

11 May 1993
Project 1736.12

Mr. Kevin Tinsley
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Subject: Stockpiled Soil
Parcel C
Marina Village Development
Alameda, California

Dear Mr. Tinsley:

As you requested during our field meeting on 24 November 1992, Geomatrix Consultants, Inc. (Geomatrix), developed and implemented a work plan addendum to address your concerns regarding surface water runoff from a stockpile of petroleum-containing soil that was relocated to Parcel C (Figure 1) in October, 1992. The work plan addendum, dated 30 November 1992, incorporated elements of our 4 September 1992 Stockpiled Soil Relocation Work Plan that addressed the relocation of the petroleum-containing soil from Parcel H to Parcel C within the Marina Village Development. This letter report describes the work plan, field activities and observations, results of chemical testing, and conclusions and recommendations. The letter was prepared on behalf of Alameda Real Estate Investments, Inc. (AREI).

SCOPE OF WORK

The work plan addendum included the following:

Soil Leachability Analysis - Collect soil samples from the stockpile of petroleum-containing soil and perform a leachate test using leachate that simulates surface water runoff resulting from rainfall to assess the solubility of petroleum hydrocarbons contained in the stockpiled soil.

Catch Basin and Field Inspections - Install a catch basin and a sediment barrier at the lowest corner of the stockpile. Monitor the catch basin for accumulation of sediment. Monitor the stockpile visually for indication of erosion.

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Surface Water Sampling and Analysis - Collect surface water samples from the catch basin after rainfall events and analyze them for total petroleum hydrocarbons as diesel (TPHd).

SOIL LEACHABILITY ANALYSIS

A soil sample was collected from the soil stockpile to evaluate the leaching potential of the stockpiled soil under simulated rainfall conditions. The sample was collected on 25 November 1992 by an AREI representative. The soil sample was extracted for two hours using a simulated rainwater leaching agent consisting of deionized water adjusted to a pH of 5.5 using a carbonate/bicarbonate buffer and HCl at a ratio of 10 parts leaching agent to 1 part soil sample, which is the ratio used in the California Code of Regulations; Title 22, Section 66261.126 Waste Extraction Test (WET) methodology. The leachate was then extracted according to Environmental Protection Agency (EPA) Method 3510 for analysis of extractable hydrocarbons as diesel by GCFID at Quanteq Laboratories (Quanteq) of Pleasant Hill, California, a state-certified analytical laboratory. The solvent extract was treated with silica gel prior to analysis to remove non-petroleum hydrocarbons. Quanteq reported that 0.07 milligrams per liter (mg/l) of extractable hydrocarbons as diesel was detected in the soil leachate.

CATCH BASIN INSTALLATION AND FIELD INSPECTIONS

A catch basin was installed by AREI at the lowest corner of the stockpile as shown on Figure 1; AREI also placed hay bales around the lowest corner of the stockpile to act as a sediment barrier. The perimeter swale constructed around the stockpile allowed adequate capacity to retain runoff generated during the first storms of the 1992-1993 rainy season. The perimeter swale directs surface water runoff into the catch basin before emptying into the adjacent storm drain.

After rainfall events, water accumulated in the catch basin. Water samples were collected from the catch basin after three rainfall events. As you requested during the 24 November 1992 field meeting, we initially sealed off the culvert between the stockpile and the storm drain, until we received analytical results from the first surface water sampling event (described below) that showed no detectable concentrations of petroleum hydrocarbons. The culvert was then opened to allow surface water discharge during future storm events.

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The catch basin was periodically checked by AREI representatives for the accumulation of sediment and for the presence of a petroleum sheen on the surface water. A small amount of sediment was observed in the catch basin during collection of the surface water samples. AREI removed the sediment from the catch basin and replaced it on the soil stockpile. No petroleum sheen was observed on the surface water that accumulated in the catch basin. The soil stockpile was periodically checked by AREI representatives for visible indications of erosion. AREI reported that the swale and stockpile maintained their integrity, and that there was no significant development of gullies or other erosional features.

SURFACE WATER SAMPLING AND ANALYSIS

Surface water samples were collected from the catch basin by AREI personnel on 8 January, 10 February, and 17 March 1993 following rainfall events. Samples were collected in laboratory-supplied one-liter amber glass jars and placed in an ice-chilled cooler immediately after collection. The water samples were then conveyed to Quanteq for analysis.

Quanteq analyzed the three water samples according to EPA Method 3510 GCFID for extractable hydrocarbons as diesel. The analytical results are presented in Table 1.

SUMMARY AND RECOMMENDATIONS

Results of the work described above include the following:

- The leaching tests performed on samples of the petroleum-containing soil indicate low solubility characteristics of the petroleum under site-specific conditions.
- Sampling and analysis of surface water collected from the catch basin indicates non-detectable to very low concentrations of petroleum hydrocarbons in the surface water runoff.
- No petroleum sheen was observed on surface water that accumulated in the catch basin.
- No evidence of erosion was observed during the periodic inspections of the stockpiled soil.

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Alameda County Department of Environmental Health
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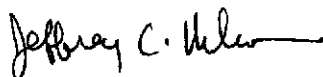
These results suggest that the petroleum in the soil is not significantly discharging to the nearby Alameda Inner Harbor via erosion or surface water runoff. Additionally, discharge of surface water from the soil stockpile meets criteria set forth in the San Francisco Bay Regional Water Quality Control Plan (Basin Plan, 1986); the Basin Plan prohibits the discharge of floating oil or oil deposits, or the discharge of soil containing residual oil, to surface waters.

Based on the aforementioned observations and results, we recommend continued visual monitoring of the stockpiled soil and surface water for indications of erosion or petroleum sheen.

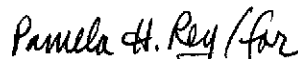
Please call either of the undersigned if you have questions or comments you would like to discuss.

Sincerely,

GEOMATRIX CONSULTANTS, INC.



Jeffrey C. Nelson
Project Manager



Elizabeth A. Nixon
Senior Project Engineer

JCN/EAN/rlr
1736PARC.LTR

cc: Rahn Verhaeghe, AREI
Richard Hiatt, RWQCB

Attachments: Table
Figure
Laboratory Reports

TABLE 1

ANALYTICAL RESULTS FOR CATCH BASIN SURFACE WATER SAMPLES¹

Parcel C
Marina Village
Alameda, California

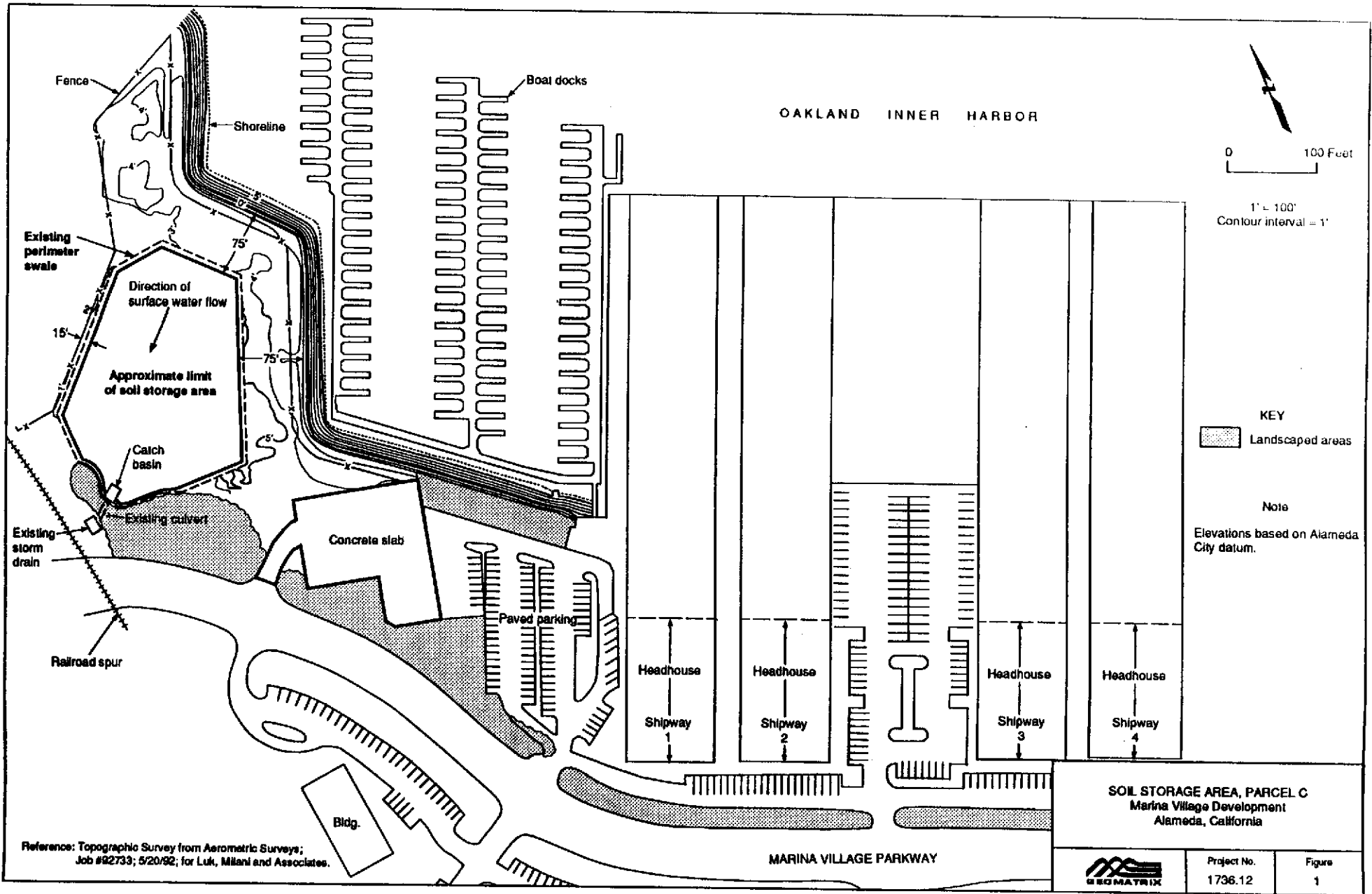
Results in milligrams per liter (mg/l)

Sample Number	Sample Date	Extractable Hydrocarbons as Diesel ²	Reporting Limit
Parcel C CB-W	1/8/93	ND	0.05
Water 1	1/27/93	0.3	0.05
Parcel C	3/17/93	0.1	0.05

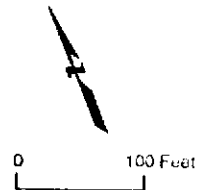
¹ Samples analyzed by Quanteq Laboratories of Pleasant Hill, California.

² Analyzed according to EPA Method 3510 GCFID.

ND = Not detected.



OAKLAND INNER HARBOR



1" = 100'
Contour interval = 1'

KEY
 Landscaped areas

Note
 Elevations based on Alameda City datum.

SOIL STORAGE AREA, PARCEL C
 Marina Village Development
 Alameda, California



Project No.
1736.12

Figure
1

Reference: Topographic Survey from Aerometric Surveys;
 Job #82733; 5/20/92; for Luk, Milani and Associates.

MARINA VILLAGE PARKWAY

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

GEOMATRIX CONSULTANTS
100 PINE STREET
10TH FLOOR
SAN FRANCISCO, CA 94111
ATTN: ELIZABETH NIXON

REPORT DATE: 12/17/92
DATE SAMPLED: 11/25/92
DATE RECEIVED: 11/30/92
QUANTEQ JOB NO: 9211236

CLIENT PROJ. ID: 1736.10
PROJ. NAME: MARINA VILLAGE PARCEL C

PROJECT SUMMARY:

On November 30, 1992, this laboratory received one (1) soil sample. Sample was received at the proper temperature and in appropriate container.

Per client request, the soil sample was extracted for 2 hours using a simulated rainwater leaching agent consisting of deionized water adjusted to a pH of 5.5 using a carbonate/bicarbonate buffer and HCL at a ratio of 10 parts leaching agent to 1 part soil sample. All rocks were removed and the soil sample was homogenized prior to extraction. The leachate was then extracted by EPA Method 3510 for analysis of Extractable Hydrocarbons as Diesel by GCFID. The solvent extract was treated with silica gel prior to analysis. Results are reported in mg Diesel per liter extract.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.



Larry Klein
Laboratory Manager

Results FAXed 12/10/92

GEOMATRIX CONSULTANTS

DATE SAMPLED: 11/25/92
 DATE RECEIVED: 11/30/92
 CLIENT PROJ. ID: 1736.10

REPORT DATE: 12/17/92
 QUANTEQ JOB NO: 9211236

Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
PARCEL C SOIL	01B	0.07
Reporting Limit		0.05
Method: 3510 GCFID		
Instrument: C		
Date Extracted: 12/09/92		
Date Analyzed: 12/10-11/92		
ND = Not Detected		

The soil sample was extracted for 2 hours using a simulated rainwater leaching agent consisting of deionized water adjusted to a pH of 5.5 using a carbonate/bicarbonate buffer and HCL at a ratio of 10 parts leaching agent to 1 part soil sample. All rocks were removed and the soil sample was homogenized prior to extraction. The leachate was then extracted by EPA Method 3510 for analysis of Extractable Hydrocarbons as Diesel by GCFID. The solvent extract was treated with silica gel prior to analysis. Results are reported in mg Diesel per liter extract.

QUALITY CONTROL DATA

DATE EXTRACTED: 12/14/92
 DATE ANALYZED: 12/15/92
 CLIENT PROJ. ID: 1736.10

QUANTEQ JOB NO: 9211236
 SAMPLE SPIKED: D.I. WATER
 INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
 TPH EXTRACTABLE WATER
 METHOD 3520 GCFID
 (WATER MATRIX; EXTRACTION METHOD)

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	2.01	ND	1.64	1.65	81.8	0.6

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Diesel	(49.3-101.4)	29

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

FAX 523-1638
 Reporting Information:
 1. Client: Geomatrix
 Address: _____
 Contact: Elizabeth Nixon
 Alt. Contact: _____

Address Invoice To:
 3. _____

Quanteq
 An Ecology Company

R-415B

Page _____ of _____

**REQUEST FOR ANALYSIS/
 CHAIN OF CUSTODY**

Lab Job Number: 9211234
 Lab Destination: _____
 Date Samples Shipped: _____
 Lab Contact: _____
 Date Verbals Required: Standard
 Date Report Required: _____
 Client Contact PH. No.: _____
 Client Contact Fax No.: _____

Address Report To:
 2. _____

Send Invoice To:
 4. _____

Send Report To: 1 or 2 (Circle one)
 Client project/P.O. #: 1736.10
 Sample Team Member ('s) AKEI

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type *	Pres.	No. of Cont.	Type of Cont.	ANALYSIS										Comments/Inst., Hazards, etc.						
								1	2	3	4	5	6	7	8	9	10		11	12				
<u>01A</u>	<u>Parcel C Soil</u>		<u>11-25-92</u>	<u>98</u>																			<u>Please homogenize sample; remove rocks from sample.</u>	

*Simulated
 "Rainwater"
 Leachability*
*Analyse
 for Pesticides*

See Attached Instructions on Comments/Inst., Hazards, etc.

Relinquished by: (Signature) <u>[Signature]</u>	DATE <u>11-30-92</u> TIME <u>10:20</u>	Received by: (Signature) <u>[Signature]</u>	DATE <u>11-30-92</u> TIME <u>10:30</u>
Relinquished by: (Signature) _____	DATE _____ TIME _____	Received by: (Signature) <u>Gina Gillispie</u>	DATE <u>11-30-92</u> TIME _____
Relinquished by: (Signature) _____	DATE _____ TIME _____	Received by: (Signature) _____	DATE _____ TIME _____
Method of Shipment _____		Lab Comments _____	

* Sample type (Specify): 1) 25 mm 0.45 Um MCEF 2) 25 mm 0.8 Um MCEF 3) 25 mm 0.4 Um polycarb. filter 4) 37 mm 0.8 Um 5) PVC filter diam. _____ pore size _____
 6) Charcoal tube 7) Silica gel tube 8) Waste Water 9) Soil 10) Bulk 11) Other _____
 COPIES: WHITE - JOB FILE - YELLOW - PROJECT FILE - PINK - CLIENT

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

GEOMATRIX CONSULTANTS
100 PINE STREET
10TH FLOOR
SAN FRANCISCO, CA 94111
ATTN: ELIZABETH NIXON

CLIENT PROJ. ID: 1736.12

REPORT DATE: 01/20/93
DATE SAMPLED: 01/08/93
DATE RECEIVED: 01/11/93
QUANTEQ JOB NO: 9301059

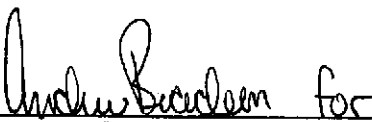
PROJECT SUMMARY:

On January 11, 1993, this laboratory received one (1) water sample.

Client requested sample be analyzed for Total Petroleum Hydrocarbons as Diesel by EPA Method 3510 GCFID. Sample identification, results and dates analyzed are summarized on the following pages. The sample was centrifuged prior to extraction so that no particulate matter was analyzed.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Manager

Results FAXed 01/18/93

GEOMATRIX CONSULTANTS

DATE SAMPLED: 01/08/93
DATE RECEIVED: 01/11/93
CLIENT PROJ. ID: 1736.12

REPORT DATE: 01/20/93
QUANTEQ JOB NO: 9301059

Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
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PARCEL C CB-W	01A	ND
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Reporting Limit		0.05
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Method: 3510 GCFID

Instrument: C

Date Extracted: 01/14/93

Date Analyzed: 01/15/93

ND = Not Detected

QUALITY CONTROL DATA

DATE EXTRACTED: 01/11/93
DATE ANALYZED: 01/11/93
CLIENT PROJ. ID: 1736.12

QUANTEQ JOB NO: 9301059
SAMPLE SPIKED: D.I. WATER
INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
TPH EXTRACTABLE WATER
METHOD 3510 GCFID
(WATER MATRIX; EXTRACTION METHOD)

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	1.74	ND	1.56	1.56	89.7	0.0

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Diesel	(49.3-101.4)	29

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

GEOMATRIX CONSULTANTS
100 PINE STREET
10TH FLOOR
SAN FRANCISCO, CA 94111
ATTN: ELIZABETH NIXON

REPORT DATE: 02/10/93

DATE RECEIVED: 01/27/93

CLIENT PROJ. ID: 1736.10
PROJECT NAME: MARINA VILLAGE

QUANTEQ JOB NO: 9301194

PROJECT SUMMARY:

On January 27, 1993, this laboratory received one (1) water sample.

Client requested sample be analyzed for Total Petroleum Hydrocarbons as Diesel by EPA Method 3520 GCFID. Sample identification, results and dates analyzed are summarized on the following pages.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.



Larry Klein
Laboratory Manager

Results FAXed 02/09/93

GEOMATRIX CONSULTANTS

DATE RECEIVED: 01/27/93

REPORT DATE: 02/10/93

CLIENT PROJ. ID: 1736.10

QUANTEQ JOB NO: 9301194

Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
WATER 1	01A	0.3
Reporting Limit		0.05
Method: 3520 GCFID		
Instrument: C		
Date Extracted: 02/04/93		
Date Analyzed: 02/04-09/93		

QUALITY CONTROL DATA

DATE EXTRACTED: 02/02/93
 DATE ANALYZED: 02/04/93
 CLIENT PROJ. ID: 1736.10

QUANTEQ JOB NO: 9301194
 SAMPLE SPIKED: D.I. WATER
 INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
 TPH EXTRACTABLE WATER
 METHOD 3520 GCFID
 (WATER MATRIX; EXTRACTION METHOD)

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	1.74	ND	1.08	1.13	63.5	4.5

CURRENT QC LIMITS (Revised 05/14/92)

<u>Analyte</u>	<u>Percent Recovery</u>	<u>RPD</u>
Diesel	(49.3-101.4)	29

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

Quanteq Laboratories

An Ecologies Company

Certificate of Analysis

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DOHS CERTIFICATION NO. E772

AIHA ACCREDITATION NO. 332

GEOMATRIX CONSULTANTS
100 PINE STREET
10TH FLOOR
SAN FRANCISCO, CA 94111
ATTN: ELIZABETH NIXON

REPORT DATE: 03/31/93
DATE SAMPLED: 03/17/93
DATE RECEIVED: 03/19/93
QUANTEQ JOB NO: 9303167

CLIENT PROJ. ID: 1736.12

PROJECT SUMMARY:

On March 19, 1993, this laboratory received one (1) water sample.

Client requested sample be analyzed for Total Petroleum Hydrocarbons as Diesel by EPA Method 3510 GCFID. Sample identification, result and date analyzed are summarized on the following pages. Sample extract was treated with silica gel prior to analysis.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.


Larry Klein
Laboratory Manager

Results FAXed 03/27/93

GEOMATRIX CONSULTANTS

DATE SAMPLED: 03/17/93
 DATE RECEIVED: 03/19/93
 CLIENT PROJ. ID: 1736.12

REPORT DATE: 03/31/93
 QUANTEQ JOB NO: 9303167

Client Sample Id.	Quanteq Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
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PARCEL C	01A	0.1
Reporting Limit		0.05

Method: 3510 GCFID

Instrument: C

Date Extracted: 03/22/93

Date Analyzed: 03/24/93

ND = Not Detected

Note: Sample extract was treated with
 silica gel prior to analysis.

QUALITY CONTROL DATA

DATE EXTRACTED: 03/19/93
 DATE ANALYZED: 03/19/93
 CLIENT PROJ. ID: 1736.12

QUANTEQ JOB NO: 9303167
 SAMPLE SPIKED: D.I. WATER
 INSTRUMENT: C

MATRIX SPIKE RECOVERY SUMMARY
 TPH EXTRACTABLE WATER
 EPA METHOD 3510 GCFID

ANALYTE	Spike Conc. (mg/L)	Sample Result (mg/L)	MS Result (mg/L)	MSD Result (mg/L)	Average Percent Recovery	RPD
Diesel	2.00	ND	2.01	1.87	97.0	7.2

CURRENT QC LIMITS (Revised 05/14/92)

Analyte	Percent Recovery	RPD
Diesel	(49.3-101.4)	29

MS = Matrix Spike
 MSD = Matrix Spike Duplicate
 RPD = Relative Percent Difference
 ND = Not Detected

Reporting Information:

1. Client: Geomatrix
 Address: _____
 Contact: Elizabeth Nixon
 Alt. Contact: _____

Address Invoice To:

3. _____

Quanteq
 An Ecologics Company

Page _____ of _____

REQUEST FOR ANALYSIS/CHAIN OF CUSTODY

Lab Job Number: _____
 Lab Destination: _____
 Date Samples Shipped: _____
 Lab Contact: _____
 Date Results Required: Standard TAT
 Date Report Required: _____
 Client Contact PH. No.: _____
 Client Contact Fax No.: _____

~~9303167~~

Address Report To:

2. _____

Send Invoice To:

4. _____

Send Report To: 1 or 2 (Circle one)

Client project/P.O. #: 1736.12

Sample Team Member ('s) _____

Lab Number	Client Sample Identification	Air Volume	Date/Time Collected	Sample Type	Pres.	No. of Cont.	Type of Cont.	ANALYSIS										Comments/Inst., Hazards, etc.							
D1AB	Parcel C	—	3-17-93	7	HCl	2	Amber	X																Silica gel cleanup	

Relinquished by: (Signature) <u>John D. ...</u>	DATE: <u>3-19-93</u>	TIME: <u>10:40</u>	Received by: (Signature) <u>[Signature]</u>	DATE: <u>3-19-93</u>	TIME: <u>10:40</u>
Relinquished by: (Signature) <u>[Signature]</u>	DATE: <u>3-19-93</u>	TIME: <u>11:10</u>	Received by: (Signature) <u>[Signature]</u>	DATE: <u>3-19-93</u>	TIME: <u>11:10</u>
Relinquished by: (Signature) _____	DATE: _____	TIME: _____	Received by: (Signature) _____	DATE: _____	TIME: _____
Method of Shipment _____			Lab Comments _____		

* Sample type (Specify): 1) 37 mm 0.8 Um MCEF 2) 25 mm 0.8 Um MCEF 3) 25 mm 0.4 Um polycarb. filter 4) PVC filter, diam. _____ pore size _____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample 10) Other _____ (11) Other _____