INNOVATIVE TECHNICAL SOLUTIONS, Inc.

ITSI

May 18, 1998

Mr. Joseph Cotton
City of Oakland
Environmental Services
1333 Broadway, Suite 330
Oakland, CA 94612

Results of Semi-Annual Groundwater Monitoring on March 11, 1998
2662 Fruitvale Avenue
Oakland, California

Dear Mr. Cotton:

Innovative Technical Solutions, Inc. (ITSI) is pleased to provide the results of semi-annual groundwater monitoring performed on March 11, 1998 at the property located at 2662 Fruitvale Avenue in Oakland. The semi-annual groundwater monitoring included the monitoring and sampling of seven monitoring wells, MW-F1, MW-F2, MW-F3, MW-F4, MW-F5, MW-F6, and MW-13. Figure 1 shows the site layout and approximate location of the monitoring wells sampled as part of this semi-annual groundwater monitoring event.

The purpose of this groundwater monitoring program is to identify changes in shallow groundwater quality at the site over time, including an evaluation of groundwater conditions that may serve as indicators of intrinsic bioremediation of petroleum hydrocarbons occuring beneath the site.

SCOPE OF WORK

Prior to sampling, the presence of floating product was evaluated in each of the monitoring wells using an oil/water interface probe. Water levels were then measured in each of the wells to 0.01 foot using a water level meter. Depth to water measurements and thickness of floating product, if present, were recorded on Monitoring Well Purge and Sample Forms. Copies of the Monitoring Well Purge and Sample Forms are included in Appendix A.

1330 Broadway, Suite 1625, Oakland, CA 94612 (510) 286-8888 (510) 286-8889 fax

After depth to water measurements were recorded, the monitoring wells were purged using a peristaltic pump. Approximately three casing volumes of water were removed, until pH, conductivity, and temperature readings stabilized. Field parameters were recorded on the Monitoring Well Purge and Sample Forms.

Groundwater samples from each monitoring well were collected using the peristaltic pump and transferred into laboratory provided sample containers with appropriate preservatives. Samples were labeled, placed on ice in an insulated cooler, and transported under chain-of-custody procedures to Chromalab, Inc., a California-certified laboratory.

Groundwater samples were analyzed for the following:

- TPH as gasoline (TPHg) by modified EPA Method 8015.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020A.
- Nitrate, sulfate, and total and soluble iron.

RESULTS

Groundwater elevations and the presence and thickness of floating product are summarized in Table 1 and shown in Figure 1. Results of groundwater sample analyses are summarized in Table 2 and shown in Figures 2 and 3. Copies of the analytical results and chain-of-custody form are included in Appendix B.

Depth to groundwater ranged from approximately 8 to 9 feet below ground surface (bgs). Groundwater flow direction was generally towards the west-southwest, at a gradient ranging from approximately 0.01 to 0.08 feet per foot. The groundwater flow direction is consistent with groundwater flow directions from previous monitoring events.

As shown in Table 1, floating product was observed in one monitoring well, MW-13, at a thickness of 0.02 feet. Floating product was not observed in the other six wells monitored and sampled.

Petroleum Hydrocarbons

TPHg was reportedly detected in samples from three monitoring wells, MW-F2, MW-F4 and MW-13, at concentrations of 0.20, 9.5, and 13 mg/L, respectively. TPHg was reportedly not detected (at a detection limit of 0.05 mg/L) in the other four monitoring wells sampled.

Benzene was reportedly detected in samples collected from three monitoring wells, MW-F2, MW-F4, and MW-13, at concentrations of 0.00088, 0.062, and 0.30 mg/L, respectively. Benzene concentrations detected in MW-F4 and MW-13 exceed the Maximum Contaminant Level (MCL) for benzene of 0.001 mg/L. MCLs are drinking water standards established by California Code of Regulations (CCR) Title 26. Benzene was reportedly not detected (at a detection limit of 0.0005 mg/L) in the other four monitoring wells sampled.

Toluene was reportedly detected at a concentration of 0.030 mg/L in monitoring well MW-F4. Toluene was reportedly not detected (at a detection limit of 0.0005 mg/L) in the other six monitoring wells sampled.

Ethylbenzene was reportedly detected in samples collected from two monitoring wells, MW-F4 and MW-13, at concentrations of 1.0 and 0.89 mg/L, respectively. Ethylbenzene concentrations detected in MW-F4 and MW-13 exceed the MCL for ethylbenzene of 0.7 mg/L Ethylbenzene was reportedly not detected (at a detection limit of 0.0005 mg/L) in the other five monitoring wells sampled.

Xylenes were reportedly detected in samples collected from two monitoring wells, MW-F4 and MW-13, at concentrations of 0.80 and 0.51 mg/L, respectively Xylenes were reportedly not detected (at a detection limit of 0.0005 mg/L) in the other five monitoring wells sampled.

Intrinsic Bioremediation Indicator Compounds

Soluble iron, representing ferrous iron (Fe^{2+}), was reportedly detected in four of the seven wells sampled, MW-F2, MW-F3, MW-F4, and MW-13, at concentrations up to 6.7 mg/L. The highest concentrations of soluble iron were reported in samples from monitoring wells MW-F4 and MW-13 which also contained the highest reported concentrations of TPHg and BTEX compounds.

Sulfate was reportedly detected in each of the monitoring wells sampled, except for MW-F4, at concentrations ranging from 2.3 to 49 mg/L. The lowest concentrations of sulfate were reported in samples from monitoring wells MW-F4 and MW-13 which also contained the highest reported concentrations of TPHg and BTEX compounds.

Dissolved oxygen, as monitored in the field during purging of the monitoring wells, was relatively high in MW-F1 (3.0 mg/L), and ranged from 0.5 to 1.0 mg/L in the remaining wells monitored.

DISCUSSION

Floating product was observed in monitoring well MW-13 downgradient of the site. Floating product has been reported in MW-13 during previous monitoring events. High concentrations of TPHg, benzene and ethylbenzene were reported in MW-F4 and MW-13, located in the southwest corner of the site and offsite to the southwest, respectively. These results are also consistent with previous monitoring events.

The extent of the plume appears relatively limited. TPHg and BTEX were not reported in MW-F5 and MW-F6, which are located downgradient of MW-13. Previous sporadic detection of TPHg (June 1995), benzene (June 1997), and xylenes (December 1996) indicate that MW-F5 is located near the downgradient margin of the plume. Continued water quality monitoring of MW-F5 and MW-F6 should be performed to evaluate potential changes in water quality in these downgradient wells.

Intrinsic bioremediation indicator parameters reveal a pattern generally supportive of active biodegredation occuring in groundwater beneath the site. Specifically, electron receptor sulfate is lowest in the wells with the highest concentrations of TPHg (MW-F4 and MW-13), and soluble (ferrous) iron, an indicator of reduction of ferric iron, is highest in these same wells.

Continued semi-annual water quality monitoring of MW-F2 through MW-F6 and MW-13 is recommended for this site to monitor the extent of the groundwater plume and the effects of intrinsic bioremediation on the plume.

Please call me if you have any questions or need additional information.

Sincerely,

for

Jeffrey D. Hess, R G.
Project Director

cc: Kevin O'Dea
Baseline Environmental Consulting

TABLE 1

GROUNDWATER ELEVATIONS
2662 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

Monitoring Well ID	Casing Elevation[1] (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Note
MW-F1	104 41	08/16/93	-	11.13	93.28	1
		06/29/94	-	10.38	93 53	1
		09/09/94	-	11.56	92.85	1
		12/21/94	-	8.96	95.45	1
		06/30/95	-	10.49	93.92	1
		12/29/95	-	9.38	95.03	1
		06/27/96	-	10.69	93.72	1
		12/13/96	-	8.55	95 86	1
		6/26/97	-	11.23	93.18	
		3/11/98	-	8.73	95.68	
MW-F2	102.22	08/16/93	-	12.15	90.07	1
		06/29/94	-	11.74	90 48	1
		09/09/94	-	12.21	90.01	1
		12/21/94	-	10.34	91.88	1
		06/30/95	-	11 32	90 90	1
		12/29/95	-	9.94	92.28	1
		06/27/96	-	11.51	90.71	1
		12/13/96	-	8.62	93.60	1
		6/26/97	-	11.96	90.26	
		3/11/98	-	7.70	94.52	
MW-F3	102 42	08/16/93	-	11.99	90.43	1
		06/29/94	-	11.40	91.02	1
		09/09/94	-	12.39	90 03	1
		12/21/94	-	9 32	93.10	1
		06/30/95	-	11.14	91.28	1
		12/29/95	-	10.08	92 34	1
		06/27/96	-	11.31	91.11	1
		12/13/96	-	8.76	93.66	1
		6/26/97	-	11.85	90.57	
		3/11/98	-	8.82	93.6	

TABLE 1 (Continued)

GROUNDWATER ELEVATIONS
2662 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

Monitoring Well ID	Casing Elevation[1] (feet)	Date Measured	Product Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Note
MW-F4	101.56	09/09/94	-	11.21	90.35	1
		12/21/94	-	8.00	93.56	1
		06/30/95	-	10.08	91.48	1
		12/29/95	-	8.52	93.04	1
		06/27/96	-	9.75	91.81	1
		12/13/96	-	6.61	94.95	1
		6/26/97	-	10.94	90.62	
		3/11/98	-	8.40[2]	-	
MW-F5	100.32	06/30/95	-	11.09	89.23	1
		12/29/95	-	9.37	90.95	1
		06/27/96	-	11.33	88.99	1
		12/13/96	-	8.72	91.60	1
		6/26/97	-	11.61	88.71	
		3/11/98	-	8.79	91.53	
MW-F6	100.11	06/30/95	-	10.96	89.15	1
		12/29/95	-	9.84	90.27	1
		06/27/96	-	10.98	89.13	1
		12/13/96	-	8.44	91.67	1
		6/26/97	-	11.35	88.76	
		3/11/98	-	8.60	91.51	
MW-13	101.20	09/09/94	-	12.27	88.93	1
		12/21/94	-	9.32	91.88	1
		06/30/95	-	11.32	89.88	1
		12/29/95	-	9.00	92.20	1
		06/27/96	-	11.49	89.71	1
		12/13/96	-	8.28	92.92	1
		6/26/97	0.02	11.76	89.45[3]	
		3/11/98	0.02	8.11	93.11[3]	

[1] From Table 3, Groundwater Elevation and Gradient Determination Data, February 7, 1997, BASELINE.
[2] Depth to groundwater not stabilized.
[3] Groundwater elevation calculated assuming a specific gravity of 0.75 for product.

TABLE 2

SUMMARY OF LABORATORY RESULTS FOR GROUNDWATER SAMPLES
2662 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F1	08/16/93	<0 05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0 0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0 9	<0.0009	<0.0009	<0.0009	<0 0009	-	-		-	1
	12/21/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	<0 05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0 0005	<0.0005	-	-	-	-	1
	12/13/96	-	-	-	-	-	-	<0.10	**8.5**	**38**	1
	6/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	**0.1**	<0.1	**7.7**	**38**	
	3/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	**0.90**	<0.10	**11**	**38**	
MW-F2	08/16/93	<0.05	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0 05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0 0009	-	-	-	-	1
	12/21/94	**0.096**	<0.0005	<0.0005	<0.0005	<0 0005	-	-	-	-	1
	06/30/95	**0.34**	<0.0005	<0 0005	<0.0005	**0.0005**	-	-	-	-	1
	12/29/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	06/27/96	**0.064**	**0.0012**	<0.0005	<0.0005	<0 0005	-	-	-	-	1
	12/13/96	**0.06**	<0.0005	<0.0005	<0.0005	<0.0005		**0.24**	**0.20**	**8**	1
	6/26/97	<0.05	<0.0005	<0.0005	<0.0005	<0 0005	**0.1**	<0.1	<0.05	**7.4**	
	3/11/98	**0.20**	**0.00088**	<0.0005	<0.0005	<0.0005	**4.8**	**0.18**	<0.05	**7.1**	
MW-F3	08/16/93	<0.1	<0.002	<0.002	<0.002	<0.002	-	-	-	-	1
	06/29/94	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	09/09/94	<0.9	<0.0009	<0.0009	<0.0009	<0.0009	-	-	-	-	1
	12/21/94	**0.13**	<0.0005	**0.0013**	<0.0005	<0.0005	-	-	-	-	1
	06/30/95	**0.11**	<0.0005	<0 0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	**0.35**	**0.0008**	<0.0005	**0.0012**	**0.0007**	-	-	-	-	1
	06/27/96	**0.088**	**0.002**	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	**0.18**	<0.0005	<0.0005	<0.0005	<0.0005	–	**0.11**	**0.69**	**23**	1
	6/26/97	<0 05	<0.0005	<0.0005	<0.0005	<0.0005	**0.46**	**0.16**	**0.70**	**23**	
	3/11/98	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	**0.11**	**0.20**	**2.5**	**28**	

TABLE 2 (Continued)

SUMMARY OF LABORATORY RESULTS FOR GROUNDWATER SAMPLES
2662 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

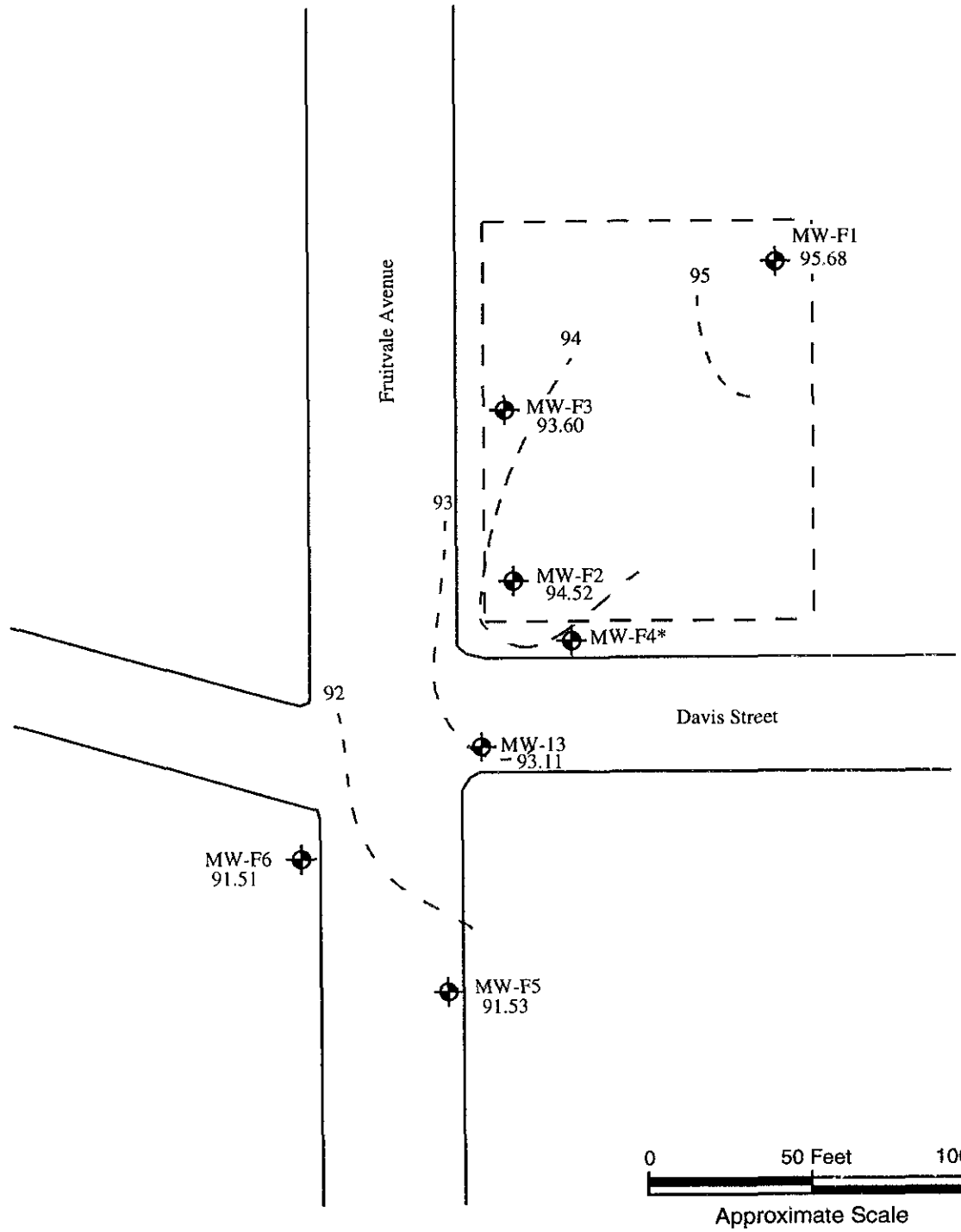
Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Note
MW-F4	9/9/94*	3.5	0.029	0.0030	0.038	0.099	-	-	-	-	1
	12/21/94	37	0.66	28	2.3	5.9	-	-	-	-	1
	06/30/95	9.2	0.18	<0.1	0.76	1.0	-	-	-	-	1
	12/29/95	38	0.61	0.019	4.3	5.8	-	-	-	-	1
	06/27/96	6.2	0.081	0.14	0.52	0.29	-	-	-	-	1
	12/13/96	27	0.39	0.05	3.2	3.7	–	6.6	<0.05	<2	1
	6/26/97	6.2	0.16	0.018	0.71	0.32	2.4	3.1	<0.05	0.2	
	3/11/98	9.5	0.062	0.030	1.0	0.80	1.2	3.0	<0.05	<0.1	
MW-F5	06/30/95	0.10	<0.0005	<0.0005	<0 0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0 0005	<0.0005	<0.0005	0.0007	-	-	-	-	1
	06/27/96	<0 05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/13/96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0 10	6.6	45	1
	6/26/97	<0.05	0.0032	0.0064	0.00073	0.0042	0.21	<0 1	6.1	45	
	3/11/98	<0 05	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.10	6.1	45	
MW-F6	06/30/95	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	1
	12/29/95	<0.05	<0 0005	<0 0005	<0.0005	<0 0005	-	-	-	-	1
	6/27/96	<0.05	<0 0005	<0.0005	<0 0005	<0.0005	-		-	-	1
	12/13/96	<0.05	<0.0005	<0 0005	<0.0005	<0.0005	–	<0 10	0.44	39	1
	6/26/97	<0 05	<0 0005	<0.0005	<0.0005	<0 0005	0.22	0.18	<0.05	47	
	3/11/98	<0 05	<0.0005	<0.0005	<0.0005	<0 0005	<0.10	<0.10	0.14	49	
MW-13	12/21/94	3.3	0.33	<0.013	0.024	0.24	-	-	-	-	1
	06/30/95	22	0.85	<0.0005	1.2	1.6	-	-	-	-	1
	12/29/95	22	0.97	0.078	1.8	2.4	-	-	-	-	1
	06/27/96	18	0.63	0.026	1.1	1.0	-	-	-	-	1
	12/13/96	16	0.67	0.04	1.2	1.0	–	6.8	<0.05	<2	1
	6/26/97*	11	0.42	0.037	0.64	0.26	7.7	6.9	<0 05	0.3	
	3/11/98*	13	0.30	<0.025	0.89	0.51	4.3	6.7	<0.05	2.3	
MCL		–	0.001	0.150	0.700	1.75	–	–	–	–	

Note: Bold indicates detected concentrations. Shaded indicates concentrations exceeding MCLs.

* Higher concentration reported for either the sample or field duplicate sample (QC/1).

1 Historical laboratory data provided by Baseline Environmental Consulting.

97-037/F-1-Wells



Legend

- Approximate Location of Monitoring Wells
- 91.51 Groundwater Elevations
- Lines of Equal Groundwater Elevations
- (0.02) Product Thickness on March 11, 1998
- * Groundwater Elevation Not Stabalized

Source: Modified from Figure 3, Groundwater Elevation Contour Map, 13 December 1996, BASELINE

FIGURE 1

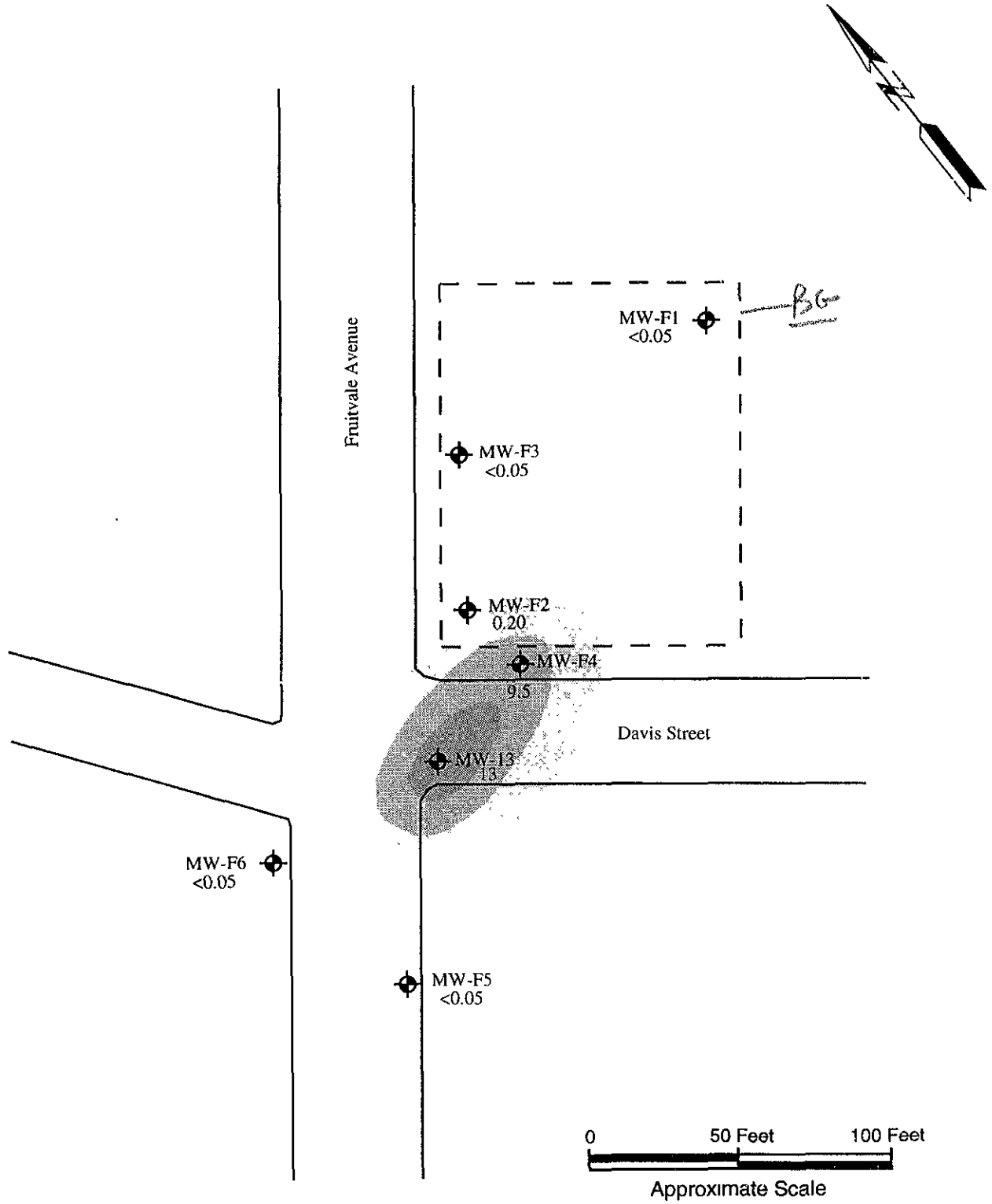
GROUNDWATER ELEVATIONS MEASURED ON MARCH 11, 1998

2662 Fruitvale Avenue
Oakland, California

CITY OF OAKLAND

ITSI
INNOVATIVE TECHNICAL SOLUTIONS, INC.

97-037/F 1-Wells



Legend

- Approximate Location of Monitoring Wells
- 13 Concentration of TPHg in mg/L
- TPHg ≥ 0.1 mg/L
- TPHg ≥ 1 mg/L
- TPHg ≥ 10 mg/L

Source: Modified from Figure 3, Groundwater Elevation Contour Map, 13 December 1996, BASELINE.

FIGURE 2

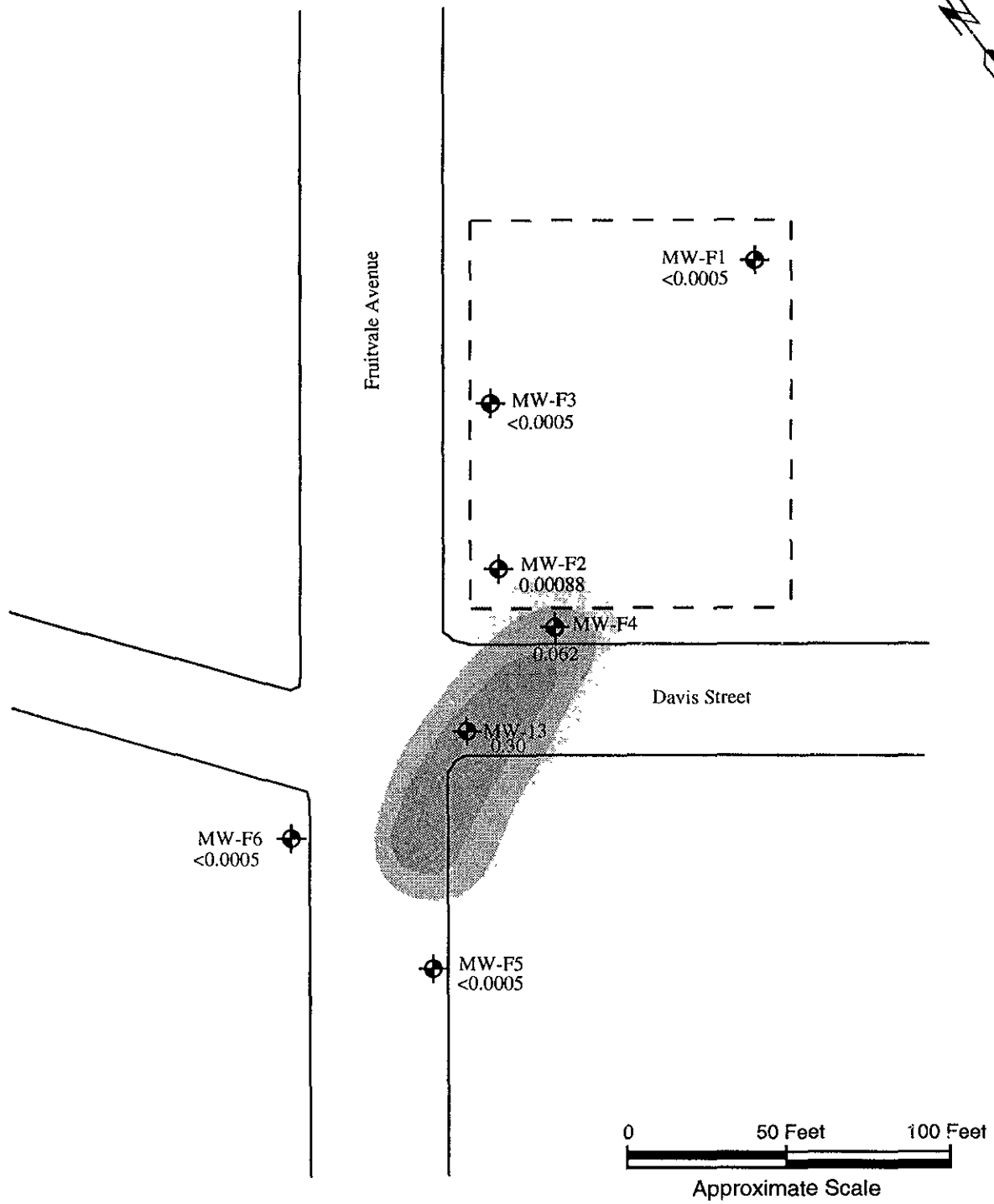
LABORATORY RESULTS FOR TPHg FOR SAMPLES COLLECTED ON MARCH 11, 1998

2662 Fruitvale Avenue
Oakland, California

CITY OF OAKLAND

ITSI
INNOVATIVE TECHNICAL SOLUTIONS, INC.

97-037/F 1-Wells



Legend

Approximate Location of Monitoring Wells

0.30 Concentration of benzene in mg/L

Benzene ≥ 0.001 mg/L

Benzene ≥ 0.01 mg/L

Benzene ≥ 0.1 mg/L

Source: Modified from Figure 3, Groundwater Elevation Contour Map 13 December 1996, BASELINE.

FIGURE 3

LABORATORY RESULTS FOR BENZENE FOR SAMPLES COLLECTED ON MARCH 11, 1998

2662 Fruitvale Avenue
Oakland, California

CITY OF OAKLAND

ITSI
INNOVATIVE TECHNICAL SOLUTIONS, INC.

APPENDIX A

COPIES OF MONITORING WELL PURGE AND SAMPLE FORMS

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland - 2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-F1 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: notch or red mark TOC Static Water Level (ft.): 8.73

Total Well Depth (ft.): 24.84 Sample Method: Peristaltic Pump + disposable Tubing

Water Level Measurement Method: Solinist BASELINE Time Sampled: 758

Purge Method: Peristaltic Pump + disposable tubing Sample Depth (ft.): >8 8

Time Start Purge: 7:30 Field Filtering: Yes Soluble lead

Time End Purge: 7:51 Field Preservation: ICE + HNO3

Comments: unlocked well cap, no bolts on lid, Box damaged.

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2	4	6	=	Casing Volume (gal)
	24.84		8.73		16.11		0.16	0.64	1.44		2.52 (3 vols = 7.7)

Time	7:37	7:44	7:51				
Volume Purged (gals)	2.6	2.6	2.6				
Cumulative Volume Purged (gals)	2.6	5.2	7.8				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.37	0.37	0.37				
Temperature (F°) or (C°)	15.9	15.8	16.2				
pH	7.20	7.18	7.17				
Specific Conductivity (µmhos/cm) X 100	5.00	4.60	4.60				
Dissolved Oxygen (mg/L)	3.2	3.0	3.0				
Turbidity/Color (NTU)	Clear	→	→				
Odor	None	→	→				
Dewatered?	NO	→	→				

William K Scott

CHECKED BY: DATE: 3/12/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland - 2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-F 2 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: Red notch/Mark TOC

Total Well Depth (ft.): 19.91

Water Level Measurement Method: Solinist I P

Purge Method: Peristaltic Pump + Tubing

Time Start Purge: 9:25

Time End Purge: 9:46

Static Water Level (ft.): 7.70

Sample Method: Peristaltic pump + Tubing

Time Sampled: 9:55

Sample Depth (ft.): > 8.0

Field Filtering: Yes (Soluble Fe)

Field Preservation: Ice + HNO3

Comments: Unlocked well no bolts on l.d

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2	4	6	=	Casing Volume (gal)
	19.91	-	7.70	=	12.21	x	0.16	0.64	1.44	=	1.95 3 Vols = 5.9

Time	9:32	9:39	9:46				
Volume Purged (gals)	2	2	2				
Cumulative Volume Purged (gals)	2	4	6				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.29	0.29	0.29				
Temperature (F°) or (C°)	17.6	18.2	19.5				
pH	7.01	7.00	6.97				
Specific Conductivity (µmhos/cm)	6.0	6.0	6.0				
Dissolved Oxygen (mg/L)	1.0	0.75	0.6				
Turbidity/Color (NTU)	clear →						
Odor	none →						
Dewatered?	no →						

William K Scott

CHECKED BY: [signature] DATE: 4/2/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland 2662 Fruitvale PROJECT NO.: 97-033

WELL NO.: MW-F3 TESTED BY: L. Scott DATE: 3-11-98

Measuring Point Description: red/notch on TOC

Total Well Depth (ft.): 23.98

Water Level Measurement Method: Solinst IP

Purge Method: Peristaltic Pump + Tubing

Time Start Purge: 8:37

Time End Purge: 9:00

Static Water Level (ft.): 8.82

Sample Method: Peristaltic Pump + Tubing

Time Sampled: 9:05

Sample Depth (ft.): ~9-

Field Filtering: Yes (Soluble Fe)

Field Preservation: Ice + HNO3

Comments: unlocked well cap, no bolts on christy lid.

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2	4	6	=	Casing Volume (gal)
	23.98		8.82		15.16		0.16	0.64	1.44		2.43 3 vols = 7.3

Time	8:45	8:52	9:00				
Volume Purged (gals)	2.5	2.5	2.5				
Cumulative Volume Purged (gals)	2.5	5.0	7.5				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.31	0.36	0.31				
Temperature (F°) or (C°)	18.3	18.5	19.6				
pH	7.40	7.15	7.02				
Specific Conductivity (µmhos/cm)	70	70	70				
Dissolved Oxygen (mg/L)	0.75	1.2	1.0				
Turbidity/Color (NTU)	Clear	→	→				
Odor	NONE	→	→				
Dewatered?	NO	→	→				

William K Leach

CHECKED BY: [signature] DATE: 4/2/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland -2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-F4 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: Red/Notch Mark TOC ~~Static~~ Rising very Slowly Water Level (ft.): 8.40

Total Well Depth (ft.): 16.87 Sample Method: Peristaltic Pump + Tubing

Water Level Measurement Method: Solinist IP Time Sampled: 10:50

Purge Method: Peristaltic Pump + Tubing Sample Depth (ft.): > 9.0

Time Start Purge: 10:12 Field Filtering: Yes Soluble Fe

Time End Purge: 10:35 Field Preservation: Ice + HNO3

Comments: Unlocked well cap, removed standing water in well Box.

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2	4	6	=	Casing Volume (gal)
	16.87	-	8.40	=	8.47	x	0.16	0.64	1.44	=	1.35 3 vols = 4.1

Time	10:21	10:26	10:35				
Volume Purged (gals)	1.35	1.35	1.35				
Cumulative Volume Purged (gals)	1.35	2.7	4.1				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.15	0.19	0.19				
Temperature (F°) or (C°)	19.6	19.1	19.6				
pH	6.95	7.00	6.96				
Specific Conductivity (µmhos/cm)	5.0	5.0	5.25				
Dissolved Oxygen (mg/L)	1.75	1.0	0.6				
Turbidity/Color (NTU)	clear	clear	clear				
Odor	yes	yes	yes				
Dewatered?	yes						

William K Scott

CHECKED BY: [signature] DATE: 4/2/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland - 2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-F5 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: red/Notch Mark TOC Static Water Level (ft.): 8.79

Total Well Depth (ft.): 24.04 Sample Method: Peristaltic Pump + Tubing

Water Level Measurement Method: Solinist IP Time Sampled: 12:30

Purge Method: Peristaltic Pump + Tubing Sample Depth (ft.): > 9.0

Time Start Purge: 12:02 Field Filtering: Yes Soluble Fe

Time End Purge: 12:24 Field Preservation: Ice + HNO3

Comments: Unbolted Lid, bailed standing water out of Box, Unlocked well cap

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2"	4	6	=	Casing Volume (gal)
	24.04		8.79		15.25		0.16	0.64	1.44		2.44 3 vols = 7.3

Time	12:10	12:18	12:24				
Volume Purged (gals)	2.5	2.5	2.5				
Cumulative Volume Purged (gals)	2.5	5	7				
Cumulative Number of Casing Volumes	1	2.1	3.2				
Purge Rate (gpm)	0.31	0.31	0.31				
Temperature (F°) or (C°)	19.8	20.1	19.7				
pH	6.92	6.86	6.87				
Specific Conductivity (µmhos/cm)	6.0	6.0	6.0				
Dissolved Oxygen (mg/L)	0.8	0.5	0.5				
Turbidity/Color (NTU)	clear	→	→				
Odor	none	→	→				
Dewatered?	no	→	→				

William K. Scott

CHECKED BY: [signature] DATE: 4/1/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland - 2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-F6 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: Red/Notch Mark TOC Static Water Level (ft.): 8.60

Total Well Depth (ft.): 21.03 Sample Method: Peristaltic Pump + Tubing

Water Level Measurement Method: Solinst IP Time Sampled: 11:50

Purge Method: Peristaltic Pump + Tubing Sample Depth (ft.): > 9.0

Time Start Purge: 11:16 Field Filtering: Yes Soluble Fe

Time End Purge: 11:40 Field Preservation: Ice - HNO3

Comments: unbolted well cover.

Well Volume Calculation (fill in before purging)	Total Depth (ft)	-	Depth to Water (ft)	=	Water Column (ft)	x	Multiplier for Casing Diameter (in) 2	4	6	=	Casing Volume (gal)
	21.03		8.60		12.43		0.16	0.64	1.44		1.98 3 Vols = 6

Time	11:24	11:32	11:40				
Volume Purged (gals)	2	2	2				
Cumulative Volume Purged (gals)	2	4	6				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.25	0.25	0.25				
Temperature (F°) or (C°)	20.5	20.5	20.5				
pH	7.27	7.17	7.13				
Specific Conductivity (µmhos/cm)	50	5.0	50				
Dissolved Oxygen (mg/L)	1.4	1.0	0.8				
Turbidity/Color (NTU)	clear	clear	clear				
Odor	none	→	→				
Dewatered?	no	→	→				

William K Scott

CHECKED BY: [signature] DATE: 4/2/98

ITSI

MONITORING WELL
PURGE AND SAMPLE FORM

PROJECT NAME: City of Oakland - 2662 Fruitvale PROJECT NO.: 97-037

WELL NO.: MW-13 TESTED BY: W. Scott DATE: 3-11-98

Measuring Point Description: Notch on TOC

Total Well Depth (ft.): 23.97

Water Level Measurement Method: Solinst Bi... [illegible]

Purge Method: Peristaltic Pump + Tubing

Time Start Purge: 12:55

Time End Purge: 13:18

Static Water Level (ft.): 8.11 water 8.09 product

Sample Method: Peristaltic Pump + Tubing

Time Sampled: 13:25

Sample Depth (ft): > 8.5

Field Filtering: Yes Soluble Fe

Field Preservation: Ice + HNO_3

Comments: unlocked well, 0.02 ft Product measured. QC-1 13:40

Well Volume Calculation (fill in before purging)	Total Depth (ft)		Depth to Water (ft)		Water Column (ft)		Multiplier for Casing Diameter (in)				Casing Volume (gal)
							2 (circled)	4	6		
	23.97	-	8.11 ~~8.09~~	=	15.86 ~~15.88~~	x	0.16	0.64	1.44	=	2.54 3 Vols = 7.6

Time	13:02	13:09	13:18				
Volume Purged (gals)	2.5	2.5	2.6				
Cumulative Volume Purged (gals)	2.5	5.0	7.6				
Cumulative Number of Casing Volumes	1	2	3				
Purge Rate (gpm)	0.36	0.36	0.36				
Temperature (F°) or (C°)	19.3	19.2	19.1				
pH	6.92	6.85	6.86				
Specific Conductivity (µmhos/cm)	7.0	7.5	7.5				
Dissolved Oxygen (mg/L)	0.5	0.5	0.5				
Turbidity/Color (NTU)	clear	→	→				
Odor	yes	→	→				
Dewatered?	no	→	→				

[signature]

CHECKED BY: [signature] DATE: 4/1/98

ITSI

APPENDIX B

COPIES OF LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORM FOR GROUNDWATER SAMPLES

CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F1**
Spl#: 174993 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11657 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	97	1
BENZENE	N.D.	0.50	N.D.	85	1
TOLUENE	N.D.	0.50	N.D.	83	1
ETHYL BENZENE	N.D.	0.50	N.D.	79	1
XYLENES	N.D.	0.50	N.D.	83	1

Vincent Vancil
Chemist

Michael Verona
Operations Manager

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F2**
Spl#: 174994 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11657 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	200	50	N.D.	97	1
BENZENE	0.88	0.50	N.D.	85	1
TOLUENE	N.D.	0.50	N.D.	83	1
ETHYL BENZENE	N.D.	0.50	N.D.	79	1
XYLENES	N.D.	0.50	N.D.	83	1

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March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F3**
Spl#: 174995 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11657 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	97	1
BENZENE	N.D.	0.50	N.D.	85	1
TOLUENE	N.D.	0.50	N.D.	83	1
ETHYL BENZENE	N.D.	0.50	N.D.	79	1
XYLENES	N.D.	0.50	N.D.	83	1

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INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F4**
Spl#: 174996 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11763 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	9500	2500	N.D.	90	50
BENZENE	62	25	N.D.	94	50
TOLUENE	30	25	N.D.	101	50
ETHYL BENZENE	1000	25	N.D.	109	50
XYLENES	800	25	N.D.	97	50

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March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F5**
Spl#: 174997 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11763 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	90	1
BENZENE	N.D.	0.50	N.D.	94	1
TOLUENE	N.D.	0.50	N.D.	101	1
ETHYL BENZENE	N.D.	0.50	N.D.	109	1
XYLENES	N.D.	0.50	N.D.	97	1

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CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-F6**
Spl#: 174998 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11657 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	N.D.	50	N.D.	97	1
BENZENE	N.D.	0.50	N.D.	85	1
TOLUENE	N.D.	0.50	N.D.	83	1
ETHYL BENZENE	N.D.	0.50	N.D.	79	1
XYLENES	N.D.	0.50	N.D.	83	1

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CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-13**
Spl#: 174999 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11763 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	13000	2500	N.D.	90	50
BENZENE	280	25	N.D.	94	50
TOLUENE	N.D.	25	N.D.	101	50
ETHYL BENZENE	890	25	N.D.	109	50
XYLENES	460	25	N.D.	97	50

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CHROMALAB, INC.

Environmental Services (SDB)

March 23, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **QC-1**
Spl#: 175000 *Matrix:* WATER
Sampled: March 11, 1998 *Run#:*11763 *Analyzed:* March 17, 1998

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	12000	2500	N.D.	90	50
BENZENE	300	25	N.D.	94	50
TOLUENE	N.D.	25	N.D.	101	50
ETHYL BENZENE	830	25	N.D.	109	50
XYLENES	510	25	N.D.	97	50

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CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F1**
Spl#: 175002 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 16, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
Inorganics Supervisor

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CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F2**
Spl#: 175003 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.18	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
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CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F3**
Spl#: 175004 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.20	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
Inorganics Supervisor

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M030 0:QC0405 JOHN 16:33

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F4**
Spl#: 175005 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	3.0	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
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CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F5**
Spl#: 175006 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/19

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CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-F6**
Spl#: 175007 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	105	1

~~Shafi Barekzai~~
Chemist

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510-256-8998 GC 03/18

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Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **MW-13**
Spl#: 175008 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	6.7	0.10	N.D.	105	1

Shafi Barekzai
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 cc 03/19

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

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Soluble Miscellaneous Metals with Mercury analysis.
Method: *EPA 3005A/6010A/7470A Nov 1990*

Client Sample ID: **QC-1**
Spl#: 175009 *Matrix:* WATER *Extracted:* March 13, 1998
Sampled: March 11, 1998 *Run#:* 11626 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	6.7	0.10	N.D.	105	1

Shari Barekzai
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/19

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

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F1**
Spl#: 174993 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.90	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/18

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

M010 Q:QC0405 JOHN 18:33

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F2**
Spl#: 174994 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	4.8	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 QC 03/19

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

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F3**
Spl#: 174995 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	0.11	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

CHROMALAB, INC.
Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F4**
Spl#: 174996 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	1.2	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/19

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

CHROMALAB, INC.
Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F5**
Spl#: 174997 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/18

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

M010 0:QCD405 JOHN 16:33

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998 *Submission #:* 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND *Project#:* 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: **MW-F6**
Spl#: 174998 *Matrix:* WATER *Extracted:* March 17, 1998
Sampled: March 11, 1998 *Run#:* 11653 *Analyzed:* March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	N.D.	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/19 1220 Quarry Lane • Pleasanton, California 94566-4756
(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

March 18, 1998

Submission #: 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND
Received: March 12, 1998

Project#: 95-037

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: MW-13
Spl#: 174999
Sampled: March 11, 1998

Matrix: WATER
Run#: 11653

Extracted: March 17, 1998
Analyzed: March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	4.2	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 0319

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

CHROMALAB, INC.
Environmental Services (SDB)

March 18, 1998

Submission #: 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND
Project#: 95-037
Received: March 12, 1998

re: One sample for Miscellaneous Metals analysis.
Method: *EPA 3010A/3050A/6010A Nov 1990*

Client Sample ID: QC-1
Spl#: 175000
Sampled: March 11, 1998
Matrix: WATER
Run#: 11653
Extracted: March 17, 1998
Analyzed: March 17, 1998

ANALYTE	RESULT (mg/L)	REPORTING LIMIT (mg/L)	BLANK RESULT (mg/L)	BLANK SPIKE (%)	DILUTION FACTOR
IRON	4.3	0.10	N.D.	102	1

Christopher Arndt
Chemist

John S. Labash
Inorganics Supervisor

510-256-8998 GC 03/19

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

San Francisco Regional Office

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
LABORATORY
SERVICES

March 20, 1998

Mr. Ken Wright
CHROMALAB, INC.
1220 Quarry Lane
Pleasanton, CA 94566

Client Ref.: 38677
Clayton Project No.: 98031.87

Dear Mr. Wright:

Attached is our analytical laboratory report for the samples received on March 13, 1998. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after April 19, 1998, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact Client Services at (510) 426-2657.

Sincerely,

Ken Wicht for

Andrew C. Bradeen
Director, Laboratory Services
San Francisco Regional Office

ACB/kmd

Attachments

Clayton
LABORATORY
SERVICES

Analytical Results
for
CHROMALAB, INC.
Client Reference: 38677
Clayton Project No. 98031.87

Sample Identification: See Below
Lab Number: 9803187
Sample Matrix/Media: WATER
Method Reference: EPA 300.0

Date Received: 03/13/98
Date Analyzed: 03/13/98

Lab Number	Sample Identification	Date Sampled	Nitrate-N (mg/L)	Method Detection Limit (mg/L)
-01	MW-F1	03/11/98	11	0.05
-02	MW-F2	03/11/98	<0.05	0.05
-03	MW-F3	03/11/98	2.5	0.05
-04	MW-F4	03/11/98	<0.05	0.05
-05	MW-F5	03/11/98	6.1	0.05
-06	MW-F6	03/11/98	0.14	0.05
-07	MW-13	03/11/98	<0.05	0.05
-08	QC-1	03/11/98	<0.05	0.05
-09	METHOD BLANK	--	<0.05	0.05

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Clayton
LABORATORY
SERVICES

Analytical Results
for
CHROMALAB, INC.
Client Reference: 38677
Clayton Project No. 98031.87

Sample Identification: See Below
Lab Number: 9803187
Sample Matrix/Media: WATER
Method Reference: EPA 300.0

Date Received: 03/13/98
Date Analyzed: 03/13/98

Lab Number	Sample Identification	Date Sampled	Sulfate (mg/L)	Method Detection Limit (mg/L)
-01	MW-F1	03/11/98	38	0.1
-02	MW-F2	03/11/98	7.1	0.1
-03	MW-F3	03/11/98	28	0.1
-04	MW-F4	03/11/98	<0.1	0.1
-05	MW-F5	03/11/98	45	0.1
-06	MW-F6	03/11/98	49	0.1
-07	MW-13	03/11/98	2.2	0.1
-08	QC-1	03/11/98	2.3	0.1
-09	METHOD BLANK	--	<0.1	0.1

ND: Not detected at or above limit of detection
--: Information not available or not applicable

0367/174993-175007

INNOVATIVE TECHNICAL SOLUTIONS, Inc.

ITSI 1330 Broadway, Suite 1625
Oakland, California 94612
(510) 286-8888 (Tel), (510) 286-8889 (Fax)

SUBM #: 9803163 REF: GC
CLIENT: ITSI
DUE: 03/19/98
REF #:38677

38677

CHAIN OF CUSTODY

PROJECT NAME: City of Oakland - 2662 Fruitvale Ave
PROJECT NUMBER: 95-037
SITE LOCATION: 2662 Fruitvale Ave, Oakland CA

DATE: 3-11-98
PAGE: 1 of 2

SAMPLE I.D	SAMPLE DEPTH	DATE	TIME	NUMBER OF CONTAINERS	TYPE OF CONTAINERS	SAMPLE MATRIX	ANALYSIS: TPH as Gas/BTEX - 8015/8020	TPH as Diesel - 8015	TPH as Diesel - 8015 (w/ Silica Gel Cleanup)	TEPH - 8015	TEPH-8015 (w/ Silica Gel Cleanup)	TRPH - 418.1	Oil and Grease - 5520	Purgeable Halocarbons - 601/8010	VOCs - 624/ 8240	SVOCs - 625/8270	LUFT Metals (Cd, Cr, Ni, Pb, Zn)	CAM 17 Metals	Soluable Iron	Total Iron	Sulfate + Nitrate
MW-F1	NA	3-11-98	7:58	2	250 ml Poly	Water	•												X	X	
↓	↓	↓	↓	3	40 ml VOA	↓	X														
↓	↓	↓	↓	1	750 ml Poly	↓															X
MW-F2	↓	↓	9:55	2	250 ml Poly	↓													X	X	
↓	↓	↓	↓	3	40 ml VOA	↓	X														
↓	↓	↓	↓	1	750 ml Poly	↓															X
MW-F3	↓	↓	9:05	2	250 ml Poly	↓													X	X	
↓	↓	↓	↓	3	40 ml VOA	↓	X														
↓	↓	↓	↓	1	750 ml Poly	↓															X
MW-F4	↓	↓	10:50	2	250 ml Poly	↓													X	X	
↓	↓	↓	↓	3	40 ml VOA	↓	X														
↓	↓	↓	↓	1	750 ml Poly	↓															X
TOTAL NUMBER OF CONTAINERS				24	TOTAL TESTS		4												4	4	4

Chroma lab
Pleasanton, CA

SPECIAL INSTRUCTIONS/COMMENTS

SAMPLED BY: William K Scott
SIGNATURE: William K Scott

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY: William K Scott William K Scott
Printed Name Signature
ITSI 3-12-98 1420
Company Date and Time

RECEIVED BY: [illegible] [illegible]
Printed Name Signature
Chromalab 3-12-98 1420
Company Date and Time

RELINQUISHED BY: [illegible] [illegible]
Printed Name Signature
Chromalab 3/12/98 1859
Company Date and Time

RECEIVED BY:
Printed Name Signature
Company Date and Time

RELINQUISHED BY:
Printed Name Signature
Company Date and Time

RECEIVED BY: T Cannon
Printed Name Signature
Colleen Cassidy 3/12/98
Chromalab Date and Time 18:45

SEND RESULTS TO:

INNOVATIVE TECHNICAL SOLUTIONS, Inc.
ITSI
1330 Broadway, Suite 1625
Oakland, California 94612
(510) 286-8888 (Tel), (510) 286-8889 (Fax)

9803163

38677

PROJECT NAME: City of Oakland - 2662 Fruitvale Ave
PROJECT NUMBER: 95-037
SITE LOCATION: 2662 Fruitvale

CHAIN OF CUSTODY

DATE: 3-11-98
PAGE: 2 of 2

SAMPLE I.D.	SAMPLE DEPTH	DATE	TIME	NUMBER OF CONTAINERS	TYPE OF CONTAINERS	SAMPLE MATRIX	ANALYSIS: TPH as Gas/BTEX - 8015/8020	TPH as Diesel - 8015	TPH as Diesel - 8015 (w/ Silica Gel Cleanup)	TEPH - 8015	TEPH-8015 (w/ Silica Gel Cleanup)	TRPH - 418.1	Oil and Grease - 5520	Purgeable Halocarbons - 601/8010	VOCs - 624/ 8240	SVOCs - 625/8270	LUFT Metals (Cd, Cr, Ni, Pb, Zn)	CAM 17 Metals	Soluable Iron	Total Iron	Sulfate + Nitrate	SPECIAL INSTRUCTIONS/COMMENTS
MW-F5	NA	3-11-98	12:30	2	250 ml poly	Water													X	X		Chroma lab Pleasanton, CA
↓	↓	↓	↓	3	40 ml VOA	↓	X															
↓	↓	↓	↓	1	750 ml poly	↓															X	
MW-F6	↓	↓	11:50	2	250 ml poly	↓													X	X		
↓	↓	↓	↓	3	40 ml VOA	↓	X															
↓	↓	↓	↓	1	750 ml poly	↓															X	
MW-13	↓	↓	13:25	2	250 ml poly	↓													X	X		
↓	↓	↓	↓	3	40 ml VOA	↓	X															
↓	↓	↓	↓	1	750 ml poly	↓															X	
QC-1	↓	↓	13:40	2	250 ml poly	↓													X	X		
↓	↓	↓	↓	3	40 ml VOA	↓	X															
↓	↓	↓	↓	1	750 ml poly	↓															X	
TRAVEL BLANK	—	3-11-98	—	3	40 ml VOA	↓	X															
TOTAL NUMBER OF CONTAINERS					TOTAL TESTS																	

SAMPLED BY: William K Scott
SIGNATURE: William K Scott

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY: William K Scott William K Scott
Printed Name Signature
ITSI 3-12-98 / 1420
Company Date and Time

RECEIVED BY: [illegible] [illegible]
Printed Name Signature
Chromalab 3-12-98
Company Date and Time

RELINQUISHED BY: [illegible]
Printed Name Signature
Chromalab 3-12-98
Company Date and Time

RECEIVED BY:
Printed Name Signature
Company Date and Time

RELINQUISHED BY:
Printed Name Signature
Company Date and Time

RECEIVED BY: Colleen Cassidy Colleen Cassidy
Printed Name Signature
Chromalab 3-12-98 18:45
Company Date and Time

SEND RESULTS TO:

CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: **INNOVATIVE TECHNICAL SOLUTIONS** Date/Time Received: 03/12/98 | 18:45

Reference/Submis: 38677 | 9803163 Received by: BM.

Checklist completed by: C Cassidy 3.13.98 Reviewed by: CL 3/13/98
Signature | Date Initials | Date

Matrix: water Carrier name: Client - C/L

Shipping container/cooler in good condition?	Yes ✓	No ___	Not Present ___
Custody seals intact on shipping container/cooler?	Yes ___	No ___	Not Present ✓
Custody seals intact on sample bottles?	Yes ___	No ___	Not Present ✓
Chain of custody present?	Yes ✓	No ___	
Chain of custody signed when relinquished and received?	Yes ✓	No ___	
Chain of custody agrees with sample labels?	Yes ✓	No ___	
Samples in proper container/bottle?	Yes ✓	No ___	
Sample containers intact?	Yes ✓	No ___	
Sufficient sample volume for indicated test?	Yes ✓	No ___	
All samples received within holding time?	Yes ✓	No ___	
Container/Temp Blank temperature in compliance?	Temp: 6.9 °C Yes ___	No ✓	
Water - VOA vials have zero headspace?	No VOA vials submitted ~~✓~~	Yes ✓	No ___
Water - pH acceptable upon receipt? YES	Adjusted? ___	Checked by CL (chemist for VOAs)	

Any No and/or NA (not applicable) response must be detailed in the comments section below.

==========

Client contacted: _____ **Date contacted:** _____ **Person contacted:** _____

Contacted by: _____ **Regarding:** _____

Comments: Samples received out of standard temperature range of 2-6 °C.

Corrective Action: _____