INNOVATIVE TECHNICAL SOLUTIONS, Inc.



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 A<u>venue</u> 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.

97-037/L/Cotton-Frontvale

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 (Fe²⁺), 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.

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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 occurring 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,

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-FI	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	ı
		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	J
		06/29/94	-	11.74	90 48	l
		09/09/94	<u>-</u>	12.21	90.01	1
		12/21/94	-	10.34	91.88	1
		06/30/95	-	11 32	90 90	
		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	ı
		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	i
		06/30/95	+	10.08	91.48	1
		12/29/95	-	8.52	93.04	1
		06/27/96	+	9.75	91.81	l
		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	l
		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	l
		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	93.113	

From Table 3, Groundwater Elevation and Gradient Determination Data, February 7, 1997 BASELINE.
Depth to groundwater not stabilized.

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-FI	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	<09	<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	ı
	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	-	-	-	-	l
	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	*	-	-	_	ı
	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	-	-	-	-	l
	12/29/95	0.35	0.0008	<0.0005	0.0012	0.0007	4	-	-	-	ı
	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)

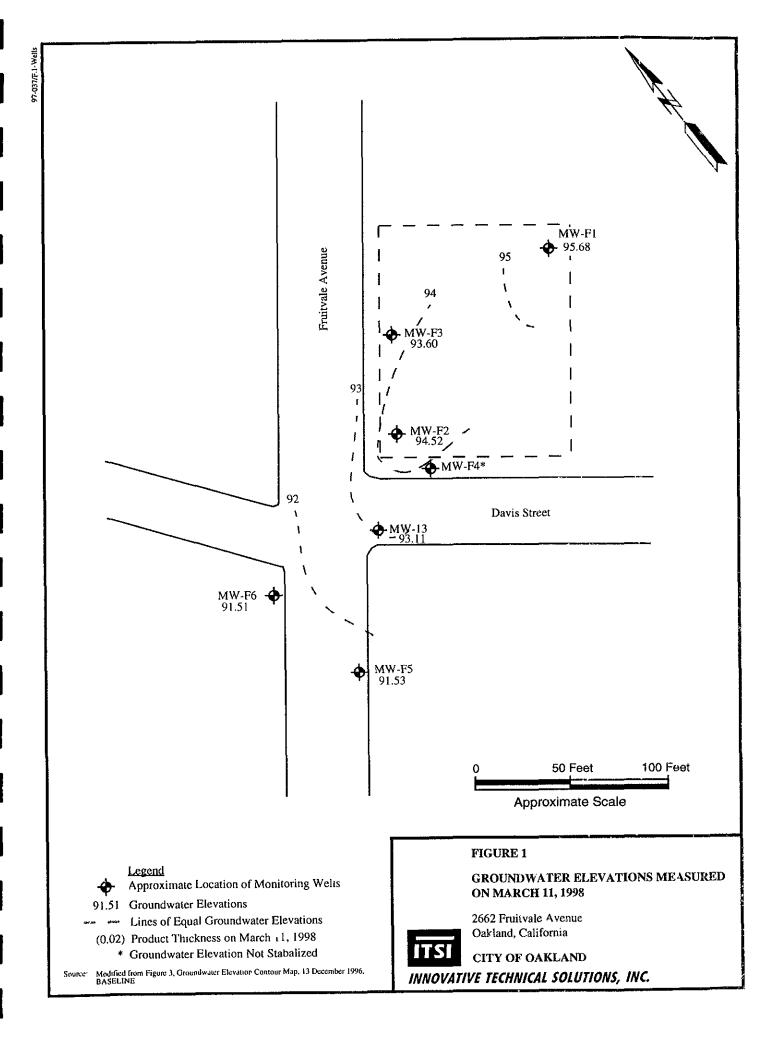
SUMMARY OF LABORATORY RESULTS FOR GROUNDWATER SAMPLES 2662 FRUITVALE AVENUE OAKLAND, CALIFORNIA

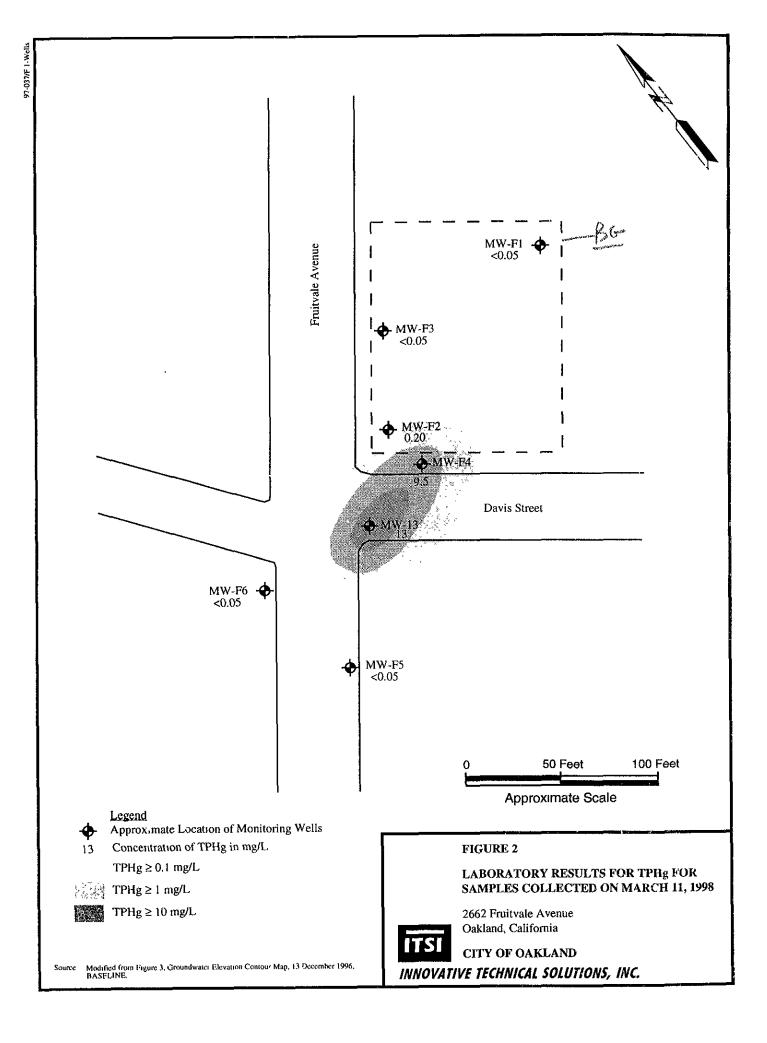
Monitoring Well ID	Date Sampled	TPHg (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl- benzene (mg/L)	Xylenes (mg/L)	Total Iron (mg/L)	Soluble Iron (mg/L)	Nitrate (mg/L)	Sultate (mg/L)	Note
/MW-F4	9/9/94*	3.5	0.029	0.0030	0.038	0.099	-	-	-	-	1
	12/21/94	37	0.66	28	2.3	5.9	-	-	-	-	1
•	06/30/95	9.2	0.18	<0.1	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	•	-	*	-	l
	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	-	~	-		ı
	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	<01	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	-			-	J
•	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	ī
	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	[2/21/94	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					

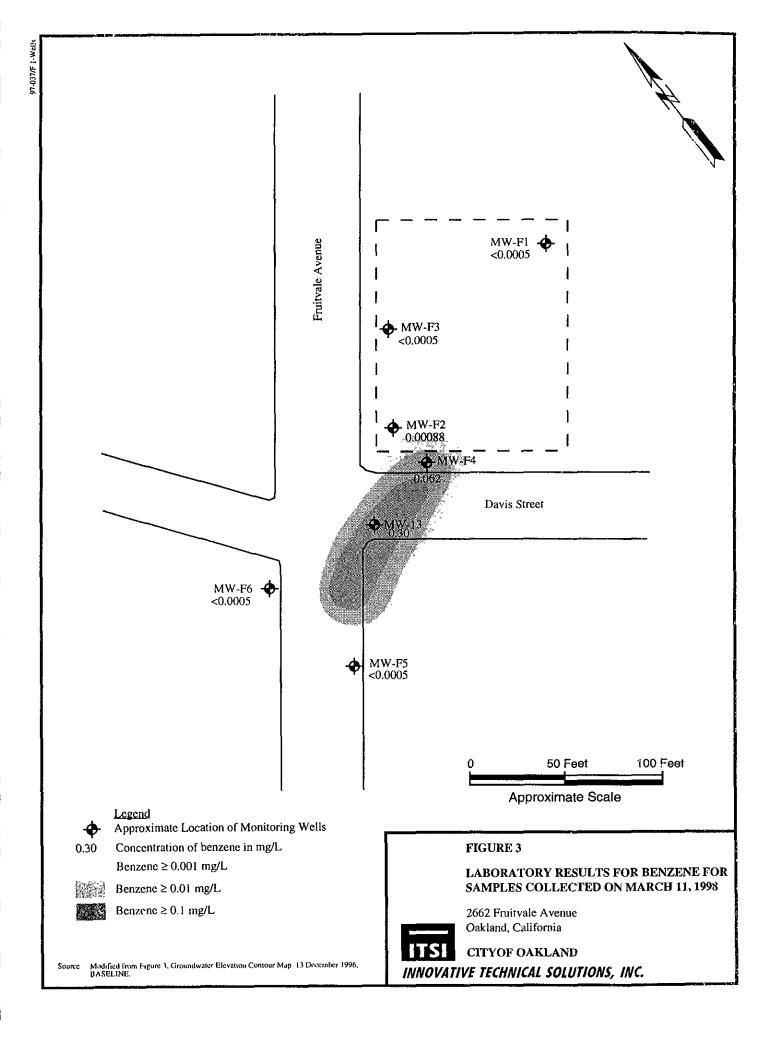
Note: Bold indicates detected concentrations. Shaded indicates concentrations exceeding MCLs.

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

¹ Historical laboratory data provided by Baseline Environmental Consulting.







APPENDIX A COPIES OF MONITORING WELL PURGE AND SAMPLE FORMS

PROJECT NAME: _	City of	Oakland -	-2662	Fruitsle PF	ROJECT NO	D.: <u>97-</u>	037	
WELL NO .: MW-F		TESTED B			DATE:	3-11-9	8	
Measuring Point Des	cription: <u>pc</u>	otch or red	Mark TUC	Static Wate	er Level (ft.)): <u>8.73</u>)	
Total Well Depth (ft.	.):2	4.84		Sample Me	ethod: Peris	Tatte Au	mp + dispo	sable Tubing
Water Level Measure	ement Meth	od: Solini	ST BASEO	√eTime Sam	pled:7	58		
Purge Method: Per	istallic Pu	mp + dispo	Sahu Tub.	Sample De	epth (ft.):	>88	5	
Time Start Purge:				Field Filte	ring: <u>Ves</u>	Solu	ble lead	
Time End Purge:				Field Prese	ervation: <u>I</u>	CE + 1-	+N03	
Comments: unles				on lid	, Box	dancine	d	
Continents. <u>Unite</u>			T				Casing	
Well Volume Total I	. ,	Depth to Water (ft)	Water Column (fo		plier for Casir iameter (in)	^	folume (gal)	
(fill in before purging) 24.84	- -	.73 =	1611	x 2 0.16	4	44 3	Vols: 7.7)	i
Time	7:37	7:44	7 51					
Volume Purged (gals)	2.6	216	26				_	
Cumulative Volume Purged (gals)	26	52	72					
Cumulative Number of Casing Volumes	1	2	3					
Purge Rate (gpm)	0.37	0.37	0.37					
Temperature (F°) or (C°)	159	158	16.2		,,			
рН	7.20	7.16	7.17					
Specific Conductivity (µmhos/cm) X /00	5.00	4.50	4.90					<u> </u>
Dissolved Oxygen (mg/L)	3.2	3.0	30					<u> </u>
Turbidity/Color (NTU)	clear -	-	->					<u> </u>
Odor	NONE-		->					_
Dewatered?	NO -	<u> </u>	->					
Millem X	Secto							=
CHECKED BY:	May			DA	ne: <u>', / · /</u>	19-1		_

PROJECT NA	ME: <u>(</u>	.4.	1	Oak	land-2	60	62 Fruituale		P	RO.	IECT	N(D.: 4	77	- <i>C</i>	3;	7 	
WELL NO.: _					ESTED	B`	Y: Wi Sco	#			DA	ΓE:	_3	-//	1-9	K		- =
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Water Level N	Me asure	ement	Me	thod	1: <u>Solu</u>	<u>115</u>	ST IP		ne Sarr									_
Purge Method	i: <u>Per</u>	stat	Tic	. <i>p</i> ,	1mp +	7	ubing		nple D									
Time Start Pu	ırge: _	9.2	5					Fie	ld Filte	erinį	g: <u>7</u>	<u> </u>	(5	ارد	l u it	<u> بلر</u>	<u>FC</u>)	-
Time End Pu	гge:	9.1	46					Fie	ld Pres	serv	ation	<u> </u>	CE	+	H	NC	3_	_
Comments: _	Unloc	ked	<i>لب</i>	11	no b	ان	ts on 1.d											_ ¬
Well Volume Calculation	Total [_			epth to nter (ft)		Water Column (ft)	X	Mult 2	tiplie Diarr	r for (eter (i	n)	ng 6	=		1.9	e (gal)	- 1
(fill in before purging)	19.9	/	-	`フ. ־	70 🗸	=	1221	Ĺ	0.16	1			44		3 ι	<i>J</i> US	£ 5.9	<u>'</u>
Time		9	32	<u></u>	9:39		9.46							-				4
Volume Purgeo	i (gals)	2			2		2			-		_				-		\dashv
Cumulative Vo Purged (gals)	olume	2			4		6			 						-		\dashv
Cumulative Nu of Casing Volu		1_			2		3			-						 		
Purge Rate (gpm)		0.9	29		0.29		0.29									\vdash		
Temperature (F°) or (C°)		17.	6		182		195									-		4
рН		7.0)		7.00		6.97			-								_
Specific Cond (µmhos/cm)	uctivity	6.0	9		60		6.0			_						—		_
Dissolved Oxy	/gen	1	0		0 75		0.6			_						-		\dashv
Turbidity/Cole (NTU)	or	cle	ur				>						<u> </u>			-		_
Odor		no	n	, ,									ļ			-		_
Dewatered?		no)				 											
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PROJECT NA	ME: <u>4</u>	11/0	of Oc	akland_	20	563 Fini	Ud 	PR	OJEC	τN	0.: _	97	1-0	235
WELL NO.: 1	MW-	F 3		TESTED	B	Y: <u>کی ک</u>	07	<u> </u>	DA	(IE			7	<u>8</u>
Measuring Poi					9	n Tuc		tic Wate	_					up + Yun
Water Level N							Tir	ne Samı	oled:	9	05	- · · · · · · · · · · · · · · · · · · ·		
								mple De				_		
Purge Method														(Te)
Time Start Pu														
Time End Pur	ge:	9.0	00					eld Preso				+ A	1,0	,3
Comments: 1	unioc	६७०	wel	1 cap,	_	no bolts		n Chr	11 4.65	<u>1.</u>				
Well Volume Calculation (fill in before	Total I	1)		Depth to Water (ft)	=	Water Column (ft)	×	D	plier for iameter (ing 6		V₀ (2	Casing lume (gal) . 43
purging)	23.9	18		ረ ሄ ጋ		15 16		0.16	0.64		.44_		ر ا	Jols = 7.3
Time		8.1	15	8 52		900								
Volume Purged		G. 9	5	2.5	_	2,5								
Cumulative Vo Purged (gals) Cumulative Nu	mber	2.	<u> </u>	5.0		7.5								
of Casing Volu Purge Rate (gpm)	mes	0.	31	0.36		0.31								
Temperature (F°) or (C°)		18.	3	18.5		19.6								<u> </u>
pH		70	10	715		7.02								
Specific Condu	ctivity	7	0	7.0		70								
Dissolved Oxy (mg/L)	gen	0.	75	1.2		10					<u> </u>			
Turbidity/Colo	r	Cle				>			·		<u> </u>			
Odor		No	NE			->					<u> </u>			<u> </u>
Dewatered?		No)			>				··				
Millie	in K	· <u>L</u>	e (G	- -						,				
CHECKE				1/1/20				DAT	TE: 4	1/2,	198			

PROJECT NAME: L	ity of a	tk~a -26	62 Fruit		ECT NO.:	: <u>47 - (</u>	037
WELL NO .: MW-F	14 7	TESTED B	۲: <u>۱۷۰ S</u> ر	OT	DATE _		
Measuring Point Desc	cription: Re	d/Notch M	nark Toc	Rising Static Water L			
Total Well Depth (ft.)	: 16.87	7	-	Sample Metho			+ Fubins
Water Level Measure	ment Metho	od: Salinis	TIP	Time Sampled			
Purge Method: Peri	STaltic P	oump + T	رداطان	Sample Depth			
Time Start Purge:	10:12			Field Filtering			
Time End Purge:	10:35			Field Preserva	ation: Tc.	e + 41	<u> </u>
Comments: <u>vnlock</u>	ed well	Cap, se	moved ST	ending water	A IA WO	eu Box	<u>. </u>
Well Volume Calculation (fill in before purging) Total D	V	Depth to Vater (ft)	Water Column (ft)	x 2 Diame	r for Casing eter (in) 4 6 0.64 1.44	- = Vo	Casing olume (gal) .35
Time	10:21	10:26	10:35				
Volume Purged (gals)	1.35	135	1.35				
Cumulative Volume Purged (gals)	1.35	2.7	4.1				
Cumulative Number of Casing Volumes	1	2	3				
Dusgo Pata	0.15	0.19	0.19				
Temperature (F°) or (C°)	19.6	191	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	10	06				
Turbidity/Color (NTU)	clear	Clean	Clear				
Odor	ves	Yes	yes				
Dewatered?	yes						
Mellen & S.	ed 111					1/00	
CHECKED BY.	My	1.60)	DATE:	<u> 7/0</u>	1/48	

PROJECT NAME: (1. Hot Oc	Klond - 2	662 Fruit		ROJECT NO	D.: <u>97</u>	-037	
WELL NO.: MW-	-F <u>5</u>	TESTED B	Y: <u>い、</u> S	coll	DATE:	3-11	98	
Measuring Point Des	scription: <u>re</u>	ed/Noich N	10/K TOL		er Level (ft.			
Total Well Depth (ft	.): <u>24.</u>	04		•			Pump + Tub	119
Water Level Measur	ement Meth	od: <u>Solia</u>	STIP	Time Sam	pled:/3	1. 30		
Purge Method: Per	ristaltic	Pump +	Tubing	Sample D	epth (ft.):	7 9.0		
Time Start Purge:				Field Filte	ering: <u>Yes</u>	Solub	Le Fe	
Time End Purge:	12:24			Field Pres	ervation: 1	:ce +	HNO3	
Comments: Unk	solted L	d. ban	ed Ston	ling Wal	Len out	of Box	, vulockas	well c
			Water	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	iplier for Casi		Casing	
Well Volume Total Calculation (f	• 1 1 ,	Depth to Water (ft)	Column (ft) [Diameter (in)		Volume (gal)	
(fill in before purging) 24.	-	3.79	15.25	x 2' 0.16	H	6 = 3	Vuls = 73	<u> </u>
Time	12:10	12:18	12:24					-
Volume Purged (gals)	25	25	2.5					1
Cumulative Volume Purged (gals)	25	5	7	ļ				-
Cumulative Number of Casing Volumes	1	9.1	32					_
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					(in the second
Turbidity/Color (NTU)	clear		>					_
Odor	none		->					-
Dewatered?	no -		-					
Millian	Kdow	9						<u></u>
CHECKED BY:		1.8)	DA	TE:	1/98		_

Measuring Point Description: Red Indian Mark Toc Static Water Level (ft.): 9.60 Total Well Depth (ft.). 21.03 Sample Method: Peristah Angel 7047 Water Level Measurement Method: Solinist IP Time Sampled: 11.50 Purge Method: Peristah Purge: 11.16 Field Filtering: Yes Soluble Ferilled Preservation: Ice Hwas Comments: University 11.32 III.40 Well Volume Calculation (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	PROJECT NAME: 4	City of Oal	cland - 26	62 Fruitual	L PI	ROJECT N	10.: <u>9</u>	7-037	
Sample Method: Per-stath Annet Tubers Water Level Measurement Method: Solinist IP Time Sampled: //, 500 Sample Depth (ft.): 700 Sample Depth (DATE	3.	-11-98	
Water Level Measurement Method: Solinist IP Time Sampled: 1/. 50	Measuring Point Des	scription: 🌬	d/Notch M						
Purge Method: Perislatic Pump a Jubing Sample Depth (ft.): 790 Find Start Purge: 11:16 Field Filtering: Yes Saluble Fe Field Preservation: Tee - Hwa3 Comments: Univolved Weil (OVA) Well Volume Calculation (ft) Water (ft) Column (ft) Depth to Water (ft) In the fore purging) Time 11:24 11:32 11:40 Volume Purged (gals) 2 2 2 2 Cumulative Volume Purged (gals) 2 3 2 2 2 Cumulative Number of Cassing Volumes Purged (gals) Cumulative Number of Cassing Volumes 1 2 3 0:45 2 6 Purge Rate (gpm) 0.25 0.25 0.25 (gpm) Temperature (Period Column (ft) Volume Purged (gals) 1 2 3 0:45 2 6 Purge Rate (gpm) 1 2 0.5 20.5 20.5 (gpm) Temperature Volume 1 1 0 0.28 (gmm) Specific Conductivity So S. 0 S	Total Well Depth (ft	.). 21.0	3		•				7 >
Purge Method: Perislative Pump a Tubring Sample Depth (ft.): 790 Fine Start Purge: 11:16 Field Filtering: Yes Satuble Feet Field Preservation: Tree Hands Field Preservation: Tree Hands Well Volume Calculation (ft) Water (ft) Water (ft) (ft) Water (ft) (ft) Water (ft) (ft) (ft) Water (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Water Level Measur	ement Meth	od: <u>Solin</u> i	STIP	Time Sam	pled://	1:50) 	
Fine Start Purge: 11:16 Field Filtering: Yes Scluble Fee Fine End Purge: 11:10 Field Preservation: Ice Hwo3 Comments: Un bolised Well Cove Well Volume Total Depth Opeth to Water (ft) (ft) Vater (ft) V	Purge Method: Pe	ristaltic	Pump + 7	ubing	Sample D	epth (ft.): _	79	0	e e e e e e e e e e e e e e e e e e e
Field Preservation: T(e - Hwa3 Comments: Un'bolted Wett (OVEN. Well Volume Calculation (ft) Depth to Water (ft) Rill in before purging) 21.03 8.60 12.43 11.40					Field Filte	ring: Yes	Sel	uble Fe	-
Well Volume Total Depth Depth to Water (ft) (ft) Water (ft) Column (ft) Value (ft) Value (ft) Va					Field Pres	ervation:	Ece -	HNOZ	-
Well Volume Total Depth Depth to Water (ft) Wat									-
(fill in before purging) 21.03 8.60 12.43 0.18 0.64 1.44 3.045:26 Time 11.24 11.32 11.40 Volume Purged (gals) 2 2 2 Cumulative Volume Purged (gals) 1 2 3 Cumulative Number of Casing Volumes 1 2 3 Purge Rate (gpm) 20.25 0.25 0.25 (gpm) Temperature (F) or (C°) pH 7.27 7.17 7.13 Specific Conductivity 50 5.0 5.0 5.0 (mg/L) Dissolved Oxygen 1.4 10 0.8 (mg/L) Turbidity/Color (NTU) Odor None Dewatered? NO DATE: 4/2/200	Well Volume Total	Depth	Depth to Water (ft)	Water Column (ft)		Diameter (in)		Volume (gal)	
Volume Purged (gals) 2 2 2 2 2 2 2 2 2	(fill in before purging)	,3 '	8.60	12 43	\ - 				
Cumulative Volume Purged (gals) Cumulative Number of Casing Volumes 1 2 3 Purge Rate (gpm) (gpm)	Time	11.34	11:32	11:40			ļ		-
Purged (gals) Cumulative Number of Casing Volumes Purge Rate (gpm) Purge Rate (gpm) Temperature (F°) or (C°) PH 7 2 7 7.17 7.13 Specific Conductivity (µmhos/cm) Dissolved Oxygen (mg/L) Cum/L Cum/Color (NTU) Dewatered? Mulliam K Aust	Volume Purged (gals)	2	2	2					
Cumulative Number of Casing Volumes Purge Rate (gpm) Temperature (F°) or (C°) pH 7 27 7.17 Specific Conductivity (µmhos/cm) Dissolved Oxygen (I. Y 10 0.98 Intribidity/Color (NTU) Odor Dewatered? Mulliam K Audt 1 2 3 3 0 2 3 0.25 0.25 0.25 0.25 20.5 20.5 20.5 20.6 20.6 20.7 20.8 20.8 20.9 20	Cumulative Volume Purged (gals)	2	4	6			ļ		
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 5.0 Dissolved Oxygen (mg/L) 1.4 1.0 0.28 Turbidity/Color (NTU) clear clear clear Clear clear Downstered? no >	Cumulative Number	1	2	3					
Temperature (F°) or (C°) pH 727 7.17 7.13 Specific Conductivity 50 5.0 50 (μπhos/cm) Dissolved Oxygen 1.4 10 0.8 (mg/L) Turbidity/Color (NTU) Odor None Dewatered? Mulliam K Just	Purge Rate	0.25	0.25	0.25			ļ		
PH 727 7.17 7.13 Specific Conductivity 50 5.0 50 (μmhos/cm) Dissolved Oxygen (mg/L) Turbidity/Color (NTU) Odor None Dewatered? Mulliam K State Market State DATE: \$\frac{1}{2}\lambda_{2}	Temperature	20.5	20.5	20.5					
Specific Conductivity (µmhos/cm) Dissolved Oxygen (mg/L) Turbidity/Color (NTU) Odor Dewatered? NO Dewatered? NO Dewatered?		727	7.17	7.13					_
Dissolved Oxygen (mg/L) Turbidity/Color (NTU) Odor None Dewatered? Mulliam K State Many State M			5.0	50					_
Turbidity/Color (NTU) Odor None Dewatered? NO >	Dissolved Oxygen					,		and the second	1
Odor None Dewatered? NO Dewatered?	Turbidity/Color	clear	clear	clear					
Mellian V Sunt	<u> </u>			>					
Mellian V Sunt	Dewatered?	no		>					
111100 0100 4/3/34	Millan		est		<u></u>				
		111	11/6)	DA	TE: %	2/9	8/	

ROJECT NAME. 4								
VELL NO.: MW-	13_	TESTED B	Y: <u>W. S</u>	 -		TE: 3		
Measuring Point Des	cription: 🔥	lotch on To	oc					product
Total Well Depth (ft.): <u>23.9</u>	97		Sample M	Iethod: Pa	eristel	tic Pu	~P + Tub
Water Level Measure	ement Meth	iod: <u>So/://</u> ∑	+ Bic.	Time San	rpled:/	3:25		
Purge Method: Pe.				Sample D				
Γime Start Purge.	12:55			Field Filt	ering: <u>V</u>	es s	01050	e Fe
Time End Purge:	13:18			Field Pre				•
Comments: unloc	Ked well	, 0.02 ^{ft}	Product	measured.		QC-1	13:4	0
Well Volume Total I Calculation (fill in before purging)	Depth)	Depth to Water (ft)	Water Column (f	Mult	iplier for C Diameter (ir 4 0.64	asirg	Vol	Casing ume (gal)
Time	13:02	13:09	13:18					
Volume Purged (gals)	25	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	192	19.1					
рН	6.92	6.85	6.86					
Specific Conductivity (µmhos/cm)	7.0	7.5	7.5					
Dissolved Oxygen (mg/L)	0.5	0.5	05	in statementalism bridge designs material	" " " " A TODOR SPECIAL SECTION	,, econo 2006_2 %	ness synce hat the	down the a model of the
Turbidity/Color (NTU)	clear		>					
Odor	Yes -		-					
Dewatered?	20		>					
Mellen	Khan	·						
CHECKED BY:	111	2/20		DA	TE: 4/	11/98		

APPENDIX B

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

Environmental Services (SDB)

March 23, 1998

Submission #: 9803163

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

Vincent Vancil

Chemist

Michael Verona

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 Sampled: March 11, 1998 Matrix: WATER

Run#:11657

Analyzed: March 17, 1998

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

Vincent Vancil

Chemist

Michael Verona

Environmental Services (SDB)

March 23, 1998

Submission #: 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND

Received: March 12, 1998

Project#: 95-037

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)	LIMIT (ug/L)	RESULT (ug/L)		FACTOR
GASOLINE BENZENE TOLUENE ETHYL BENZENE XYLENES	N.D. N.D. N.D. N.D. N.D.	50 0.50 0.50 0.50 0.50	N.D. N.D. N.D. N.D.	97 85 83 79 83	1 1 1 1

Vincent Vancil

Chemist

Michael Verona

Environmental Services (SDB)

March 23, 1998

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND

Received: March 12, 1998

Project#: 95-037

re: One sample for Gasoline BTEX analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-F4

Spl#: 174996 Sampled: March 11, 1998

Matrix: WATER

Run#:11763

Analyzed: March 17, 1998

Submission #: 9803163

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

Vincent Vancil

Chemist

Michael Verona

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-F5

Spl#: 174997 Sampled: March 11, 1998 Matrix: WATER

Run#:11763

Analyzed: March 17, 1998

BLANK DILUTION

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

DEDODUTING

Vincent Vancil

Chemist

Michael Verong

Operations Manager

BT. ANK

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 Sampled: March 11, 1998 Matrix: WATER

Run#:11657

Analyzed: March 17, 1998

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

Vincent Vancil

Chemist

Michael Verona

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 Sampled: March 11, 1998 Matrix: WATER

Run#:11763

Analyzed: March 17, 1998

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

Vincent Vancil

Chemist

Michael Verona

Environmental Services (SDB)

March 23, 1998

Submission #: 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND

Received: March 12, 1998

Project#: 95-037

re: One sample for Gasoline BTEX analysis.

Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: QC-1

Spl#: 175000 Sampled: March 11, 1998 Matrix: WATER

Run#:11763

Analyzed: March 17, 1998

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

Vincent Vancil

Chemist

Michael Verona

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 Soluble Miscellaneous Metals with Mercury analysis.

Method: EPA 3005A/6010A/7470A Nov 1990

Client Sample ID: MW-F1

Spl#: 175002

Sampled: March 11, 1998

Matrix: WATER

Extracted: March 13, 1998

Run#: Analyzed: March 16, 1998 11626

RESULT

REPORTING LIMIT (mg/L)0.10

BLANK RESULT (mg/L)

BLANK DILUTION SPIKE FACTOR

(%) 105

IRON

(mg/L) N.D.

Chemist

\\$. Labash

N.D.

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

Sp1#: 175003

Matrix: WATER

Extracted: March 13, 1998

Sampled: March 11, 1998

Run#: 11626 Analyzed: March 17, 1998

RESULT (mq/L)

0.18

REPORTING LIMIT (mg/L)

0.10

BLANK RESULT (mq/L)

BLANK DILUTION SPIKE FACTOR

(왕) 105

<u>ANALYTE</u>

IRON

Chemist

Dabash

 $\overline{\mathrm{N.D.}}$

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

Sp1#: 175004

Matrix: WATER

Extracted: March 13, 1998

Sampled: March 11, 1998

Run#: 11626 Analyzed: March 17, 1998

RESULT (mg/L)

0.20

REPORTING LIMIT (mg/L)

0.10

BLANK RESULT (mg/L)

N.D.

BLANK DILUTION SPIKE FACTOR

105

ANALYTE IRON

Chemist

John S. Labash

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

Sp1#: 175005

Sampled: March 11, 1998

Matrix: WATER

Extracted: March 13, 1998

Run#: 11626

Analyzed: March 17, 1998

RESULT (mg/L)

REPORTING LIMIT

BLANK RESULT BLANK DILUTION SPIKE FACTOR

1

(mq/L)

0.10

(mg/L)N.D.

(%) 105

ANALYTE IRON

Barekzai

Chemist

乙abash

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 Soluble Miscellaneous Metals with Mercury analysis.

Method: EPA 3005A/6010A/7470A Nov 1990

Client Sample ID: MW-F5

Spl#: 175006

Sampled: March 11, 1998

Matrix: WATER
Run#: 11626

Extracted: March 13, 1998
Analyzed: March 17, 1998

Run#: 11626 Analyzed: March 17,

RESULT (mg/L)

N.D.

REPORTING
LIMIT
(mg/L)
0.10 \

BLANK RESULT (mg/L) BLANK DILUTION SPIKE FACTOR

mg/L) (%) N.D. 105

ANALYTE IRON

Shafi Berekzaj

Chemist

John S. Labash

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

Sampled: March 11, 1998

Matrix: WATER

Extracted: March 13, 1998

Analyzed: March 17, 1998 Run#: 11626

RESULT (mg/L)

 $\overline{\mathrm{N.D.}}$

REPORTING LIMIT (mg/L)0.10

BLANK RESULT (mq/L)

BLANK DILUTION SPIKE FACTOR

(왕)

IRON

Chemist

babash

N.D.

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

Sampled: March 11, 1998

Matrix: WATER Run#:

Extracted: March 13, 1998

Analyzed: March 17, 1998 11626

 $\overline{\mathrm{N.D.}}$

RESULT (mg/L)

REPORTING LIMIT (mg/L) 0.10

BLANK RESULT (mg/L)

BLANK DILUTION SPIKE FACTOR

<u>(%)</u>

<u>ANALYTE</u>

IRON

Chemist

S. Labash

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 Sampled: March 11, 1998

Extracted: March 13, 1998

Analyzed: March 17, 1998 Run#: 11626

RESULT (mg/L)

REPORTING LIMIT (mq/L)

0.10

BLANK RESULT (mq/L)

BLANK DILUTION SPIKE FACTOR

(%) 105 N.D.

ANALYTE IRON

Shari Barekzai

Chemist

5/. Labash

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-F1

Spl#: 174993

Sampled: March 11, 1998

Matrix: WATER

Run#: 11653

Extracted: March 17, 1998

Analyzed: March 17, 1998

RESULT

LIMIT (mg/L)

BLANK RESULT BLANK DILUTION

(mg/L)

SPIKE FACTOR (%)

ANALYTE IRON RESULT (mg/L) 0.90

(mg/L) 0.10

REPORTING

 $N \cdot D$

(**%)** 102

Christopher Arndt

Chemist

John S. Labash

Environmental Services (SD8)

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

RESULT (mg/L)

REPORTING LIMIT BLANK RESULT BLANK DILUTION SPIKE FACTOR

1

g/L) (mg/L) .8 0.10 (mg/L)

(%) 102

ANALYTE IRON

Christopher Arndt

Chemist

John S. Labash

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-F3

Spl#: 174995

Sampled: March 11, 1998

Matrix: WATER Run#:

Extracted: March 17, 1998

Analyzed: March 17, 1998 11653

RESULT

REPORTING LIMIT

BLANK RESULT (mq/L)

BLANK DILUTION FACTOR SPIKE

(%)

ANALYTE IRON

(mg/L) 0.11

(mg/L) 0.10

N.D.

102

1

Chemist

క. Labash

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-F4

Spl#: 174996

Sampled: March 11, 1998

Matrix: WATER

Run#: 11653

Extracted: March 17, 1998

Analyzed: March 17, 1998

BLANK BLANK DILUTION REPORTING RESULT SPIKE FACTOR LIMIT RESULT (mg/L)(mq/L) (mq/L)102 0.10 1.2 IRON

Chemist

John S. Labash

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

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

Christopher

Chemist

John S. Labash

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-F6

Spl#: 174998

Sampled: March 11, 1998

Matrix: WATER

Run#: 11653

Extracted: March 17, 1998

Analyzed: March 17, 1998

BLANK DILUTION REPORTING BLANK **FACTOR** SPIKE RESULT LIMIT RESULT (%) (mq/L)(mq/L)(mq/L) NALYTE 102 0.10N.D. IRON

Christopher Arndt

Chemist

John S. Labash

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

Matrix: WATER 11653 Extracted: March 17, 1998

Sampled: March 11, 1998

Run#:

Analyzed: March 17, 1998

RESULT

REPORTING LIMIT

BLANK RESULT BLANK DILUTION **FACTOR** SPIKE

(%)

<u>ANAL</u>YTE RON

(ma/L)

(mq/L)0.10

(mg/L)

1 102

Christopher

Chemist

John S. Labash

Environmental Services (SDB)

March 18, 1998

Submission #: 9803163

INNOVATIVE TECHNICAL SOLUTIONS

Atten: William Scott

Project: CITY OF OAKLAND

Received: March 12, 1998

95-037 Project#:

re: One sample for Miscellaneous Metals analysis.

Method: EPA 3010A/3050A/6010A Nov 1990

Client Sample ID: QC-1

Sp1#: 175000

Sampled: March 11, 1998

Matrix: WATER 11653 Run#:

Extracted: March 17, 1998

Analyzed: March 17, 1998

BLANK DILUTION REPORTING BLANK RESULT SPIKE LIMIT RESULT

FACTOR (%) (mq/L)(mq/L)(mq/L) $\overline{N.D.}$ 102 0.10 IRON

Christopher

Chemist

John S. Labash

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



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,

Andrew C. Bradeen

Kan Wihl for

Director, Laboratory Services San Francisco Regional Office

ACB/kmd

Attachments

Page 2 of 3

Analytical Results for

CHROMALAB, INC.

Client Reference: 38677 Clayton Project No. 98031.87

Sample Identification: See Below

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

Lab Number:

9803187 WATER

Sample Matrix/Media: Method Reference:

EPA 300.0

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	OC-1	03/11/98	<0.05	0.05
-09	METHOD BLANK	- -	<0.05	0.05

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

Date Received:

Date Analyzed:

Page 3 of 3

03/13/98

03/13/98

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

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	OC-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

INNOVATIVE TECHNICAL SOLUTIONS, Inc.

1330 Broadway, Suite 1625 Oakland, California 94612 (510) 286-8888 (Tel), (510) 28 SUBM #: 9803163 REP: GC

CLIENT: ITSI

DUE: 03/19/98

REF #:38677

38677

PROJECT NAME: Coty		cland -		ruitua						\ E	 ' Cl	TTC	T	ΩT	v			_				DATE: 3-11-98 PAGE: _/_ of _2_
PROJECT NUMBER: _9 SITE LOCATION: _26	15 -0. 67. FI	<u>37</u>		2. Oak	cland G	₄ C.		X 1.1	N C	JΓ	U	U.S	ΙŢ	JL	Į							PAGE: _/_ 01 _ Z _
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	Į Ę			S	NTA	TRIX	тех	- 80	- 80° Clean		S		e - 55	ocart	240	8270	b, Zn	als	1	Iron	₹	
9	SAMPLE DEPTH			R OF	TYPE OF CONTAINERS	SAMPLE MATRIX	Jas/B	TPH as Diesel - 8015	TPH as Diesel - 8015 (w/ Silica Gel Cleanup)	3015	TEPH-8015 (w/ Silica Gel Cleanup)	FRPH - 418.1	Oil and Grease - 5520	e Hal	VOCs -624/ 8240	SVOCs -625/8270	LUFT Metals (Cd, Cr, Ni, Pb, Zn)	CAM 17 Metals	Solvable	1	$\frac{q}{2}$	
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MW-F2	++		9.57	3	256 pme 40,02		X							-								
	++	 		<u> </u>	750 Me						-										X	
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INNOVATIVE TECHNICAL SOLUTIONS, Inc.



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

9803163

38677

ITE LOCATION: 2		T											,	AN	ALYS	ıs		,					Chroma lab	
SAMPLE I.D.	SAMPLE DEPTH		DATE	тіме .	NUMBER OF CONTAINERS	TYPE OF CONTAINERS	SAMPLE MATRIX	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	LUFF Metals (Cd, Cr, Ni, Pb, Zn)	S I	~0	Total Jon	SUPPLY + NTICK	Chroma lab Pleaso-Ion, (
MW-F5	NA			12:30	λ	250 AL 805	hister													X	X			
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Environmental Service (SDB)

Sample Receipt Checklist

Client Name: INNOVATIVE TECHNICAL SOLUTIONS Date/Time Received: 03/12/98 $\frac{18.90}{100}$
Reference/Submis: 38677 9803163 Received by: βM .
Checklist completed by: Classify 3:1398 Reviewed by: Initials Date
Matrix: Watu Carrier name: Client - C/L
Shipping container/cooler in good condition? Yes No Not Not
Custody seals intact on shipping container/cooler? Yes No Present
Custody seals intact on sample bottles? Yes No Present
Chain of custody present?
Chain of custody signed when relinquished and received? Yes
Chain of custody agrees with sample labels?
Samples in proper container/bottle? Yes No
Sample containers intact? Yes V No
Sufficient sample volume for indicated test? Yes No
All samples received within holding time? YesNo
Container/Temp Blank temperature in compliance? Temp: 6.9°C YesNo
Water - VOA vials have zero headspace? No VOA vials submitted Yes No
Water - pH acceptable upon receipt? Adjusted? Checked by Chec
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: Smyles received out of standard temperature range of 2-6°C
Corrective Action: