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CITY OF OAKLAND

DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 5301 • OAKLAND, CALIFORNIA 94612-2034

Public Works Agency
Environmental Services

FAX (510) 238-7286
TDD (510) 238-7644

August 11, 2006

Farhad Azimzadeh
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: NPDES Renewal Application for Groundwater Remediation at City of Oakland Municipal Services Center, 7101 Edgewater Drive, Oakland

Dear Mr. Azimzadeh:

Enclosed is an NPDES permit renewal application for re-authorization to discharge treated groundwater from a remediation project at the City of Oakland Municipal Services Center (MSC) located at 7101 Edgewater Drive, Oakland, CA. The remediation project includes petroleum product recovery and groundwater extraction from 7 wells, oil/water separation, treatment of the extracted groundwater through three (3) activated carbon vessels in series and discharge of the treated effluent to local storm drain via an NPDES permit. A more detailed description of the remediation system is included with this letter (Item 2 below). The construction of the remediation system was completed in early May 2006 and the groundwater extraction and treatment began on May 22, 2006.

This NPDES renewal application package was prepared following the instruction contained in a March 9, 2006 email from Ms. Carolina Silva of your Water Board and you forwarded the email to me on April 27, 2006. The information requested for the NPDES permit renewal is presented below.

1. Application Form 200 – completed and signed by City of Oakland Public Works Agency Environmental Service Division Manager.
2. Analytical Results – A summary of effluent monitoring data for all pollutants, including number of samples, minimum, maximum, average, median, standard deviation, number of non-detects, and range of reporting limits for all non-detects.
3. A description of the installed treatment facility and a certification by the City's consultant OTG Enviroengineering Solutions, Inc.

4. Summary of all violations and corrective actions completed – the remediation system has been in compliance with the NPDES permit since the startup of the system on May 22, 2006 and hence, no violation has been recorded.
5. Other information – included in Item 2 above.

We trust that the information contained in this NPDES renewal application package is sufficient to allow your timely review and approval. If you have questions or require additional information, please contact Mr. Xinggang Tong of OTG Enviroengineering solutions, Inc. (the City's consultant for this project) at (510) 465-8982 or myself at (510) 238-6361.

Sincerely,

Gopakumar Nair
Environmental Program Specialist

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE
GENERAL INFORMATION FORM FOR
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

I. FACILITY INFORMATION

A. Facility:

Name: City of Oakland Municipal Services Center			
Address: 7101 Edgewater Drive			
City: Oakland	County: Alameda	State: CA	Zip Code: 94621
Contact Person: Raul Godinez II, Director,Public Works Agency		Telephone Number: (510) 238-4470	

B. Facility Owner:

Name: City of Oakland			Owner Type (Check One) 1. ☐ Individual 2. ☐ Corporation 3. ☑ Governmental Agency 4. ☐ Partnership 5. ☐ Other:
Address: 250 Frank Ogawa Plaza, Suite 4314			
City: Oakland	State: CA	Zip Code: 94612	
Contact Person: Raul Godinez II, Director,Public Works Agency		Telephone Number: (510) 238-4470	Federal Tax ID: 94-6000384

C. Facility Operator (The agency or business, not the person):

Name: City of Oakland Public Works Agency			Operator Type (Check One) 1. ☐ Individual 2. ☐ Corporation 3. ☑ Governmental Agency 4. ☐ Partnership 5. ☐ Other:
Address: 250 Frank Ogawa Plaza, Suite 5301			
City: Oakland	State: CA	Zip Code: 94612	
Contact Person: Mark Gomez, Environmental Program Supervisor		Telephone Number: (510) 238-7314	

D. Owner of the Land:

Name: Port of Oakland			Owner Type (Check One) 1. ☐ Individual 2. ☐ Corporation 3. ☑ Governmental Agency 4. ☐ Partnership 5. ☐ Other:
Address: 530 Water Street			
City: Oakland	State: CA	Zip Code: 94607	
Contact Person: Jeff Jones, Environmental Compliance Supervisor		Telephone Number: (510) 627-1360	

E. Address Where Legal Notice May Be Served:

Address: 250 Frank H. Ogawa Plaza, Suite 5301		
City: Oakland	State: CA	Zip Code: 94612
Contact Person: Gopakumar Nair, Environmental Specialist		Telephone Number: (510) 238-6361

F. Billing Address:

Address: 250 Frank H. Ogawa Plaza, Suite 5301		
City: Oakland	State: CA	Zip Code: 94612
Contact Person: Gopakumar Nair, Environmental Specialist		Telephone Number: (510) 238-6361

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

II. TYPE OF DISCHARGE

Check Type of Discharge(s) Described in this Application (A or B):

☐ **A. WASTE DISCHARGE TO LAND** ☑ **B. WASTE DISCHARGE TO SURFACE WATER**

Check all that apply:

- ☐ Domestic/Municipal Wastewater Treatment and Disposal
- ☐ Cooling Water
- ☐ Mining
- ☐ Waste Pile
- ☐ Wastewater Reclamation
- ☐ Animal Waste Solids
- ☐ Land Treatment Unit
- ☐ Dredge Material Disposal
- ☐ Surface Impoundment
- ☐ Industrial Process Wastewater
- ☐ Animal or Aquacultural Wastewater
- ☐ Biosolids/Residual
- ☐ Hazardous Waste (see instructions)
- ☐ Landfill (see instructions)
- ☐ Storm Water
- ☑ Other, please describe: Remediation of groundwater impacted by petroleum hydrocarbons

III. LOCATION OF THE FACILITY

Describe the physical location of the facility.

1. Assessor's Parcel Number(s)	2. Latitude	3. Longitude
Facility: 41-3902-20	**Facility:** 37 45' 00" north	**Facility:** 122 12' 30" west
Discharge Point: 41-3902-20	**Discharge Point:** 37 45' 00" north	**Discharge Point:** 122 12' 30" west

IV. REASON FOR FILING

- ☐ New Discharge or Facility
- ☐ Changes in Ownership/Operator (see instructions)
- ☐ Change in Design or Operation
- ☑ Waste Discharge Requirements Update or NPDES Permit Reissuance
- ☐ Change in Quantity/Type of Discharge
- ☐ Other: _____

V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Name of Lead Agency: San Francisco Bay Regional Water Quality Control Board

Has a public agency determined that the proposed project is exempt from CEQA? ☑ **Yes** ☐ **No**

If Yes, state the basis for the exemption and the name of the agency supplying the exemption on the line below.

Basis for Exemption/Agency: California Water Code Section 13389/Regional Water Quality Control Board

Has a "Notice of Determination" been filed under CEQA? ☐ **Yes** ☐ **No**

If Yes, enclose a copy of the CEQA document, Environmental Impact Report, or Negative Declaration. If no, identify the expected type of CEQA document and expected date of completion.

Expected CEQA Documents:

☐ **EIR** ☐ **Negative Declaration** **Expected CEQA Completion Date:** _____

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

State of California
Regional Water Quality Control Board

APPLICATION/REPORT OF WASTE DISCHARGE
GENERAL INFORMATION FORM FOR
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT

VI. OTHER REQUIRED INFORMATION

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to, design and actual flows, a list of constituents and the discharge concentration of each constituent, a list of other appropriate waste discharge characteristics, a description and schematic drawing of all treatment processes, a description of any Best Management Practices (BMPs) used, and a description of disposal methods.

Also include a site map showing the location of the facility and, if you are submitting this application for an NPDES permit, identify the surface water to which you propose to discharge. Please try to limit your maps to a scale of 1:24,000 (7.5' USGS Quadrangle) or a street map, if more appropriate.

VII. OTHER

Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:

You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your Application/Report of Waste Discharge, pursuant to Division 7, Section 13260 of the California Water Code.

VIII. CERTIFICATION

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name: Raul Godinez II Title: Director of Public Works Agency

Signature: [signature] Date: 8.10.2006

FOR OFFICE USE ONLY

Date Form 200 Received:	Letter to Discharger:	Fee Amount Received:	Check #:

Table 1 - Summary of Laboratory Analytical Procedures
City of Oakland Municipal Services Center Groundwater Remediation Project

	5/22/06	5/30/06	6/26/06
Flow rate	onsite totalizer	onsite totalizer	onsite totalizer
Turbidity	on-site	on-site	on-site
Fish bioassay			EPA/821/R/02/012
pH	on-site	on-site	on-site
DO			
Temperature	on-site	on-site	on-site
E. conductivity	on-site	on-site	on-site
Benzene	EPA 8021B	EPA 8021B	EPA 8021B
Toluene	EPA 8021B	EPA 8021B	EPA 8021B
Ethylbenzene	EPA 8021B	EPA 8021B	EPA 8021B
Total xylenes	EPA 8021B	EPA 8021B	EPA 8021B
MTBE	EPA 8021B	EPA 8021B	EPA 8021B
TPH g&d	EPA 8015B	EPA 8015B	EPA 8015B
EDB		EPA 8260B	
VOCs		EPA 8260B	
TAME		EPA 8260B	
DIPE		EPA 8260B	
ETBE		EPA 8260B	
TBA		EPA 8260B	
Ethanol		EPA 8015B	
Methanol		EPA 8015B	
SVOCs		EPA 625	
PAHs		EPA 610	
Hardness	SM 2340B	SM 2340B	SM 2340B
Antimony	EPA 200.8	EPA 200.8	EPA 6020
Arsenic	EPA 200.8	EPA 200.8	EPA 6020
Beryllium	EPA 200.8	EPA 200.8	EPA 6020
Cadmium	EPA 200.8	EPA 200.8	EPA 6020
Chromium	EPA 200.8	EPA 200.8	EPA 6020
Cr +6	EPA 7196	EPA 7196	EPA 7199
Copper	EPA 200.8	EPA 200.8	EPA 6020
Cyanide	EPA 335.2	EPA 335.2	EPA 335.2
Lead	EPA 200.8	EPA 200.8	EPA 6020
Mercury	EPA 245.1	EPA 245.1	EPA 7470A
Nickel	EPA 200.8	EPA 200.8	EPA 6020
Selenium	EPA 200.8	EPA 200.8	EPA 6020
Silver	EPA 200.8	EPA 200.8	EPA 6020
Thallium	EPA 200.8	EPA 200.8	EPA 6020
Zinc	EPA 200.8	EPA 200.8	EPA 6020

pH/Conductivity/Tempt were measured on-site using a Oakton pH/Con 10 meter, Serial #311648, calibrated daily before use.

Turbidity was measured on-site using a Oakton T-100 meter, Serial #316738, calibrated daily before use.

Table 2 - Summary of Operational Data and Field Measured Parameters
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Time	Effluent (E-1)				Influent (I-1)			Btw-1	Btw-2	Totalizer	Monthly	Monthly	Product	Notes
		pH	Tempt (°C)	E. conduc (ms/cm)	Turbidity (NTU)	pH	Tempt (°C)	E. cond. (ms/cm)			Reading (gallons)	Treated (gallons)	ave. rate (gal/min)	recovered (gallons)	
5/22/2006	7:00										1,389				Before turn on system
5/22/2006	11:25	8.3	20.4	8.81	0.2	7.12	21.4	10.2	sampled		2,050				treated water held in tank
5/22/2006	14:15										2,414				stopped, waiting for analy data
5/24/2006	13:00										2,414				system on, start discharge
5/30/2006	12:30	7.48	19.4	8.25	0.04	6.98	23.1	8.32	sampled		14,230	12,841		20	
5/31/2006	10:00										18,980	17,591	1.705		
6/2/2006	16:30								sampled	sampled	31,080				
6/9/2006	8:30										48,610				
6/16/2006	10:20										67,755				
6/19/2006	9:40										74,670				
6/22/2006	11:00										90,480				
6/26/2006	9:00	7.32	22.3	13	0.1	7.37	23.3	13.4	sampled	sampled	106,950				
6/30/2006	9:00										122,860	103,880	2.405	100	
7/5/2006	10:00										140,500				two full drums of product
7/12/2006	9:30								sampled	sampled	163,230				
7/19/2006	9:30										182,740				
7/25/2006	9:30	7.35	23.6	12.5	0.04	7.4	24.2	13.1	sampled		197,030				
7/31/2006	19:30										212,010	89,150	1.997		
8/2/2006	19:30										216,790				three full drums of product
Sample No.		4	4	4	4										
Minimum		7.32	20.4	8.25	0.04										
Maximum		8.3	23.6	12.5	0.2										
Average		7.61	21.4	10.64	0.095										
Median		7.34	21.4	10.66	0.07										
Std. Dev.		0.46	1.88	2.46	0.075										
# of ND		0	0	0	0										
ND range															

Table 3 - Summary of Petroleum Hydrocarbon Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	Effluent (E-1)							Influent (I-1)						
	TPH gas	TPHdiesel	benzene	toluene	ethyl benz	xylenes	MTBE	TPH gas	TPHdiesel	benzene	toluene	ethyl benz	xylenes	MTBE
	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Eff. Limit	50	50	5	5	5	5	13							
5/22/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	52,000	25,000 (h,l)	6,100	5,200	1,200	6,100	ND (100)
5/30/2006	ND (50)	130 (a1)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	57000	9,200 (l,y)	4900	5300	1100	7100	ND (36)
6/2/2006		ND (50)												
6/26/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	50000	10,000(h,l,y)	4800	6900	1100	7200	ND (50)
7/25/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	60000	4,000(l,y)	5800	8800	1100	9000	ND (80)
Sample No	4	5	4	4	4	4	4							
Minimum	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)							
Maximum	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)							
Average	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)							
Median	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)							
Std. Dev.	0	0	0	0	0	0	0							
# of ND	4	5	4	4	4	4	4							
ND range	50 - 50	50 - 50	0.5 - 0.5	0.5 - 0.5	0.2 - 0.5	0.5 - 0.5	2.0 - 2.0							

The number in parentheses following ND is the reporting limit

(a1) - false positive detection, confirmed ND on 6/2/06 samples at E-1, Btw-1 & Btw-2

(h) - heavier hydrocarbons contributed to the quantitation

(l) - lighter hydrocarbons contributed to the quantitation

(y) - sample exhibits chromatographic pattern which does not resemble standard

Table 3 - Summary of Petroleum Hydrocarbon Analytical Data
City of Oakland Municipal Services Center Groundwater Remediation Project

Date	After 1st Carbon Unit (Btw-1)							After 2nd Carbon Unit (Btw-2)						
	TPH gas	TPHdiesel	benzene	toluene	ethyl benz	xylenes	MTBE	TPH gas	TPHdiesel	benzene	toluene	ethyl benz	xylenes	MTBE
	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Eff. Limit	50	50	5	5	5	5	13	50	50	5	5	5	5	13
5/22/2006	57 (y)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)							
5/30/2006	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)							
6/2/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)			ND (50)					
6/26/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)
7/12/2006	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2.0)	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	3.9 (a2)
7/25/2006	ND (50)		ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	2.7							

(a2) - false positive detection, confirmed ND after the first carbon unit
(h) - heavier hydrocarbons contributed to the quantitation
(l) - lighter hydrocarbons contributed to the quantitation
(y) - sample exhibits chromatographic pattern which does not resemble standard

Table 4 - Summary of Analytical Data for Inorganic Constituents and Fish Bioassay
City of Oakland Municipal Services Center Groundwater Remediation Project

Constituen	Unit	Eff Limit	Effluent (E-1)			No. of					Standard	No. of	Range of
		(<10 gpm)	5/22/06	5/30/06	6/26/06	samples	Minimum	Maximum	Average	Median	deviation	ND	ND
Antimony	ug/L		2.3	1.8	0.12	3	0.12	2.3	1.4	1.8	1.1	0	
	g/day	3	0.02137	0.01672	0.001572								
Arsenic	ug/L		36	24	7	3	7	36	22.3	24	14.6	0	
	g/day	1	0.33444	0.22296	0.0917								
Beryllium	ug/L		ND (0.35)	ND (0.5)	ND (0.055)	3	ND(0.055	ND (0.5)	ND	ND		3	0.055 - 0.5
	g/day	3											
Cadmium	ug/L		1	0.5	ND (0.14)	3	ND (0.14)	1	0.55	0.5	0.43	1	0.14
	g/day	1	0.00929	0.00465									
Total Cr	ug/L		3.1	ND (0.5)	0.62	3	ND (0.5)	3.1	1.4	ND	1.5	1	0.5
	g/day	2	0.0288		0.008122								
Cr +6	ug/L		ND (1.0)	ND (10)	ND (0.5)	3	ND (0.5)	ND (10)	ND	ND		3	0.5 - 10
	g/day	2											
Copper	ug/L		1.3	0.9	1.3	3	0.9	1.3	1.17	1.3	0.23	0	
	g/day	3	0.01208	0.00836	0.01703								
Lead	ug/L		ND (0.1)	ND (0.25)	0.26	3	ND (0.1)	0.26	0.2	ND	0.1	2	0.1 - 0.25
	g/day	5			0.003406								
Mercury	ug/L		ND(0.008	ND(0.2)	ND (0.2)	3	ND(0.008	ND (0.2)	ND	ND		3	0.008 - 0.2
	g/day	0.01											
Nickel	ug/L		11	67	15	3	11	67	31	15	31	0	
	g/day	5	0.10219	0.62243	0.1965								
Selinium	ug/L		3	3	1.2	3	1.2	3	2.4	3	1	0	
	g/day	2	0.02787	0.02787	0.01572								
Silver	ug/L		ND (0.02)	ND (0.1)	ND (0.041)	3	ND (0.02)	ND (0.1)	ND	ND		3	0.02 - 0.1
	g/day	1											
Thallium	ug/L		0.06	ND (0.1)	0.21	3	0.06	0.21	0.12	ND	0.078	1	0.1
	g/day	3	0.00056		0.002751								
Zinc	ug/L		2	ND (10)	44	3	2	44	18.7	ND	22.3	1	10
	g/day	10	0.01858		0.5764								
Cyanide	ug/L		ND (0.8)	ND (3)	ND (10)	3	ND (0.8)	ND (10)	ND	ND		3	0.8 - 10
	g/day												
Hardness	mg/LCaCO3		560	960	1100	3	560	1100	873	960	280	0	
Fish Bioassay -													
% survival of Rainbow Trout					100%								

Table 4 - Summary of Analytical Data for Inorganic Constituents and Fish Bioassay
City of Oakland Municipal Services Center Groundwater Remediation Project

Inorganic	Unit	Eff Limit	Influent (I-1)	
		(<10 gpm)	5/22/06	5/30/06
Antimony	ug/L		ND (60)	ND (1)
	g/day	3		
Arsenic	ug/L		7.2	8.5
	g/day	1	0.06689	0.07897
Beryllium	ug/L		ND (2)	ND (1)
	g/day	3		
Cadmium	ug/L		34	10
	g/day	1	0.31586	0.0929
Total Cr	ug/L		ND (10)	ND (1)
	g/day	2		
Cr +6	ug/L		ND (0.5)	ND (0.5)
	g/day	2		
Copper	ug/L		250	25
	g/day	3	2.3225	0.23225
Lead	ug/L		28	21
	g/day	5	0.26012	0.19509
Mercury	ug/L		ND (0.2)	ND (0.2)
	g/day	0.01		
Nickel	ug/L		68	19
	g/day	5	0.63172	0.17651
Selinium	ug/L		9.4	ND (1)
	g/day	2	0.08733	
Silver	ug/L		ND (5)	ND (1)
	g/day	1		
Thallium	ug/L		25	ND (1)
	g/day	3	0.23225	
Zinc	ug/L		31	57
	g/day	10	0.28799	0.52953
Cyanide	ug/L		10	10
	g/day		0.0929	0.0929

Table 5 - Summary of Analytical Data for Organic Constituents
City of Oakland Municipal Services Center Groundwater Remediation Project

		Effluent (E-1)
	Max Daily Eff. Limit (ug/L)	5/30/06 (ug/L)
Benzene	5	ND (0.5)
Carbon tetrachloride	5	ND (0.5)
Chloroform	5	ND (0.5)
1,1-Dichloroethane	5	ND (0.5)
1,2-Dichloroethane	5	ND (0.5)
1,1-dichloroethylene	5	ND (0.5)
Ethylbenzene	5	ND (0.5)
Methylene chloride	5	ND (0.5)
Tetrachloroethylene	5	ND (0.5)
Toluene	5	ND (0.5)
c-1,2-Dichloroethylene	5	ND (0.5)
t-1,2-Dichloroethylene	5	ND (0.5)
1,1,1-Trichloroethane	5	ND (0.5)
1,1,2-Trichloroethane	5	ND (0.5)
Trichloroethylene	5	ND (0.5)
vinyl chloride	5	ND (0.5)
total xylenes	5	ND (0.5)
MTBE	13	ND (0.5)
Ethylene dibromide	5	ND (0.5)
Trichlorotrifluoroethane	5	ND (5)
TPH gas	50	ND (50)
TPH diesel	50	ND (50)
TAME		ND (0.5)
DIPE		ND (0.5)
ETBE		ND (0.5)
TBA		ND (10)
Ethanol		ND(1000)
Methanol		ND(1000)
Other VOCs (EPA 8260)		ND
PAHs (EPA 8310 or 610)		
All analytes		ND (1.0)
SVOCs(EPA8270 or625)		
All analytes		ND (5.0)

Table 5 - Summary of Analytical Data for Organic Constituents
City of Oakland Municipal Services Center Groundwater Remediation Project

		Influent (I-1)					
		5/30/06					
		(ug/L)					
Benzene		4900					
Carbon tetrachloride		ND (36)					
Chloroform		ND (36)					
1,1-Dichloroethane		ND (36)					
1,2-Dichloroethane		ND (36)					
1,1-dichloroethylene		ND (36)					
Ethylbenzene		1100					
Methylene chloride		ND (36)					
Tetrachloroethylene		ND (36)					
Toluene		5300					
c-1,2-Dichloroethylene		ND (36)					
t-1,2-Dichloroethylene		ND (36)					
1,1,1-Trichloroethane		ND (36)					
1,1,2-Trichloroethane		ND (36)					
Trichloroethylene		ND (36)					
vinyl chloride		ND (36)					
total xylenes		7100					
MTBE		ND (36)					
Ethylene dibromide		ND (36)					
Trichlorotrifluoroethane		ND (360)					
TPH gas		57000					
TPH diesel		9200					
TAME		ND (36)					
DIPE		ND (36)					
ETBE		ND (36)					
TBA		ND (710)					
Ethanol		ND(1000)					
Methanol		ND(1000)					
Other VOCs (EPA 8260)							
Isopropylbenzene		40					
Propylbenzene		120					
1,3,5-Trimethylbenzene		410					
1,2,4-Trimethylbenzene		1500					
Naphthalene		370					
PAHs (EPA 8310 or 610)							
Benzo(a)anthracene		1.7					
Benzo(a)pyrene		1.6					
Chrysene		2.6					
Fluoranthene		3.8					
Naphthalene		130					
Pyrene		3.3					
SVOCs(EPA8270 or625)							
Dimethylphthalate		28					
bis(2-Ethylhexyl)phthalate		12					
Naphthalene		290					
Phenol		13					

Table 5 - Summary of Analytical Data for Organic Constituents
City of Oakland Municipal Services Center Groundwater Remediation Project

		After First Carbon Unit (Btw-1)
	Max Daily Eff. Limit (ug/L)	5/30/06 (ug/L)
Benzene	5	ND (0.5)
Carbon tetrachloride	5	ND (0.5)
Chloroform	5	ND (0.5)
1,1-Dichloroethane	5	ND (0.5)
1,2-Dichloroethane	5	ND (0.5)
1,1-dichloroethylene	5	ND (0.5)
Ethylbenzene	5	ND (0.5)
Methylene chloride	5	ND (0.5)
Tetrachloroethylene	5	ND (0.5)
Toluene	5	ND (0.5)
c-1,2-Dichloroethylene	5	ND (0.5)
t-1,2-Dichloroethylene	5	ND (0.5)
1,1,1-Trichloroethane	5	ND (0.5)
1,1,2-Trichloroethane	5	ND (0.5)
Trichloroethylene	5	ND (0.5)
vinyl chloride	5	ND (0.5)
total xylenes	5	ND (0.5)
MTBE	13	ND (0.5)
Ethylene dibromide	5	ND (0.5)
Trichlorotrifluoroethane	5	ND (5)
TPH gas	50	ND (50)
TPH diesel	50	ND (50)
TAME		ND (0.5)
DIPE		ND (0.5)
ETBE		ND (0.5)
TBA		ND (10)
Ethanol		NA
Methanol		NA
Other VOCs (EPA 8260)		ND
PAHs (EPA 8310 or 610)		NA
SVOCs(EPA8270 or625)		NA

OTG EnviroEngineering Solutions, Inc.

July 31, 2006

Mr. Gopakumar Nair
City of Oakland PWA/ESD
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, CA 94612

Subject: NPDES Permit Renewal Application for Groundwater Remediation at City of Oakland Municipal Service Center, 7101 Edgewater Drive, Oakland, CA

Dear Mr. Nair:

OTG EnviroEngineering Solutions, Inc. (OTG) is pleased to prepare this information package for NPDES permit renewal application. The permit is required for discharge of treated groundwater to storm drain at the City's Municipal Services Center. The current discharge authorization by the California Regional Water Quality Control Board – San Francisco Bay Region under NPDES Permit No. CAG912002 (Order No. 01-100) will expire on September 19, 2006.

1. PROJECT BACKGROUND

The City of Oakland Municipal Services Center (MSC) is located at 7101 Edgewater Drive, Oakland, CA (Figure 1). The site was originally part of a waterfront tidal marsh complex, which was filled between 1950 and 1971. The MSC was constructed around 1971 and occupies an area of approximately 17 acres. The City leased the land from the Port of Oakland for use as a corporation yard. Bordering the MSC site to the west and the north is the Martin Luther King Regional Shoreline Park. This park land is also owned by the Port of Oakland. Damon Slough is located to the north, and commercial developments are located to the east and south.

Under the supervision of Alameda County Department of Environmental Health, the MSC site has been the subject of numerous environmental investigations starting in about 1989. The suspected sources of on-site contamination include releases from underground fuel storage tanks (USTs) installed after the MSC was constructed in 1971, gasoline and diesel fuel hydrant system (2,650-foot underground piping system), and the floor drain waste collection pits formerly located adjacent to Building No. 5, where City-owned vehicles have been maintained since the MSC was constructed. In addition, some or all of the material used to fill the site may have been waste or contaminated prior to placement at the site. A comprehensive investigation conducted by Baseline in 2000 identified the existence of free-phase petroleum hydrocarbon

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product at four separate areas within the MSC. They are labeled as Plumes A through D on Figure 2. Baseline's investigation is documented in the report of *Site History and Characterization* (January 2001).

Groundwater monitoring has been conducted quarterly from the fourth Quarter of 1989 through the third quarter of 2002 and then semi-annually to current. Shallow groundwater elevation varies from 2 to 10 feet below ground surface and is partially subject to tidal influence. Shallow groundwater flow is toward the southwest to the nearest shoreline along San Leandro Bay across much of the site. In the northern portion of the MSC, groundwater flows in a more northerly direction toward the curving shoreline and Damon Slough (Baseline , January 2001)

Pilot-scale Dual-Phase Extraction (DPE) tests were conducted in 2002 to enhance the removal of free-phase petroleum product from the four identified areas (Cambria, August 13, 2002 and URS, August 29, 2002). Extracted groundwater was treated on-site through two 2,000-lb granular activated carbon units connected in series and discharged to on-site storm drain via a NPDES permit granted by the San Francisco Bay Regional Water Quality Control Board (NPDES Permit No. CAG912002). Based on the pilot test result, the City retained Cambria in May 2003 to design a full-scale application of product recovery and groundwater/soil vapor extraction at Plumes C and D. Cambria's design was revised in October 2005 by Groundwater and Environmental Services (GES) to focus the first phase of product removal in Plume D. The final design drawings are included with this letter. Chemical oxidation and enhanced bioremediation through periodic injections of hydrogen peroxide have been implemented in Plumes A, B and C since July 2004.

In March 2006, the City retained URS Corporation and its subcontractor ERRG to construct the GES' revised remediation system of product recovery and groundwater/soil vapor extraction. The construction was completed in early May 2006. On May 22, 2006, the product recovery and groundwater extraction portion of the remediation system was turned on and it has been in continuous operation since May 24, 2006.

2. DESCRIPTION OF REMEDIATION SYSTEM

The remediation system consists of extraction of liquid (petroleum product and groundwater) and soil vapor from seven (7) wells located in Plume D area (Figure 3), separation of petroleum product from groundwater, treatment of groundwater by activated carbon, discharge of treated water to local storm drain via a NPDES permit, treatment of soil vapor, and discharge of treated vapor to the atmosphere via an air discharge permit. A process and instrumentation diagram of the remediation system is illustrated on Figure 4. Detailed design drawings are included.

The seven wells are: RW-D1, RW-D2, RW-D3, RW-D4, RW-D5, TBW-5 and RW-1. Their locations are shown on Figure 3. RW-D1 through RW-D5 were constructed in December 2001 specifically for remediation purposes, and RW-1 and TBW-5 were placed during backfilling of the excavation of former fuel hydrant lines in 1998. Each well is equipped with a total fluid

recovery pneumatic pump specifically designed for viscous petroleum product recovery. The pump is manufactured by Clean Environment Equipment in Oakland and has the Model # AP-Custom. An Ingersoll-Rand air compressor (model # SSR UP6-10) provides compressed air to the pneumatic pumps. Each well is also piped into a high vacuum extraction unit that can produce up to 28 inches of mercury vacuum. This vacuum unit can be operated at either mode of soil vapor extraction only or soil vapor and liquid simultaneous extraction. The pneumatic pumps and the vacuum extraction unit can be operated independently.

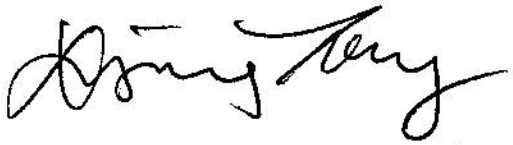
A 40 hp liquid-ring vacuum pump capable of 500 ACFM and up to 28" Hg extracts soil vapor and liquid from the seven wells. The vapor is abated by a combination of thermal and catalytic oxidizer. At low vapor organic concentrations, activated carbon can also be used for vapor abatement.

The liquid extracted by the pneumatic pumps and the vacuum unit is pumped into an oil/water separator (Model # AGM-3SS-90V, Hydro Quip, Inc.). Recovered oil is contained in 55-gallon drums, which are sent to an off-site oil recycling facility. Groundwater is treated through three (3) granular activated carbon (GAC) units connected in series (Model #ASC-2000, U.S.Filter/Westates Carbons) before been discharged into local storm drain. Each GAC unit contains 2,000 lbs of GAC. Figure 5 illustrates the groundwater treatment portion of the remediation system and identifies sampling ports. A certification of the treatment system is included with this letter. **No chemicals were added to the treatment process. Floating product is removed in the oil/water separator by natural gravity differences between oil and water and dissolved contaminants are removed by activated carbon adsorption without the addition of any chemicals.**

The maximum design capacity of the groundwater treatment system is 50 gallons per minute (gpm). The maximum daily flow rate since the startup of the system on May 22, 2006 has been less than 5 gpm and the average daily flow rate has been 2.04 gpm. The plan is to gradually increase the extraction and treatment rate to near 10 gpm in the next three months.

We appreciate the opportunity to assist you on this important project. Please call the undersigned at (510) 465-8982 if you have questions or comments.

Sincerely,
OTG EnviroEngineering Solutions, Inc.



Xinggang Tong, PhD, PE
Principal

Attachments:

Figure 1.	Site Location and Discharge Location Map
Figure 2.	Identification of Free Product Locations and Discharge Location
Figure 3.	Identification of Extraction Wells & Trench Layout
Figure 4.	Remediation System Process & Instrumentation Diagram
Figure 5.	Schematic of Groundwater Treatment System & Sampling Locations

Appendix A	Design Drawings of Remediation System
Appendix B	Certification of Treatment System

OTG EnviroEngineering Solutions, Inc.

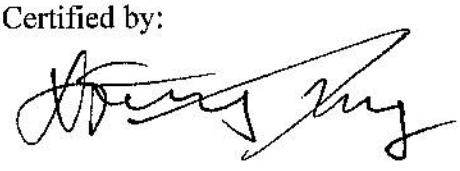
CERTIFICATION OF ADEQUACY
Groundwater Treatment System at
City of Oakland Municipal Services Center

Activated carbon adsorption is a proven technology for removing petroleum hydrocarbons from groundwater. Many companies supply off-shelf, standard units in various sizes for quick deployment. The design criteria are that the selected carbon units must have adequate capacities to handle the expected flow rate and the range of hydrocarbon concentrations and that the system must have adequate safety factors to ensure that hydrocarbons will be removed to meet discharge requirements.

The groundwater treatment system at the City of Oakland Municipal Services Center includes three carbon units connected in series, which are supplied by U.S. Filter with the Model No. ASC-2000. Each unit contains 1,800-lb granular activated carbon (GAC) and is designed for up to 50 gallons per minute (gpm) flow rate. Based on the design flow rate of 12 gpm and the average historical monitored groundwater concentration of petroleum hydrocarbons, each unit can be operated continuously for up to 160 days before breakthrough occurs (see the included Manufacturer's calculation datasheet). The water between the first and the second carbon unit will be monitored monthly. The lead unit will be changed with fresh GAC as soon as breakthrough is detected and then it will be rotated to the last unit position in the three-unit treatment train. The two additional units after the first unit will provide adequate safeguard to ensure that the treated effluent (after the third carbon unit) will meet the discharge requirement.

The activated carbon treatment system is an intrinsically safety system. It is located in a fenced and secure area inside the municipal service center. No chemicals are added to the system and it has no by-pass that could allow accidental discharge of untreated or partially treated water. Power outages will shutdown both extraction and treatment systems and will not result in discharge of untreated or partially treated water. I have reviewed the current Operations and Maintenance Manual and certify that the O&M Manual is adequate. A copy of the O&M Manual's Table of Contents is included with this certification.

Certified by:



Xinggang Tong, PhD, PE, Principal
OTG EnviroEngineering Solutions, Inc.

Date: July 20, 2006

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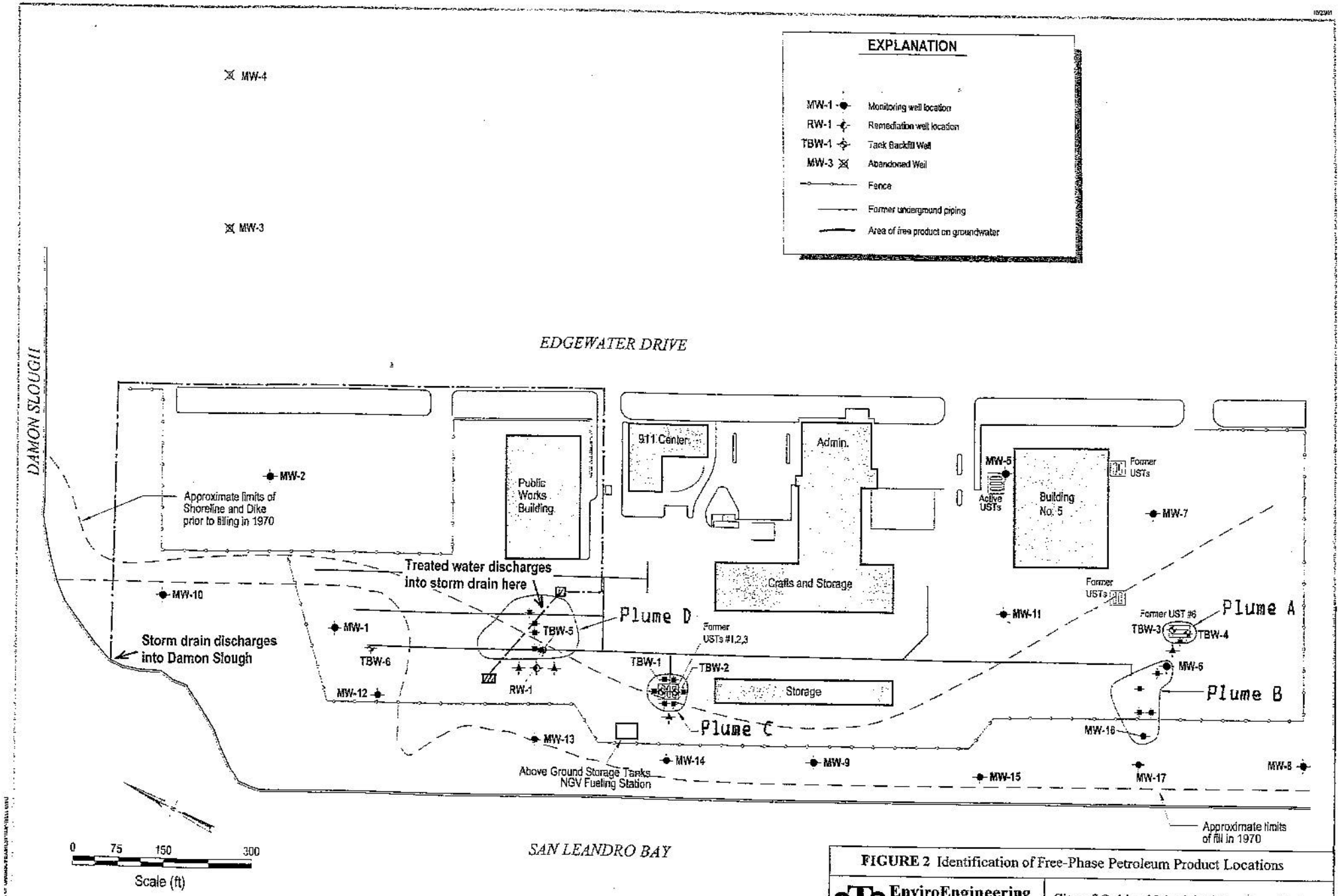

FIGURE 2 Identification of Free-Phase Petroleum Product Locations

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City of Oakland Municipal Services Center
7101 Edgewater Drive, Oakland, CA

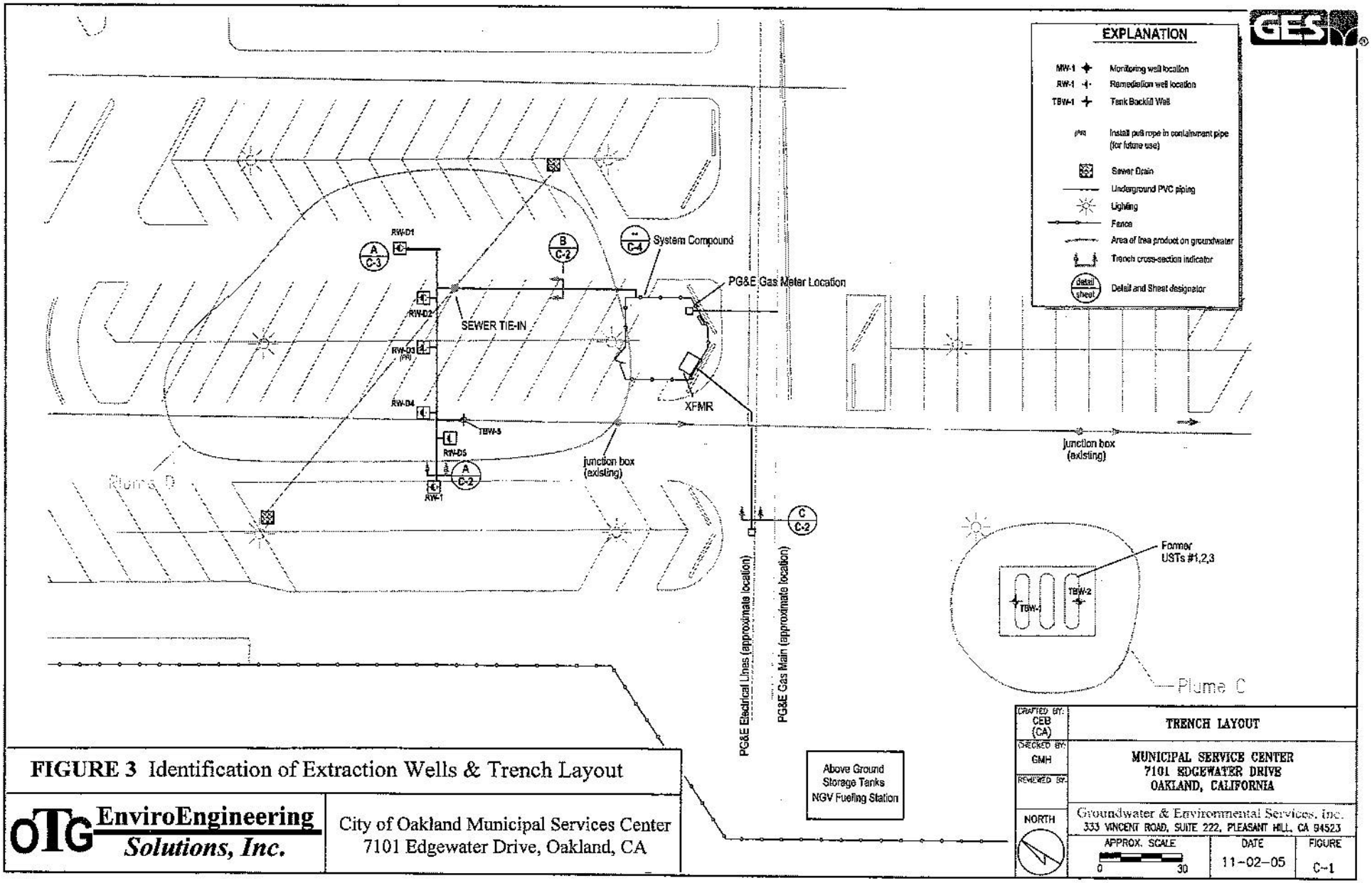

FIGURE 3 Identification of Extraction Wells & Trench Layout

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City of Oakland Municipal Services Center
7101 Edgewater Drive, Oakland, CA

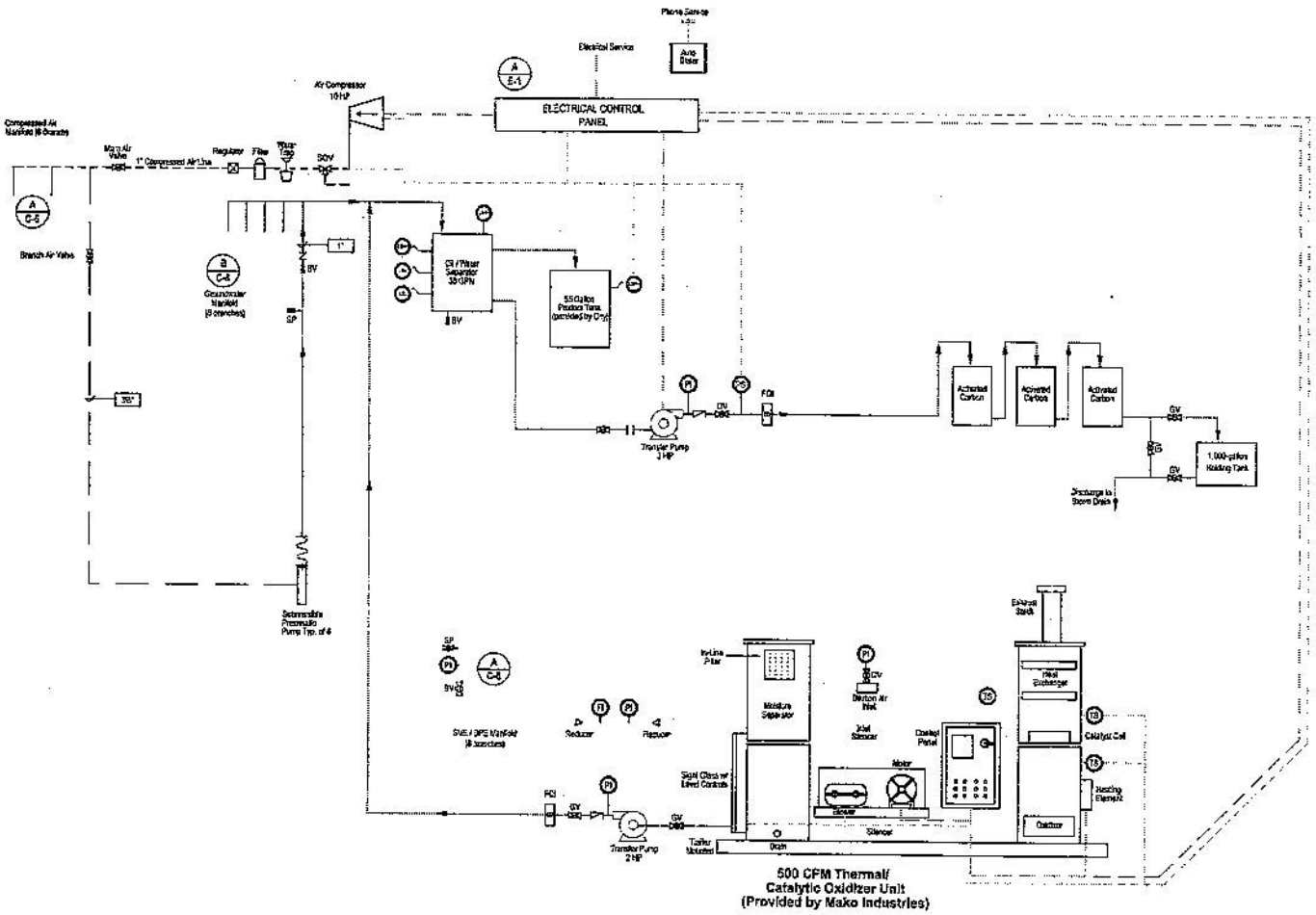

FIGURE 4 Remediation System Process & Instrumentation Diagram

EnviroEngineering Solutions, Inc.	City of Oakland Municipal Services Center 7101 Edgewater Drive, Oakland, CA

DRAFTED BY: CEB (CA)	PROCESS AND INSTRUMENTATION DIAGRAM
CHECKED BY: GMH	MUNICIPAL SERVICE CENTER 7101 EDGEWATER DRIVE OAKLAND, CALIFORNIA
REVIEWED BY: NORTH	Groundwater & Environmental Services, Inc. 333 VINCENT ROAD, SUITE 222, PLEASANT HILL, CA 94523
NOT TO SCALE	DATE: 11-02-05 / FIGURE: M-1

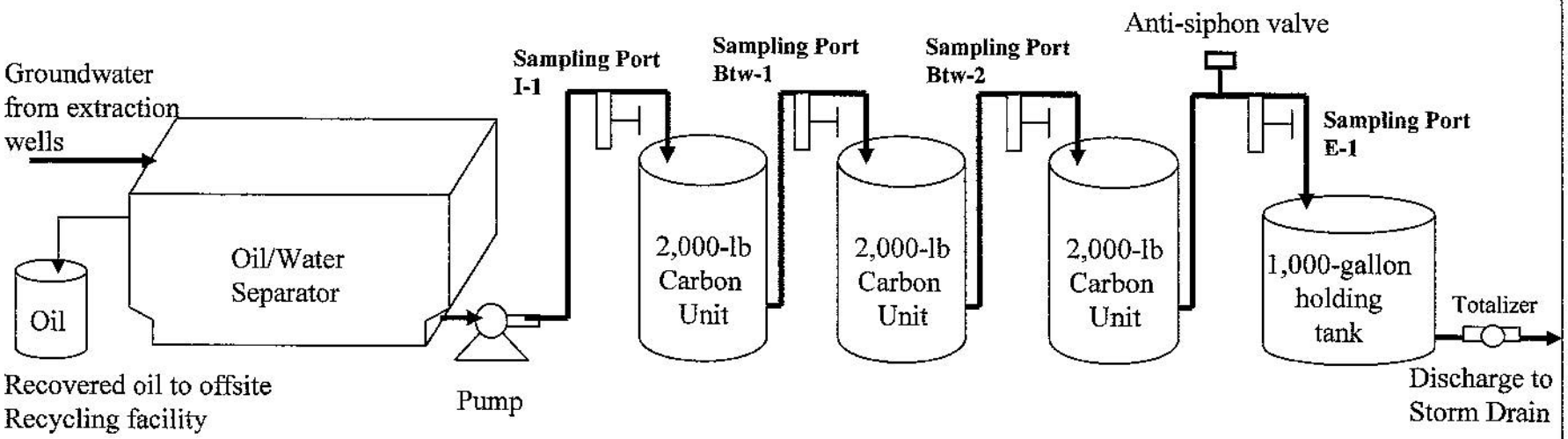

FIGURE 5 Schematic of Groundwater Treatment System and Sampling Locations

June 2006

EnviroEngineering *Solutions, Inc.*

City of Oakland Municipal Services Center
7101 Edgewater Drive, Oakland, CA