REPORT
QUARTERLY GROUNDWATER QUALITY MONITORING
FORMER CASTRO VALLEY UNIFIED SCHOOL DISTRICT CORPORATION YARD
21000 WILBEAM AVENUE
CASTRO VALLEY, CALIFORNIA

Job No. 03715-051-043
December 1993

DAMES & MOORE

b:BART/GES4.010

DAMES & MOORE
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December 22, 1993
Job No. 03715-051-043

Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. Scott Seery
Senior Hazardous Materials Specialist

Dear Mr. Seery:

Report
Quarterly Groundwater Quality Monitoring
Former School District Corporation Yard
21000 Wilbeam Avenue
Castro Valley Station

Dames & Moore is pleased to present this report for the Quarterly Groundwater Monitoring being conducted at the former Castro Valley Unified School District Corporation Yard located at 21000 Wilbeam Avenue in Castro Valley, California.

If you have any questions or comments regarding this report please contact us.

Very truly yours,

DAMES & MOORE

Erik Skov
Project Geologist

Dana Brock, P.E., C.E.G.
Senior Geologist

REGISTERED GEOLOGIST
DANA J. BROCK
No. 1241
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b:BART/GES4.010

REPORT
QUARTERLY GROUNDWATER QUALITY MONITORING
FORMER CASTRO VALLEY UNIFIED SCHOOL
DISTRICT CORPORATION YARD
21000 WILBEAM AVENUE
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FORMER CASTRO VALLEY UNIFIED SCHOOL DISTRICT CORPORATION YARD
21000 WILBEAM AVENUE
CASTRO VALLEY, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of the quarterly groundwater monitoring conducted to evaluate the extent of petroleum hydrocarbon contamination associated with the unauthorized release of fuel hydrocarbons from underground storage tanks (USTs) located at the former Castro Valley Unified School District (CVUSD) Corporation Yard (the site) at 21000 Wilbeam Avenue in Castro Valley, California (Figure 1). The site is currently under construction for use as part of the parking lot at the proposed Castro Valley BART station.

1.1 SITE HISTORY

The site is owned by the Bay Area Rapid Transit District (BART) and was leased to the CVUSD for the past 30+ years. The former corporation yard occupies approximately 60,000 square feet and is accessed from Wilbeam Avenue. It was used as the school district's maintenance/service yard. The school district utilized the site for several different purposes including: district vehicle service, maintenance, and storage; landscape equipment service, maintenance, and storage; storage of school supplies and food; and workshops to support maintenance activities at other school district locations. In order to support the service and maintenance activities for district vehicles and landscape equipment, the school district was known to operate two small (approximately 2,000 gallon) USTs at the site.

A Preliminary Site Assessment (PSA) was conducted for the Dublin/ Pleasanton BART extension during December 1990 (PHASE A) and April 1991 (PHASE 2A). The PSA identified two small USTs reported to contain gasoline and diesel fuel and a fuel dispensing island. According to the CVUSD maintenance supervisor, the two USTs were installed around 1957 and used for the storage of gasoline and diesel fuel for school district vehicles and equipment. Fuel was dispensed through two product dispensers located in the center of a concrete slab overlying the USTs.

Prior to removal of these tanks in 1992 (described in Section 1.2) a preliminary environmental investigation was conducted at the site. Part of this investigation included drilling three soil borings in the vicinity of the tanks to evaluate subsurface conditions prior to excavation and removal of the tanks. Both soil and grab groundwater samples were collected from the borings and analyzed. The results of the environmental investigation are presented in our report entitled "Underground Storage Tank Removal, Asbestos Removal and Environmental Investigation, Former School District Corporation Yard, Castro Valley Station" dated August 26, 1992 (Dames & Moore). A copy of this report was submitted to the Alameda County Department of Environmental Health, Hazardous Materials Division (ACDEHHMD).

1.2 TANK REMOVAL

During June 1992, the USTs were located and they were prepared for removal and disposal. During excavation of the soil overlying the tanks, an abandoned product line was discovered near the former regular gasoline dispenser. At the request of Mr. Scott Seery of the ACDEHHMD, the line was excavated. The line terminated near a small patched area in a part of the concrete slab that had not been removed in order to take out the tanks. Upon excavation of the concrete and soil under the patched area another pipe was discovered. The new pipe was oriented vertically and upon closer examination was determined to be the fill pipe for a third tank. The presence of the third tank was not previously documented. The concrete and soil overlying the third, previously unknown tank, was excavated to confirm the presence of the tank. The tank was then prepared for removal subsequent to approval from BART and modification of the closure permit by the ACDEHHMD.

The two tanks known to be on site were removed on June 25, 1992. The tank containing regular gasoline was of single wall steel construction and measured 8.75 feet long by 6.0 feet in diameter, corresponding to a volume of approximately 1,850 gallons. Upon removal from the excavation, the tank was inspected and found to have a large hole (greater than one-half inch diameter) in the end of the tank near the top of the rim.

The diesel tank was constructed of thick gauge single wall steel and measured 12.0 feet long by 6.0 feet in diameter, corresponding to a volume of approximately 2,500 gallons. Upon removal it was found to be slightly corroded and pitted in some areas. No holes were observed.

The third, previously undocumented tank, was removed on June 26, 1992. It was of single wall steel construction and measured 12.0 feet long by 4.0 feet in diameter corresponding to a volume

of approximately 1,150 gallons. Upon removal it was inspected and found to have numerous holes in the bottom, top, and ends.

Prior to removal of the tanks from the excavations, all residual product remaining in the tanks was pumped out. Approximately 13.0 inches of product were pumped from the diesel tank and 19.0 inches of residual product were pumped out of the gasoline tank. Upon removal of the overlying soil from the third tank it was observed that the tank was filled with water and contained no residual product. The water in the third tank was pumped out prior to tank removal. All fluids pumped from the tanks and generated during rinsing of the tanks were collected and disposed of by Erickson, Inc. of Richmond, California at Refinery Services Company in Patterson, California.

After the tanks were removed from the excavations and their conditions documented, confirmatory soil samples were collected from the side walls of the excavations in areas approved by the ACDEHHMD inspector. Confirmatory samples were collected, using the bucket of the excavator, from just above the standing water line in the excavations. Groundwater was encountered in the bottoms of the excavations, at approximately 10.0 feet bgs and rose to approximately 5.5 to 6.0 feet bgs when allowed to equilibrate in the open excavations. In addition confirmatory samples were also collected from beneath the two product dispensers and along the vent tube line for the regular gas tank.

The soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline, TPH as diesel, benzene, toluene, ethylbenzene, and xylenes (BTEX), and total lead by EPA Methods 8015M as gasoline, 8015M as diesel, 8020, and 6010 respectively.

Based on the results of the confirmatory sampling from the third tank excavation and beneath the fuel dispensers, additional excavation was needed in these areas to reduce concentrations of fuel hydrocarbons in soil to acceptable levels in order to obtain approval from the ACDEHHMD to backfill the excavations. Approximately 100 cubic yards of additional soil were removed from these areas. After over-excavation was complete there were no detectable levels of TPH as gasoline or TPH as diesel in the confirmatory samples from the three excavations.

Approximately 250 cubic yards of soil were generated during excavation and removal of the tanks. After proper waste characterization analyses were conducted, the soil was disposed of at the Browning Ferris Industries Class III landfill in Livermore, California.

Prior to backfilling of the excavations, approximately 15,000 gallons of groundwater encountered during removal of the tanks was pumped from the excavations into a holding tank. After appropriate analytical testing was conducted, the Ora Loma Sanitary District approved the request for discharge of the water to their sewer system.

At the time the tanks were removed there were no data available regarding prior tank testing or results of any testing. In addition there was no documentation indicating that any product was ever lost from the tanks, and, therefore, the volume of product discharged is unknown. After the tanks were removed from the excavations and it became apparent that release of fuel hydrocarbons had occurred, an Unauthorized Release Report was filed with the ACDEHHMD.

1.3 SOIL AND GROUNDWATER INVESTIGATION

To evaluate the impact of the release of hydrocarbons from the USTs on the soil and groundwater at the site Dames and Moore conducted a soil and groundwater investigation in the immediate vicinity of the former tanks during February 1993. The technical scope of work for this investigation was presented in our workplan dated January 5, 1993 and approved by ACDEHHMD on January 25, 1993. The scope of work included the following:

- Drilling three soil borings and chemically analyzing two soil samples from above the water table from each boring;
- Completing the three soil borings as monitoring wells and chemically analyzing groundwater samples from each;
- Monitoring water levels in the wells over a two and one-half month period; and
- Preparing a summary report detailing the results of our investigation.

The results of analyses performed on the soil samples from the site indicated that petroleum hydrocarbons were not detected in any the six samples. Total lead was detected in five of the samples at levels considered to be within the range of normal background lead levels for this area.

The results of analyses performed on the groundwater samples indicated that petroleum hydrocarbons were not detected in any of the samples. Total lead was detected in each of the

samples in the concentrations of 0.094 mg/kg, 0.076 mg/kg, and 0.037 mg/kg in MW-1, MW-2, and MW-3 respectively.

The results of the monitoring of water levels at the site indicated that groundwater elevations, groundwater flow direction, and hydraulic gradient fluctuated during the monitoring period.

The August 1993 summary report concluded that the groundwater in the immediate vicinity of the removed USTs did not appear to have been affected by releases from the tanks at the site. Although the lead concentration in groundwater from MW-1 was found to be above the EPA Maximum Contaminant Level (MCL), the lack of petroleum hydrocarbon detections in the same water sample would seem to indicate that the source of the lead in the groundwater was background-level lead in the soil.

2.0 SITE DESCRIPTION

2.1 PHYSICAL CHARACTERISTICS

The project site is a relatively flat area that was formerly the Castro Valley School District Corporation Yard. In preparing the site for the proposed parking lot construction, all structures located on the site including all concrete and asphalt surfaces were demolished and removed. The site is currently being graded for parking lot construction. Prior to demolition, the site contained six buildings, a pump island, and three underground storage tanks.

2.2 HYDROGEOLOGIC SETTING

2.2.1 Physiography

The site is located along Dublin Canyon in Castro Valley. Castro Valley is an intermountain alluvial basin within the East Bay Hills. Dublin Canyon trends east-west across the East Bay Hills. The valley floor has an average elevation of 175 feet above mean sea level (msl), while Dublin Canyon reaches to 740 feet above msl.

2.2.2 Regional Geology

The site is located in the Sunol structural block (Hall, 1958), which is an uplifted fault block. The Sunol block is separated from the Bay block to the west by the Hayward fault zone and from the Livermore block to the east by the Calaveras fault zone. Significant active faults

(surface displacement within the last 11,000 years) in the vicinity of the site are the Calaveras (8.1 miles east), Hayward (1.5 miles west), San Andreas (18.4 miles southwest), and Pleasanton faults (10.1 miles southeast). Northwest trending inactive faults and folds are common within the Sunol block. The closest fault to the site is the inactive Chabot fault, which is buried beneath Castro Valley alluvial deposits.

Castro Valley is underlain by fill, alluvium and bedrock. The fill is thickest close to Interstate 580 (up to 20 feet thick) and consists of variable proportions of clay, silt, sand, gravel, and cobbles with occasional boulders. Alluvium in the site vicinity is believed to be up to 80 feet thick consisting of discontinuous lenses of clayey, medium dense sand, silt, and gravel. Bedrock beneath the alluvium consists of the Cretaceous Niles Canyon Formation, which is a sandy shale, siltstone, and interbedded sandstone and claystone.

2.2.3 Site Stratigraphy

The stratigraphy of the soils underlying the site is known from observations made in soil borings previously drilled at the site and from the walls of the tank excavations. The upper 1.0 to 2.5 feet of soil consists of brownish yellow sand fill with occasional silt and gravel. The interval from approximately 2.5 to 8.0 feet bgs consists of a dark grey to olive grey clay grading with sands and gravels. The lithology from 8.0 to 9.5 feet bgs consists of brown to yellowish brown silty sand/sandy clay.

2.2.4 Hydrogeology

Previous investigations performed at the site during June 1992 included soil borings drilled to depths below the water table. First encountered groundwater was found within the unconsolidated alluvial deposits at depths ranging from 10.0 to 12.0 feet bgs. When allowed to equilibrate in the open boreholes the water level rose within 5.0 feet of the ground surface indicating locally confined groundwater conditions.

3.0 OBJECTIVE AND SCOPE OF SERVICES

The objective of this ongoing quarterly monitoring is to evaluate any potential impact from the release of hydrocarbons from the USTs on groundwater beneath the site in order to fulfill the policy of the San Francisco Bay Regional Water Quality Control Board (RWQCB) for a minimum well sampling program. In order to obtain the objective, the following services were performed:

- Collected and analyzed groundwater samples from the three monitoring wells;
- Collected water level measurements from the wells; and
- Prepared this report detailing the results of the quarterly monitoring.

4.0 GROUNDWATER QUALITY MONITORING PROGRAM

4.1 GROUNDWATER SAMPLING

Groundwater samples were collected from each well on November 30, 1993. Prior to measuring the initial water levels in each well, the locking expanding caps were removed and the wells were allowed to stabilize for 10 to 15 minutes prior to measuring the water levels. Water levels were measured to the nearest 0.01 foot using an electronic water level indicator. The wells were purged by bailing until a minimum of three casing volumes were removed from each well and the physical parameters of pH, conductivity and temperature had stabilized. Once purging was completed, the water level was allowed to recover to at least 80% of its original static level prior to sampling.

Groundwater samples were collected using disposable polyethylene bailers and discharged with bottom emptying devices to minimize the potential for volatilization of contaminants from the sample during transfer to laboratory containers. Samples were transferred directly to laboratory-supplied containers and labeled with the following information: job number, client name, location, date, time, and sampler's initials. Samples were then sealed in plastic bags and placed in a cooler of ice for preservation. The samples were delivered to CKY Incorporated Environmental Services in Pleasanton, California, and were analyzed for: total petroleum hydrocarbons (TPH) as gasoline; TPH as diesel; benzene, toluene, ethylbenzene, and xylenes (BTEX); and total lead by EPA Methods 8015M (gasoline), 8015M (diesel), 8020 and 7421, respectively. In addition a Trip Blank was submitted and analyzed for TPH as gasoline and BTEX. Proper chain-of-Custody documentation was maintained and accompanied the samples to the laboratory.

4.2 WATER LEVEL MONITORING

A clean electronic water level indicator was used to measure the depth to water to the nearest 0.01 foot in the three monitoring wells. The depths to groundwater were subtracted from the well casing elevations to calculate the groundwater elevations in the monitoring wells. Table

1 summarizes these measurements and the corresponding groundwater elevations and those data from previous measurements at the site.

5.0 MONITORING RESULTS

5.1 GROUNDWATER ANALYTICAL RESULTS

Table 2 summarizes the analytical results for the groundwater samples collected from the monitoring wells. TPH as gasoline, TPH as diesel, BTEX, and lead were not detected in the three groundwater samples. In addition, no TPH as gasoline or BTEX were detected in the Trip Blank. Copies of the analytical reports and chain-of-custody documents for the groundwater samples are included in Appendix A.

5.2 GROUNDWATER GRADIENT AND FLOW DIRECTION

As shown on Table 1, the groundwater elevations have fluctuated over the six month period that water levels have been monitored. A groundwater elevation contour map (Figure 2) was generated using the groundwater elevation data collected on November 30, 1993. As shown on Figure 2, the groundwater flow direction in November 1993, was to the southwest at a gradient of approximately 0.011. Groundwater flow during August 1993 was to the ~~northwest~~ NE at an approximate gradient of 0.081. (SEE FIG. 2)

6.0 DISCUSSION OF RESULTS

The results of the analyses performed on the groundwater samples were below the laboratory reporting limits for TPH as gasoline, TPH as diesel, BTEX, and total lead.

Groundwater elevations in the monitoring wells have varied greatly over the nine-month period they have been monitored at the site. These fluctuations likely represent normal seasonal patterns caused by a period of recharge to the groundwater table from the heavy rains of the winter and spring of 1993 which were followed by an extended period of virtually no precipitation during the summer. In addition, hydraulic gradient has also been inconsistent over the same period.

7.0 CONCLUSIONS

Based on the results of soil and groundwater sampling and work conducted during tank removal activities, overexcavation of approximately 100 yd^3 of contaminated soil and dewatering of tank excavation pits prior to backfilling, it does not appear that the groundwater in the immediate vicinity of the former tank locations has been affected by releases of hydrocarbons from the tanks at the site.

8.0 RECOMMENDATIONS

In accordance with the November 1, 1993 letter from the ACDEHHMD, Dames & Moore recommends that the groundwater quality monitoring be conducted for one more quarter, which will complete one full year of monitoring. The RWQCB will typically consider a site for groundwater case closure if it can be demonstrated the groundwater is free of contaminants for four consecutive quarters of groundwater monitoring. If the results of the next round of sampling and analysis indicate that petroleum hydrocarbons are not present in the groundwater in the immediate vicinity of the removed USTs we will request case closure and recommend abandonment of the monitoring wells at the site.

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
QUARTERLY GROUNDWATER QUALITY MONITORING
BART, CASTRO VALLEY UNIFIED SCHOOL DISTRICT YARD
NOVEMBER 1993

Well No.	Date Collected	Depth to Water (feet)	TOC[1] Elevation (feet)	Groundwater Surface Elevation (feet)
MW-1	2/25/93	2.44	164.68	162.24
	3/25/93	2.41		162.27
	4/22/93	2.99		161.69
	5/10/93	3.47		161.21
	8/30/93	4.57	162.48*	157.97
	11/30/93	1.41		161.07
MW-2	2/25/93	2.47	164.64	162.17
	3/25/93	2.86		161.78
	4/22/93	3.52		161.12
	5/10/93	3.50		161.14
	8/30/93	3.22	163.01*	159.79
	11/30/93	2.24		160.77
MW-3	2/25/93	2.54	165.58	163.04
	3/25/93	3.73		161.85
	4/22/93	3.93		161.65
	5/10/93	4.10		161.48
	8/30/93	5.32	162.65*	157.33
	11/30/93	1.52		161.13

Notes: [1] TOC = Top of casing. Elevations referenced to Mean Sea Level.
* Wells cut down and resurveyed to facilitate construction activities at the site.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
QUARTERLY GROUNDWATER QUALITY MONITORING
BART, CASTRO VALLEY UNIFIED SCHOOL DISTRICT YARD
AUGUST 1993

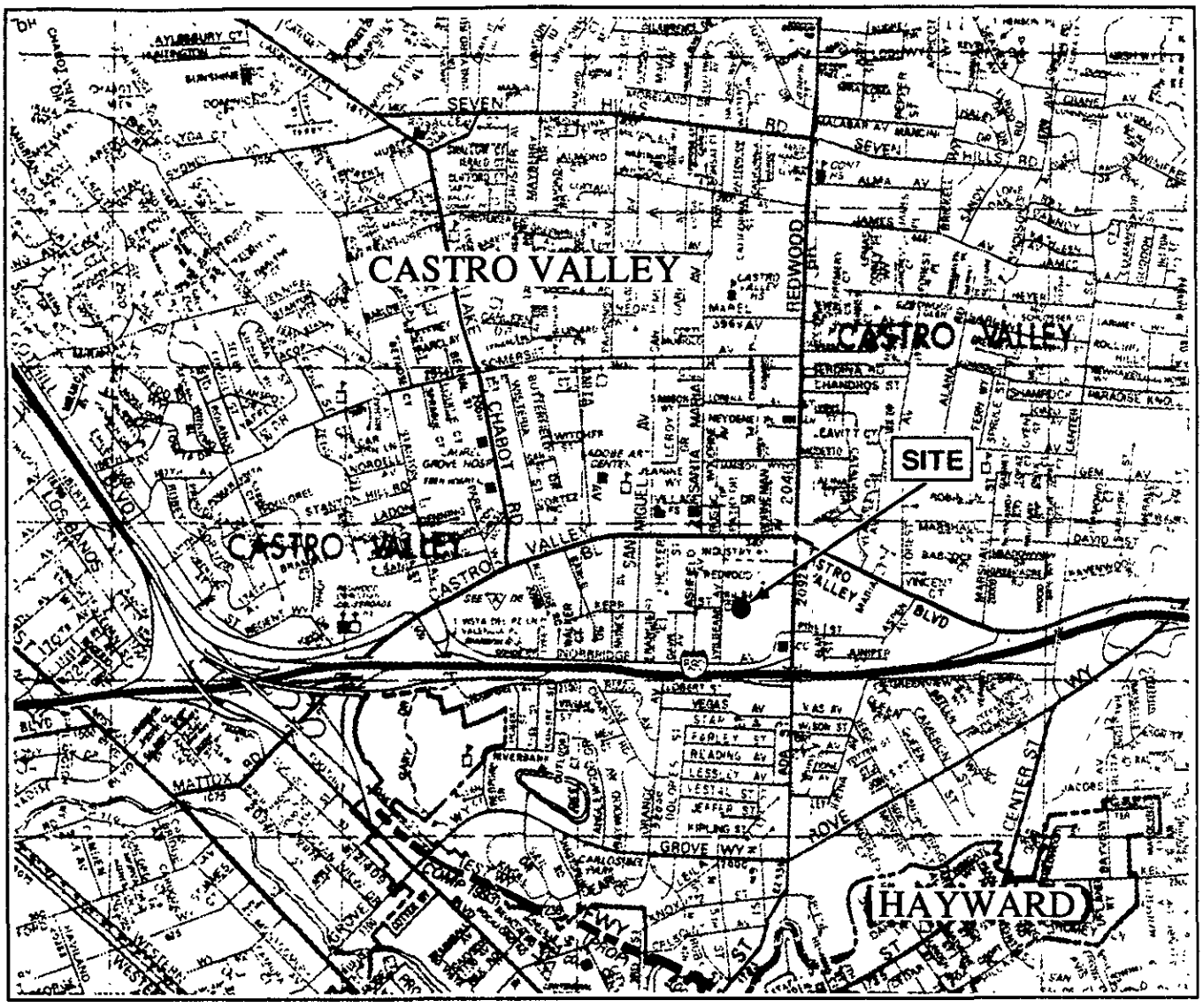
Monitoring Well No.	Analytes						
	TPH as Gasoline	TPH as Diesel	B[2]	T[2]	E[2]	X[2]	Total Lead
MW-1	ND[3]	ND	ND	ND	ND	ND	ND
MW-2	ND	ND	ND	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	ND	ND	ND
Travel Blank	ND	NA[4]	ND	ND	ND	ND	NA
Detection Limit	1.0 mg/L	1.0 mg/L	1.0 µg/L	1.0 µg/L	1.0 µg/L	1.0 µg/L	0.06 Mg/L

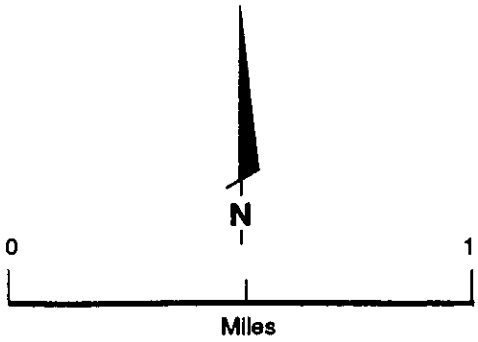
Notes: (1) All analyses performed by CKY Environmental Services of Pleasanton, California. All results reported in mg/L (ppm) unless otherwise stated. See Appendix A for copies of Laboratory Reports.

(2) BTEX = Benzene, Toluene, Ethylbenzene and Xylenes reported in µg/L.

(3) ND = Not Detected

(4) NA = Not Analyzed





LOCATION MAP

BART
Castro Valley Unified School District
Corporation Yard
Castro Valley, California

December 1993
03715-051-043

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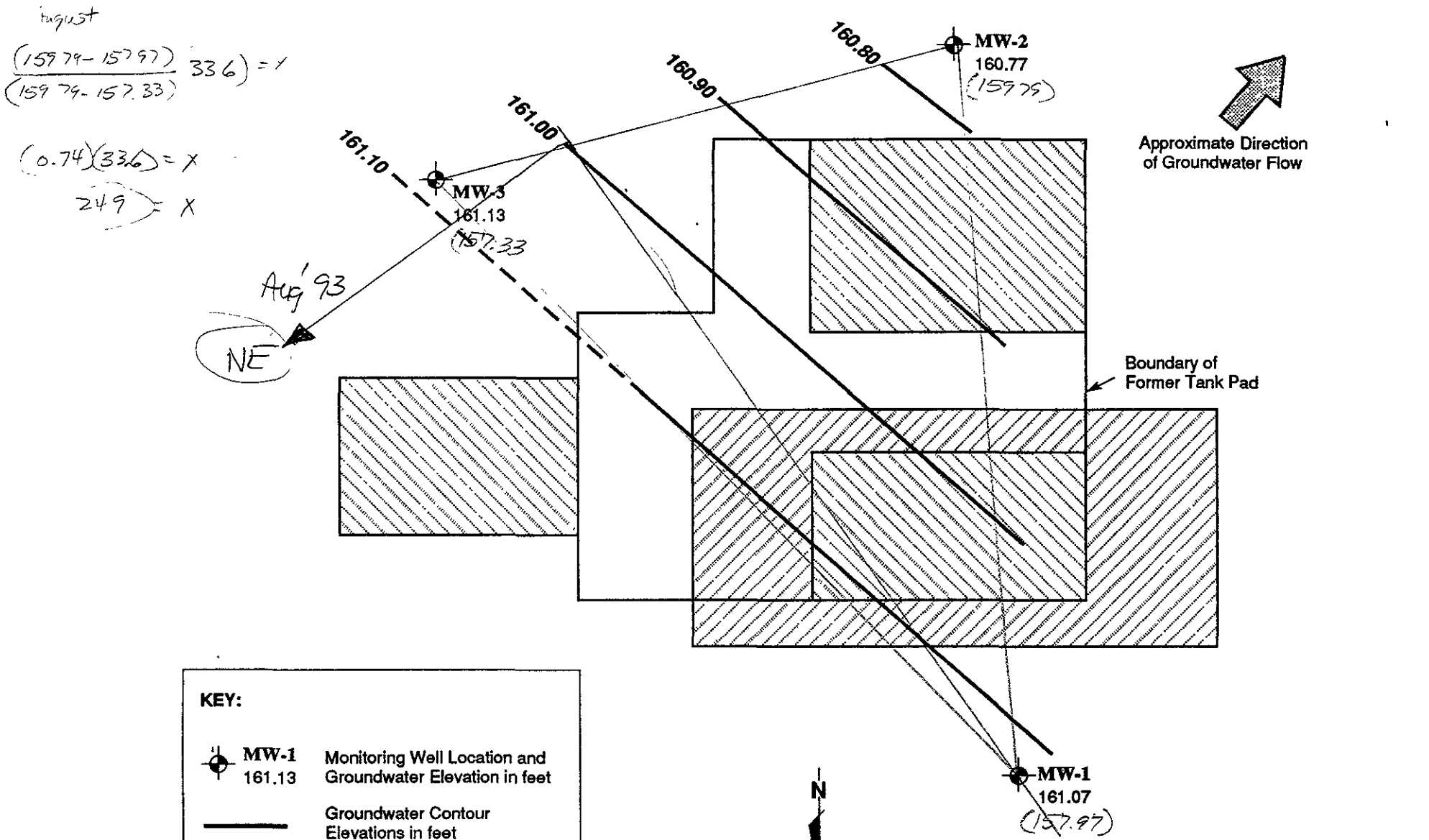
FIGURE 1



Note: Groundwater measurements taken on ~~August~~ November 30, 1993 (August)

GROUNDWATER ELEVATION CONTOUR MAP

BART
Castro Valley Unified School District
Corporation Yard
Castro Valley, California

December 1993
03715-051-043

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FIGURE 2

APPENDIX A

LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

C K Y incorporated
Environmental Services

Date: 12/02/93
N9311-31

Dames & Moore
221 Main St., Suite 600
San Francisco, CA 94105-1917

Attn: Mr. Eric Skov

Subject: Laboratory Report
Project: BART/Castro Valley

Enclosed is the laboratory report for samples received on 11/30/93. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported includes:

Method	No. of Analysis
M8015-D	3 Water
M8015-G	4 Water
EPA 602 (BTEX)	4 Water
Total Pb	3 Water

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely,

Danny Hoang
Laboratory Director

3942 Valley Avenue, Suite F, Pleasanton, CA 94566 • Telephone 510-846-3188 • Fax: 510-846-1236

EPA METHOD 5030/Mod. 8015-GASOLINE
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

CLIENT:	D&M	**DATE REC'D:**	11/30/93
PROJECT:	BART/Castro Valley	**DATE ANALYZED:**	11/30/93
CONTROL NO:	N9311-31	**MATRIX:**	Water

SAMPLE ID:	CONTROL NO:	RESULTS (mg/L)	DET. LIMIT (mg/L)	% SURRO RECOVERY
M. Blank	N931130-blk	ND	1.0	87
MW-1	N931130-01	ND	1.0	85
MW-3	N931130-02	ND	1.0	81
MW-2	N931130-03	ND	1.0	84
Trip Blank	N931130-04	ND	1.0	84

EPA METHOD - 602
BTEX

CLIENT:	D&M	**DATE REC'D:**	11/30/93
PROJECT:	BART/Castro Valley	**DATE ANALYZED:**	11/30/93
CONTROL NO:	N9311-31	**MATRIX:**	Water

		RESULTS (ug/L)				% SURR
SAMPLE ID:	CONTROL NO:	Benz	Tol	Et Benz	Xyls	REC
M. BLANK	N931131-BLK	ND	ND	ND	ND	90
MW-1	N931131-01	ND	ND	ND	ND	89
MW-3	N931131-02	ND	ND	ND	ND	85
MW-2	N931131-03	ND	ND	ND	ND	89
TRIP BLANK	N931131-04	ND	ND	ND	ND	89
DETECTION LIMIT		1.0	1.0	1.0	1.0	

EPA METHOD Mod. 8015-DIESEL
TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

CLIENT:	D&M	**DATE REC'D:**	11/30/93
PROJECT:	BART/Castro Valley	**DATE EXTRACTED:**	11/30/93
CONTROL NO:	N9311-31	**DATE ANALYZED:**	11/30/93
MATRIX:	Water		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/L)	H-C RANGE	%SURROGATE 1-4,DCB	Di-ni-Octo
Prep Blank	N931131-blk	ND	N.A.	119	98
MW-1	N931131-01	ND	N.A.	127	110
MW-3	N931131-02	ND	N.A.	118	101
MW-2	N931131-03	ND	N.A.	119	117

DETECTION LIMIT: 1.0 mg/L

EPA 3050/6010
TTLC LEAD BY ICP

CLIENT:	D&M	**DATE REC'D:**	11/30/93
PROJECT:	BART	**DATE EXTRACTED:**	12/01/93
CONTROL NO:	N9311-31	**DATE ANALYZED:**	12/03/93
MATRIX:	Water		

SAMPLE ID:	CONTROL NO:	RESULTS (mg/L)	DET. LIMIT (mg/L)
PBW	N931131-BLK	ND	0.06
MW-1	N931131-01	ND	0.06
MW-1	N931131-01D	ND	0.06
MW-3	N931131-02	ND	0.06
MW-2	N931131-03	ND	0.06

QUALITY CONTROL DATA

CLIENT: D&M
PROJECT: BART/Castro Valley
CONTROL NO: N9311-31 **DATE ANALYZED:** 11/30/93

METHOD M8015-GASOLINE
MATRIX: Water

SAMPLE ID: N9311-30-01

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.	DUP. % REC.	RPD
GASOLINE	ND	5	94	96	2

QUALITY CONTROL DATA

CLIENT: D&M
PROJECT: BART/Castro Valley **DATE ANALYZED:** 11/30/93
CONTROL NO: N9311-31

METHOD EPA 602 (BTEX)
MATRIX: Water

SAMPLE ID: N9311-30-02

COMPOUND	SAMPLE RESULTS (ug/L)	AMOUNT SPIKED (ug/L)	% REC.	DUP. % REC.	RPD
Benzene	ND	50	96	90	6
Toluene	ND	50	96	90	6
Ethyl Benzene	ND	50	96	90	6
Xylene	ND	100	96	89	8

QUALITY CONTROL DATA

CLIENT: D&M
PROJECT: BART/Castro Valley **DATE EXTRACTED:** 11/30/93
CONTROL NO: N9311-31 **DATE ANALYZED:** 11/30/93

METHOD M8015-DIESEL
MATRIX: Water

SAMPLE ID: N9311-30-01

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.	DUP. % REC.	RPD
DIESEL	ND	100	103	107	4

QUALITY CONTROL DATA

CLIENT: D&M
PROJECT: BART
CONTROL NO: N9311-31-01

DATE EXTRACTED: 12/01/93
DATE ANALYZED: 12/03/93

METHOD EPA 3050/6010
MATRIX: Water

SAMPLE ID: MW-1

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.
Lead	ND	2	98

QUALITY CONTROL DATA

CLIENT: D&M
PROJECT: BART
CONTROL NO: N9311-31
DATE EXTRACTED: 12/01/93
DATE ANALYZED: 12/03/93

METHOD EPA 3050/6010
MATRIX: Water

SAMPLE ID: LCS

COMPOUND	SAMPLE RESULTS (mg/L)	AMOUNT SPIKED (mg/L)	% REC.
Lead	ND	2	97

CHAIN-OF-CUSTODY RECORD

WHITE COPY - Original (Accompanies Samples) YELLOW COPY - Collector PINK COPY - Project Manager

	Boring or Well Number	Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (M)	TITLE 22 METALS	WET Test	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TCLP	pH	ASBESTOS	Total Lead					FIELD NOTES:	Total Number Of Containers	Laboratory Note Number
1	MW-1			1430	water	3 x 40 ml	X				X																		
	"			"		1 x 1L Glass					X																			
	"			"		1 x 1L plastic															X								
2	MW-3			1445		3 x 40 ml	X				X																		
	"			"		1 x 1L Glass					X																			
	"			"		1 x 1L plastic															X								
3	MW-2			1500		3 x 40 ml	X				X																		
	"			"		1 x 1L Glass					X																			
	"			"		1 x 1L plastic															X								
4	Trip Blank			—	✓	3 x 40 ml	X				X																		

AS PER TEL. CONVERSATION W/ MIKE GRAY
10/10/93 @ 11:20 AM

N9311-31 R-5

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	11/30/93 1605	[signature]
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

ANALYTICAL LABORATORY: CKY Analytical

LABORATORY CONTACT: Harry Hudson

D&M CONTACT: Erik Skov PHONE: 415-896-5858

DAMES & MOORE
221 Main Street, Suite 600
San Francisco, California 94105-1917
(415) 896-5858 Fax: (415) 882-9261

LABORATORY NOTES:

Analyze each sample for: TPHG (8015M)
BTEX (8020)
TPHD (8015M)
Total Lead

Total lead samples filtered in field

Analyze Trip Blank for: TPHG / BTEX only

JOB NO.: 03715-051-043 SHEET 1 OF 1

PROJECT BART

LOCATION Castro Valley

COLLECTOR M. Gray DATE OF COLLECTION 11-30-93