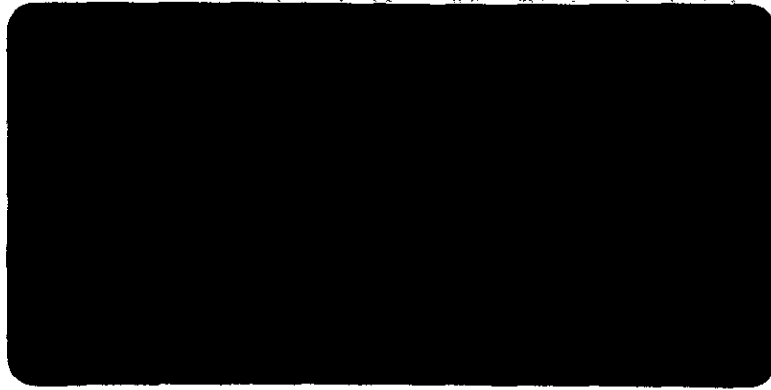


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TERRATECH, INC.

QUARTERLY GROUND WATER SAMPLING AND ANALYSIS
APRIL 1992
CLARK'S HOME AND GARDEN
23040 CLAWITER ROAD
HAYWARD, CALIFORNIA
PROJECT 4983

for

Mr. Chester Clark
521 Triller Lane
Grants Pass, Oregon 97527

by

TERRATECH, INC.
1365 Vander Way
San Jose, California 95112

May 6, 1992



SECOND QUARTERLY GROUND WATER MONITORING REPORT
APRIL 1992
CLARK'S HOME & GARDEN
23040 CLAWITER ROAD
HAYWARD, CALIFORNIA

PROJECT 4983

INTRODUCTION

This report describes the work performed for and the findings from Terratech's recent quarterly testing of the shallow ground water at Clark's Home & Garden Center, 23040 Clawiter Road in Hayward (see Figures 1 and 2). The work is being performed according to requirements of the Alameda County Health Agency (ACHA) for follow-up to a fuel leak discovered when two underground storage tanks were removed from the site in 1988.

Background information on this project is presented in Terratech's Project 4983 reports, "Initial Investigation of Ground Water Contamination, . . .," dated September 5, 1991; "Follow-up Ground Water Testing, . . .," dated November 12, 1991; and "Quarterly Ground Water Sampling and Analysis, . . .," dated February 26, 1992.

WORK PERFORMED

On April 8, 1992 a member of Terratech's environmental department performed the quarterly sampling of on-site monitoring well MW-1. The depth to standing water in the well was first measured using an electronic probe. The well was then purged using a pre-cleaned Teflon bailer. During purging, temperature, pH and specific conductance measurements were recorded until stable (< 10% variation) readings were obtained. Approximately four well-volumes of water were removed from MW-1 prior to collecting a sample. The sampling technician logged field notes on a Well Sampling Data Sheet (see attached copy). Purged water was placed into a labeled drum and left on site.

Ground water from MW-1 was carefully transferred from the bailer into a set of three 40-ml volatile organic analysis (VOA) vials, and a pair of 1-liter amber jars supplied by the testing laboratory. The VOA vials, which contained a small amount of hydrochloric acid preservative, were filled until a positive meniscus formed then sealed with a Teflon septum screw cap. The containers were inverted and tapped to confirm the absence of headspace or bubbles, then immediately labeled and iced. The amber jars were filled, capped labeled and iced.

The sample containers were kept iced or refrigerated from the time of collection until the time of analysis. Sample collection, handling and analytical requests were documented on a chain-of-custody record.



May 6, 1992

Project 4983

The ground water sample was transferred to and analyzed by NET Pacific, a State-certified laboratory in Santa Rosa, for total petroleum hydrocarbons (TPH) as diesel using EPA Method 3510 extraction and GC-FID detection; TPH as gasoline using EPA Method 5030 with GC-FID detection; and the specific fuel compounds - benzene, toluene, ethylbenzene and xylenes (BTEX) using a modified EPA Method 8020.

FINDINGS

The on-site ground water level rose approximately 1.66 feet during the period between the January 7, 1992 and April 4, 1992 quarterly sampling events. Table I presents a summary of ground water level measurements in MW-1 to-date. Based on previously reviewed regulatory information on surrounding fuel leak sites, the local ground water gradient direction is expected to be toward the west.

A prominent fuel odor and surface sheen on purged water were noticed by our sampling technician during the April sampling activities.

Recent laboratory analyses of the MW-1 ground water sample detected 8,100 parts per billion (ppb) of TPH as gasoline and 3,500 ppb of TPH as diesel. The diesel finding was reported by the laboratory as due to a combination of lighter hydrocarbons and diesel. Benzene, ethylbenzene and xylenes were also detected at 19 ppb, 350 ppb and 210 ppb, respectively.

Ground water sample analyses results to date are summarized in Table 2. The April 1992 laboratory report and corresponding chain of custody record are appended.

COMMENTS

Our follow-up observations and laboratory analyses confirm that fuel impact persists in the shallow ground water beneath the subject site. The impact appears to be from a mixture of gasoline and diesel, and possibly one or more petroleum fuels. The amount of fuel recently detected appear to be slightly lower than amounts detected in previous sampling events, possibly due to higher recharge dilution as evidenced by the water levels.

In our February 26, 1992 report, we recommended a 3-step approach to investigating fuel contamination in the vicinity on and around the subject project site. These steps are reiterated below:

- Establish common survey datum for chosen neighborhood monitoring wells, splitting the survey cost among pertinent responsible parties (RPs). (The targeted sites are presently in the regulatory jurisdiction of either the Hayward Fire Department or the ACHA.) Plot the well and ground water elevation data on a vicinity map.

- Coordinate a time for common ground water sampling, with each RP paying their own consultant for sampling labor.



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-Obtain analytical services from a laboratory agreed upon by all sampling parties, with each RP paying their own laboratory fees.

We are still waiting on regulatory comment regarding this recommendation. To maintain our established schedule, we will be proceeding with two more quarterly sampling and analytical events, as contracted.

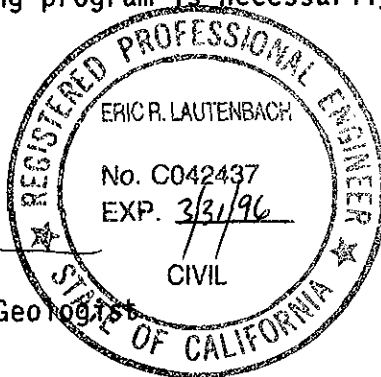
LIMITATIONS

This report and the associated work have been provided in accordance with the general principles and practices currently employed in the environmental consulting profession. This is in lieu of all warranties, express or implied. Our sampling and testing program is necessarily limited.

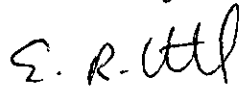
Report Prepared by:

TERRATECH, INC.


Shiela M. Chrisley
Project Environmental Geologist



Reviewed by:


Eric R. Lautenbach
CE 42437

Attachments (Tables 1 and 2, Vicinity Map, Site Plan, Chain-of-Custody Record and Laboratory Report)

cc: ✓ Ms. Pamela Evans - Alameda County Health Care Agency
Mr. Eddy So - Regional Water Quality Control Board
Mr. Hugh Murphy - Hayward Fire Department
Mr. Butch Voss - L.H. Voss Materials, Inc.
Mr. Bob Price



TABLE 1	
SUMMARY OF GROUND WATER DEPTH MEASUREMENTS	
Clark's Home and Garden Center 23040 Clawiter Road Hayward, California	
Location and Date	Depth to Ground Water (feet)
MW-1	
08/07/91	17.44
09/05/91	17.72
10/15/91	17.92
01/07/92	17.23
04/08/92	15.57



<p style="text-align: center;">TABLE 2</p> <p style="text-align: center;">SUMMARY OF GROUND WATER SAMPLE ANALYSIS RESULTS</p> <p style="text-align: center;">Clark's Home and Garden Center 23040 Clawiter Road Hayward, California</p> <p style="text-align: center;">(Concentrations are in parts per billion (ppb))</p>						
Sample Location and Date	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
MW-1						
08/07/91	7,100	5,900	45	<25	130	520
09/05/91	2,800*	47,000	<50	<50	230	660
10/15/91	13,000	24,000	<50	<50	<50	390
01/07/92	9,000*	23,000**	<50	<50	270	800
04/08/92	3,500*	8,100	19	<5	350	210
Action Level/MCL	--	--	1	100	680	1,750

NOTES:

TPH = Total petroleum hydrocarbons

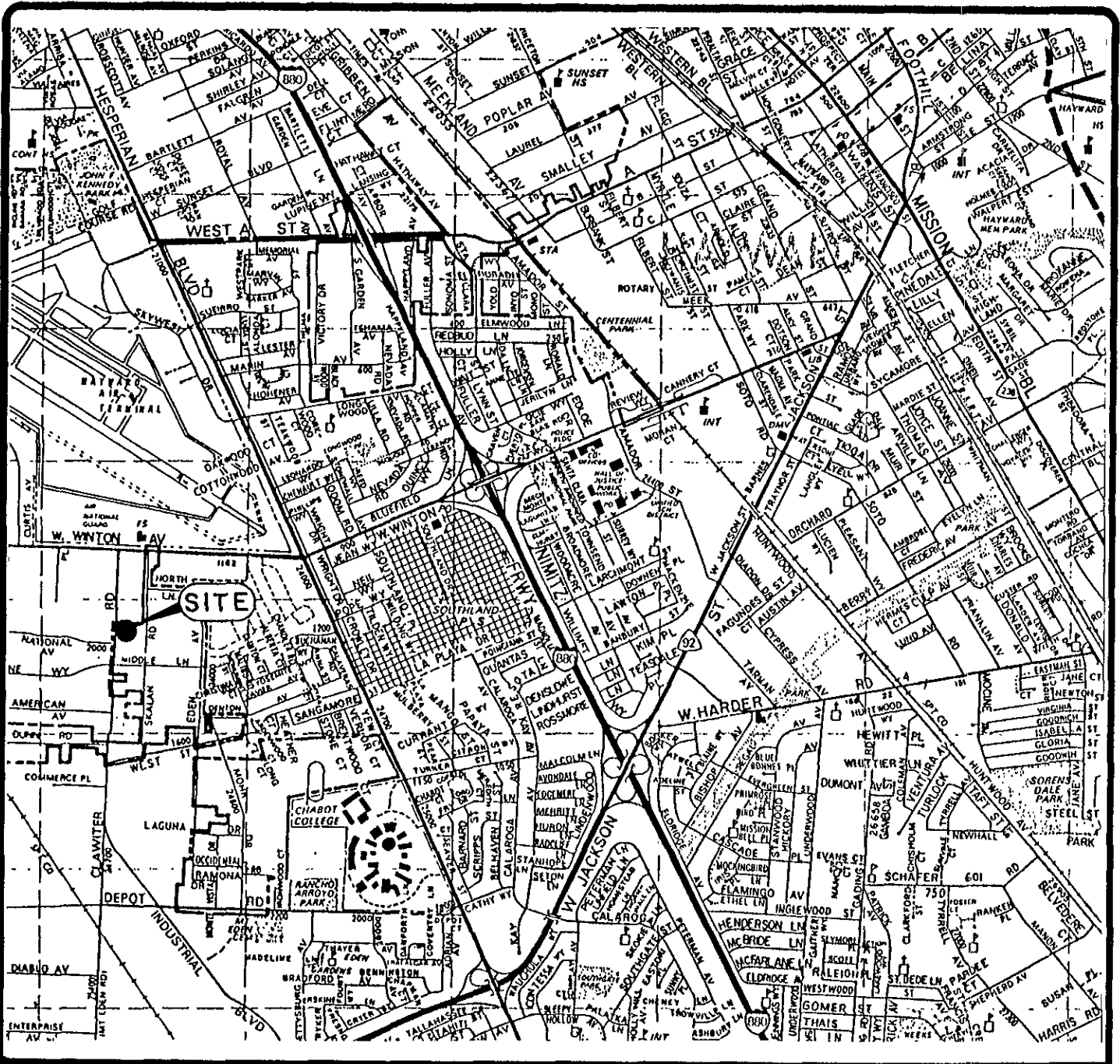
*Laboratory notes that petroleum hydrocarbon detected as diesel is due to both diesel and a petroleum hydrocarbon lighter than diesel.

**Laboratory notes that petroleum hydrocarbon detected as gasoline does not appear to have a typical gasoline pattern.

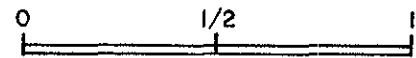
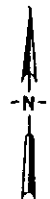
Action Levels and Maximum Contaminant Levels (MCL) are for contaminants in drinking water, as established by the California Department of Health Services.

-- = Action Level or MCL not established for TPH in drinking water. Clean-up guidelines are established on a site-specific basis.





BASE MAP: Thomas Brothers Maps; Alameda County
1990 edition; p. 58.



Scale in miles

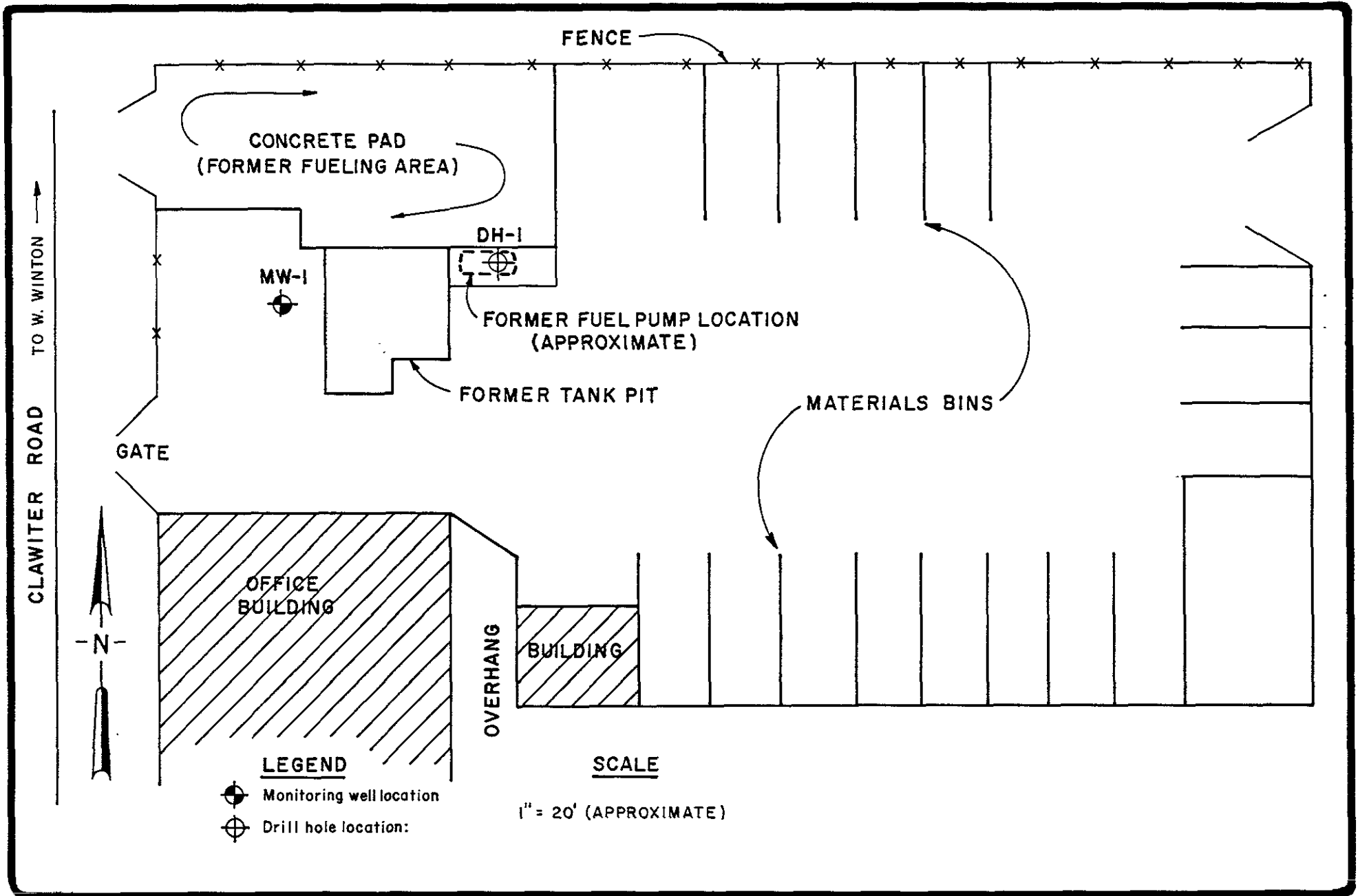


AUG. 1991
TERRATECH

CLARK'S BUILDING MATERIALS
23040 CLAWITER ROAD
HAYWARD, CALIFORNIA

SITE VICINITY MAP

FIGURE
1
PROJECT
4983



AUG. 1991
TERRATECH

CLARK'S BUILDING MATERIALS
23040 CLAWITER ROAD
HAYWARD, CALIFORNIA

SITE PLAN

FIGURE
2
PROJECT
4983

APPENDIX

**Well Sampling Data Sheet,
Laboratory Report, and
Chain-of-Custody Record**

TERRATECH, INC.
WELL SAMPLING DATA SHEET

PROJECT NAME:
PROJECT NUMBER: #4983
WELL DESIGNATION: MW-1

DATE: 4/10/92
SAMPLER: GCS
SAMPLE NUMBER:

CONDITION OF WELL HEAD/VAULT: Good, Some water
TOP OF CASING ELEVATION:
DEPTH TO GROUND WATER (initial): 15.57'
DEPTH TO BOTTOM OF WELL: MEASURED 23.40 EXPECTED 23.5
HEIGHT OF WATER COLUMN (HWC): 0.03

CASING DIAMETER: 2" 3" _____ 4" _____ OTHER _____

CALCULATED WELL VOLUME: HWC x V = ~~2.03~~ 1.4 gal
Volume (V) of 2" well - 0.163 gal/ft
Volume (V) of 4" well - 0.653 gal/ft

ODOR Yes SHEEN Yes FLOATING PRODUCT THICKNESS No

PUMP TYPE: PVC HAND _____ BLADDER _____ PNEUMATIC _____
ELECTRIC _____ BAILER OTHER _____

PUMP DEPTH:

TIME	GALLONS PURGED	NO. OF WELL VOLUMES	pH	TEMPERATURE (°F or °C)	CONDUCTIVITY (mmhos/cm or µmhos/cm)	TURBIDITY (NTU or visual)
11:00	2.8	~2	7.05	65.5	2700	—
11:15	4.2	~3	6.96	65.8	2000	—
11:30	5.6	~4	6.90	66.0	2720	—

RECHARGE RATE (qualitative): good

DEPTH TO WATER (pre-sample collection): 15.57

SAMPLER TYPE: TEFLON BAILER ACRYLIC BAILER _____ ELECTRIC _____
TEFLON BLADDER _____ PNEUMATIC PUMP _____ OTHER _____

SAMPLES COLLECTED: PRESERVED VOA'S 3 UNPRESERVED VOA'S _____
PRESERVED LITERS _____ UNPRESERVED LITERS 2
500 ml PLASTIC BOTTLE WITH PRESERVATIVE FOR METALS:
FILTERED _____ UNFILTERED _____
OTHER _____

COMMENTS:



NATIONAL ENVIRONMENTAL TESTING, INC. ®

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

TERRATECH, INC.

MAY - 4 1992

RECEIVED

Eric Lautenbach
Terratech
1365 Vander Way
San Jose, CA 95112

Date: 04/30/1992
NET Client Acct. No: 70400
NET Pacific Job No: 92.1972
Received: 04/09/1992

Client Reference Information

Project: 4983

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:


Jules Skamarack
Laboratory Manager

Enclosure(s)



Client Acct: 70400
 Client Name: Terratech
 NET Job No: 92.1972

Date: 04/30/1992
 Page: 2

NET Pacific, Inc

Ref: Project: 4983

SAMPLE DESCRIPTION: MW-1
 Date Taken: 04/08/1992
 Time Taken:
 LAB Job No: (-119373)

Parameter	Method	Reporting Limit	Results	Units
TPH (Gas/BTXE,Liquid)			--	
METHOD 5030 (GC,FID)			04-23-92 *	
DATE ANALYZED			10	
DILUTION FACTOR*			8.1	mg/L
as Gasoline	5030	0.05		
METHOD 8020 (GC,Liquid)			--	
DATE ANALYZED			04-23-92	
DILUTION FACTOR*			10	
Benzene	8020	0.5	19	ug/L
Ethylbenzene	8020	0.5	350	ug/L
Toluene	8020	0.5	ND	ug/L
Xylenes (Total)	8020	0.5	210	ug/L
SURROGATE RESULTS			--	
Bromofluorobenzene	5030		139**	% Rec.
METHOD 3510 (GC,FID)				
DILUTION FACTOR*			1	
DATE EXTRACTED			04-15-92	
DATE ANALYZED			04-20-92	
as Diesel	3510	0.05	3.5***	mg/L

* Originally analysed on 04-22-92. Re-run needed for dilutions.

** High surrogate recovery due to matrix interference.

*** Positive result for Petroleum Hydrocarbons as Diesel appears to be due to a combination of lighter hydrocarbons and Diesel.



NET Pacific, Inc

Ref: Project: 4983

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	88	ND	92	94	2.2
Benzene	0.5	ug/L	101	ND	99	99	<1
Toluene	0.5	ug/L	103	ND	93	98	5.2
Diesel	0.05	mg/L	95	ND	90	89	<1
Motor Oil	0.5	mg/L	75	ND	N/A	N/A	N/A

COMMENT: Blank Results were ND on other analytes tested.



NET Pacific, Inc

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference, 100 [(Value 1 - Value 2)/mean value].
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.



TERRATECH

CHAIN OF CUSTODY RECORD

P.O. NO. 2070

5063

TURNAROUND: 10 Day

PROJECT NUMBER: # 4903					Number of Containers	Analysis Required TPH 95 GASOLINE W/MTA TOM AS P/SEA	REMARKS	SAMPLE DEPTH
SAMPLERS (signature): Scott Blaw								
Station Number	Date 1992	Time	Comp.	Grab	Station Location			
MW-1	4/8	AM				3 JAS W/MCL	X	
MW-1	4/8	AM				2 Arches	X	
<p>CUSTODY SEALED 4/8/92</p> <p>© 1900 MMT sealed</p>								
Relinquished by(signature):		Date / Time	Received by (signature):		Relinquished by(signature):		Date / Time	Received by (signature):
Company or Agency:			Company or Agency:		Company or Agency:			Company or Agency:
Relinquished by(signature): Scott Blaw Terratech		Date / Time 4/8/92 12:15pm	Received by (signature): Mike Brown NET		Relinquished by: Mike Brown NET		Date / Time 4/8/92 1900	Received by (signature):
Company or Agency:			Company or Agency:		Company or Agency:			Company or Agency:
Relinquished by(signature): (via net)		Date / Time	Received for Laboratory by: (signature)		Date / Time	Remarks/Shipping Information		
Company or Agency: TERRATECH, INC.			Sample		4/9/92 5800	Send reports to: 1365 VANDER WAY, SAN JOSE 95112		