15,000,g,b/d	103
70431	WB10-S2	S	1.4,b	105
70436	WB2-WS2A	W	720,b/d,g	111
70438	WB5-WS2A	W	280,b/d	107
70439	WB9-WS2A	W	16,000,a,c/g,i	107
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/28-10/30/96
	Client P.O:	Date Analyzed: 10/28-10/30/96

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
70410	WB2-S1	S	ND
70411	WB2-S2	S	ND
70413	WB3-S1	S	1300
70415	WB4-S1	S	ND
70418	WB5-S1	S	ND
70419	WB5-S2	S	ND
70422	WB7-S1	S	170
70423	WB7-S2	S	ND
70427	WB9-S1	S	54,000
70428	WB9-S2	S	ND
70430	WB10-S1	S	64,000
70431	WB10-S2	S	ND
70433	WB11-S1	S	ND
70436	WB2-WS2A	W	ND
70438	WB5-WS2A	W	ND
70439	WB9-WS2A	W	8.4,i
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L and soil and sludge samples in mg/kg

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/23/96
	Client P.O:	Date Analyzed: 10/24/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	70410	70413	70418	70427
Client ID	WB2-S1	WB3-S1	WB5-S1	WB9-S1
Matrix	S	S	S	S
Compound	Concentration*			
Bromodichloromethane	ND	ND	ND	ND< 100
Bromoform(b)	ND	ND	ND	ND< 100
Bromomethane	ND	ND	ND	ND< 100
Carbon Tetrachloride(c)	ND	ND	ND	ND< 100
Chlorobenzene	ND	ND	ND	ND< 100
Chloroethane	ND	ND	ND	ND< 100
2-Chloroethyl Viny l Ether(d)	ND	ND	ND	ND< 100
Chloroform (e)	ND	ND	ND	ND< 100
Chloromethane	ND	ND	ND	ND< 100
Dibromochloromethane	ND	ND	ND	ND< 100
1,2-Dichlorobenzene	ND	ND	ND	110
1,3-Dichlorobenzene	ND	ND	ND	ND< 100
1,4-Dichlorobenzene	ND	ND	ND	ND< 100
Dichlorodifluoromethane	ND	ND	ND	ND< 100
1,1-Dichloroethane	ND	ND	ND	220
1,2-Dichloroethane	ND	ND	ND	ND< 100
1,1-Dichloroethene	ND	ND	ND	ND< 100
cis 1,2-Dichloroethene	ND	ND	ND	ND< 100
trans 1,2-Dichloroethene	ND	ND	ND	ND< 100
1,2-Dichloropropane	ND	ND	ND	ND< 100
cis 1,3-Dichloropropene	ND	ND	ND	ND< 100
trans 1,3-Dichloropropene	ND	ND	ND	ND< 100
Methylene Chloride(f)	ND< 20	ND< 20	ND< 20	ND< 100
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND< 100
Tetrachloroethene	ND< 10	ND< 10	ND< 10	3700
1,1,1-Trichloroethane	ND	ND	ND	1700
1,1,2-Trichloroethane	ND	ND	ND	ND< 100
Trichloroethene	ND	ND	ND	1700
Trichlorofluoromethane	ND	ND	ND	ND< 100
Vinyl Chloride(g)	ND	ND	ND	ND< 100
% Recovery Surrogate	100	100	97	105
Comments				

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil and sludge, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/23/96
	Client P.O:	Date Analyzed: 10/24/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	70428	70430	70431	70433
Client ID	WB9-S2	WB10-S1	WB10-S2	WB11-S1
Matrix	S	S	S	S
Compound	Concentration*			
Bromodichloromethane	ND	ND< 50	ND	ND
Bromoform(b)	ND	ND< 50	ND	ND
Bromomethane	ND	ND< 50	ND	ND
Carbon Tetrachloride(c)	ND	ND< 50	ND	ND
Chlorobenzene	ND	ND< 50	ND	ND
Chloroethane	ND	ND< 50	ND	ND
2-Chloroethyl Vinyl Ether(d)	ND	ND< 50	ND	ND
Chloroform (e)	ND	ND< 50	ND	ND
Chloromethane	ND	ND< 50	ND	ND
Dibromochloromethane	ND	ND< 50	ND	ND
1,2-Dichlorobenzene	ND	990	ND	ND
1,3-Dichlorobenzene	ND	74	ND	ND
1,4-Dichlorobenzene	ND	280	ND	ND
Dichlorodifluoromethane	ND	ND< 50	ND	ND
1,1-Dichloroethane	ND	830	ND	ND
1,2-Dichloroethane	ND	ND< 50	ND	ND
1,1-Dichloroethene	ND	ND< 50	ND	ND
cis 1,2-Dichloroethene	ND	90	ND	ND
trans 1,2-Dichloroethene	ND	ND< 50	ND	ND
1,2-Dichloropropane	ND	ND< 50	ND	ND
cis 1,3-Dichloropropene	ND	ND< 50	ND	ND
trans 1,3-Dichloropropene	ND	ND< 50	ND	ND
Methylene Chloride(f)	ND< 20	ND< 50	ND< 20	ND< 20
1,1,2,2-Tetrachloroethane	ND	ND< 50	ND	ND
Tetrachloroethene	ND< 10	2600	ND< 10	ND< 10
1,1,1-Trichloroethane	ND	550	ND	ND
1,1,2-Trichloroethane	ND	ND< 50	ND	ND
Trichloroethene	ND	ND< 50	ND	ND
Trichlorofluoromethane	ND	ND< 50	ND	ND
Vinyl Chloride(g)	ND	ND< 50	ND	ND
% Recovery Surrogate	100	109	99	95
Comments				

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil and sludge, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/23/96
	Client P.O:	Date Analyzed: 10/23/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	70439	70438		
Client ID	WB9-WS1A	WB5-WS1A		
Matrix	W	W		
Compound	Concentration*			
Bromodichloromethane	ND< 1	ND		
Bromoform(b)	ND< 1	ND		
Bromomethane	ND< 1	ND		
Carbon Tetrachloride(c)	ND< 1	ND		
Chlorobenzene	ND< 1	ND		
Chloroethane	ND< 1	ND		
2-Chloroethyl Vinyl Ether(d)	ND< 1	ND		
Chloroform (e)	ND< 1	ND		
Chloromethane	ND< 1	ND		
Dibromochloromethane	ND< 1	ND		
1,2-Dichlorobenzene	ND< 1	ND		
1,3-Dichlorobenzene	ND< 1	ND		
1,4-Dichlorobenzene	ND< 1	ND		
Dichlorodifluoromethane	ND< 1	ND		
1,1-Dichloroethane	18	ND		
1,2-Dichloroethane	ND< 1	ND		
1,1-Dichloroethene	ND< 1	ND		
cis 1,2-Dichloroethene	ND< 1	ND		
trans 1,2-Dichloroethene	ND< 1	ND		
1,2-Dichloropropane	ND< 1	ND		
cis 1,3-Dichloropropene	ND< 1	ND		
trans 1,3-Dichloropropene	ND< 1	ND		
Methylene Chloride(f)	1.8	ND		
1,1,2,2-Tetrachloroethane	ND< 1	ND		
Tetrachloroethene	2.8	ND		
1,1,1-Trichloroethane	1.7	ND		
1,1,2-Trichloroethane	ND< 1	ND		
Trichloroethene	2.6	ND		
Trichlorofluoromethane	ND< 1	ND		
Vinyl Chloride(g)	ND< 1	ND		
% Recovery Surrogate	106	101		
Comments	i,h			

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil and sludge, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) sample diluted due to high organic content; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/21-10/22/96
		Date Received: 10/22/96
	Client Contact: David Glick	Date Extracted: 10/23-10/29/96
	Client P.O:	Date Analyzed: 10/24-10/30/96

LUFT Metals*

EPA analytical methods 6010/200.7, 239.2+

Lab ID	Client ID	Matrix	Extraction°	Cadmium	Chromium	Lead	Nickel	Zinc	% Rec. Surrogate
70427	WB9-S1	S	TTLC	ND	20	ND	12	36	97
70428	WB9-S2	S	TTLC	ND	36	ND	22	32	92
70430	WB10-S1	S	TTLC	ND	30	4.3	34	34	93
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLC	0.5 mg/kg	0.5	3.0	2.0	1.0	
		W	TTLC	0.005 mg/L	0.005	0.005	0.05	0.05	
		---	STLC,TCLP	0.01 mg/L	0.05	0.2	0.05	0.05	

* soil samples and sludge are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

surrogate diluted out of range; N/A means surrogate not applicable to this analysis

& reporting limit raised due matrix interference

i) liquid sample that contains greater than ~ 2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/22/96-10/23/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#67146)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.918	1.908	2.03	94	94	0.5
Benzene	0.000	0.216	0.196	0.2	108	98	9.7
Toluene	0.000	0.216	0.208	0.2	108	104	3.8
Ethylbenzene	0.000	0.204	0.198	0.2	102	99	3.0
Xylenes	0.000	0.622	0.606	0.6	104	101	2.6
TPH (diesel)	0	317	320	300	106	107	1.2
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/28/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68822)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.973	1.943	2.03	97	96	1.5
Benzene	0.000	0.178	0.178	0.2	89	89	0.0
Toluene	0.000	0.194	0.194	0.2	97	97	0.0
Ethylbenzene	0.000	0.178	0.178	0.2	89	89	0.0
Xylenes	0.000	0.534	0.534	0.6	89	89	0.0
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil and grease)	0.0	28.6	29.4	29.6	97	99	2.8

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/30/96-10/31/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68822)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.845	1.857	2.03	91	91	0.6
Benzene	0.000	0.168	0.172	0.2	84	86	2.4
Toluene	0.000	0.176	0.180	0.2	88	90	2.2
Ethylbenzene	0.000	0.182	0.182	0.2	91	91	0.0
Xylenes	0.000	0.532	0.534	0.6	89	89	0.4
TPH (diesel)	0	316	307	300	105	102	3.0
TRPH (oil and grease)	0.0	23.4	23.6	20.8	113	113	0.9

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/22/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70334)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	88.8	97.7	100.0	88.8	97.7	9.5
Benzene	0.0	9.1	10.3	10.0	91.0	103.0	12.4
Toluene	0.0	9.2	10.3	10.0	92.0	103.0	11.3
Ethyl Benzene	0.0	9.4	10.4	10.0	94.0	104.0	10.1
Xylenes	0.0	27.6	31.0	30.0	92.0	103.3	11.6
TPH (diesel)	0	156	157	150	104	104	0.3
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/28/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70325)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	93.5	93.4	100.0	93.5	93.4	0.2
Benzene	0.0	9.8	10.0	10.0	98.0	100.0	2.0
Toluene	0.0	9.9	10.4	10.0	99.0	104.0	4.9
Ethyl Benzene	0.0	9.7	10.6	10.0	97.0	106.0	8.9
Xylenes	0.0	28.8	31.7	30.0	96.0	105.7	9.6
TPH (diesel)	0	172	169	150	115	113	1.7
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/30/96-10/31/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70317)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	104.7	105.7	100.0	104.7	105.7	0.9
Benzene	0.0	9.5	9.6	10.0	95.0	96.0	1.0
Toluene	0.0	9.9	9.9	10.0	99.0	99.0	0.0
Ethyl Benzene	0.0	9.8	10.0	10.0	98.0	100.0	2.0
Xylenes	0.0	28.7	29.6	30.0	95.7	98.7	3.1
TPH (diesel)	0	173	159	150	116	106	8.7
TRPH (oil & grease)	0	26400	25800	23700	111	109	2.3

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 10/24/96 Matrix: Soil

Analyte	Concentration (ug/kg)				% Recovery		
	Sample (#67146)	MS	MSD	Amount Spiked	MS	MSD	RPD
1,1-DCE	0	90	92	100	90	92	2.2
Trichloroethene	0	90	93	100	90	93	3.3
EDB	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobenzene	0	96	99	100	96	99	3.1
Benzene	0	100	103	100	100	103	3.0
Toluene	0	100	103	100	100	103	3.0
Chlorobz (PID)	0	94	97	100	94	97	3.1

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 10/23/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70080)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-DCE	0.0	10.3	11.0	10.0	103	110	6.6
Trichloroethene	0.0	8.9	9.5	10.0	89	95	6.5
EDB	0.0	8.4	8.8	10.0	84	88	4.7
Chlorobenzene	0.0	9.5	10.2	10.0	95	102	7.1
Benzene	0.0	10.2	11.0	10.0	102	110	7.5
Toluene	0.0	9.4	10.1	10.0	94	101	7.2
Chlorobz (PID)	0.0	9.3	10.0	10.0	93	100	7.3

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR METALS

Date: 10/24/96 Matrix: Soil

Extraction: TTLC

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Arsenic	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum	0.0	4.7	4.8	5.0	94	96	2.4
Silver	0.0	0.5	0.5	0.5	91	92	1.1
Thallium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium	0.0	4.4	4.5	5.0	89	90	1.7
Nickel	0.0	4.8	4.9	5.0	97	99	2.2
Chromium	0.0	4.8	4.9	5.0	95	98	2.3
Vanadium	0.0	4.8	4.8	5.0	95	96	1.3
Beryllium	0.0	4.8	4.9	5.0	96	98	1.5
Zinc	0.0	5.0	5.1	5.0	100	103	2.9
Copper	0.0	4.6	4.9	5.0	93	97	4.4
Antimony	0.0	4.5	4.6	5.0	91	92	1.3
Lead	0.0	4.6	4.8	5.0	92	95	3.3
Cadmium	0.0	5.1	5.2	5.0	102	104	2.4
Cobalt	0.0	4.5	4.6	5.0	90	91	1.1
Mercury	0.000	0.251	0.258	0.250	100	103	2.8

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 10/30/96 Matrix: Soil

Analyte	Concentration (mg/kg,mg/L)			Amount	% Recovery		RPD
	Sample	MS	MSD	Spiked	MS	MSD	
Total Lead	0.0	5.09	5.03	5.0	102	101	1.2
Total Cadmium	0.0	5.49	5.46	5.0	110	109	0.5
Total Chromium	0.0	5.05	5.05	5.0	101	101	0.1
Total Nickel	0.0	4.95	4.95	5.0	99	99	0.0
Total Zinc	0.0	5.31	5.24	5.0	106	105	1.3
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

335/ 104845 - 104850

McCAMPBELL ANALYTICAL
110 2nd AVENUE, # D7
PACHECO, CA 94553

(510) 798-1620 FAX (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY ☐ ROUTINE

REPORT TO: Ed Hamilton BILL TO: MAT

PROJECT NUMBER: 7453 PROJECT NAME: GP/ WPE

PROJECT LOCATION:

ANALYSIS REQUEST | OTHER

SUBM #: 9610335 REP: MV
CLIENT: MCCAM
DUE: 10/30/96
REF #: 30405

SAMPLE ID	LOCATION	SAMPLING DATE	SAMPLING TIME	# CONTAINERS	TYPE CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCL	HNO3	ICE	OTHER	EPA 601/8010	EPA 602/8020	EPA 608/8080	EPA 608/8080 - PCBs Only	EPA 624/8240/8260	EPA 625/8270	CAM - 17 Metals	EPA - Priority Pollutant Metals	LUFT Metals	LEAD (7240/7421/239.2/6010)	ORGANIC LEAD	RCI	PNAs						COMMENTS
WB2-S1		10/21	1020	1	VOA		X						X														X						70410
WB5-S1		"	1345	"	"		"						"														X						70411
WB9-S1		10/22	915	"	"		"						"														X						70427
WB9-S2		"	920	"	"		"						"														X						70428
WB10-S1		"	950	"	"		"						"														X						70430
WB10-S2		"	955	"	"		"						"														X						70431

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	10/23	1115	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:
	10/23/96	1300	

REMARKS:

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB2-S1**
Spl#: 104845 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 28, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	78.7	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	79.9	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB5-S1**
Spl#: 104846 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 28, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	78.7	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	79.9	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

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(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB9-S1**
Spl#: 104847 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 29, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	10	N.D.	--	100
ACENAPHTHYLENE	N.D.	10	N.D.	--	100
ACENAPHTHENE	N.D.	10	N.D.	78.7	100
FLUORENE	N.D.	10	N.D.	--	100
PHENANTHRENE	N.D.	10	N.D.	--	100
ANTHRACENE	N.D.	10	N.D.	--	100
FLUORANTHENE	N.D.	10	N.D.	--	100
PYRENE	N.D.	10	N.D.	79.9	100
BENZO(A)ANTHRACENE	N.D.	10	N.D.	--	100
CHRYSENE	N.D.	10	N.D.	--	100
BENZO(B)FLUORANTHENE	N.D.	10	N.D.	--	100
BENZO(K)FLUORANTHENE	N.D.	20	N.D.	--	100
BENZO(A)PYRENE	N.D.	3.5	N.D.	--	100
INDENO(1,2,3-CD)PYRENE	N.D.	20	N.D.	--	100
DIBENZO(A,H)ANTHRACENE	N.D.	20	N.D.	--	100
BENZO(GHI)PERYLENE	N.D.	20	N.D.	--	100

Note: Reporting limits raised due to matrix interference.Surrogates were diluted below detectable levels.

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB9-S2**
Spl#: 104848 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 29, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	78.7	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	79.9	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB10-S1**
Spl#: 104849 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 29, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	10	N.D.	--	100
ACENAPHTHYLENE	N.D.	10	N.D.	--	100
ACENAPHTHENE	N.D.	10	N.D.	78.7	100
FLUORENE	N.D.	10	N.D.	--	100
PHENANTHRENE	N.D.	10	N.D.	--	100
ANTHRACENE	N.D.	10	N.D.	--	100
FLUORANTHENE	N.D.	10	N.D.	--	100
PYRENE	N.D.	10	N.D.	79.9	100
BENZO(A)ANTHRACENE	N.D.	10	N.D.	--	100
CHRYSENE	N.D.	10	N.D.	--	100
BENZO(B)FLUORANTHENE	N.D.	10	N.D.	--	100
BENZO(K)FLUORANTHENE	N.D.	20	N.D.	--	100
BENZO(A)PYRENE	N.D.	3.5	N.D.	--	100
INDENO(1,2,3-CD)PYRENE	N.D.	20	N.D.	--	100
DIBENZO(A,H)ANTHRACENE	N.D.	20	N.D.	--	100
BENZO(GHI)PERYLENE	N.D.	20	N.D.	--	100

Note: Reporting limits raised due to matrix interference.Surrogates were diluted below detectable levels.

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB10-S2**
Spl#: 104850 *Matrix:* SOIL *Extracted:* October 28, 1996
Sampled: October 21, 1996 *Run#:* 3789 *Analyzed:* October 29, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	78.7	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	79.9	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

October 30, 1996 *Submission #:* 9610335

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: GP-WPE *Project#:* 7453
Received: October 23, 1996

re: **Surrogate** report for 6 samples for Polynuclear Aromatic
Method: EPA 8270
Lab Run#: 3789
Matrix: SOIL

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
104845-1	WB2-S1	NITROBENZENE-D5	74.3	23-120
104845-1	WB2-S1	2-FLUOROBIPHENYL	64.7	30-115
104845-1	WB2-S1	TERPHENYL-D14	85.7	18-137
104846-1	WB5-S1	NITROBENZENE-D5	78.0	23-120
104846-1	WB5-S1	2-FLUOROBIPHENYL	75.9	30-115
104846-1	WB5-S1	TERPHENYL-D14	85.1	18-137
104848-1	WB9-S2	NITROBENZENE-D5	73.9	23-120
104848-1	WB9-S2	2-FLUOROBIPHENYL	77.8	30-115
104848-1	WB9-S2	TERPHENYL-D14	81.0	18-137
104850-1	WB10-S2	NITROBENZENE-D5	77.2	23-120
104850-1	WB10-S2	2-FLUOROBIPHENYL	86.9	30-115
104850-1	WB10-S2	TERPHENYL-D14	73.4	18-137

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
105424-1	*Reagent blank (MDB)*	NITROBENZENE-D5	63	23-120
105424-1	*Reagent blank (MDB)*	2-FLUOROBIPHENYL	64	30-115
105424-1	*Reagent blank (MDB)*	TERPHENYL-D14	91	18-137
105425-1	*Spiked blank (BSP)*	NITROBENZENE-D5	64	23-120
105425-1	*Spiked blank (BSP)*	2-FLUOROBIPHENYL	70	30-115
105425-1	*Spiked blank (BSP)*	TERPHENYL-D14	88	18-137
105426-1	*Spiked blank duplicate (BSD)*	NITROBENZENE-D5	60	23-120
105426-1	*Spiked blank duplicate (BSD)*	2-FLUOROBIPHENYL	73	30-115
105426-1	*Spiked blank duplicate (BSD)*	TERPHENYL-D14	80	18-137

S105
QCSURR1229 MIKELEE 30-Oct-96 12

1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

GeoPlexus, Inc.

CHAIN-OF-CUSTODY

7469AGP291

1900 Wyatt Drive, Suite 1, Santa Clara, California 95054
Phone 408/987-0210 Fax 408/988-0815

PROJECT NUMBER: C95041
PROJECT NAME: WASH Pacific / EBMUD

Send Report Attention of: DAVID GLICK
Report Due: / /
Verbal Due: / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPHg/BTEX/MTBE	TPHd	5520 Oil & Grease	8010	LUFT Metals	PNA'S	Condition of Samples	Initial
WB12-S1	10/24/96	900		/	BORING WB12 3.5-4'	1 EA	4" Stainless Steel Tube	✓	✓	✓	✓	✓	✓	70483	
WB12-S2	↓	910		/	BORING WB12 9-9.5'	↓	↓	✓			✓			70484	
WB13-S1		935		/	BORING WB13 5-5.5'			✓	✓	✓	✓	✓	✓	70485	
WB13-S2		945		/	BORING WB13 9-9.5'			✓			✓			70486	
WB14-S1		1050		/	BORING WB14 4-4.5'			✓	✓	✓				70487	
WB14-S2		1053		/	BORING WB14 8-8.5'			✓	✓					70488	
WB14-S3		1100		/	BORING WB14 12.5-13'			✓						70489	
WB15-S1		1120		/	BORING WB15 4-4.5'			✓	✓	✓				70490	
WB15-S2		1125		/	BORING WB15 8.5-9'			✓	✓					70491	
WB14-WS1A		1140		/	BORING WB14 GRAB WATER	↓	HCl Acidified VOA	✓			✓			70492	
WB14-WS2A	↓	1140		/	↓	1 EA	1 LTR AMBER		✓	✓					

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/25/96 1055	Ron Hamilton [signature]	10/25/96 1055
Ron Hamilton [signature]	10/25/96 1450	Angela Rydelius [signature]	10/25/96 1450

Remarks: STANDARD TURNAROUND

ICE/T° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓

	VOAS	O&G	METALS	OTHER
PRESERVATIVE	✓			

APPROPRIATE CONTAINERS ✓

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/25-10/29/96
	Client P.O:	Date Analyzed: 10/25-10/29/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
70483	WB12-S1	S	4.2,j	ND	0.010	0.013	ND	0.038	108
70484	WB12-S2	S	ND	ND	ND	ND	ND	ND	103
70485	WB13-S1	S	12,j	ND< 0.06	0.006	0.012	0.010	0.10	104
70486	WB13-S2	S	ND	ND	ND	0.012	ND	0.011	107
70487	WB14-S1	S	35,j	ND< 0.2	0.23	0.080	0.16	0.48	106
70488	WB14-S2	S	110,j	ND< 0.15	ND	ND	0.064	0.44	99
70489	WB14-S3	S	ND	0.005	0.007	ND	ND	ND	105
70490	WB15-S1	S	530,j	ND< 3.5	1.8	1.3	0.76	4.5	99
70491	WB15-S2	S	1.6,b,d	ND	0.018	0.013	ND	0.016	105
70492	WB14-WS1A	W	2900,j,h,i	ND< 15	52	7.3	8.3	21	105
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/25/96
	Client P.O:	Date Analyzed: 10/25-10/28/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
70483	WB12-S1	S	1200,c/g	105
70485	WB13-S1	S	1800,g,d/b	108
70487	WB14-S1	S	57,d,g	113
70488	WB14-S2	S	99,d,b/g	112
70490	WB15-S1	S	5700,e	108
70491	WB15-S2	S	4.2,b	105
70492	WB14-WS2A	W	59,000,d,g,h,i	109
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (Kerosene?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

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Edward Hamilton, Lab Director

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110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/30-11/01/96
	Client P.O:	Date Analyzed: 10/30-11/01/96

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
70483	WB12-S1	S	11,000
70485	WB13-S1	S	13,000
70487	WB14-S1	S	180
70490	WB15-S1	S	190
70492	WB14-WS2A	W	56,h,i
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L and soil and sludge samples in mg/kg

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/25/96
	Client P.O:	Date Analyzed: 10/25-10/29/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	70483	70484	70485	70486
Client ID	WB12-S1	WB12-S2	WB13-S1	WB13-S2
Matrix	S	S	S	S
Compound	Concentration*			
Bromodichloromethane	ND	ND	ND	ND
Bromoform(b)	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Carbon Tetrachloride(c)	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
2-Chloroethyl Vinyl Ether(d)	ND	ND	ND	ND
Chloroform (e)	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND
cis 1,2-Dichloroethene	ND	ND	ND	ND
trans 1,2-Dichloroethene	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND
cis 1,3-Dichloropropene	ND	ND	ND	ND
trans 1,3-Dichloropropene	ND	ND	ND	ND
Methylene Chloride(f)	ND< 10	ND< 10	ND< 10	ND< 10
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND
Tetrachloroethene	ND< 15	ND< 15	34	ND< 15
1,1,1-Trichloroethane	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND
Trichloroethene	5.2	ND	5.4	ND
Trichlorofluoromethane	ND	ND	ND	ND
Vinyl Chloride(g)	ND	ND	ND	ND
% Recovery Surrogate	100	101	100	101
Comments				

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil and sludge, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) dichloromethane; (g) chloroethene; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/26-10/29/96
	Client P.O:	Date Analyzed: 10/26-10/29/96

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	70492			
Client ID	WB14-WS1A			
Matrix	W			
Compound	Concentration*			
Bromodichloromethane	ND< 5			
Bromoform(b)	ND< 5			
Bromomethane	ND< 5			
Carbon Tetrachloride(c)	ND< 5			
Chlorobenzene	ND< 5			
Chloroethane	ND< 5			
2-Chloroethyl Vinyl Ether(d)	ND< 5			
Chloroform (e)	ND< 5			
Chloromethane	ND< 5			
Dibromochloromethane	ND< 5			
1,2-Dichlorobenzene	ND< 5			
1,3-Dichlorobenzene	ND< 5			
1,4-Dichlorobenzene	ND< 5			
Dichlorodifluoromethane	ND< 5			
1,1-Dichloroethane	ND< 5			
1,2-Dichloroethane	ND< 5			
1,1-Dichloroethene	ND< 5			
cis 1,2-Dichloroethene	ND< 5			
trans 1,2-Dichloroethene	ND< 5			
1,2-Dichloropropane	ND< 5			
cis 1,3-Dichloropropene	ND< 5			
trans 1,3-Dichloropropene	ND< 5			
Methylene Chloride	ND< 5			
1,1,2,2-Tetrachloroethane	ND< 5			
Tetrachloroethene	ND< 5			
1,1,1-Trichloroethane	ND< 5			
1,1,2-Trichloroethane	ND< 5			
Trichloroethene	ND< 5			
Trichlorofluoromethane	ND< 5			
Vinyl Chloride	ND< 5			
% Recovery Surrogate	105			
Comments	h,i,f			

* water and vapor samples are reported in ug/L, soil and sludge samples in ug/kg and all TCLP extracts in ug/L.

Reporting limit unless otherwise stated: water/TCLP extracts, ND< 0.5ug/L; soil and sludge, ND< 5ug/kg

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis

(b) tribromomethane; (c) tetrachloromethane; (d) (2-chloroethoxy) ethene; (e) trichloromethane; (f) sample diluted due to high organic content; (h) a lighter than water immiscible sheen is present; (i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Geo Plexus, Inc. 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054	Client Project ID: # C95041; Walsh Pacific/EBMUD	Date Sampled: 10/24/96
		Date Received: 10/25/96
	Client Contact: David Glick	Date Extracted: 10/25/96
	Client P.O:	Date Analyzed: 10/28/96

LUFT Metals*

EPA analytical methods 6010/200.7, 239.2+

Lab ID	Client ID	Matrix	Extraction°	Cadmium	Chromium	Lead	Nickel	Zinc	% Rec. Surrogate
70483	WB12-S1	S	TTLC	ND	38	80	38	66	86
70485	WB13-S1	S	TTLC	ND	61	64	48	77	91
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLC	0.5 mg/kg	0.5	3.0	2.0	1.0	
		W	TTLC	0.005 mg/L	0.005	0.005	0.05	0.05	
		---	STLC,TCLP	0.01 mg/L	0.05	0.2	0.05	0.05	

* soil samples and sludge are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

surrogate diluted out of range; N/A means surrogate not applicable to this analysis

& reporting limit raised due matrix interference

i) liquid sample that contains greater than ~ 2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
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Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/25/96-10/26/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68822)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.946	1.949	2.03	96	96	0.2
Benzene	0.000	0.198	0.186	0.2	99	93	6.3
Toluene	0.000	0.206	0.194	0.2	103	97	6.0
Ethylbenzene	0.000	0.198	0.188	0.2	99	94	5.2
Xylenes	0.000	0.594	0.564	0.6	99	94	5.2
TPH (diesel)	0	326	325	300	109	108	0.4
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
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QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/29/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68822)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.942	1.932	2.03	96	95	0.6
Benzene	0.000	0.172	0.178	0.2	86	89	3.4
Toluene	0.000	0.188	0.194	0.2	94	97	3.1
Ethylbenzene	0.000	0.178	0.182	0.2	89	91	2.2
Xylenes	0.000	0.528	0.546	0.6	88	91	3.4
TPH (diesel)	0	327	318	300	109	106	2.6
TRPH (oil and grease)	0.0	10.6	11.0	10	106	110	3.7

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 11/01/96-11/02/96 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68823)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.840	1.853	2.03	91	91	0.7
Benzene	0.000	0.172	0.174	0.2	86	87	1.2
Toluene	0.000	0.182	0.184	0.2	91	92	1.1
Ethylbenzene	0.000	0.174	0.176	0.2	87	88	1.1
Xylenes	0.000	0.524	0.534	0.6	87	89	1.9
TPH (diesel)	0	314	315	300	105	105	0.2
TRPH (oil and grease)	0.0	11.4	11.3	10	114	113	0.9

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
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QC REPORT FOR EPA 8010/8020/EDB

Date: 10/25/96-10/26/96 Matrix: Soil

Analyte	Concentration (ug/kg)				% Recovery		
	Sample (#68822)	MS	MSD	Amount Spiked	MS	MSD	RPD
1,1-DCE	0	93	93	100	93	93	0.0
Trichloroethene	0	85	92	100	85	92	7.9
EDB	0	83	90	100	83	90	8.1
Chlorobenzene	0	93	98	100	93	98	5.2
Benzene	0	102	108	100	102	108	5.7
Toluene	0	98	100	100	98	100	2.0
Chlorobz (PID)	0	95	100	100	95	100	5.1

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

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QC REPORT FOR EPA 8010/8020/EDB

Date: 10/28/96-10/29/96 Matrix: Soil

Analyte	Concentration (ug/kg)				% Recovery		
	Sample (#68822)	MS	MSD	Amount Spiked	MS	MSD	RPD
1,1-DCE	0	89	98	100	89	98	9.6
Trichloroethene	0	85	93	100	85	93	9.0
EDB	0	81	91	100	81	91	11.6
Chlorobenzene	0	93	101	100	93	101	8.2
Benzene	0	97	105	100	97	105	7.9
Toluene	0	88	97	100	88	97	9.7
Chlorobz (PID)	0	87	98	100	87	98	11.9

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
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QC REPORT FOR EPA 8010/8020/EDB

Date: 10/25/96-10/26/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70287)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-DCE	0.0	11.7	10.8	10.0	117	108	8.0
Trichloroethene	0.0	10.0	9.2	10.0	100	92	8.3
EDB	0.0	10.1	9.3	10.0	101	93	8.2
Chlorobenzene	0.0	10.7	9.8	10.0	107	98	8.8
Benzene	0.0	11.9	10.8	10.0	119	108	9.7
Toluene	0.0	10.9	9.9	10.0	109	99	9.6
Chlorobz (PID)	0.0	11.0	10.2	10.0	110	102	7.5

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 10/28/96-10/29/96 Matrix: Water

Analyte	Concentration (ug/L) Sample (#70080)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
1,1-DCE	0.0	9.9	10.5	10.0	99	105	5.9
Trichloroethene	0.0	9.4	9.8	10.0	94	98	4.2
EDB	0.0	9.0	9.3	10.0	90	93	3.3
Chlorobenzene	0.0	10.1	10.5	10.0	101	105	3.9
Benzene	0.0	10.4	10.9	10.0	104	109	4.7
Toluene	0.0	9.5	10.0	10.0	95	100	5.1
Chlorobz (PID)	0.0	9.6	10.1	10.0	96	101	5.1

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
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QC REPORT FOR METALS

Date: 10/28/96 Matrix: Soil

Extraction: TTLC

Analyte	Concentration (mg/kg)			Amount	% Recovery		RPD
	Sample	MS	MSD	Spiked	MS	MSD	
Arsenic	0.0	5.1	5.1	5.0	102	101	0.6
Selenium	0.0	4.8	4.8	5.0	95	96	0.5
Molybdenum	0.0	4.8	4.8	5.0	96	96	0.1
Silver	0.0	0.5	0.5	0.5	105	104	0.6
Thallium	0.0	4.9	4.8	5.0	98	97	1.4
Barium	0.0	4.6	4.6	5.0	93	91	1.2
Nickel	0.0	5.0	5.0	5.0	99	99	0.2
Chromium	0.0	4.9	4.9	5.0	98	98	0.3
Vanadium	0.0	4.9	4.9	5.0	98	98	0.6
Beryllium	0.0	5.2	5.2	5.0	105	104	0.5
Zinc	0.0	5.1	5.1	5.0	102	101	0.7
Copper	0.0	4.7	4.6	5.0	94	93	1.5
Antimony	0.0	4.9	4.8	5.0	97	97	0.2
Lead	0.0	4.9	4.9	5.0	98	98	0.1
Cadmium	0.0	5.3	5.2	5.0	105	105	0.5
Cobalt	0.0	5.0	5.0	5.0	100	100	0.2
Mercury	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

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CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY ☐ ROUTINE

SUBM #: 9610404 REP: NV
CLIENT: MCCAM
DUE: 11/04/96
REF #:30401

REPORT TO: Ed Hamilton BILL TO: MAI
PROJECT NUMBER: 7469 PROJECT NAME: G-W.P.-C95041
PROJECT LOCATION:

SAMPLE ID	LOCATION	SAMPLING DATE	SAMPLING TIME	# CONTAINERS	TYPE CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCL	HNO_3	ICE	OTHER	ANALYSIS REQUEST: EPA 601/8010	EPA 602/8020	EPA 608/8080	EPA 608/8080 - PCBs Only	EPA 624/8240/8260	EPA 625/8270	CAM - 17 Metals	EPA - Priority Pollutant Metals	LUFT Metals	LEAD (7240/7421/239.2/6010)	ORGANIC LEAD	RCI	OTHER: PNA'S						COMMENTS
WB12-S1		10/24/96		1	VOA		X						X														X						70483
WB13-S1		"		1	VOA		X						X														X						70485

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Heidi Rivera (signature)	10/28/96	1223	(signature)
(signature)	10/28/96	1445	(signature)
			RECEIVED BY LABORATORY: (signature)

REMARKS:

CHROMALAB, INC.

Environmental Services (SDB)

November 4, 1996 *Submission #:* 9610404

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: G-W.P.-C95041 *Project#:* 7469
Received: October 28, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB12-S1**
Spl#: 105410 *Matrix:* SOIL *Extracted:* October 31, 1996
Sampled: October 24, 1996 *Run#:* 3835 *Analyzed:* October 31, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	1.0	N.D.	--	10
ACENAPHTHYLENE	N.D.	1.0	N.D.	--	10
ACENAPHTHENE	N.D.	1.0	N.D.	84.1	10
FLUORENE	N.D.	1.0	N.D.	--	10
PHENANTHRENE	N.D.	1.0	N.D.	--	10
ANTHRACENE	N.D.	1.0	N.D.	--	10
FLUORANTHENE	N.D.	1.0	N.D.	--	10
PYRENE	N.D.	1.0	N.D.	113	10
BENZO(A)ANTHRACENE	N.D.	1.0	N.D.	--	10
CHRYSENE	N.D.	1.0	N.D.	--	10
BENZO(B)FLUORANTHENE	N.D.	1.0	N.D.	--	10
BENZO(K)FLUORANTHENE	N.D.	2.0	N.D.	--	10
BENZO(A)PYRENE	N.D.	0.35	N.D.	--	10
INDENO(1,2,3-CD)PYRENE	N.D.	2.0	N.D.	--	10
DIBENZO(A,H)ANTHRACENE	N.D.	2.0	N.D.	--	10
BENZO(GHI)PERYLENE	N.D.	2.0	N.D.	--	10

Note: Reporting limits raised due to matrix interference.

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

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(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 4, 1996 *Submission #:* 9610404

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: G-W.P.-C95041 *Project#:* 7469
Received: October 28, 1996

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *EPA 8270*

Client Sample ID: **WB13-S1**
Spl#: 105411 *Matrix:* SOIL *Extracted:* October 31, 1996
Sampled: October 24, 1996 *Run#:* 3835 *Analyzed:* October 31, 1996

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	84.1	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	113	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

November 4, 1996 *Submission #:* 9610404

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: G-W.P.-C95041 *Project#:* 7469
Received: October 28, 1996

re: **Surrogate** report for 2 samples for Polynuclear Aromatic
Method: EPA 8270
Lab Run#: 3835
Matrix: SOIL

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
105410-1	WB12-S1	NITROBENZENE-D5	62.6	23-120
105410-1	WB12-S1	2-FLUOROBIPHENYL	67.7	30-115
105410-1	WB12-S1	TERPHENYL-D14	49.2	18-137
105410-2	WB12-S1	NITROBENZENE-D5	96.0	23-120
105410-2	WB12-S1	2-FLUOROBIPHENYL	98.0	30-115
105410-2	WB12-S1	TERPHENYL-D14	86.4	18-137
105411-1	WB13-S1	NITROBENZENE-D5	74.0	23-120
105411-1	WB13-S1	2-FLUOROBIPHENYL	66.1	30-115
105411-1	WB13-S1	TERPHENYL-D14	68.1	18-137

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
105739-1	*Reagent blank (MDB)*	NITROBENZENE-D5	80	23-120
105739-1	*Reagent blank (MDB)*	2-FLUOROBIPHENYL	78	30-115
105739-1	*Reagent blank (MDB)*	TERPHENYL-D14	92	18-137
105737-1	*Spiked blank (BSP)*	NITROBENZENE-D5	79	23-120
105737-1	*Spiked blank (BSP)*	2-FLUOROBIPHENYL	81	30-115
105737-1	*Spiked blank (BSP)*	TERPHENYL-D14	95	18-137
105738-1	*Spiked blank duplicate (BSD)*	NITROBENZENE-D5	82	23-120
105738-1	*Spiked blank duplicate (BSD)*	2-FLUOROBIPHENYL	81	30-115
105738-1	*Spiked blank duplicate (BSD)*	TERPHENYL-D14	98	18-137
105740-1	*Matrix spike (MS)*	NITROBENZENE-D5	69	23-120
105740-1	*Matrix spike (MS)*	2-FLUOROBIPHENYL	75	30-115
105740-1	*Matrix spike (MS)*	TERPHENYL-D14	66	18-137
105741-1	*Matrix spike duplicate (MSD)*	NITROBENZENE-D5	77	23-120
105741-1	*Matrix spike duplicate (MSD)*	2-FLUOROBIPHENYL	75	30-115
105741-1	*Matrix spike duplicate (MSD)*	TERPHENYL-D14	71	18-137

S105
QCSURR1229 MIKELEE 04-Nov-96 15

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APPENDIX C

REVISED RBCA TIER-1 ANALYSIS

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: EBMUD Adeline Maintenance
Site Location: Oakland, CA

Job Identification: run2
Date Completed: 11/24/96
Completed By: David Glick

Software: GSI RBCA Spreadsheet
Version: v 1.0

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg•yr/kg•d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2•yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
tox	Use EPA tox data for air (or PEL based)	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
GW.v	Volatilization to Outdoor Air	FALSE	TRUE	
GW.b	Vapor Intrusion to Buildings	FALSE	TRUE	
Soil Pathways				
S.v	Volatiles from Subsurface Soils	FALSE	TRUE	
SS.v	Volatiles and Particulate Inhalation	FALSE	TRUE	TRUE
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
S.l	Leaching to Groundwater from all Soils	FALSE	TRUE	
S.b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location on- or off-site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		TRUE		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-04***	
TRc	Target Risk (class C carcinogens)	***1.0E-04***	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	1	
Tier	RBCA Tier	1	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***9.3E+06***		***9.3E+06***
W	Length of affected soil parallel to wind (cm)	***1.5E+03***		***1.5E+03***
W.gw	Length of affected soil parallel to groundwater (c	1.5E+03		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	1.0E+02		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater Transport velocity (cm/yr)	6.6E+03
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	Biodegradation Capacity (mg/L)	
BIO?	Is Bioattenuation Considered	FALSE
phi.eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***6.1E+00***		
hv	Vadose zone thickness (cm)	***2.1E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.1E+02***		
Ls	Depth to top of affected soil (cm)	1.0E+02		
Lsubs	Thickness of affected subsurface soils (cm)	***3.6E+02***		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.1

Site Name: EBMUD Adeline Maintenance Center

Site Location: Oakland, CA

Completed By: David Glick

Date Completed: 11/24/1996

Target Risk (Class A & B) 1.0E-4 ☐ MCL exposure limit?

Target Risk (Class C) 1.0E-4 ☐ PEL exposure limit?

Target Hazard Quotient 1.0E+0

Calculation Option: 1

SURFACE SOIL RBSL VALUES (< 3 FT BGS)

RBSL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1
120-12-7	Anthracene	0.0E+0	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1
71-43-2	Benzene	1.2E-2	NA	5.8E+0	NA	NA	3.6E+2	>Res	5.8E+0	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	NA	2.3E+3	NA	NA	>Res	>Res	2.3E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	NA	3.1E+2	NA	NA	4.3E+2	>Res	3.1E+2	☐	<1
75-34-3	Dichloroethane, 1,1-	0.0E+0	NA	9.2E+1	NA	NA	3.8E+3	3.3E+3	9.2E+1	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	NA	2.5E+0	NA	NA	1.1E+2	2.3E+3	2.5E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	9.0E-2	NA	6.4E+0	NA	NA	3.7E+2	2.9E+2	6.4E+0	☐	<1
100-41-4	Ethylbenzene	2.1E-2	NA	1.3E+2	NA	NA	>Res	>Res	1.3E+2	☐	<1
206-44-0	Fluoranthene	2.9E+0	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1
75-09-2	Methylene chloride	0.0E+0	NA	1.2E+1	NA	NA	1.4E+3	2.7E+3	1.2E+1	☐	<1
91-20-3	Naphthalene	0.0E+0	NA	6.4E+1	NA	NA	>Res	>Res	6.4E+1	☐	<1
85-01-8	Phenanthrene	3.9E+0	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1
129-00-0	Pyrene	3.3E+0	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1
127-18-4	Tetrachloroethene	0.0E+0	NA	8.8E+3	NA	NA	2.1E+2	6.4E+3	2.1E+2	☐	<1
108-88-3	Toluene	1.9E-2	NA	3.6E+2	NA	NA	>Res	>Res	3.6E+2	☐	<1
71-55-6	Trichloroethane, 1,1,1-	0.0E+0	NA	3.3E+2	NA	NA	3.5E+3	3.6E+3	3.3E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	NA	4.2E-1	NA	NA	1.8E+2	>Res	4.2E-1	☐	<1
79-01-6	Trichloroethene	0.0E+0	NA	2.4E+0	NA	NA	>Res	>Res	2.4E+0	☐	<1
########	Xylene (mixed isomers)	1.7E-1	NA	>Res	NA	NA	>Res	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet Serial: g-265-vhx-686

Version: v 1.0

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.2

Site Name: EBMUD Adeline Maintenance Center
Site Location: Oakland, CA

Completed By: David Glick
Date Completed: 11/24/1996

Target Risk (Class A & B) 1.0E-4
Target Risk (Class C) 1.0E-4
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 1

SUBSURFACE SOIL RBSL VALUES (> 3 FT BGS)

RBSL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	X Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
120-12-7	Anthracene	0.0E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
71-43-2	Benzene	4.3E-1	NA	5.8E+0	NA	NA	7.8E-1	NA	3.3E+2	7.8E-1	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	9.8E-2	NA	2.3E+3	NA	NA	1.1E+3	NA	>Res	1.1E+3	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	3.0E-2	NA	3.1E+2	NA	NA	3.9E+2	NA	>Res	3.1E+2	☐	<1
75-34-3	Dichloroethane, 1,1-	2.1E-1	NA	9.2E+1	NA	NA	6.5E+1	NA	>Res	6.5E+1	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	NA	2.5E+0	NA	NA	2.6E+0	NA	5.6E+2	2.5E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0	NA	6.4E+0	NA	NA	4.6E+0	NA	>Res	4.6E+0	☐	<1
100-41-4	Ethylbenzene	2.7E+0	NA	1.3E+2	NA	NA	1.3E+2	NA	>Res	1.3E+2	☐	<1
206-44-0	Fluoranthene	0.0E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
75-09-2	Methylene chloride	0.0E+0	NA	1.2E+1	NA	NA	7.8E+1	NA	>Res	1.2E+1	☐	<1
91-20-3	Naphthalene	0.0E+0	NA	6.4E+1	NA	NA	1.1E+2	NA	>Res	6.4E+1	☐	<1
85-01-8	Phenanthrene	0.0E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
129-00-0	Pyrene	0.0E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1
127-18-4	Tetrachloroethene	1.9E+0	NA	8.8E+3	NA	NA	1.5E+4	NA	>Res	8.8E+3	☐	<1
108-88-3	Toluene	2.4E+0	NA	3.6E+2	NA	NA	5.5E+1	NA	>Res	5.5E+1	☐	<1
71-55-6	Trichloroethane, 1,1,1-	5.4E-1	NA	3.3E+2	NA	NA	1.3E+2	NA	>Res	1.3E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	NA	4.2E-1	NA	NA	2.2E+0	NA	>Res	4.2E-1	☐	<1
79-01-6	Trichloroethene	8.7E+2	NA	2.4E+0	NA	NA	2.1E+1	NA	>Res	2.4E+0	■	3.7E+02
1330-20-7	Xylene (mixed isomers)	6.5E+0	NA	>Res	NA	NA	>Res	NA	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet Serial: g-265-vhx-686
Version: v 1.0

Site Name: EBMUD Adeline Maintenance Center
Site Location: Oakland, CA

Completed By: David Glick
Date Completed: 11/24/1996

GROUNDWATER RBSL VALUES

Target Risk (Class A & B) 1.0E-4
Target Risk (Class C) 1.0E-4
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 1

RBSL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
83-32-9	Acenaphthene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
120-12-7	Anthracene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
71-43-2	Benzene	5.2E-2	NA	NA	NA	NA	1.4E+0	NA	3.6E+2	1.4E+0	☐	<1
95-50-1	Dichlorobenzene (1,2) (-o)	0.0E+0	NA	NA	NA	NA	9.4E+1	NA	>Sol	9.4E+1	☐	<1
106-46-7	Dichlorobenzene, (1,4) (-p)	0.0E+0	NA	NA	NA	NA	3.1E+1	NA	>Sol	3.1E+1	☐	<1
75-34-3	Dichloroethane, 1,1-	1.8E-2	NA	NA	NA	NA	6.1E+1	NA	>Sol	6.1E+1	☐	<1
107-06-2	Dichloroethane, 1,2-	0.0E+0	NA	NA	NA	NA	6.6E+0	NA	1.2E+3	6.6E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	0.0E+0	NA	NA	NA	NA	2.2E+0	NA	6.6E+2	2.2E+0	☐	<1
100-41-4	Ethylbenzene	8.5E-3	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
206-44-0	Fluoranthene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
75-09-2	Methylene chloride	1.8E-3	NA	NA	NA	NA	1.9E+2	NA	>Sol	1.9E+2	☐	<1
91-20-3	Naphthalene	0.0E+0	NA	NA	NA	NA	1.3E+1	NA	>Sol	1.3E+1	☐	<1
85-01-8	Phenanthrene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
129-00-0	Pyrene	0.0E+0	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
127-18-4	Tetrachloroethene	2.8E-3	NA	NA	NA	NA	3.5E+1	NA	>Sol	3.5E+1	☐	<1
108-88-3	Toluene	2.7E-2	NA	NA	NA	NA	9.2E+1	NA	>Sol	9.2E+1	☐	<1
71-55-6	Trichloroethane, 1,1,1-	1.7E-3	NA	NA	NA	NA	1.1E+2	NA	>Sol	1.1E+2	☐	<1
79-00-5	Trichloroethane, 1,1,2-	0.0E+0	NA	NA	NA	NA	2.1E+1	NA	3.1E+3	2.1E+1	☐	<1
79-01-6	Trichloroethene	2.6E-3	NA	NA	NA	NA	1.5E+1	NA	>Sol	1.5E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	5.8E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1

Site Name: EBMUD Adeline Maintenan Site Location: Oakland, CA Completed By: David Glick Date Completed: 11/24/1996 3 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: **Exposure Concentration**

DERMAL CONTACT 1) Source Medium | 4) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (1/day) | 5) Average Daily Intake Rate (mg/kg-day)

Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Acenaphthene	0.0E+0		2.3E-6		0.0E+0
Anthracene	0.0E+0		2.3E-6		0.0E+0
Benzene	1.2E-2		8.2E-6		9.8E-8
Dichlorobenzene (1,2) (-o)	0.0E+0		2.3E-5		0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0		8.2E-6		0.0E+0
Dichloroethane, 1,1-	0.0E+0		2.3E-5		0.0E+0
Dichloroethane, 1,2-	0.0E+0		8.2E-6		0.0E+0
Dichloroethene, cis-1,2-	9.0E-2		2.3E-5		2.1E-6
Ethylbenzene	2.1E-2		2.3E-5		4.8E-7
Fluoranthene	2.9E+0		2.3E-6		6.6E-6
Methylene chloride	0.0E+0		8.2E-6		0.0E+0
Naphthalene	0.0E+0		2.3E-6		0.0E+0
Phenanthrene	3.9E+0		2.3E-6		8.9E-6
Pyrene	3.3E+0		2.3E-6		7.6E-6
Tetrachloroethene	0.0E+0		8.2E-6		0.0E+0
Toluene	1.9E-2		2.3E-5		4.3E-7
Trichloroethane, 1,1,1-	0.0E+0		2.3E-5		0.0E+0
Trichloroethane, 1,1,2-	0.0E+0		8.2E-6		0.0E+0
Trichloroethene	0.0E+0		8.2E-6		0.0E+0
Xylene (mixed isomers)	1.7E-1		2.3E-5		3.9E-6

NOTE: ABS = Dermal absorption factor (dim) | BW = Body Weight (kg) | EF = Exposure frequencey (days/yr) | POE = Point of exposure
AF = Adherance factor | CF = Units conversion factor | ET = Exposure time (hrs/day) | SA = Skin surface area (cm^2)
AT = Averaging time (days) | ED = Exp. duration (yrs) | IR = Intake rate (L/day or mg/day)

Serial: g-265-vhx-686 GSI RBCA Spreadsheet
Version: v 1.0

Site Name: EBMUD Adeline Maintenance Center Site Location: Oakland, CA Completed By: David Glick Date Completed: 11/24/1996 *2 OF 3*

TIER 1 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

		CARCINOGENIC RISK					TOXIC EFFECTS			
	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
Constituents of Concern		On-Site Residential	On-Site Commercial	(mg/kg-day)^-1	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	(mg/kg-day)	On-Site Residential	On-Site Commercial
Acenaphthene								0.0E+0	6.0E-2		0.0E+0
Anthracene	D							0.0E+0	3.0E-1		0.0E+0
Benzene	A		1.1E-7	2.9E-2		3.2E-9					
Dichlorobenzene (1,2) (-o)	D							0.0E+0	9.0E-2		0.0E+0
Dichlorobenzene, (1,4) (-p)	C		0.0E+0	2.4E-2		0.0E+0		0.0E+0	2.3E-1		0.0E+0
Dichloroethane, 1,1-	C							0.0E+0	1.0E-1		0.0E+0
Dichloroethane, 1,2-	B2		0.0E+0	9.1E-2		0.0E+0					
Dichloroethene, cis-1,2-	D							2.3E-6	1.0E-2		2.3E-4
Ethylbenzene	D							5.3E-7	1.0E-1		5.3E-6
Fluoranthene	D							1.4E-5	4.0E-2		3.5E-4
Methylene chloride	B2		0.0E+0	7.5E-3		0.0E+0		0.0E+0	6.0E-2		0.0E+0
Naphthalene	D							0.0E+0	4.0E-3		0.0E+0
Phenanthrene	D							1.9E-5	4.0E-3		4.7E-3
Pyrene	D							1.6E-5	3.0E-2		5.3E-4
Tetrachloroethene	C-B2		0.0E+0	5.2E-2		0.0E+0		0.0E+0	1.0E-2		0.0E+0
Toluene	D							4.8E-7	2.0E-1		2.4E-6
Trichloroethane, 1,1,1-	D							0.0E+0	9.0E-2		0.0E+0
Trichloroethane, 1,1,2-	C		0.0E+0	5.7E-2		0.0E+0		0.0E+0	4.0E-3		0.0E+0
Trichloroethene			0.0E+0	1.1E-2		0.0E+0		0.0E+0	6.0E-3		0.0E+0
Xylene (mixed isomers)	D							4.3E-6	2.0E+0		2.2E-6
		Total Pathway Carcinogenic Risk =			**0.0E+0**	**3.2E-9**	***Total Pathway Hazard Index =***			**0.0E+0**	**5.9E-3**

Site Name: EBMUD Adeline Maintenance Center | Site Location: Oakland, CA | Completed By: David Glick | Date Completed: 11/24/1996 | 5 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor: On-Site Commercial		3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2): On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day): On-Site Commercial	
Acenaphthene	0.0E+0	8.6E+2		0.0E+0		9.8E-3		0.0E+0	
Anthracene	0.0E+0	1.7E+3		0.0E+0		9.8E-3		0.0E+0	
Benzene	4.3E-1	5.9E+0		7.3E-2		3.5E-3		2.6E-4	
Dichlorobenzene (1,2) (-o)	9.8E-2	2.5E+2		3.9E-4		9.8E-3		3.8E-6	
Dichlorobenzene, (1,4) (-p)	3.0E-2	2.6E+2		1.2E-4		3.5E-3		4.0E-7	
Dichloroethane, 1,1-	2.1E-1	9.0E+0		2.3E-2		9.8E-3		2.3E-4	
Dichloroethane, 1,2-	0.0E+0	7.9E+0		0.0E+0		3.5E-3		0.0E+0	
Dichloroethene, cis-1,2-	9.0E-2	6.2E+0		1.4E-2		9.8E-3		1.4E-4	
Ethylbenzene	2.7E+0	1.3E+1		2.1E-1		9.8E-3		2.0E-3	
Fluoranthene	2.9E+0	4.6E+3		6.3E-4		9.8E-3		6.2E-6	
Methylene chloride	0.0E+0	3.2E+0		0.0E+0		3.5E-3		0.0E+0	
Naphthalene	0.0E+0	1.6E+2		0.0E+0		9.8E-3		0.0E+0	
Phenanthrene	3.9E+0	1.7E+3		2.3E-3		9.8E-3		2.2E-5	
Pyrene	3.3E+0	4.6E+3		7.2E-4		9.8E-3		7.0E-6	
Tetrachloroethene	1.9E+0	1.6E+4		1.2E-4		3.5E-3		4.2E-7	
Toluene	2.4E+0	1.8E+1		1.4E-1		9.8E-3		1.3E-3	
Trichloroethane, 1,1,1-	5.4E-1	3.6E+1		1.5E-2		9.8E-3		1.5E-4	
Trichloroethane, 1,1,2-	0.0E+0	1.0E+0		0.0E+0		3.5E-3		0.0E+0	
Trichloroethene	8.7E+2	3.8E+0		2.3E+2		3.5E-3		7.9E-1	
Xylene (mixed isomers)	6.5E+0	3.0E+1		2.1E-1		9.8E-3		2.1E-3	

NOTE: AT = Averaging time (days)

BW = Body Weight (kg)
CF = Units conversion factor
ED = Exp. duration (yrs)
EF = Exposure frequencey (days/yr)
IR = Intake rate (L/day)
POE = Point of exposure

Serial: g-265-vhx-686 Software: GSI RBCA Spreadsheet
Version: v 1.0

Site Name: EBMUD Adeline Maintena Site Location: Oakland, CA Completed By: David Glick Date Completed: 11/24/1996 *4 OF 6*

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: INGESTION	Exposure Concentration 1) Source Medium	4) Exposure Multiplier (IRxCxEFxED)/(BWxAT) (1/day)		5) Average Daily Intake Rate (mg/kg-day)		TOTAL PATHWAY INTAKE (mg/kg-day) *(Sum intake values from dermal & ingestion routes.)*	
Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Acenaphthene	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Anthracene	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Benzene	1.2E-2		9.2E-7		1.1E-8		1.1E-7
Dichlorobenzene (1,2) (-o)	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Dichloroethane, 1,1-	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Dichloroethane, 1,2-	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Dichloroethene, cis-1,2-	9.0E-2		2.6E-6		2.3E-7		2.3E-6
Ethylbenzene	2.1E-2		2.6E-6		5.4E-8		5.3E-7
Fluoranthene	2.9E+0		2.6E-6		7.4E-6		1.4E-5
Methylene chloride	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Naphthalene	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Phenanthrene	3.9E+0		2.6E-6		1.0E-5		1.9E-5
Pyrene	3.3E+0		2.6E-6		8.5E-6		1.6E-5
Tetrachloroethene	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Toluene	1.9E-2		2.6E-6		4.9E-8		4.8E-7
Trichloroethane, 1,1,1-	0.0E+0		2.6E-6		0.0E+0		0.0E+0
Trichloroethane, 1,1,2-	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Trichloroethene	0.0E+0		9.2E-7		0.0E+0		0.0E+0
Xylene (mixed isomers)	1.7E-1		2.6E-6		4.4E-7		4.3E-6

NOTE

ABS = Dermal absorption factor (dim)
AF = Adherance factor
AT = Averaging time (days)
BW = Body Weight (kg)
CF = Units conversion factor
ED = Exp. duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day or mg/day)
POE = Point of exposure
SA = Skin surface area (cm^2)

Serial: g-265-vhx-686

Software: GSI RBCA Spreadsheet
Version: v 1.0

Site Name: EBMUD Adeline Maintenance Center | Site Location: Oakland, CA | Completed By: David Glick | Date Completed: 11/24/1996 | *1 OF 6*

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial	3) Exposure Medium: Air: POE Conc. (mg/m^3) (1) / (2): On-Site Commercial	4) Exposure Multiplier (IRxETxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial
Acenaphthene	0.0E+0	1.5E+5	0.0E+0	2.0E-1	0.0E+0
Anthracene	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0
Benzene	1.2E-2	1.4E+5	8.8E-8	7.0E-2	6.1E-9
Dichlorobenzene (1,2) (-o)	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0
Dichlorobenzene, (1,4) (-p)	0.0E+0	1.4E+5	0.0E+0	7.0E-2	0.0E+0
Dichloroethane, 1,1-	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0
Dichloroethane, 1,2-	0.0E+0	1.4E+5	0.0E+0	7.0E-2	0.0E+0
Dichloroethene, cis-1,2-	9.0E-2	1.4E+5	6.6E-7	2.0E-1	1.3E-7
Ethylbenzene	2.1E-2	1.4E+5	1.5E-7	2.0E-1	3.0E-8
Fluoranthene	2.9E+0	1.4E+5	2.1E-5	2.0E-1	4.1E-6
Methylene chloride	0.0E+0	1.4E+5	0.0E+0	7.0E-2	0.0E+0
Naphthalene	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0
Phenanthrene	3.9E+0	2.6E+5	1.5E-5	2.0E-1	2.9E-6
Pyrene	3.3E+0	3.8E+7	8.7E-8	2.0E-1	1.7E-8
Tetrachloroethene	0.0E+0	2.5E+5	0.0E+0	7.0E-2	0.0E+0
Toluene	1.9E-2	1.4E+5	1.4E-7	2.0E-1	2.7E-8
Trichloroethane, 1,1,1-	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0
Trichloroethane, 1,1,2-	0.0E+0	1.4E+5	0.0E+0	7.0E-2	0.0E+0
Trichloroethene	0.0E+0	1.4E+5	0.0E+0	7.0E-2	0.0E+0
Xylene (mixed isomers)	1.7E-1	1.4E+5	1.2E-6	2.0E-1	2.4E-7

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor; AT = Averaging time (days); BW = Body Weight (kg); CF = Units conversion factor; ED = Exp. duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day or mg/day); POE = Point of exposure; SA = Skin surface area (cm^2)

Site Name: EBMUD Adeline Maintenance Center Site Location: Oakland, CA Completed By: David Glick Date Completed: 11/24/1996 *2 OF 6*

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION	Exposure Concentration 1) Source Medium	2) NAF Value (m^3/kg) Receptor	3) Exposure Medium Air: POE Conc. (mg/m^3) (1) / (2)	4) Exposure Multiplier (IRxETxEFxED)/(BWxAT) (m^3/kg-day)	5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	TOTAL PATHWAY INTAKE (mg/kg-day) *(Sum intake values from surface & subsurface routes.)*
Constituents of Concern	Subsurface Soil Conc. (mg/kg)	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial
Acenaphthene	0.0E+0	2.0E+5	0.0E+0	2.0E-1	0.0E+0	0.0E+0
Anthracene	0.0E+0	5.9E+4	0.0E+0	2.0E-1	0.0E+0	0.0E+0
Benzene	4.3E-1	3.8E+4	1.1E-5	7.0E-2	7.8E-7	7.9E-7
Dichlorobenzene (1,2) (-o)	9.8E-2	1.4E+5	6.9E-7	2.0E-1	1.3E-7	1.3E-7
Dichlorobenzene, (1,4) (-p)	3.0E-2	1.8E+5	1.7E-7	7.0E-2	1.2E-8	1.2E-8
Dichloroethane, 1,1-	2.1E-1	3.8E+4	5.5E-6	2.0E-1	1.1E-6	1.1E-6
Dichloroethane, 1,2-	0.0E+0	3.8E+4	0.0E+0	7.0E-2	0.0E+0	0.0E+0
Dichloroethene, cis-1,2-	0.0E+0	3.8E+4	0.0E+0	2.0E-1	0.0E+0	1.3E-7
Ethylbenzene	2.7E+0	3.8E+4	7.0E-5	2.0E-1	1.4E-5	1.4E-5
Fluoranthene	0.0E+0	1.7E+5	0.0E+0	2.0E-1	0.0E+0	4.1E-6
Methylene chloride	0.0E+0	3.8E+4	0.0E+0	7.0E-2	0.0E+0	0.0E+0
Naphthalene	0.0E+0	1.4E+5	0.0E+0	2.0E-1	0.0E+0	0.0E+0
Phenanthrene	0.0E+0	6.4E+5	0.0E+0	2.0E-1	0.0E+0	2.9E-6
Pyrene	0.0E+0	2.6E+10	0.0E+0	2.0E-1	0.0E+0	1.7E-8
Tetrachloroethene	1.9E+0	5.7E+5	3.3E-6	7.0E-2	2.3E-7	2.3E-7
Toluene	2.4E+0	3.8E+4	6.3E-5	2.0E-1	1.2E-5	1.2E-5
Trichloroethane, 1,1,1-	5.4E-1	3.8E+4	1.4E-5	2.0E-1	2.8E-6	2.8E-6
Trichloroethane, 1,1,2-	0.0E+0	3.8E+4	0.0E+0	7.0E-2	0.0E+0	0.0E+0
Trichloroethene	8.7E+2	3.8E+4	2.3E-2	7.0E-2	1.6E-3	1.6E-3
Xylene (mixed isomers)	6.5E+0	3.8E+4	1.7E-4	2.0E-1	3.3E-5	3.3E-5

NOTE: ABS = Dermal absorption factor (dim)
AF = Adherance factor
AT = Averaging time (days)
BW = Body Weight (kg)
CF = Units conversion factor
ED = Exp. duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day or mg/day)
POE = Point of exposure
SA = Skin surface area (cm^2)

Site Name: EBMUD Adeline Maintenance Center Site Location: Oakland, CA Completed By: David Glick Date Completed: 11/24/1996 *1 OF 3*

TIER 1 PATHWAY RISK CALCULATION

AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

		CARCINOGENIC RISK				TOXIC EFFECTS		
	(1) EPA	(2) Total Carcinogenic Intake Rate (mg/kg/day)	(3) Inhalation Slope Factor	(4) Individual COC Risk (2) x (3)	(5) Total Toxicant Intake Rate (mg/kg/day)	(6) Inhalation Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
Constituents of Concern	Carcinogenic Classification	On-Site Commercial	(mg/kg-day)^-1	On-Site Commercial	On-Site Commercial	(mg/kg-day)	On-Site Commercial	
Acenaphthene					0.0E+0	6.0E-2	0.0E+0	
Anthracene	D				0.0E+0	3.0E-1	0.0E+0	
Benzene	A	7.9E-7	2.9E-2	2.3E-8	2.2E-6	1.7E-3	1.3E-3	
Dichlorobenzene (1,2) (-o)	D				1.3E-7	4.0E-2	3.4E-6	
Dichlorobenzene, (1,4) (-p)	C	1.2E-8	2.4E-2	2.8E-10	3.3E-8	2.3E-1	1.5E-7	
Dichloroethane, 1,1-	C				1.1E-6	1.4E-1	7.5E-6	
Dichloroethane, 1,2-	B2	0.0E+0	9.1E-2	0.0E+0	0.0E+0	2.9E-3	0.0E+0	
Dichloroethene, cis-1,2-	D				1.3E-7	1.0E-2	1.3E-5	
Ethylbenzene	D				1.4E-5	2.9E-1	4.8E-5	
Fluoranthene	D				4.1E-6	4.0E-2	1.0E-4	
Methylene chloride	B2	0.0E+0	1.6E-3	0.0E+0	0.0E+0	8.6E-1	0.0E+0	
Naphthalene	D				0.0E+0	4.0E-3	0.0E+0	
Phenanthrene	D				2.9E-6	4.0E-3	7.3E-4	
Pyrene	D				1.7E-8	3.0E-2	5.7E-7	
Tetrachloroethene	C-B2	2.3E-7	2.0E-3	4.7E-10				
Toluene	D				1.2E-5	1.1E-1	1.1E-4	
Trichloroethane, 1,1,1-	D				2.8E-6	2.9E-1	9.6E-6	
Trichloroethane, 1,1,2-	C	0.0E+0	5.7E-2	0.0E+0				
Trichloroethene		1.6E-3	6.0E-3	9.5E-6				
Xylene (mixed isomers)	D				3.3E-5	2.0E+0	1.7E-5	
		Total Pathway Carcinogenic Risk =		**9.5E-6**	***Total Pathway Hazard Index =***		**2.3E-3**	**0.0E+0**

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg	note	in Subsurface Soil alue (mg/kg	note
Acenaphthene				max		
Anthracene				max		
Benzene	5.2E-2		1.2E-2	max	4.3E-1	
Dichlorobenzene (1,2) (-o)				max	9.8E-2	
Dichlorobenzene, (1,4) (-p)				max	3.0E-2	
Dichloroethane, 1,1-	1.8E-2			max	2.1E-1	
Dichloroethane, 1,2-				max		
Dichloroethene, cis-1,2-			9.0E-2			
Ethylbenzene	8.5E-3		2.1E-2	max	2.7E+0	
Fluoranthene			2.9E+0	max		
Methylene chloride	1.8E-3					
Naphthalene				max		
Phenanthrene			3.9E+0	max		
Pyrene			3.3E+0	max		
Tetrachloroethene	2.8E-3			max	1.9E+0	
Toluene	2.7E-2		1.9E-2	max	2.4E+0	
Trichloroethane, 1,1,1-	1.7E-3			max	5.4E-1	
Trichloroethane, 1,1,2-				max		
Trichloroethene	2.6E-3			max	8.7E+2	
Xylene (mixed isomers)	5.8E-2		1.7E-1	max	6.5E+0	

Site Name: EBMUD Adeline Maintenance Center
Site Location: Oakland, CA

Completed By: David Glick
Date Completed: 11/24/1996

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Acenaphthene	1.0E+0	1.0E+0
Anthracene	1.0E+0	1.0E+0
Benzene	1.0E+0	1.0E+0
Dichlorobenzene (1,2) (-o)	1.0E+0	1.0E+0
Dichlorobenzene, (1,4) (-p)	1.0E+0	1.0E+0
Dichloroethane, 1,1-	1.0E+0	1.0E+0
Dichloroethane, 1,2-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Fluoranthene	1.0E+0	1.0E+0
Methylene chloride	1.0E+0	1.0E+0
Naphthalene	1.0E+0	1.0E+0
Phenanthrene	1.0E+0	1.0E+0
Pyrene	1.0E+0	1.0E+0
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethane, 1,1,1-	1.0E+0	1.0E+0
Trichloroethane, 1,1,2-	1.0E+0	1.0E+0
Trichloroethene	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: EBMUD Adeline Maintenance Center
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