

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY



DAVID J. KEARS, Agency Director

August 30, 1996

STID 3943

**ENVIRONMENTAL HEALTH SERVICES**  
ENVIRONMENTAL PROTECTION  
1131 Harbor Bay Parkway, #250  
Alameda, CA 94502-6577  
(510) 567-6700 FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATION

Mr. Michael Whelan  
ARCO Products Company  
P.O. Box 612530  
San Jose, CA 95161

Mr. Robert Bogni  
P.O. Box 14258  
Fremont, CA 94539

RE: ARCO SERVICE STATION #2152, 22141 CENTER STREET, CASTRO  
VALLEY

Dear Messrs. Whelan and Bogni:

This letter confirms the completion of site investigation and remedial action for the five (5) underground storage tanks formerly located at the above-described location. Enclosed is the Case Closure Summary for the referenced site for your records.

Based upon the available information, including current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e). If changes in land use, structural configuration, or site activities are proposed such that more conservative exposure scenarios should be evaluated, the owner must promptly notify this agency.

Please contact Scott Seery at (510) 567-6783 if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung  
Director of Environmental Health Services

enclosure

Messrs. Whelan and Bogni  
RE: 22141 Center St., Castro Valley  
August 30, 1996  
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cc: Gordon Coleman, Acting Chief, Env. Protection Division  
Kevin Graves, RWQCB  
Lori Casias, SWRCB  
Jim Ferdinand, Alameda County Fire Department

- SIGNED  
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ENVIRONMENTAL  
PROTECTION

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CASE CLOSURE SUMMARY  
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: 05/07/96

Agency name: Alameda County-EPD Address: 1131 Harbor Bay Pkwy #250  
City/State/Zip: Alameda, CA 94502 Phone: (510) 567-6700  
Responsible staff person: Scott Seery Title: Sr. Haz. Materials Spec.

II. CASE INFORMATION

Site facility name: ARCO Service Station #2152  
Site facility address: 22141 Center Street, Castro Valley 94546  
RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 3943  
URF filing date: 06/22/88 SWEEPS No: N/A  
04/10/89

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
Michael Whelan ARCO Products Company	P.O. Box 612530 San Jose, CA 95161	(408) 453-1640
Robert Bogni	P.O. Box 14258 Fremont, CA 94539	

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	12,000	gasoline	removed	08/17/89
2	6000	"	"	"
3	6000	"	"	"
4	6000	"	"	"
5	6000	"	"	"

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: UNK; however, manifolded tanks (#2, 3, 4) failed tank tests in 1988 and 1989

Site characterization complete? YES

Date approved by oversight agency:

Monitoring Wells installed? YES Number: 4 (GW monitoring)  
5 (vapor extraction)  
Proper screened interval? YES

Highest GW depth below ground surface: 35.22' Lowest depth: 51.21'

Flow direction: SW (typ.)

Most sensitive current use: commercial

Leaking Underground Fuel Storage Tank Program

III. RELEASE AND SITE CHARACTERIZATION INFORMATION (Continued)

Are drinking water wells affected? NO Aquifer name: NA

Is surface water affected? NO Nearest affected SW name: NA

Off-site beneficial use impacts (addresses/locations): NONE

Report(s) on file? YES Where is report filed? Alameda County  
1131 Harbor Bay Pkwy  
Alameda CA 94502

Treatment and Disposal of Affected Material:

<u>Material</u>	<u>Amount</u> (include units)	<u>Action (Treatment or Disposal w/destination)</u>	<u>Date</u>
Tank (4 x 6000; 12,000 gal.)		<u>Disposal</u> - H&H Ship Service San Francisco, CA	08/21/89
Piping	UNK	as above	
Free Product	NA		
Soil	~1850 yds <sup>3</sup>	<u>Disposal</u> - Redwood LF Novato, CA	UNK
Groundwater Barrels			

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	Before <sup>1</sup>	After <sup>2</sup>	Before	After
TPH (Gas)	37,000	220	64	ND
TPH (Diesel)	NA	NA	NA	NA
Benzene	4.6	0.84	0.65	0.75
Toluene	510	9.0	1.5	0.66
Xylene	2600	36	ND	0.6
Ethylbenzene	380	5.5	2	ND
Heavy metals: Organo Pb	NA	ND	NA	NA

- Note:
- 1) All "before" soil sample results derived from 1989 UST closure sample S-22-VR1, collected @ 22' BG below vapor recovery sump, except for noted benzene concentration. Benzene result is from sample S-13-T5N, also collected during 1989 UST closures, but from a depth of 13' BG below the north end of tank 5.
  - 2) All "after" soil results from borings B-18, advanced February 1991 within the Center Street dispenser area, from sample depths of 8 and 15 1/2' BG.

Leaking Underground Fuel Storage Tank Program

Comments (Depth of Remediation, etc.):

Tanks 2, 3, 4 stored the same grade of product and were manifolded together at the tank complex. During 1988 and 1989, these manifolded tanks failed their UST integrity tests. Tanks 2 and 4 were permanently taken out of service following failure of the February 1989 tests.

Tank closures occurred August 17, 1989. Four 6000 gallon steel and one 12,000 gallon FRP USTs were removed from a shared excavation. All tanks were of single-wall construction. It was reported that none of the steel USTs appeared to have any throughgoing holes - only slight rust was noted.

The FRP tank reportedly ruptured upon removal, requiring, as a consequence, that it be removed in two pieces. GW was not encountered in the UST excavation.

UST pit sampling activities occurred in phases during late August 1989. Backfill material was composed of both sand (surrounding the steel tanks) and pea gravel (surrounding the FRP tank). Native sediments encountered below backfill materials were predominantly silty clay and sandy clay. Initial samples were collected from below both ends of each tank. The excavation was expanded as field indications (e.g., odors, staining, OVM deflections, etc.) dictated the need to do so.

A total of 24 samples was eventually recovered from the UST excavation at depths ranging from 13 to 22' BG, the limit of the excavator. Sample results indicate up to 37,000 ppm TPH-G and elevated aromatic concentrations were left in place at a depth of ~22' BG (sample S-22-VR1) below the former vapor recovery "sump," located in the south-central portion of the final excavation.

During September and early October 1989, the product lines were removed. Soil samples were collected from both the product line trenches and dispenser island areas located adjacent to Grove Way and Center Street. Excavation limits were directed by field observations.

During this process an earlier generation of product piping was discovered abandoned within the Center Street dispenser area and removed. An area measuring approximately 35 x 20 x 3' deep was eventually excavated from the Center Street location in the process of "chasing" contamination. Fourteen (14) samples were ultimately collected from this location; a total of four (4) samples were also collected from the piping trench and below the dispensers adjacent to Grove Way. Sample results indicate up to 190 ppm TPH-G and 0.85 ppm benzene (sample S-3-PL17), and 130 ppm TPH-G and 1.6 ppm benzene (sample S-1.5-PL1) remain in place in the areas of the Center Street and Grove Way dispenser islands, respectively.

Leaking Underground Fuel Storage Tank Program

Approximately 1750 yds<sup>3</sup> of native soil and backfill were removed from the UST excavation during UST closure and associated over-excavation activities which was stockpiled on-site for treatment (aeration). An additional 100 yds<sup>3</sup> was excavated from the former product line trenches and dispenser areas, and was likewise stockpiled for on-site treatment. Between August and early October 1989 stockpiled soil was actively aerated to reduce HC concentrations. It is reported that the entire stockpile was eventually transported to Redwood landfill (Novato, CA) by Conrad Trucking (Escalon, CA) for eventual disposal (date unknown).

Following the August 1989 UST closures, three new 12,000 gallon double-wall FRP USTs were installed in the previous excavation. Four (4) 12" PVC conductor casings were also installed between the new USTs to facilitate future exploratory drilling and well installations.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Undetermined

Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Undetermined

Does corrective action protect public health for current land use? YES  
Site management requirements: NA

Should corrective action be reviewed if land use changes? YES

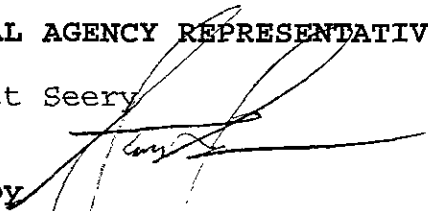
Monitoring wells Decommissioned: NO

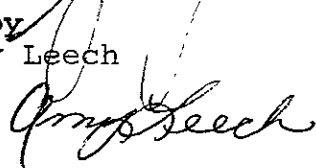
Number Decommissioned: NA                      Number Retained: 4

List enforcement actions taken: Alameda Co. District Attorney's office prepared to file a lawsuit against ARCO for violations at sites located throughout Alameda Co. The suit was eventually settled and a compliance schedule imposed on ARCO for this site, as well as for all others.

List enforcement actions rescinded: none

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Scott Seery                      Title: Sr. Haz Mat Specialist  
Signature:                       Date: 5/20/96

Reviewed by  
Name: Amy Leech                      Title: Haz Mat Specialist  
Signature:                       Date: 5/15/96

Leaking Underground Fuel Storage Tank Program

Name: Tom Peacock Title: Supervising Haz Mat Specialist  
Signature: *Tom Peacock* Date: 6-3-96

VI. RWQCB NOTIFICATION

Date Submitted to RB: 6/3/96 RB Response: *Approved*  
RWQCB Staff Name: Kevin Graves Title: San. Eng. Assoc. Date: 6/14/96

VII. ADDITIONAL COMMENTS, DATA, ETC.

A limited site assessment was performed during April 1989 to evaluate the potential extent of subsurface contamination and facilitate appropriate scoping of the (then) pending tank closures. This work involved the advancement of three (3) soil borings around the UST complex through native materials, outside the perimeter of the tank pit. Boring depths ranged from 30 - 45' BG. Encountered sediments were predominantly comprised of silty clay and clayey gravel. Up to 460 ppm TPH-G and 5.1 ppm benzene were identified in the 5' sample collected from boring B-1. Ground water (GW) was reportedly not encountered to the depths explored.

During June 1990, six (6) soil borings were advanced to evaluate the extent of fuel HCs at the site. All but borings B-10 and B-11 were advanced to ground water (GW). Borings B-4 through B-7 were converted into monitoring wells MW-1 through MW-4; borings B-10 and B-11 were converted into soil vapor extraction (SVE) wells VW-1 and VW-2.

Penetrated sediments consisted primarily of silty to sandy clay and clayey sand to sandy gravel. In general, silty to sandy clay was encountered to ~42' BG, except for clayey sand to clayey gravel encountered in borings B-4 (MW-1) and B-6 (MW-3) from ~18 - 35' BG. Clayey sand to sandy gravel was encountered from ~42 - 60' BG, at which depth claystone bedrock was encountered causing auger refusal. GW was present in the clayey sand/sandy gravel at ~52 - 56' BG.

Thirty-four soil samples were selected for laboratory analysis for the presence of gasoline compounds. Up to 88 ppm TPH-G and 2.1 ppm benzene were identified in soil sampled at the 40' depth (sample S-40-B5) in boring B-5 (MW-2). All others were unremarkable or at levels below laboratory detection limits. (The reader should note, however, that samples were not "selected" for laboratory analysis following protocol requested by this office for those borings advanced within 10' of the UST pit, i.e., every 5' of depth, at significant changes in lithology, where OVA "hits" occur during drilling, etc. Hence, the published soil analytical data do not necessarily represent a complete soil contaminant profile with depth.)

Initial GW samples collected during June 1990 revealed the presence of detectable fuel components in each well except MW-4. Up to 64 ug/l TPH-G and 0.65 ug/l benzene were identified in sampled water. Subsequent

### Leaking Underground Fuel Storage Tank Program

sampling and analyses during September 1990 failed to identify detectable fuel HCs. GW flow was calculated to the southwest.

During January 1991, nine (9) additional soil borings (B-8, B-9 and B-12 through B-18) were advanced about the UST pit and within the dispenser island areas to better define soil contamination at the site. Three of the borings (B-8, -9 and -13) were converted into additional SVE wells (VW-3, -4, and -5). Borings B-8 and -9 were advanced through conductor casings emplaced between the new USTs during their 1989 installations. A vapor extraction test (VET) was also performed during this phase of the investigation.

Thirty-seven of the soil samples collected during boring advancement were selected for laboratory analysis. Up to 680 ppm TPH-G was identified in the 22' sample collected from boring B-9 (VW-4), one of two borings advanced through a conductor casing within the UST pit. Low ppm-range benzene was identified at depths of up to 47' in several borings. In addition, up to 220 ppm TPH-G and 0.84 ppm benzene were identified in boring B-18, advanced through an area located within the dispenser island complex along Center Street, at the 8 and 15½' sampling depths, respectively. Organo-Pb, although sought in the B-18 samples, was not detected.

All SVE wells were screened at similar depths (~24 - 40' BG), although the formation textures exposed across the screened intervals differed in some wells. Two VET runs were performed in which vacuum was applied to one well, while others were used to gauge the degree of vacuum influence at those points. Vacuum impact was calculated and air samples collected during each test.

The consultant concluded SVE would be a viable method for soil remediation at this site. ACDEH, however, did not fully concur with the consultant's conclusion as: 1) the SVE well network was directly proximal to the UST pit, the pit filled with pea gravel backfill, and VET results (e.g., radius of influence, etc.) likely skewed by preferential flow through the porous backfill during test runs; and, 2) native sediments in which latent fuel HCs were evident were predominantly fine-grained (silt and clay) with low inherent permeabilities and high adsorptive properties that would prove particularly resistant to SVE even in the absence of other limiting factors, such as preferential flow through the porous backfill, among others.

A SVE and treatment system was nevertheless accepted by ACDEH as an *initial* means in the attempt to remediate impacted soil. The system, housed in a treatment compound on the southern flank of the site and comprised of a 7½ horsepower positive-displacement blower, three 2000 pound, series-flow, GAC canisters, a 5 well SVE network, and associated hardware (e.g., plumbing, manifolds, sampling ports, etc.), was permitted and constructed at the site during 1992 and January 1993.



**Leaking Underground Fuel Storage Tank Program**

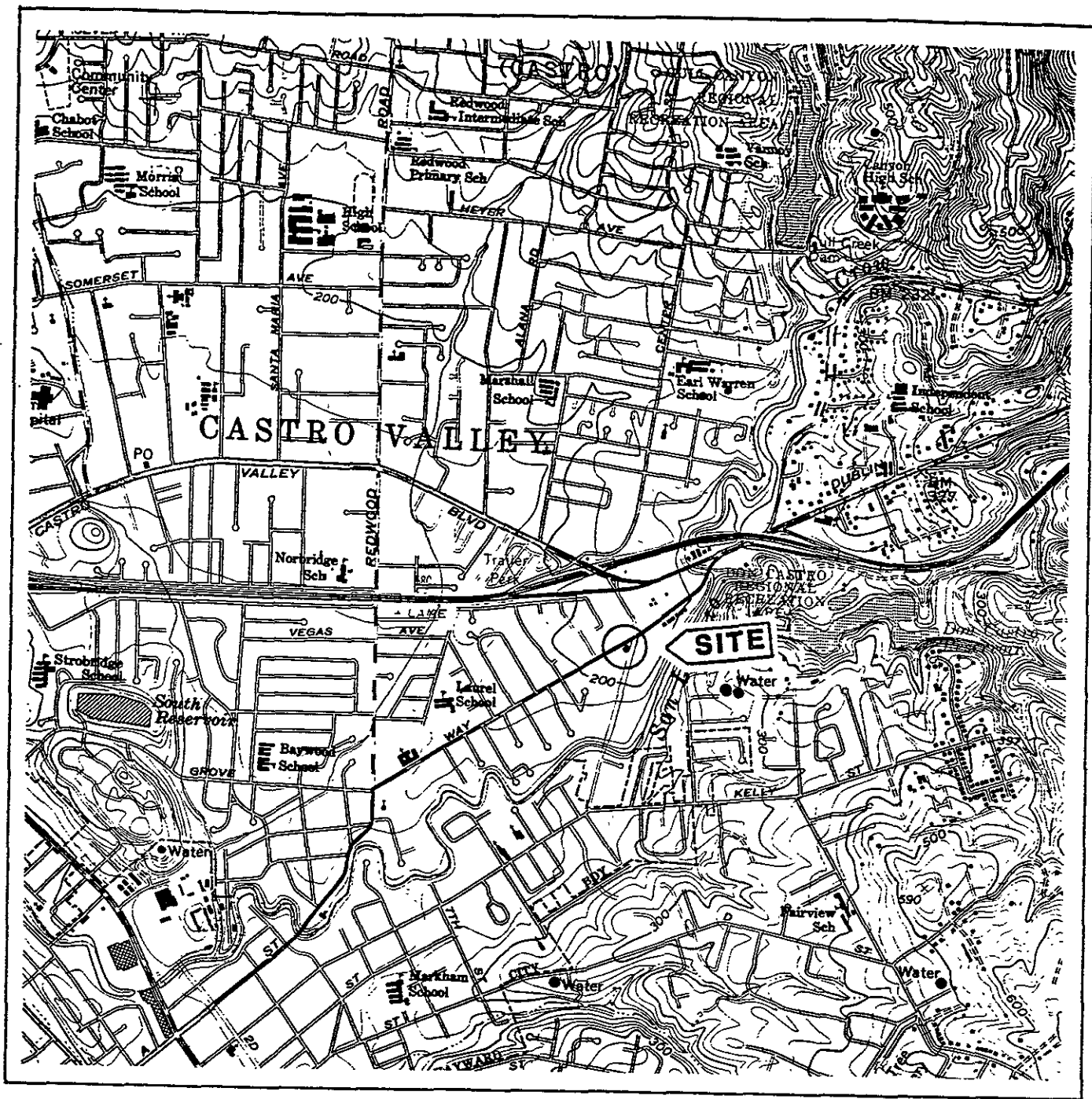
Two additional borings (B-19 and -20) were advanced near the Center Street dispenser island during February 1992 to evaluate whether they would prove good candidates should they be converted into additional SVE wells. Soil samples collected during the advancement of each boring revealed the absence of any detectable fuel HC compounds in those samples selected for laboratory analysis. Hence, no additional SVE wells were constructed.

System operation was initiated during late January 1993. Approximately 10.5 gallons (65.3 lbs) of product was reportedly removed during the first 26 days of actual operation. This HC removal rate (0.4 gal/day) was significantly lower than the *projected* rates based on the 1991 VET. As of the summer of 1993, the SVE system was no longer in operation due to its poor performance (although it has been reported that the system was operated periodically through February 1994 with similar results).

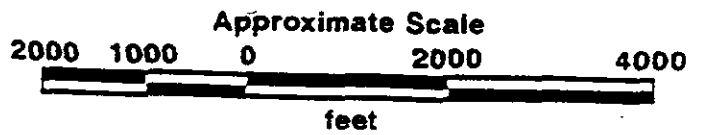
Monitoring wells were sampled and monitored quarterly between the initial June 1990 event through May 1995. SVE wells were also gauged for the presence of GW since their 1993 installation, and, when present, elevation data were used to assist in determining GW gradient and flow direction.

Periodic "hits" for various fuel components were noted in water sampled from each well during the 5 year period. The highest historic benzene concentration (4.0 ug/l) was identified in water sampled from well MW-2 during the February 1995 sampling event. The last event, occurring May 1995, identified up to 0.75 ug/l benzene in well MW-3, the first time since July 1991 that any detectable fuel compounds were identified in water sampled from this well.

In preparation for case closure, two additional borings (B-21 and B-22) were advanced to assess the extent of any latent soil contamination at depth below the current UST complex. This work focused on the area below a former vapor recovery sump where it was shown during the 1989 UST closures that up to 37,000 ppm TPH-G remained at a depth of 22' BG. Boring B-21 was advanced at an approximate 55° angle to a *vertical* depth of 42' BG; boring B-22 was advanced through a conductor casing located within the tank complex to a depth of 49' BG. No detectable fuel HCs were reportedly detected in samples selected for laboratory analyses.



Source: U.S. Geological Survey  
 7.5-Minute Quadrangle  
 Hayward, California  
 Photorevised 1980



PROJECT NO. 69013-1

**SITE VICINITY MAP**  
 ARCO Station No. 2152  
 2214 Center Street  
 Castro Valley, California

PLATE  
**P-1**

Table 2  
**Groundwater Analytical Data**  
**Total Petroleum Hydrocarbons**  
 (TPH as Gasoline and BTEX Compounds)

ARCO Service Station 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-1	06/26/90	64	0.63	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.50	<0.05	<0.05
	07/08/91	120	2.3	4.6	1.3	9.6
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50
	04/09/93	<50	<0.5	<0.5	<0.5	<0.5
	07/30/93	<50	<0.50	<0.50	<0.50	<0.50
	10/29/93	<50	<0.50	<0.50	<0.50	<0.50
	03/04/94	<50	<0.5	<0.5	<0.5	<0.5
	05/17/94	<50	<0.5	<0.5	<0.5	<0.5
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5
11/22/94	<50	<0.5	<0.5	<0.5	<0.5	
02/27/95	<50	<0.50	<0.50	<0.50	<0.50	
05/26/95	<50	<0.50	<0.50	<0.50	<0.50	
MW-2	06/26/90	27	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	30	0.42	0.47	<0.30	0.89
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50
	04/09/93	<50	<0.5	<0.5	<0.5	<0.5
	07/30/93	<50	<0.50	<0.50	<0.50	<0.50
	10/29/93	<50	<0.50	<0.50	<0.50	<0.50
	03/04/94	<50	<0.5	<0.5	<0.5	<0.5
	05/17/94	<50	<0.5	<0.5	<0.5	<0.5
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5
11/22/94	<50	<0.5	<0.5	<0.5	<0.5	
02/27/95	210	4	0.72	<0.50	1.2	
03/23/95	<50	<0.50	<0.50	<0.50	<0.50	
05/26/95	<50	<0.50	0.61	<0.50	0.6	
MW-3	06/26/90	52	0.65	1.5	<0.50	2
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.50	<0.50	<0.50	<0.50
	07/08/91	67	0.69	1.5	0.65	4.7
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	NS	NS	NS	NS	NS
	04/09/93	<50	<0.5	<0.5	<0.5	<0.5
	07/30/93	<50	<0.50	<0.50	<0.50	<0.50
10/29/93	<50	<0.50	<0.50	<0.50	<0.50	

Table 2 (continued)  
 Groundwater Analytical Data  
 Total Petroleum Hydrocarbons  
 (TPH as Gasoline and BTEX Compounds)

ARCO Service Station 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-3	03/04/94	<50	<0.5	<0.5	<0.5	<0.5
(cont.)	05/17/94	<50	<0.5	<0.5	<0.5	<0.5
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5
	11/22/94	<50	<0.5	<0.5	<0.5	<0.5
	02/27/95	<50	<0.50	<0.50	<0.50	<0.50
	05/26/95	<50	0.75	0.66	<0.50	<0.50
MW-4	06/26/90	<20	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	50	1.4	2.4	0.62	4.2
	10/15/91	<30	<0.30	<0.30	<0.30	<0.30
	03/13/92	<30	<0.30	<0.30	<0.30	<0.30
	06/08/92	<30	<0.30	<0.30	<0.30	<0.30
	09/04/92	<50	<0.5	<0.5	<0.5	<0.5
	10/19/92	<50	<0.5	<0.5	<0.5	<0.5
	01/14/93	<50	<0.50	<0.50	<0.50	<0.50
	04/09/93	<50	<0.05	<0.5	<0.5	<0.5
	07/30/93	<50	<0.50	<0.50	<0.50	<0.50
	10/29/93	<50	<0.50	<0.50	<0.50	<0.50
	03/04/94	<50	<0.05	<0.5	<0.5	<0.5
	05/17/94	<50	<0.5	<0.5	<0.5	<0.5
	08/25/94	<50	<0.5	<0.5	<0.5	<0.5
	11/22/94	<50	<0.5	<0.5	<0.5	<0.5
	02/27/95	<50	<0.50	<0.50	<0.50	<0.50
	05/26/95	<50	<0.50	<0.50	<0.50	<0.50
ppb = Parts per billion						
NS = Not sampled						

Supplemental Subsurface and Remedial Investigation  
ARCO Station 2152, Castro Valley, California

July 2, 1991  
AGS 69013-6

TABLE 1  
CUMULATIVE RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES  
ARCO Station 2152  
Castro Valley, California  
Page 1 of 3

Date	Sample ID	TPHg	B	T	E	X
4/13/89	S-10-B1	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-20-B1	<2.0	0.11	0.15	<0.050	0.19
4/13/89	S-25-B1	<2.0	0.22	0.34	0.088	0.38
4/13/89	S-30-B1	5.1	0.42	0.89	0.11	0.56
4/13/89	S-35-B1	5.1	0.40	0.72	0.094	0.42
4/13/89	S-40-B1	<2.0	0.10	<0.050	<0.050	<0.050
4/13/89	S-45-B1	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-10-B2	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-20-B2	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-25-B2	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-30-B2	<2.0	<0.050	<0.050	<0.050	<0.050
4/13/89	S-5-B3	460	5.1	34	9.6	51
4/13/89	S-10-B3	5.6	<0.050	0.11	<0.050	1.0
4/13/89	S-20-B3	<2.0	<0.050	<0.050	0.055	0.068
4/13/89	S-25-B3	<2.0	<0.050	<0.050	0.17	0.16
4/13/89	S-30-B3	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-20-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-29.5-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-40-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-44.5-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-49.5-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/15/90	S-59-B4	<2.0	<0.050	<0.050	<0.050	<0.050
6/14/90	S-20-B5	<2.0	<0.050	<0.050	<0.050	0.077
6/14/90	S-30-B5	<2.0	0.17	<0.050	<0.050	0.16
6/14/90	S-40-B5	88	2.1	7.2	1.8	13
6/14/90	S-45-B5	<2.0	<0.050	<0.050	<0.050	<0.050
6/14/90	S-49.5-B5	7.9	<0.050	<0.050	<0.050	0.096
6/14/90	S-59-B5	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-15-B6	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-29.5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-44.5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-49.5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
6/12/90	S-62-B6	<2.0	<0.050	<0.050	<0.050	<0.050

See notes on page 3 of 3.

TABLE 1  
 CUMULATIVE RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES  
 ARCO Station 2152  
 Castro Valley, California  
 Page 2 of 3

Date	Sample ID	TPHg	B	T	E	X
6/13/90	S-5-B7	<2.0	<0.050	<0.050	<0.050	<0.050
6/13/90	S-15-B7	<2.0	<0.050	<0.050	<0.050	<0.050
6/13/90	S-30-B7	<2.0	<0.050	<0.050	<0.050	<0.050
6/13/90	S-44.5-B7	<2.0	<0.050	0.10	<0.050	0.093
6/13/90	S-49-B7	<2.0	<0.050	<0.050	<0.050	<0.050
6/13/90	S-61-B7	<2.0	<0.050	<0.050	<0.050	<0.050
1/16/91	S-20-B8	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-15-B8	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-33-B8	<1.0	0.006	<0.005	<0.005	<0.005
1/16/91	S-39-B8	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-22-B9	680	<0.005	19	16	91
1/16/91	S-26-B9	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-29-B9	<1.0	0.006	<0.005	<0.005	<0.005
1/16/91	S-33-B9	<1.0	<0.005	<0.005	<0.005	<0.005
6/18/90	S-10-B10	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-20-B10	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-30-B10	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-35-B10	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-40-B10	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-5-B11	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-15-B11	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-25-B11	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-35-B11	<2.0	<0.05	<0.05	<0.05	<0.05
6/18/90	S-40-B11	<2.0	<0.05	<0.05	<0.05	<0.05
1/16/91	S-15-B12	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-30-B12	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-35-B12	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-40-B12	<1.0	0.028	<0.005	<0.005	<0.005
1/16/91	S-47-B12	<1.0	0.028	<0.005	<0.005	0.006
1/16/91	S-15-B13	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-20-B13	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-25-B13	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-30-B13	<1.0	0.033	<0.005	<0.005	0.018
1/16/91	S-35-B13	<1.0	0.030	<0.005	<0.005	<0.005
1/16/91	S-40-B13	<1.0	0.096	<0.005	<0.005	<0.005
1/16/91	S-45-B13	<1.0	<0.005	<0.005	<0.005	<0.005

See notes on page 3 of 3.

TABLE 1  
 CUMULATIVE RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES  
 ARCO Station 2152  
 Castro Valley, California  
 Page 3 of 3

Date	Sample ID	TPHg	B	T	E	X
1/16/91	S-15-B14	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-20-B14	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-30-B14	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-40-B14	<1.0	<0.005	<0.005	<0.005	0.007
1/16/91	S-45-B14	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-5-B15	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-10-B15	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-2-B16	1.7	0.037	<0.005	0.080	<0.005
1/16/91	S-5-B16	<1.0	<0.005	<0.005	<0.005	<0.005
1/16/91	S-10-B16	<1.0	<0.005	<0.005	<0.005	<0.005
2/14/91	S-5½-B17*	<1.0	<0.005	<0.005	<0.005	0.007
2/14/91	S-10-B17*	<1.0	<0.005	<0.005	<0.005	<0.005
2/14/91	S-4-B18*	50	0.12	1.2	0.62	4.3
2/14/91	S-8-B18*	220	0.31	7.3	5.5	36
2/14/91	S-15½-B18*	170	0.84	9.0	4.4	24
1/29/91	S-0129- SP1,2,3,4*	<0.5	<0.005	<0.005	<0.005	<0.005
4/11/91	S-0411- 1A,B,C,D	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

Results in parts per million (ppm).

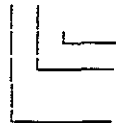
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 5030).

B:benzene T:toluene E:ethylbenzene X:total xylene isomers

BTEX analyzed by EPA Method 8020.

\*: Selected samples analyzed for Organic Lead (by California Luft method [12/87]) and nondetectable concentrations (see lab sheets for detection limits) were reported in all samples.

Sample ID: S-40-B11



Boring number  
 Approximate sample  
 depth in feet  
 Soil Sample

Sample ID: S-0129-SP1,2,3,4



Composite sample  
 Sample date  
 Soil Sample

TABLE 1  
 RESULTS OF LABORATORY ANALYSES  
 OF SOIL SAMPLES  
 ARCO Station 2152  
 Castro Valley, California

Sample ID	Date	TPHg	B	T	E	X
S-4.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-19.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-29.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-39.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-49.5-B19	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-4.5-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-9.5-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-19.5-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-29.5-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-39.5-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
S-50-B20	02/12-13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
CPSS-1,2,3,4	02/13/92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

Results in parts per million (ppm).

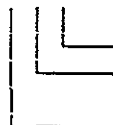
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Methods 5030/8015).

B:benzene T:toluene E:ethylbenzene X:total xylene isomers

BTEX analyzed by EPA Method 8020.

<: Less than the laboratory detection limits.

Sample ID: S-50-B20



Boring number  
 Approximate sample  
 depth in feet  
 Soil Sample

CPSS-1,2,3,4



Composite sample  
 Composite Soil Sample



Table 1  
**Soil Analytical Data**  
 Total Petroleum Hydrocarbons  
 (TPH as Gasoline and BTEX Compounds)

ARCO Service Station 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

Sample ID	Sample Depth (feet)	Date Sampled	TPH as			Ethyl-	
			Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	benzene (ppm)	Xylenes (ppm)
B-21*	26	04/28/95	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	31		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	36		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	41		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	46		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	51		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
B-22	16	04/28/95	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	21		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	26		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	31		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	36		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	41		<1.0	<0.0050	<0.0050	<0.0050	<0.0050
	46		<1.0	<0.0050	<0.0050	<0.0050	<0.0050

ppm = Parts per million  
 \* = Below laboratory detection limit.  
 < = Boring B-21 is an angle boring drilled at 55 degrees from horizontal.  
 Sample depths are along line of drilling and not vertical sample depths.

# GROUND WATER ELEVATION DATA

Table 1  
**Groundwater Elevation Data**  
 ARCO Service Station 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-1	06/25/90	217.16	49.80	167.36
	09/07/90		50.00	167.16
	09/26/90		50.09	167.07
	12/14/90		50.44	166.72
	01/08/91		50.45	166.71
	02/21/91		50.51	166.65
	03/19/91		50.16	167.00
	04/02/91		50.14	167.02
	05/02/91		49.77	167.39
	06/18/91		49.75	167.41
	07/08/91		49.80	167.36
	08/22/91		50.08	167.08
	09/18/91		50.11	167.05
	10/15/91		50.30	166.86
	11/13/91		50.30	166.86
	12/27/91		50.28	166.88
	01/18/92		50.39	166.77
	02/20/92		50.16	167.00
	03/13/92		49.75	167.41
	04/24/92		49.18	167.98
	05/15/92		49.22	167.94
	06/08/92		49.30	167.86
	07/25/92		49.42	167.74
	08/23/92		49.52	167.64
	09/04/92		49.71	167.45
	10/19/92		49.98	167.18
	11/23/92		50.10	167.06
	12/18/92		50.29	166.87
	01/14/93		49.81	167.35
	02/24/93		48.71	168.45
03/30/93	48.02	169.14		
04/09/93	47.81	169.35		
07/30/93	47.61	169.55		
10/29/93	48.00	169.16		
03/04/94	48.34	168.82		
05/17/94	47.51	169.65		
08/25/94	47.86	169.30		
11/22/94	48.36	168.80		
02/27/95	46.42	170.74		
05/26/95	44.70	172.46		
MW-2	06/25/90	216.50	49.04	167.46
	09/07/90		49.22	167.28
	09/26/90		49.32	167.18
	12/14/90		49.66	166.84
	01/08/91		49.72	166.78
	02/21/91		49.77	166.73
	03/19/91		49.44	167.06
	04/02/91		49.43	167.07
	05/02/91		49.03	167.47
	06/18/91		48.98	167.52
	07/08/91		49.03	167.47
	08/22/91		49.30	167.20
	09/18/91		49.34	167.16
	10/15/91		49.51	166.99
	11/13/91		49.53	166.97
12/27/91	49.49	167.01		

Table 1 (continued)  
Groundwater Elevation Data

ARCO Service Station 2152  
22141 Center Street at Grove Way  
Castro Valley, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-2 (cont.)	01/18/92		49.60	166.90
	02/20/92		49.39	167.11
	03/13/92		48.97	167.53
	04/24/92		48.47	168.03
	05/15/92		48.47	168.03
	06/08/92		48.50	168.00
	07/25/92		48.52	167.98
	08/23/92		44.95	171.55
	09/04/92		48.95	167.55
	10/19/02		49.20	167.30
	11/23/92		49.35	167.15
	12/18/92		49.57	166.93
	01/14/93		49.10	167.40
	02/24/93		47.86	168.64
	03/30/93		47.17	169.33
	04/09/93		47.02	169.48
	07/30/93		46.80	169.70
	10/29/93		47.20	169.30
	03/04/94		47.48	169.02
	05/17/94		46.68	169.82
08/25/94		47.04	169.46	
11/22/94		47.53	168.97	
02/27/95		45.55	170.95	
05/26/95		43.80	172.70	
MW-3	06/25/90	217.57	50.55	167.02
	09/07/90		50.73	166.84
	09/26/90		50.81	166.76
	12/14/90		51.15	166.42
	01/08/91		51.16	166.41
	02/21/91		51.21	166.36
	03/19/91		50.93	166.64
	04/02/91		50.92	166.65
	05/02/91		50.51	167.06
	06/18/91		50.47	167.10
	07/08/91		50.54	167.03
	08/22/91		50.80	166.77
	09/18/91		50.82	166.75
	10/15/91		51.02	166.55
	11/13/91		51.03	166.54
	12/27/91		51.01	166.56
	01/18/92		51.15	166.42
	02/20/92		50.84	166.73
	03/13/92		50.39	167.18
	04/24/92		49.82	167.75
	05/15/92		49.90	167.67
	07/25/92		50.14	167.43
	08/23/92		50.12	167.45
	09/04/92		50.38	167.19
	10/19/02		50.71	166.86
	11/23/92		50.81	166.76
	12/18/92		50.50	167.07
01/14/93		Well Inaccessible		
02/24/93		Well Inaccessible		
03/30/93			48.82	168.75
04/09/93			48.71	168.86
07/30/93			48.33	169.24

Table 1 (continued)  
Groundwater Elevation Data

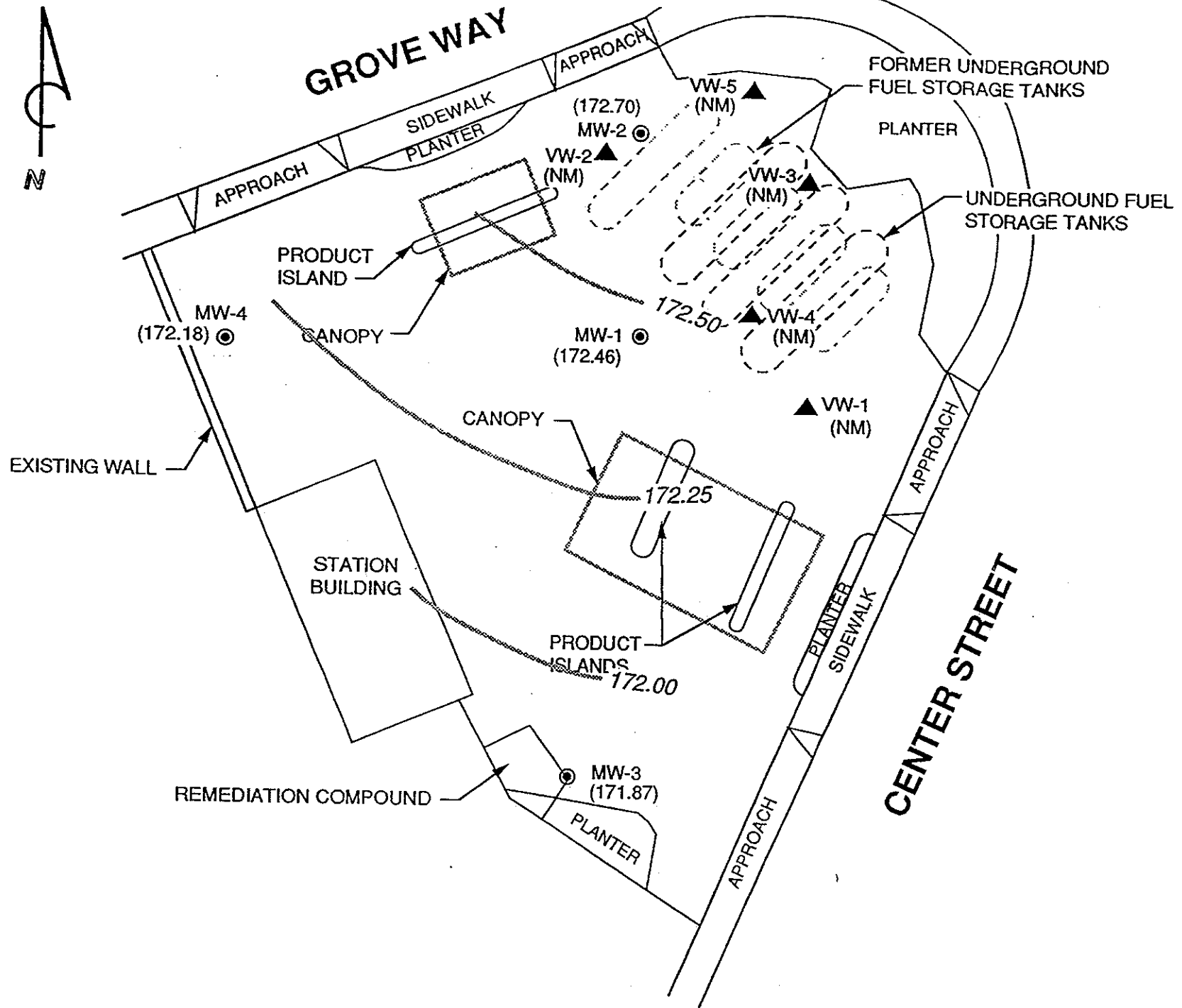
ARCO Service Station 2152  
22141 Center Street at Grove Way  
Castro Valley, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-3 (cont.)	10/29/93		48.64	168.93
	03/04/94		49.15	168.42
	05/17/94		48.33	169.24
	08/25/94		48.66	168.91
	11/22/94		49.15	168.42
	02/27/95		47.38	170.19
	05/26/95		45.70	171.87
MW-4	06/25/90	215.18	48.06	167.12
	09/07/90		48.25	166.93
	09/26/90		48.35	166.83
	12/14/90		48.68	166.50
	01/08/91		48.70	166.48
	02/21/91		48.76	166.42
	03/19/91		48.44	166.74
	04/02/91		48.43	166.75
	05/02/91		48.04	167.14
	06/18/91		48.00	167.18
	07/08/91		48.04	167.14
	08/22/91		48.34	166.84
	09/18/91		48.35	166.83
	10/15/91		48.54	166.64
	11/13/91		48.56	166.62
	12/27/91		48.52	166.66
	01/18/92		48.68	166.50
	02/20/92		48.37	166.81
	03/13/92		47.96	167.22
	04/24/92		47.41	167.77
	05/15/92		47.46	167.72
	06/08/92		47.52	167.66
	07/25/92		47.67	167.51
	08/23/92		47.78	167.40
	09/04/92		47.78	167.40
	10/19/02		48.22	166.96
	11/23/92		48.34	166.84
	12/18/92		48.50	166.68
01/14/93		48.03	167.15	
02/24/93		46.95	168.23	
03/30/93		46.25	168.93	
04/09/93		46.18	169.00	
07/30/93		45.96	169.22	
10/29/93		46.12	169.06	
03/04/94		46.60	168.58	
05/17/94		45.78	169.40	
08/25/94		46.11	169.07	
11/22/94		46.60	168.58	
02/27/95		44.73	170.45	
05/26/95		43.00	172.18	
VW-2	02/24/93	216.38	38.28	178.10
	03/30/93		38.32	178.06
	04/09/93		38.33	178.05
	07/30/93		38.36	178.02
	10/29/93		Well Dry	
	03/04/94		38.34	178.04
	05/17/94		NM	NM
	08/25/94		NM	NM
	11/22/94		NM	NM
	02/27/95		NM	NM
	05/26/95		NM	NM

Table 1 (continued)  
Groundwater Elevation Data

ARCO Service Station 2152  
22141 Center Street at Grove Way  
Castro Valley, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
VW-3	02/24/93	NM	NM	NM
	03/30/93		38.27	NM
	04/09/93	Well Inaccessible		
	07/30/93	Well Dry		
	10/29/93	Well Dry		
	03/04/94		38.27	NM
	05/17/94		NM	NM
	08/25/94		NM	NM
	11/22/94		NM	NM
	02/27/95		NM	NM
	05/26/95		NM	NM
VW-4	02/24/93	NM	NM	NM
	03/30/93	Well Dry		
	04/09/93	Well Dry		
	07/30/93	Well Dry		
	10/29/93	Well Dry		
	03/04/94	Well Dry		
	05/17/94		NM	NM
	08/25/94		NM	NM
	11/22/94		NM	NM
	02/27/95		NM	NM
	05/26/95		NM	NM
VW-5	02/24/93	NM	35.22	NM
	03/30/93	Well Dry		
	04/09/93	Well Inaccessible		
	07/30/93	Well Dry		
	10/29/93	Well Inaccessible		
	03/04/94	Well Dry		
	05/17/94		NM	NM
	08/25/94		NM	NM
	11/22/94		NM	NM
	02/27/95		NM	NM
	05/26/95		NM	NM
MSL = Mean sea level				
TOC = Top of casing				
NM = Not measured				



**LEGEND**

- MW-4 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- VW-1 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- (172.70) GROUNDWATER ELEVATION IN FEET - MSL, 5-26-95
- 172.50 --- GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 5-26-95
- (NM) WELL NOT MEASURED

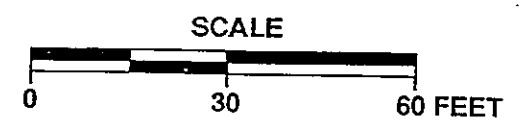


APPROXIMATE DIRECTION OF GROUNDWATER FLOW:  
 APPROXIMATE GRADIENT = 0.006

Reference: Basemap taken from RESNA



PACIFIC ENVIRONMENTAL GROUP, INC.



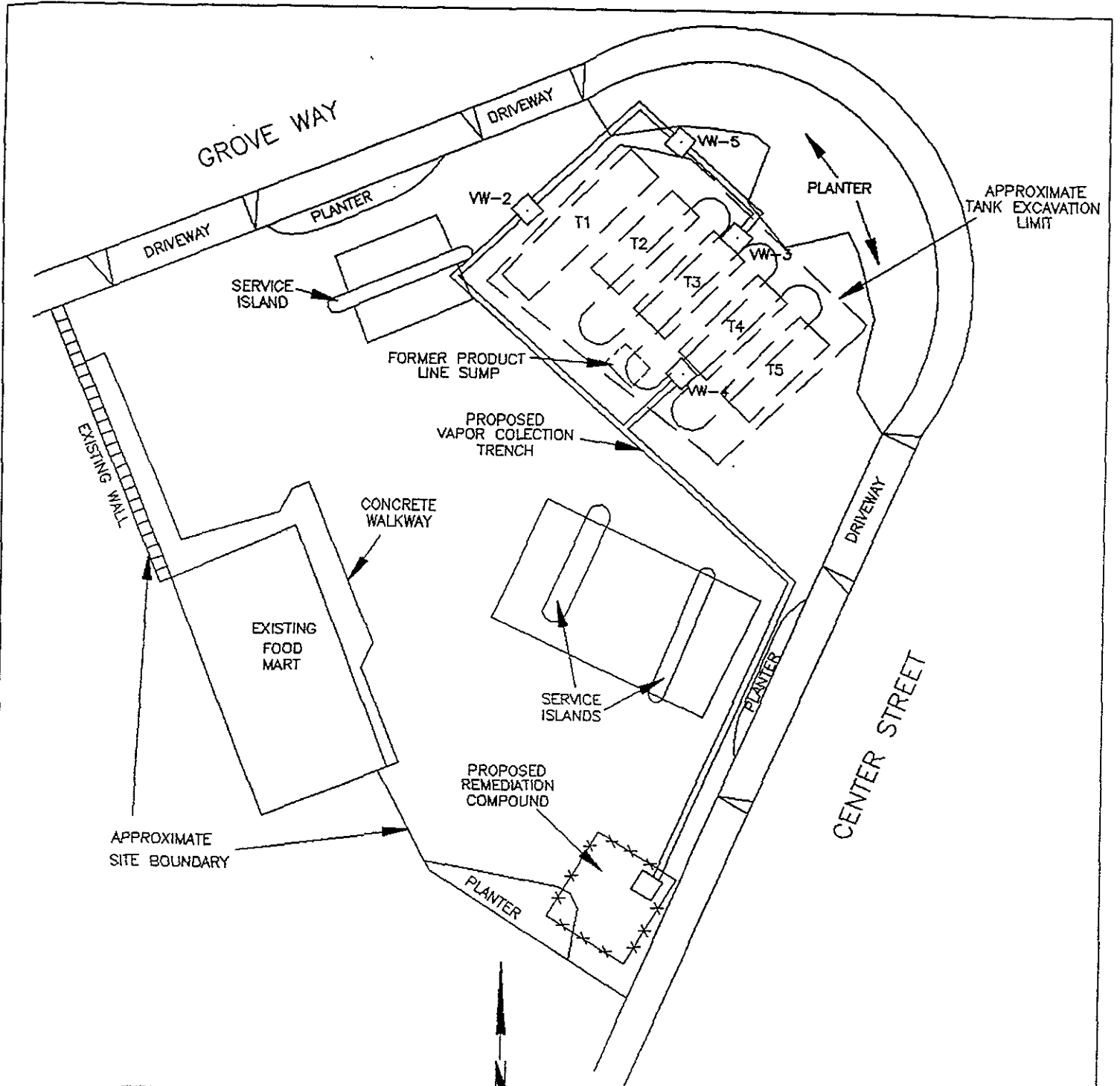
ARCO SERVICE STATION 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1

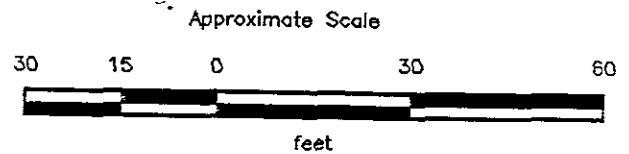
PROJECT: 330-048.2B

# SVE SYSTEM LOCATION MAP



**EXPLANATION**

- VE-5  = Vapor-Extraction well with 36" X 36" wellhead cover
- T5 = Former underground gasoline-storage tanks
- = Present underground gasoline-storage tanks



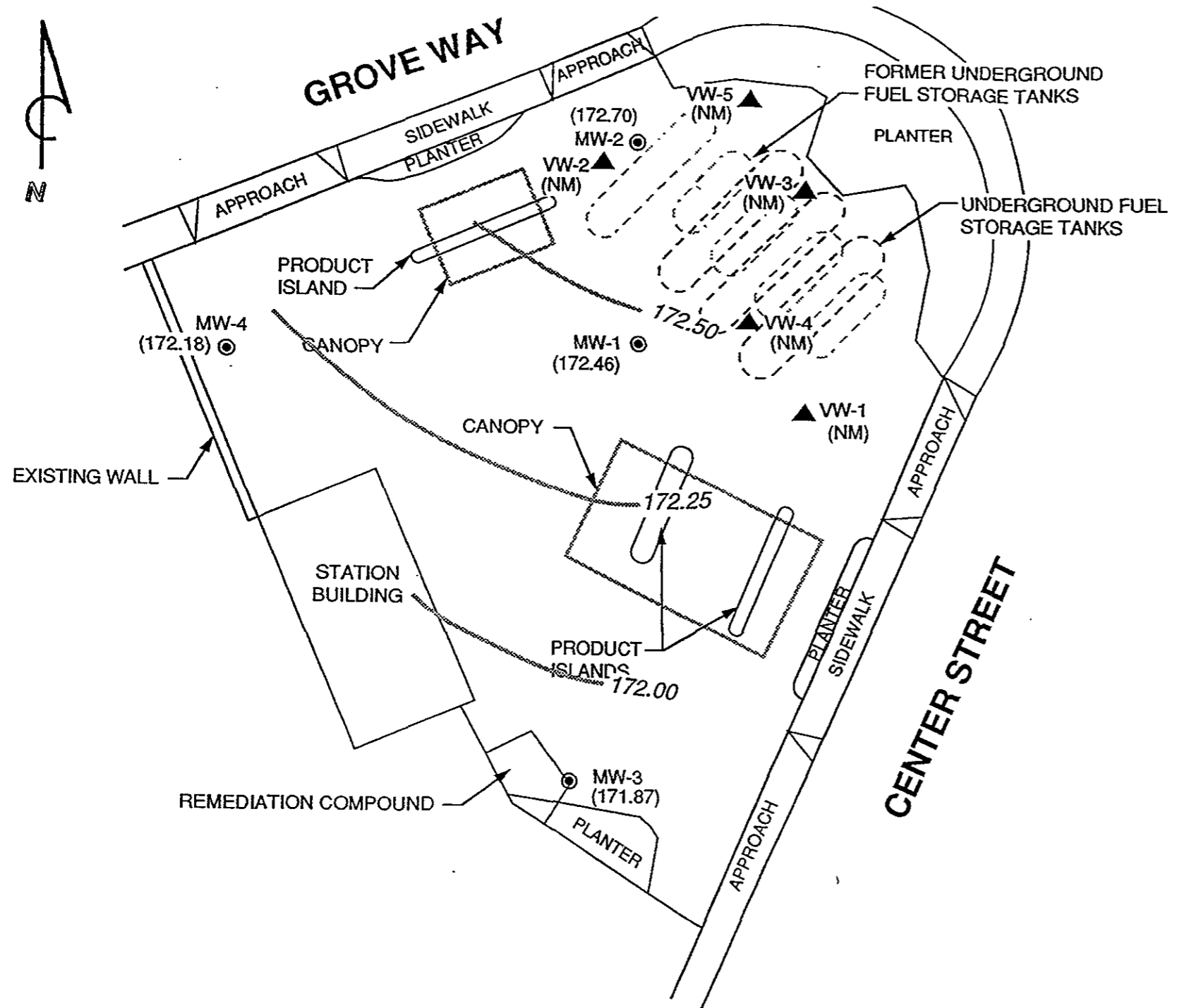
Source: Surveyed by Ron Archer Civil Engineer, Inc.

**RESNA**

PROJECT 69013.08

**GENERALIZED SITE PLAN  
ARCO Station 2152  
22141 Center Street  
Castro Valley, California**

**PLATE  
3**



- LEGEND**
- MW-4 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
  - VW-1 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
  - (172.70) GROUNDWATER ELEVATION IN FEET - MSL, 5-26-95
  - 172.50 — GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 5-26-95
  - (NM) WELL NOT MEASURED



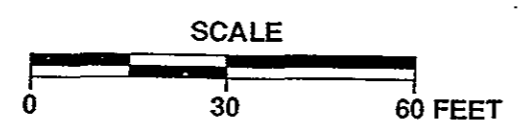
APPROXIMATE DIRECTION OF GROUNDWATER FLOW

APPROXIMATE GRADIENT = 0.006

Reference: Basemap taken from RESNA



PACIFIC ENVIRONMENTAL GROUP, INC.



ARCO SERVICE STATION 2152  
 22141 Center Street at Grove Way  
 Castro Valley, California

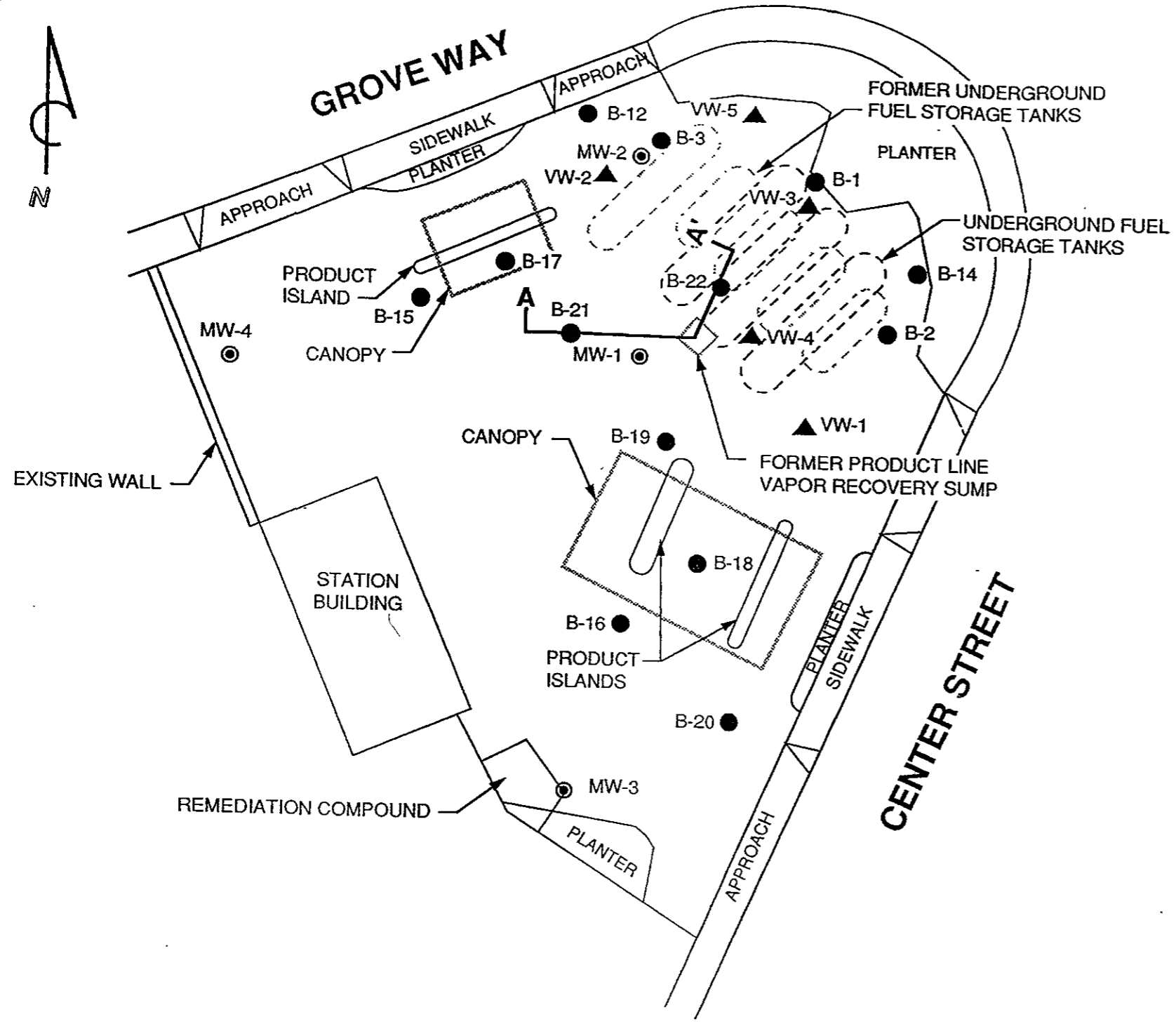
GROUNDWATER ELEVATION CONTOUR MAP

FIGURE: 1  
 PROJECT: 330-048.2B



X-SECTION BASE MAP

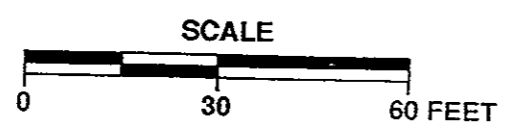
Borings B-21 / B-22  
A-A'



LEGEND

- MW-4 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- VW-1 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- B-2 ● SOIL BORING LOCATION AND DESIGNATION
- A A' LINE OF CROSS-SECTION (SEE FIGURE 3)

Reference: Basemap taken from RESNA



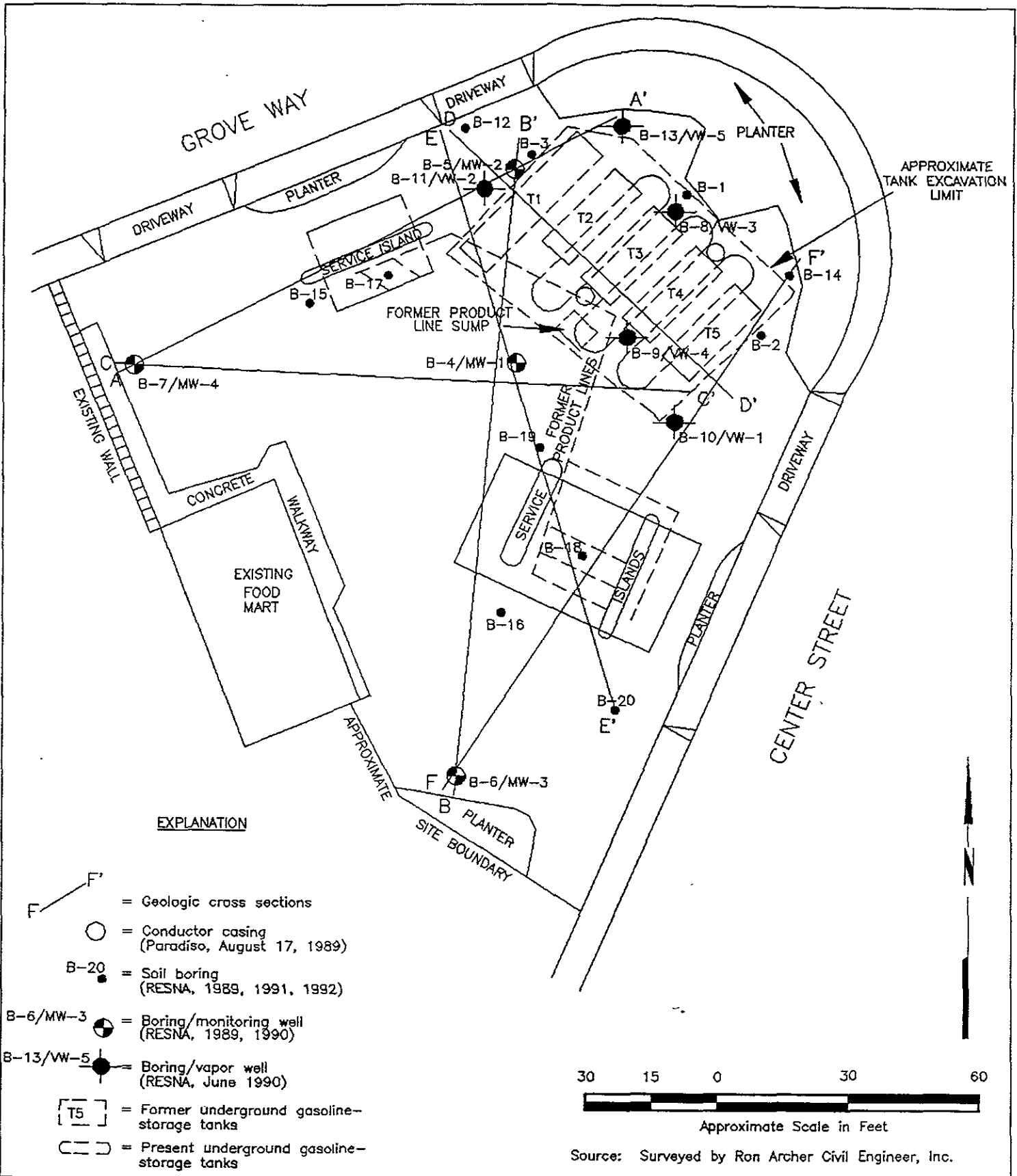
ARCO SERVICE STATION 2152  
22141 Center Street at Grove Way  
Castro Valley, California

SITE MAP

FIGURE:  
2  
PROJECT:  
330-048.1B

# X-SECTION BASE MAP

A-A'      D-D'  
 B-B'      E-E'  
 C-C'      F-F'



**EXPLANATION**

- F — F' = Geologic cross sections
- = Conductor casing (Paradiso, August 17, 1989)
- B-20 ● = Soil boring (RESNA, 1989, 1991, 1992)
- B-6/MW-3 ● = Boring/monitoring well (RESNA, 1989, 1990)
- B-13/VW-5 ● = Boring/vapor well (RESNA, June 1990)
- [T5] = Former underground gasoline-storage tanks
- = Present underground gasoline-storage tanks



Source: Surveyed by Ron Archer Civil Engineer, Inc.

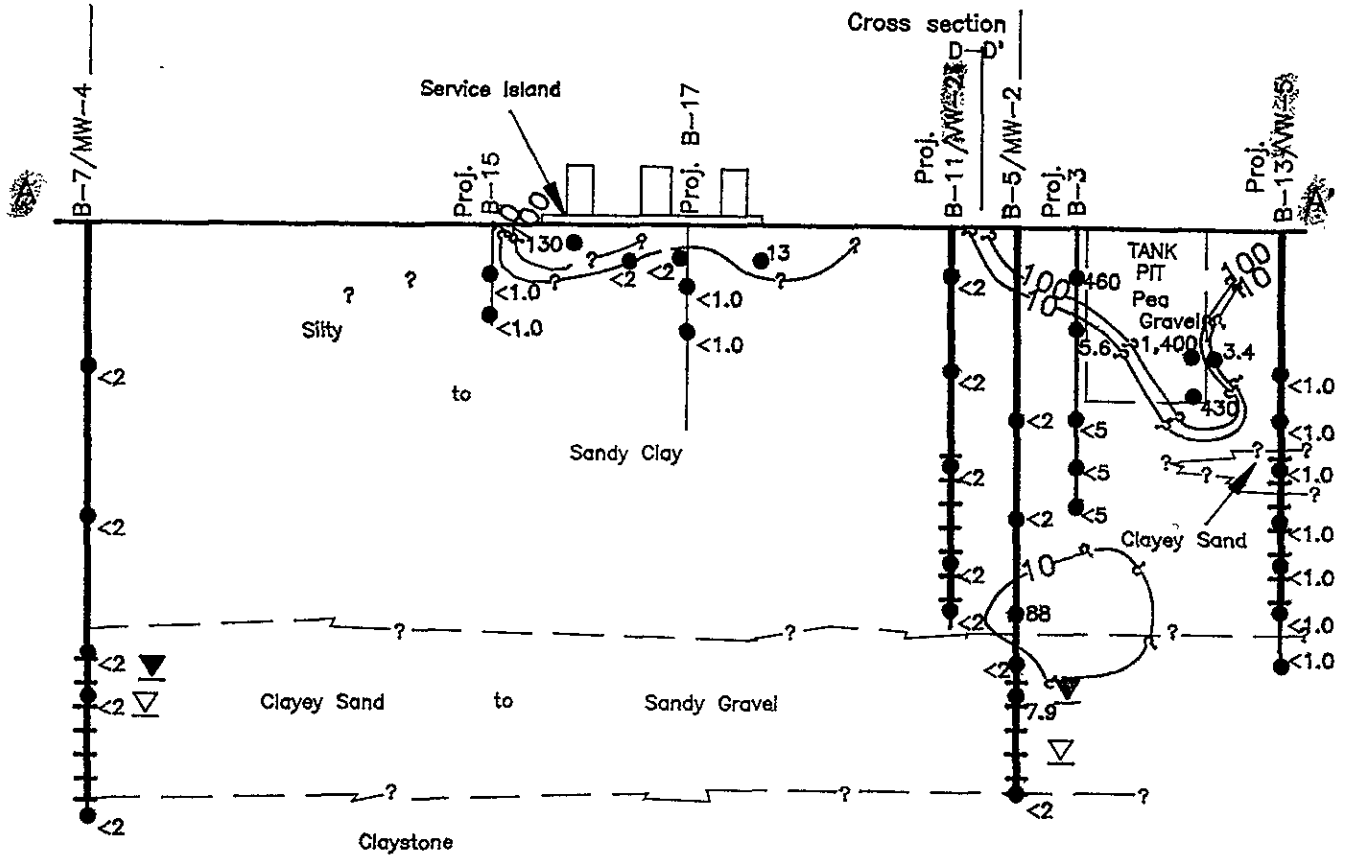


**GENERALIZED SITE PLAN**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

**PLATE**  
**2**

Cross Section C-C'

Cross section B-B'



EXPLANATION

- 100 = Line of equal concentration of TPHg in parts per million
- 1,400 = Laboratory analyzed soil sample showing concentration of TPHg in parts per million
- = Well casing
- |— = Well screen
- |— = Boring
- ▽ = Initial water level in boring
- ▽ = Static water level in well (1/8/91)

Approximate Horizontal and Vertical Scale



**GEOLOGIC CROSS SECTION A-A'**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

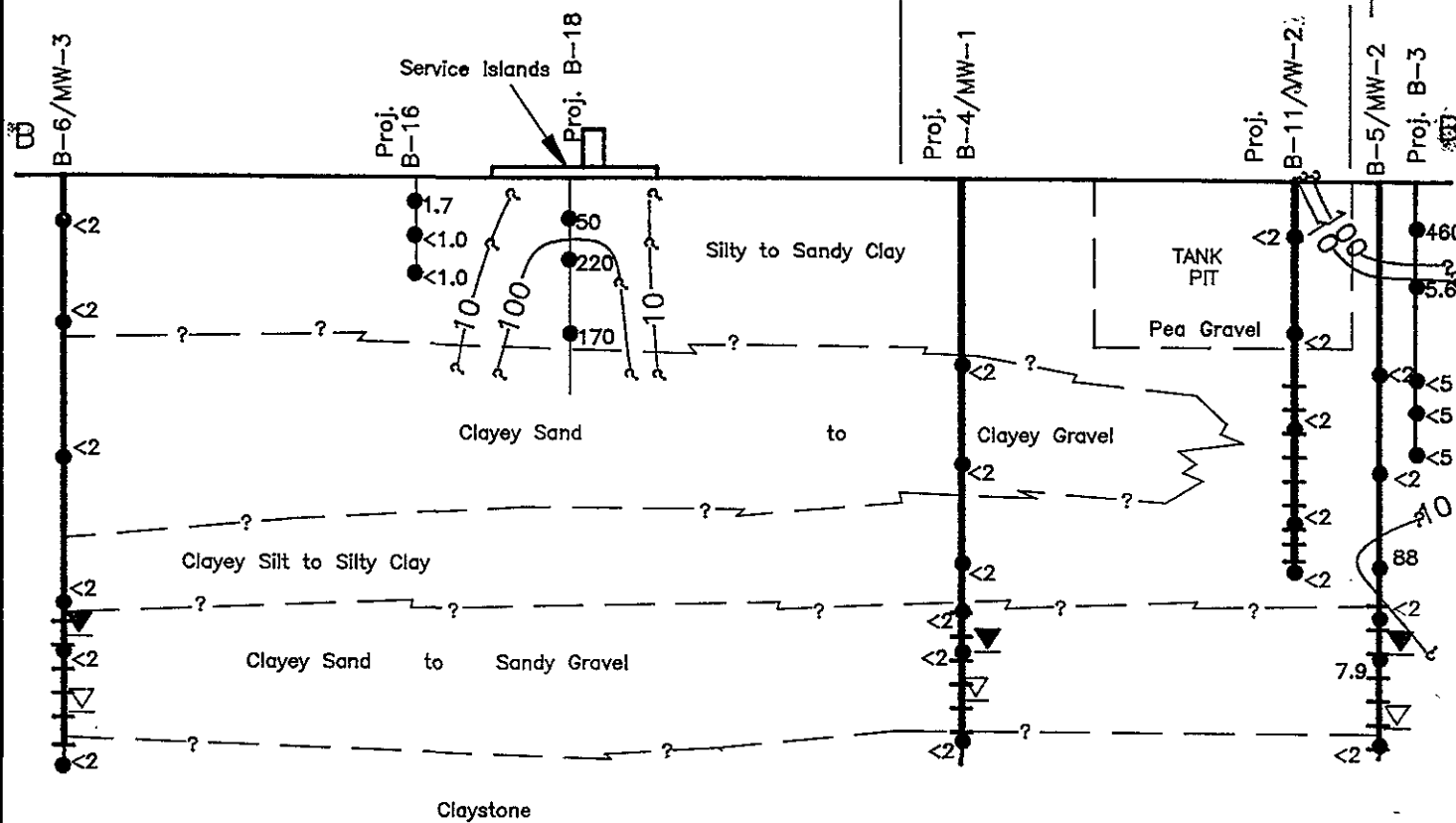
**PLATE**  
**18**

**PROJECT 69013-6**

Cross Section A-A'

Cross Section C-C'

Cross Section D-D'



**EXPLANATION**

- = Line of equal concentration of TPHg in parts per million
- = Laboratory analyzed soil sample showing concentration of TPHg in parts per million
- = Well casing
- = Well screen
- = Boring
- = Initial water level in boring
- = Static water level in well (1/8/91)

Approximate Horizontal and Vertical Scale



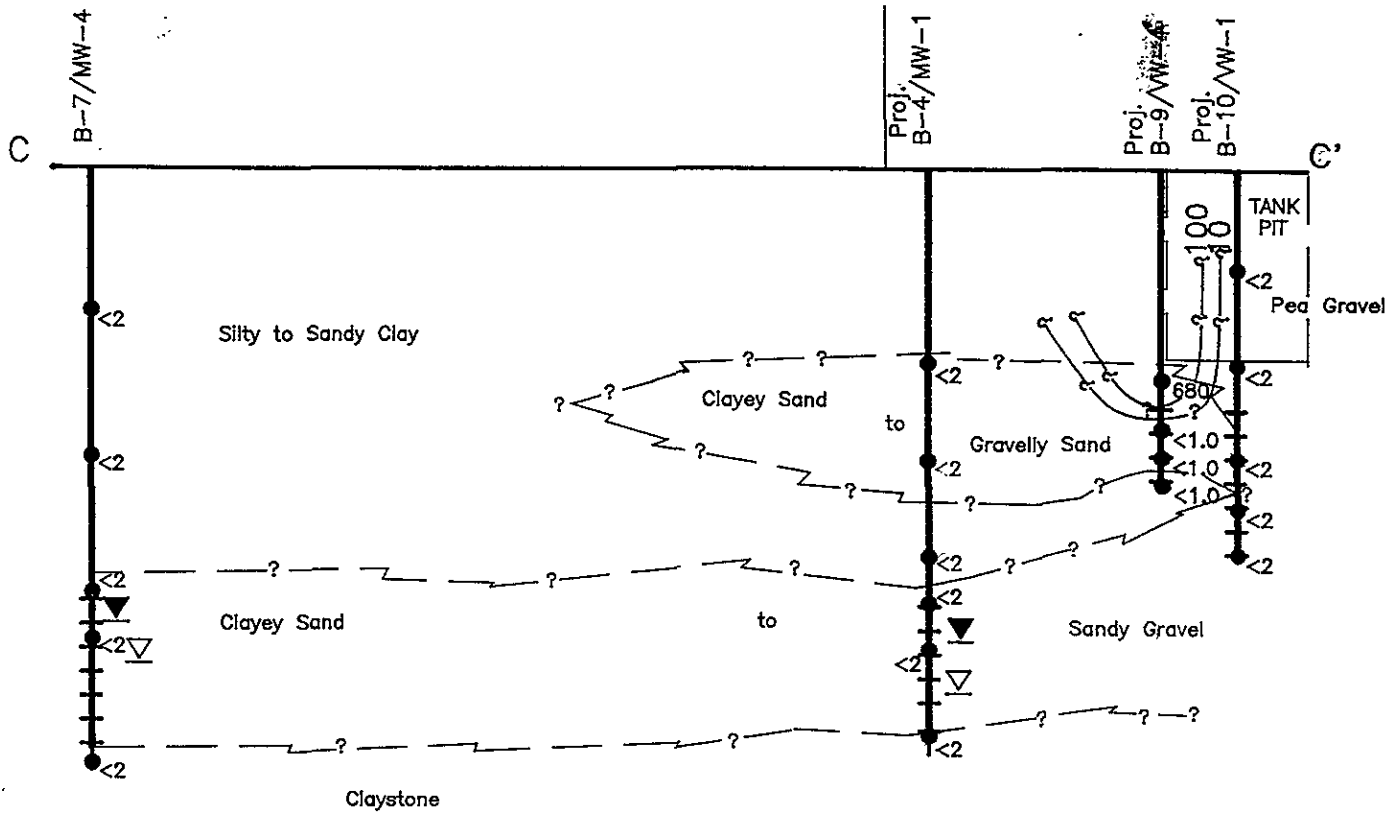
**GEOLOGIC CROSS SECTION B-B'**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

**PLATE**  
**19**

**PROJECT 69013-6**

Cross Section A-A'

Cross Section B-B'



EXPLANATION

- = Line of equal concentration of TPHg in parts per million
- = Laboratory analyzed soil sample showing concentration of TPHg in parts per million
- = Well casing
- = Well screen
- = Boring
- = Initial water level in boring
- = Static water level in well (1/8/91)

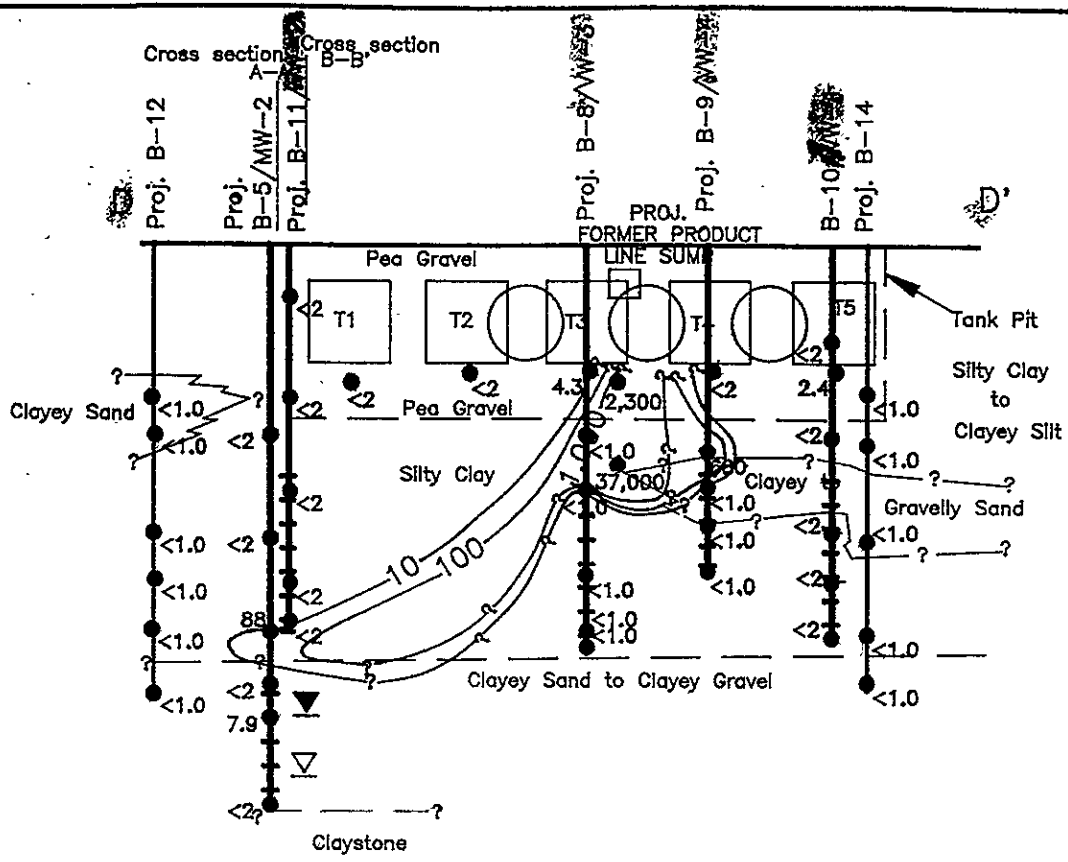
Approximate Horizontal and Vertical Scale





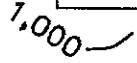
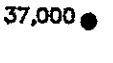






**GEOLOGIC CROSS SECTION C-C'**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

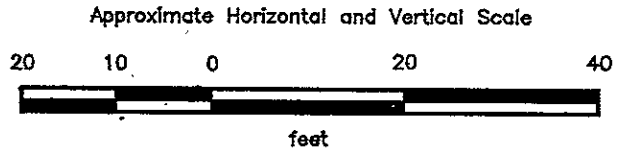
**PLATE**  
**20**

**PROJECT 69013-6**



**EXPLANATION**

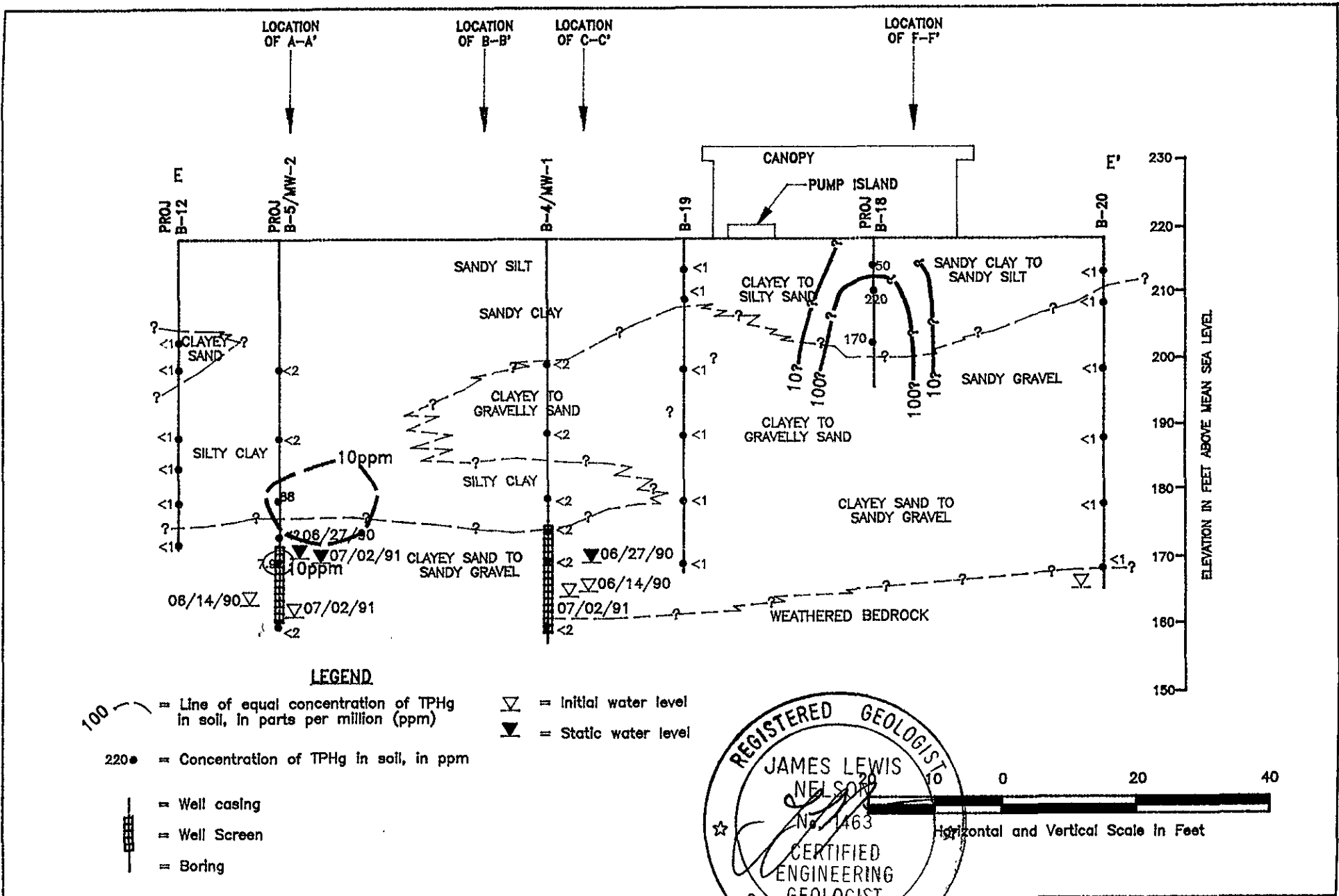
-  = Existing underground gasoline storage tanks
-  = Former underground gasoline storage tanks
-  = Line of equal concentration of TPHg
-  = Concentration of TPHg in ppm for soil sample collected 8/89
-  = Laboratory analyzed soil sample showing concentration of TPHg in parts per million
-  = Well casing
-  = Well screen
-  = Boring
-  = Initial water level in boring
-  = Static water level in well (1/8/91)



**PROJECT 69013-6**

**GEOLOGIC CROSS SECTION D-D'  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California**

**PLATE  
 21**

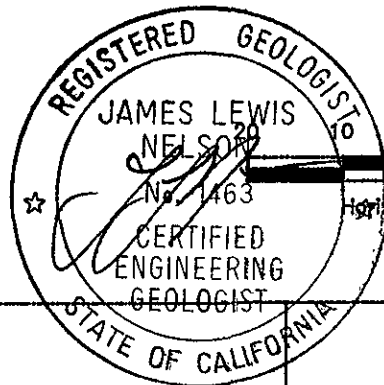


PLATE

9

**GEOLOGIC CROSS SECTION E-E'**

**ARCO Station 2152  
22141 Center Street**



**RESNA**  
Working to Restore Nature

PROJECT

69013 08

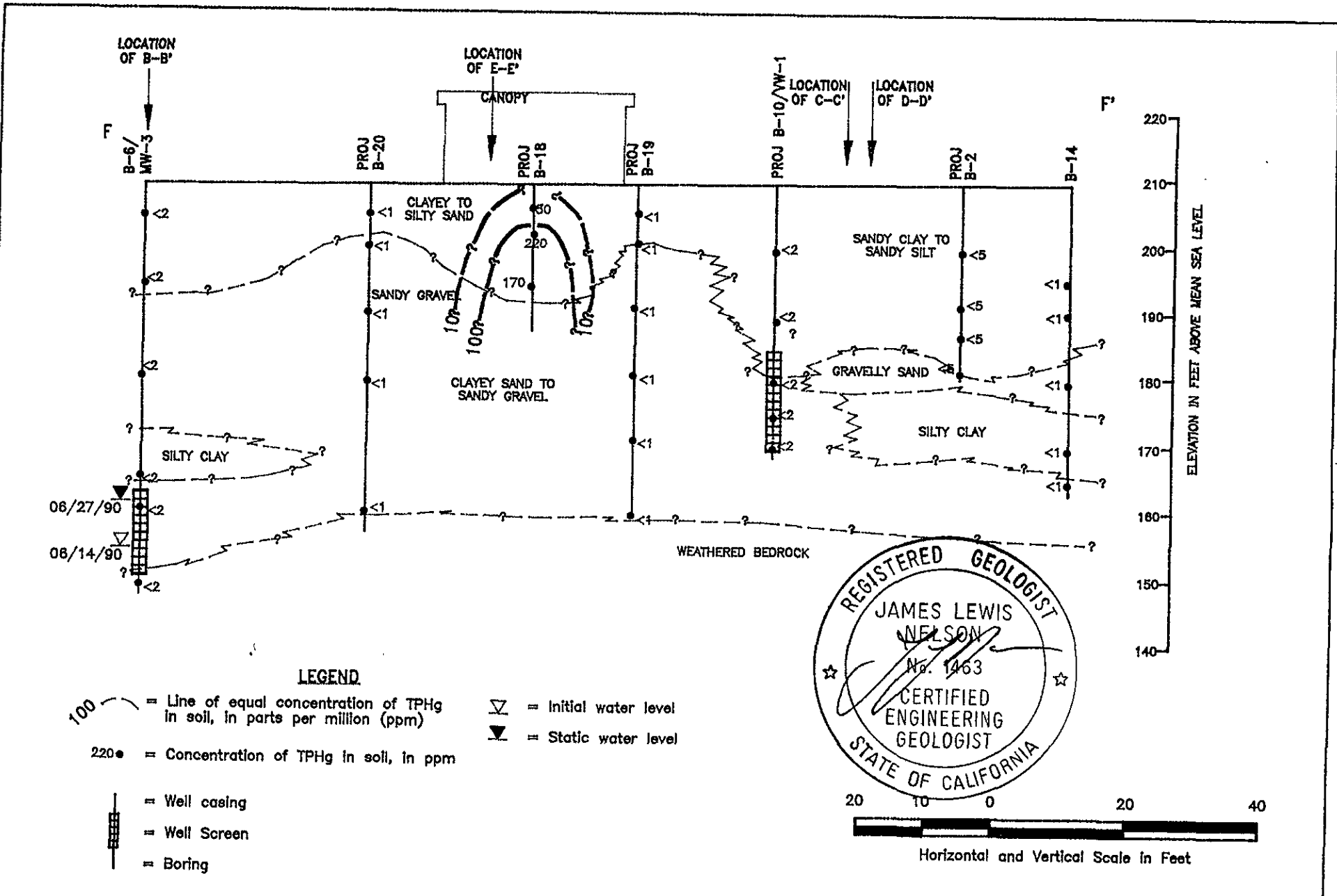


PLATE  
10

**GEOLOGIC CROSS SECTION F-F'**

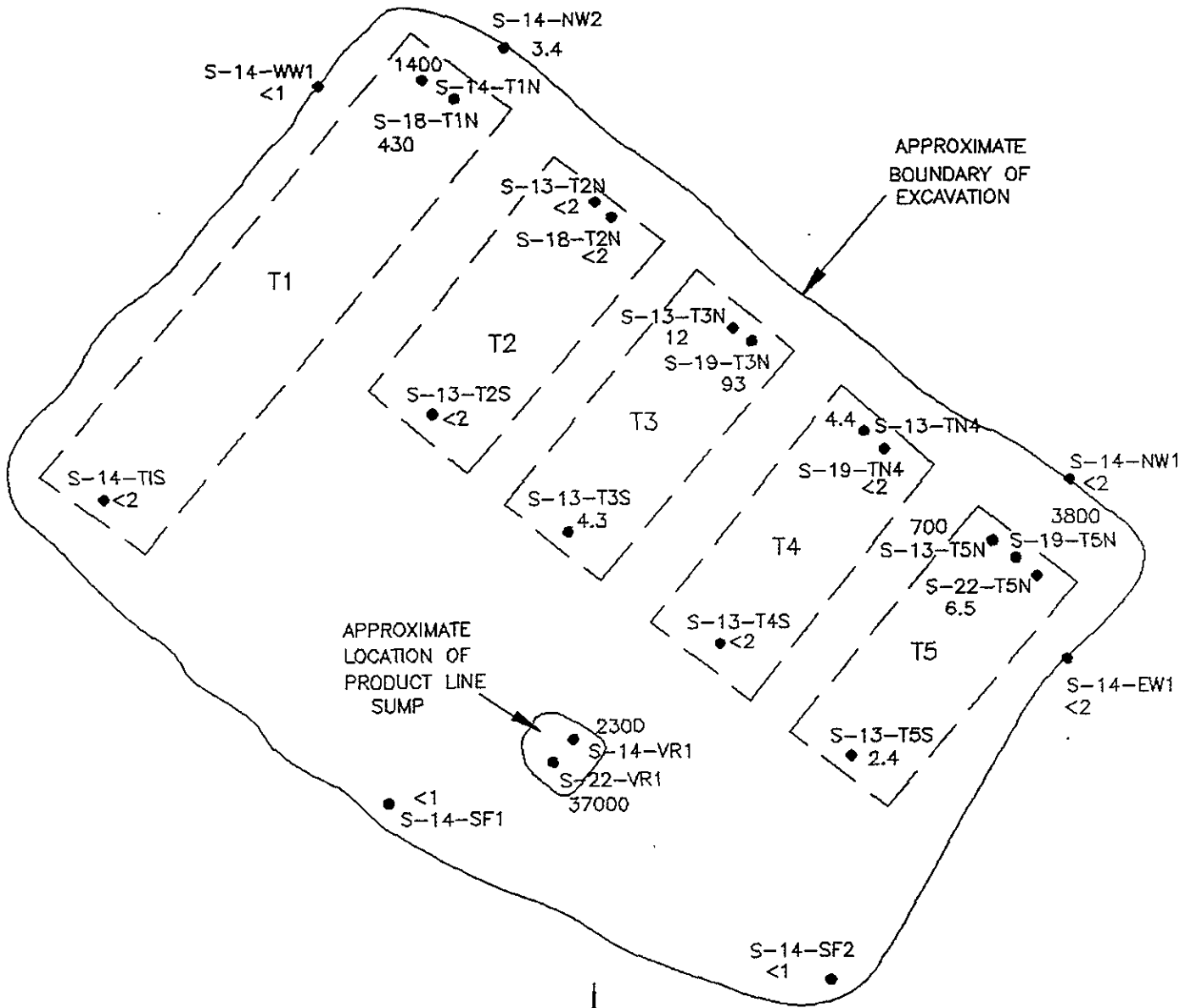
**ARCO Station 2152  
22141 Center Street  
Castro Valley, California**

**RESNA**  
*Working to Restore Nature*

PROJECT 69013 08

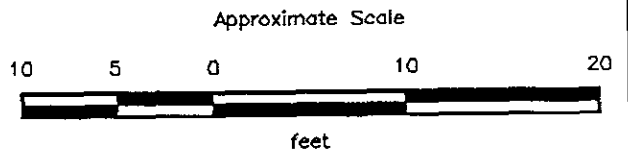


# UST PIT SAMPLES



**EXPLANATION**

- T5 = Designated tank number
- S-14-SF1 = Soil sample
- 37,000 = Concentration of TPHg in ppm



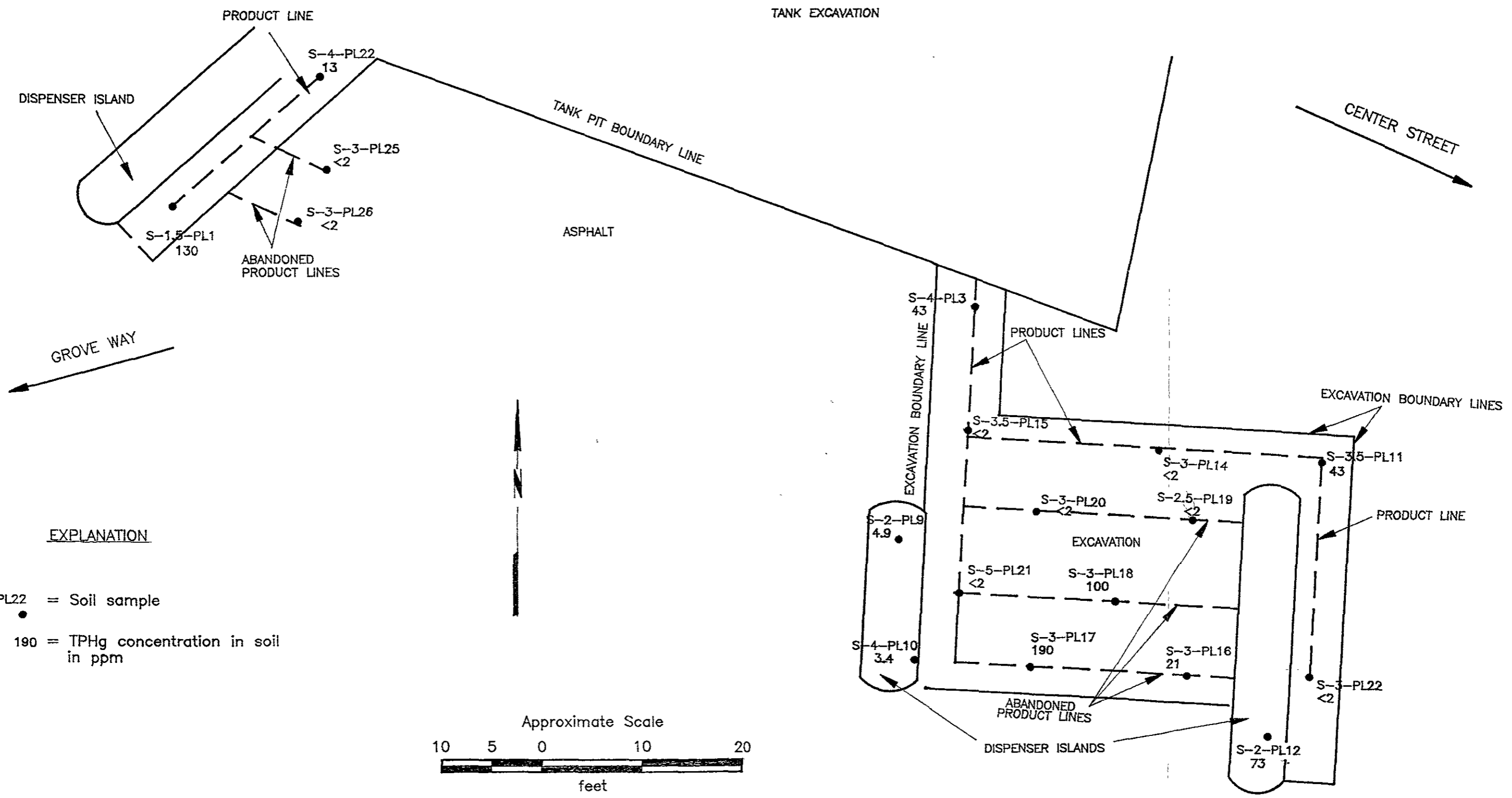
Source: Modified from plan prepared by ARCO



**TANK PIT SOIL SAMPLING LOCATIONS**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

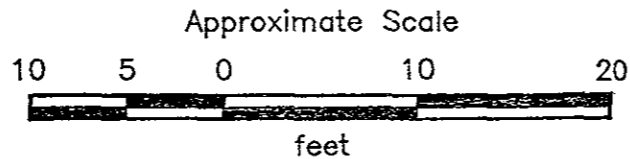
**PLATE**  
**11**

**PROJECT 69013.08**



EXPLANATION

- S-4-PL22 = Soil sample
- 190 = TPHg concentration in soil in ppm



# BORING LOGS

**Total depth of boring:** 45 feet    **Diameter of boring:** 0 inches    **Date drilled:** 4-13-89  
**Casing diameter:** N/A    **Length:** N/A    **Slot size:** N/A  
**Screen diameter:** N/A    **Length:** N/A    **Material type:** N/A  
**Drilling Company:** HEW-Drilling Co.    **Driller:** Anibal & Bobby  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman  
**Signature of Registered Professional:** \_\_\_\_\_  
**Registration No.:** \_\_\_\_\_    **State:** CA

DEPTH	SAMPLE NO.	BLOWS	P.L.D.	USCS CODE	DESCRIPTION	WELL CONST.
0					Asphalt.	
2				GC	Clayey gravel, with sand, light brown, dry to damp, fill.	▽▽▽▽
				CH	Silty clay, brown, damp, high plasticity, very stiff.	▽▽▽▽
4	S-4.5	11 7 11	0	CL	Silty clay, brown with black mottling, damp, slight plasticity, very stiff.	▽▽▽▽
10	S-9.5	8 16 17	0		Some very fine-grained sand, hard.	▽▽▽▽
14	S-14.5	7 14 18	0	CH	Silty clay, with intermittent pebbles to 3/8-inch, damp, high plasticity, hard.	▽▽▽▽
20	S-19.5	6 15 18	9.7	CL	Sandy clay, brown, damp, low plasticity, hard.	▽▽▽▽

(Section continues downward)



**PROJECT NO. 69013-1**

**LOG OF BORING B - 1**  
**ARCO Station No. 2152**  
**2214 Center Street**  
**Castro Valley, California**

**PLATE**  
**P - 4**

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-22				CL	Sandy clay, brown, damp, low plasticity, hard.	▽▽▽▽▽
-24	S-24.5	5 10 15	134		Increasing sand.  Fine-grained sand, with small lenses of light gray, damp, slight plasticity, noticeable product odor.	
-26						
-28						
-30	S-29.5	5 11 17	31	CL	Silty clay, brown with gray mottling, damp, slight plasticity, very stiff.	
-32						
-34	S-34.5	5 10 13	182		Noticeable odor.	
-36						
-38						
-40	S-39.5	7 14 21	29			
-42						
-44	S-44.5	18 12 39	0	GC	Clayey gravel, brown with gray intermittent pebbles, damp, dense.	
-46					Total Depth = 45 feet	
-48						
-50						



PROJECT NO. 69013-1

# LOG OF BORING B - 1

ARCO Station No. 2152  
2214 Center Street  
Castro Valley, California

PLATE

P - 5

**Total depth of boring:** 30 feet    **Diameter of boring:** 8 inches    **Date drilled:** 4-13-89  
**Casing diameter:** N/A    **Length:** N/A    **Slot size:** N/A  
**Screen diameter:** N/A    **Length:** N/A    **Material type:** N/A  
**Drilling Company:** HEW-Drilling Co.    **Driller:** Anibal & Bobby  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman

**Signature of Registered Professional:** \_\_\_\_\_  
**Registration No.:** \_\_\_\_\_    **State:** CA

DEPTH	SAMPLE NO.	BLOWS	P.I.D.	USCS CODE	DESCRIPTION	WELL CONST.
0					Asphalt.	VVVVV
2				GC	Clayey gravel, dark brown, damp, fill.	▽▽▽▽▽
4	S-4.5	4 8 14	0	CH	Silty clay, brown, damp, high plasticity, very stiff.	▽▽▽▽▽
6						▽▽▽▽▽
8				CL	Silty clay, brown with black mottling, damp, low plasticity, very stiff.	▽▽▽▽▽
10	S-9.5	6 15 20	0			▽▽▽▽▽
12						▽▽▽▽▽
14	S-14.5	4 7 12	0			▽▽▽▽▽
16				CL	Silty clay, with lenses of silty sand, brown, moist, medium plasticity, stiff.	▽▽▽▽▽
18						▽▽▽▽▽
20	S-19.5	3 5 6	.9			▽▽▽▽▽

(Section continues downward)



PROJECT NO. 69013-1

**LOG OF BORING B - 2**  
**ARCO Station No. 2152**  
**2214 Center Street**  
**Castro Valley, California**

**PLATE**  
**P - 6**





Depth	Sample No.	SMOTE	P.L.D.	USCS Code	Description	Well Const.
-22				CL	Silty clay with lenses of sandy clay, brown with gray mottling, moist, low plasticity.	▽▽▽▽▽
-24	S-24.5	8 10 22	15	CH	Silty clay, gray-brown, damp, high plasticity, very stiff.	▽▽▽▽▽
-26						▽▽▽▽▽
-28						▽▽▽▽▽
-30	S-29.5	4 8 12	6.1			▽▽▽▽▽
Total Depth = 30 feet						
-32						
-34						
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



PROJECT NO. 69013-1

**LOG OF BORING B - 3**

ARCO Station No 2152  
2214 Center Street  
Castro Valley, California

PLATE

P - 9



**Depth of boring:** 60 feet    **Diameter of boring:** 10 inches    **Date drilled:** 6-14-90  
**Well depth:** 58 feet    **Material type:** Sch 40 PVC    **Casing diameter:** 4 inches  
**Screen interval:** 45 to 58 feet    **Slot size:** 0.020-inch  
**Drilling Company:** Gregg Drilling    **Driller:** Steve and Mike  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman

**Signature of Registered Professional:** *Deane Barclay, BSA*  
**Registration No.:** CEG 1366    **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CH	Silty clay, dark gray to black, damp, high plasticity, very stiff. Brown.	
4	S-5	10 14 25	0	CL	Silty clay, brown mottled with black, damp, low plasticity, hard.	
10	S-10	10 10 10	0	CL	Sandy clay, brown, damp, low plasticity, very stiff.	
14	S-15	8 10 20	0	CH	Silty clay, brown, damp, high plasticity, very stiff.	
20	S-20	15 20 32	0	SP	Gravelly sand, brown, damp, very dense; medium-grained.	
(Section continues downward)						



**PROJECT:** 69013-4

## LOG OF BORING B-4/MW-1

**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

**PLATE**

**4**

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-22				SP	Gravelly sand, brown, damp, very dense; medium-grained.	
-24				SC	Clayey sand, green-brown, damp, dense.	
-26	S-25	6 12 14	0			
-28						
-30	S-30	15 23 40	0	SP	Sand with some pebbles to 1/8" diameter, brown, damp, very dense; medium-grained, noticeable product odor.	
-32						
-34	S-35	15 27 45	2	CL	Silty clay, brown mottled with black, damp, low plasticity, hard; noticeable product odor.	
-36						
-38						
-40	S-40	6 14 20	0			
-42						
-44	S-44.5	35 50	2	GC	Clayey gravel with sand, brown, moist, dense.	
-46						
-48						
-50	S-49.5	20 50	0			

(Section continues downward)



PROJECT 69013-4

**LOG OF BORING B-4/MW-1**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE

5

Depth	Sample No.	B.S.W.	P.L.D.	USCS Code	Description	Well Const.
-52				GC	Clayey gravel with sand, brown, moist, dense.	[Well Const. Pattern]
-54	S-54.5	20 50	0	GW ▽ ≡	Sandy gravel with clay, brown, moist, very dense. Wet.	
-56						
-58						
-60	S-59	100	0		Claystone, brown, dry. Drilling hard at 58 feet.	[Well Const. Pattern]
-62					Total Depth = 60 feet.	
-64						
-66						
-68						
-70						
-72						
-74						
-76						
-78						
-80						



PROJECT 69013-4

**LOG OF BORING B-4/MW-1**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE

6

Depth of boring: 60 feet    Diameter of boring: 10 inches    Date drilled: 6-14-90  
 Well depth: 59 feet    Material type: Sch 40 PVC    Casing diameter: 4 inches  
 Screen interval: 47 to 59 feet    Slot size: 0.020-inch  
 Drilling Company: Gregg Drilling    Driller: Steve and Mike  
 Method Used: Hollow-Stem Auger    Field Geologist: Steve Bittman  
 Signature of Registered Professional: *Luane Barclay*  
 Registration No.: CEG 1366    State: CA

Depth	Sample No.	Blows	P.L.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CH	Silty clay, blue-green, damp, high plasticity, very stiff; noticeable product odor.	
4				CL	Silty clay, brown, damp, medium plasticity, hard.	
6	S-5	10 15 20	0			
10	S-10	15 25 32	0			
16	S-15	15 31 39	0.5			
20	S-20	17 22 37	20		With fine sand, green-brown, low plasticity; noticeable product odor.	

(Section continues downward)



PROJECT: **69013-4**

**LOG OF BORING B-5/MW-2**

ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE

**7**

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				CL	Silty clay with fine sand, green-brown, damp, low plasticity, hard; noticeable product odor.	
24	S-25	15	55		Brown, stringers of caliche throughout; noticeable product odor.	
		25				
26		35				
28						
30	S-30	6	200			
		12				
		15				
32						
34	S-35	5	600			
		15				
36		37				
38					Obvious product odor.	
40	S-40	6	525			
		17				
		29				
42						
44	S-45	10	90	SC	Clayey sand, green-brown, damp, very dense; fine-grained, noticeable product odor.	
		23				
46		40				
48						
50	S-49.5	17	60	GC	Clayey gravel, reddish-brown, moist, very dense.	
		50				

(Section continues downward)



## LOG OF BORING B-5/MW-2

PLATE

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

8

PROJECT 69013-4

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-52				GC	Clayey gravel, reddish-brown, moist, very dense.	
-54	S-54.5	27 50	0.5	▽ =	Wet.	
-56						
-58						
-60	S-59	75	0		Claystone, yellow-brown, dry, moderately cemented, hard.	
					Total Depth = 60 feet.	
-62						
-64						
-66						
-68						
-70						
-72						
-74						
-76						
-78						
-80						



**LOG OF BORING B-5/MW-2 PLATE**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

**9**

**PROJECT 69013-4**

**Depth of boring:** 63 feet    **Diameter of boring:** 10 inches    **Date drilled:** 6-12-90  
**Well depth:** 60 feet    **Material type:** Sch 40 PVC    **Casing diameter:** 4 inches  
**Screen Interval:** 45 to 60 feet    **Slot size:** 0.020-inch  
**Drilling Company:** Gregg Drilling    **Driller:** Steve and Mike  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman

**Signature of Registered Professional:** *Heane Barclay*  
**Registration No.:** CEG 1366    **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CL	Silty clay, dark brown, damp, low plasticity, stiff. Light brown, medium plasticity.	
4	S-5	5 12 20	0	CH	Silty clay, gray-brown, damp, high plasticity, very stiff.	
10	S-10	14 20 32	0	CL	Sandy clay, light brown, damp, low plasticity, hard.	
14	S-15	10 19 24	0		Interbedded clayey sand. With medium-grained sand.	
18				GC	Clayey gravel with sand, subrounded cobbles to 3", brown, damp, dense.	
20	S-20	20 17 12	0			

(Section continues downward)



**LOG OF BORING B-6/MW-3**

**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

**PLATE**

**10**

**PROJECT: 69013-4**

Depth	Sample No.	BLOW COUNT	P.I.D.	USCS Code	Description	Well Const.
-22				GC	Clayey gravel with sand, subrounded cobbles to 3", brown, damp, medium dense.	
-24				SM	Silty fine sand, light brown, damp, dense.	
-26	S-25	10 18 26	0			
-28				SP	Gravelly sand, medium-grained with subangular pebbles to 1/2", brown, damp, very dense.	
-30	S-29.5	27 32	0			
-32						
-34				GC	Clayey gravel with medium-grained sand, brown, damp, very dense.	
-36	S-35	20 25 35	2			
-38						
-40	S-40	15 22 27	0	ML	Clayey silt, light brown, damp, low plasticity, hard.	
-42						
-44				CL	Silty clay, reddish-brown, moist, medium plasticity, very stiff.	
-46	S-44.5	27 50	2	GC	Clayey gravel, reddish-brown, moist, very dense.	
-48						
-50	S-49.5	32 70	0		With stringers of black fine-grained sand.	

(Section continues downward)



Applied GeoSystems

## LOG OF BORING B-6/MW-3

PLATE

ARCO Station 2152

22141 Center Street

Castro Valley, California

11

PROJECT

69013-4



Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-52				GC ▽ =	Clayey gravel, reddish-brown, moist, very dense; with stringers of black fine-grained sand.	
-54	S-54.5	35 90	0			
-56				▽ =	Clayey sand with gravel, medium-grained, gray-brown, wet, very dense.	
-58	S-59	80		SC		
-60					Claystone, gray, dry. Very hard drilling at 60 feet.	
-62	S-62	75	0			
-64					Total Depth = 63 feet.	
-66						
-68						
-70						
-72						
-74						
-76						
-78						
-80						



PROJECT 69013-4

**LOG OF BORING B-6/MW-3**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE

12

**Depth of boring:** 61-1/2 feet    **Diameter of boring:** 10 inches    **Date drilled:** 6-13-90  
**Well depth:** 60 feet    **Material type:** Sch 40 PVC    **Casing diameter:** 4 inches  
**Screen interval:** 45 to 60 feet    **Slot size:** 0.020-inch  
**Drilling Company:** Gregg Drilling    **Driller:** Steve and Mike  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman  
**Signature of Registered Professional:** *Heane Barclay* *BSA*  
**Registration No.:** CEG 1366    **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CH	Silty clay, gray mottled with brown, damp, high plasticity, very stiff.	
4				CL	Silty clay, light brown, mottled with black, damp, low plasticity, hard.	
6	S-5	22 34 52	0			
10	S-10	15 25 35	0			
16	S-15	14 25 34	0		Dark brown, medium plasticity.	
20	S-20	18 25 39	0		Brown.	

(Section continues downward)



PROJECT: **69013-4**

**LOG OF BORING B-7/MW-4**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**

**PLATE**  
**13**

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				CL	Silty clay, brown, damp, medium plasticity, hard.	
-24	S-25	17 35 51	0			
-26					Some fine sand, light brown, low plasticity.	
-28						
-30	S-30	15 32 59	0			
-32						
-34						
-36	S-35	15 20 27	0			
-38						
-40	S-40	18 25 39	0			
-42						
-44	S-44.5	25 50	0	GW	Sandy gravel with minor clay, brown, damp, very dense.	
-46						
-48					Heavy cobbles to 4" diameter.	
-50	S-49	50	0			

(Section continues downward)



Applied GeoSystems

## LOG OF BORING B-7/MW-4

PLATE

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

14

PROJECT 69013-4

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-52				GW ▽ =	Sandy gravel with minor clay, brown, moist, very dense Wet.	
-54	S-54.5	50 50	0	SC	Clayey sand with gravel to 2" diameter, brown, wet, very dense; medium-grained.	
-56						
-58	S-58	45 63	0			
-60	S-59.5	20 50	0		Drilling hard at 60 feet.	
-62	S-61	100	0	GW	Claystone, brown, dry, very hard.	
-62					Total Depth = 61-1/2 feet.	
-64						
-66						
-68						
-70						
-72						
-74						
-76						
-78						
-80						



Applied GeoSystems

**LOG OF BORING B-7/MW-4 PLATE**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

**15**

**PROJECT 69013-4**

Depth of boring: 41-1/2 feet Diameter of boring: 10 inches Date drilled: 1-14-91  
 Well depth: 39 feet Material type: Sch 40 PVC Casing diameter: 4 inches  
 Screen interval: 24 to 39 feet Slot size: 0.020-inch  
 Drilling Company: Exploration GeoServices Driller: Mike and John  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Pea gravel to 19-1/2 feet.	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20	S-20	10 19 21	3	CH	NOTE: 12-inch diameter Schedule 80 PVC conductor casing from surface to depth of 14 feet installed during previous tank removal operations; well installed through conductor casing on date drilled.  Bottom of tank pit backfill.  Silty clay, brown, damp, high plasticity, very stiff.	
(Section continues downward)						



PROJECT: 69013-6

LOG OF BORING B-8/VW-3  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 4

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				CH	Silty clay, brown, damp, high plasticity, very stiff.	
-24	S-25	10	4	ML/CL	Silty clay with stringers of fine sand, brown, damp, medium plasticity, hard.	
		19				
-26		21				
-28						
-30						
-32	S-33	10	140		Very stiff; noticeable product odor.	
		29				
-34		35				
-36						
-38	S-39	11	13	CL	Sandy clay, brown, damp, medium plasticity, very stiff; noticeable product odor.	
		15				
-40		16				
	S-41	10	0			
		13				
-42		15				
-44					Total Depth = 41-1/2 feet.	
-46						
-48						
-50						



PROJECT 69013-6

LOG OF BORING B-8/VW-3  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 5



Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
		9			Pea gravel to 21 feet.	
-22	S-22	27 39	700	SC	Clayey sand, fine-grained, brown, damp, very dense; noticeable product odor.	
-24						
-26	S-26	28 31 42	81			
-28						
-28	S-29	15 30 40	85	SW	Gravelly sand, gray, damp, very dense; noticeable product odor.	
-30	S-31	16 37 50	5	CL	Silty clay, brown, damp, low plasticity, hard; noticeable product odor.	
-32						
-32	S-33	13 21 30	0			
-34					Total Depth = 33-1/2 feet.	
-36						
-38						
-40						
-42						
-44						
-46						
-48						
-50						



PROJECT 69013-6

LOG OF BORING B-9/VW-4  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE

7



Depth of boring: 40-1/2 feet Diameter of boring: 6 inches Date drilled: 6-18-90  
 Well depth: 40-1/2 feet Material type: Sch 40 PVC Casing diameter: 2 inches  
 Screen interval: 25 to 40 feet Slot size: 0.020-inch  
 Drilling Company: Gregg Drilling Driller: Steve and Mike  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: Shane Barclay, P.E.  
 Registration No.: CEG 1366 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CH	Silty clay, brown, damp, high plasticity, very stiff.	
4				CL	Silty clay, brown mottled with black, damp, low plasticity, hard.	
6	S-5	15 22 39	0			
10	S-10	13 9 31	0		Brown.	
16	S-15	6 15 25	0	CH	Silty clay, brown, damp, high plasticity, hard.	
20	S-20	10 19 22	0	CL	Silty clay with some fine-grained sand, brown, damp, medium plasticity, hard.	

(Section continues downward)



PROJECT: **69013-4**

**LOG OF BORING B-10/VW-1 PLATE**

ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

**16**

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-22				CL	Silty clay with fine-grained sand, brown, damp, medium plasticity, hard.	▼▼▼▼
-24	S-25	10	0		Interbedded with fine-grained sand, low plasticity.	▼▼▼▼
-25		19				
-26		22				
-28				GW	Gravelly sand with minor clay, brown, damp, very dense.	▼▼▼▼
-30	S-30	8	0			▼▼▼▼
-31		15				
-32						▼▼▼▼
-34	S-35	9	0	GC	Clayey gravel, brown, damp, dense.	▼▼▼▼
-35		15				
-36		35				
-38						▼▼▼▼
-40	S-40	18	0			▼▼▼▼
-39		39				
-40		50				
-42	Total Depth = 40-1/2 feet.					
-44						
-46						
-48						
-50						



PROJECT 69013-4

**LOG OF BORINGB-10/VW-1 PLATE**

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

**17**

**Depth of boring:** 40-1/2 feet    **Diameter of boring:** 6 inches    **Date drilled:** 6-18-90  
**Well depth:** 39 feet    **Material type:** Sch 40 PVC    **Casing diameter:** 2 inches  
**Screen interval:** 24 to 39 feet    **Slot size:** 0.020-inch  
**Drilling Company:** Gregg Drilling    **Driller:** Steve and Mike  
**Method Used:** Hollow-Stem Auger    **Field Geologist:** Steve Bittman

**Signature of Registered Professional:** *Deane Barclay* *BSA*  
**Registration No.:** CEG 1366    **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches) over baserock (2 inches).	
2				CH	Silty clay, brown, damp, high plasticity, very stiff.	
4				CL	Silty clay, brown mottled with black, damp, low plasticity, very stiff.	
6	S-5	10 19 40	0			
10	S-10	8 19 20	0			
16	S-15	8 19 22	0			
20	S-20	10 29 31	0		Noticeable product odor.	

(Section continues downward)



**LOG OF BORING B-11/VW-2**    **PLATE**  
**ARCO Station 2152**  
**22141 Center Street**  
**Castro Valley, California**    **18**

**PROJECT:**    **69013-4**

Depth	Sample No.	BLOWS	P.L.D.	USCS Code	Description	Well Const.
-22				CL	Silty clay, brown, damp, low plasticity, hard; noticeable product odor.	V V V
-24	S-25	6	12		Gray-brown.	V V V
		19				
-26		27				
-28						
-30	S-30	12	7			V V V
		17				
		29				
-32						
-34	S-35	21	12			V V V
		15				
-36		40				
-38						
-40	S-40	8	10			V V V
		9				
		9				
-42	Total Depth = 40-1/2 feet.					
-44						
-46						
-48						
-50						



**LOG OF BORING B-11/VW-2**

**PLATE**

**ARCO Station 2152  
22141 Center Street  
Castro Valley, California**

**19**

**PROJECT 69013-4**

Depth of boring: 47-1/2 feet Diameter of boring: 8 inches Date drilled: 1-16-91  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen Interval: N/A Slot size: N/A  
 Drilling Company: Exploration GeoServices Driller: Mike and John  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	
2				GW	Sandy gravel, brown, damp, loose: Fill.	▽▽▽▽▽
				CH	Silty clay, dark brown, damp, high plasticity, stiff.	▽▽▽▽▽
4	S-5	15	0	CL	Silty clay, brown, dry, low plasticity, hard.	▽▽▽▽▽
		45				
		50				
6						
8						
10	S-10	20	0	CL	Damp.	▽▽▽▽▽
		30				
		30				
12						
14	S-15	15	0	SC	Clayey sand, fine-grained, brown, damp, hard.	▽▽▽▽▽
		24				
		30				
16						
18						
20	S-20	8	1		Moist, dense.	▽▽▽▽▽
		17				
		30				

(Section continues downward)



PROJECT: 69013-6

LOG OF BORING B-12  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 8

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				SC	Clayey sand, fine-grained, brown, moist, dense.	▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽
-24	S-25	13 32 46	2	CL	Silty clay, brown, damp, low plasticity, hard.	
-26						
-28						
-30	S-30	12 15 28	10		Noticeable product odor.	
-32						
-34	S-35	12 16 29	13			
-36						
-38						
-40	S-40	15 17 22	110		Very stiff; noticeable product odor.	
-42						
-44	S-45	16 27 31	4	SC	Clayey sand, fine-grained, brown, damp, dense; noticeable product odor.	
-46	S-47	10 25 29	9		Medium-grained.	
-48					Total Depth = 47-1/2 feet.	
-50						



LOG OF BORING B-12  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 9

PROJECT 69013-6

Depth of boring: 45-1/2 feet Diameter of boring: 8 inches Date drilled: 1-17-91  
 Well depth: 38 feet Material type: Sch 40 PVC Casing diameter: 4 inches  
 Screen Interval: 28 to 38 feet Slot size: 0.020-inch  
 Drilling Company: Exploration GeoServices Driller: Mike and John  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	
				GW	Sandy gravel, brown, damp, loose: Fill.	
2				CH	Silty clay, dark brown, moist, high plasticity, stiff.	
4	S-5	23 38 50	0		Brown, damp, hard.	
8				CL	Silty clay, dark brown, moist, low plasticity, hard.	
10	S-10	18 34 50	0			
14	S-15	6 12 17	0	CL	Sandy clay, brown, damp, low plasticity, very stiff.	
18						
20	S-20	8 9 14	0			

(Section continues downward)



PROJECT: 69013-6

LOG OF BORING B-13/VW-5

ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE

10

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				CL	Sandy clay, brown, damp, low plasticity, very stiff.	
-24	S-25	17 21 21	6	SC	Clayey sand, medium-grained, gray-brown, damp, dense; noticeable product odor.	
-26						
-28				CL	Silty clay, brown mottled with gray, damp, low plasticity, hard; noticeable product odor.	
-30	S-30	13 15 24	190			
-32						
-34	S-35	11 18 22	220			
-36						
-38						
-40	S-40	15 21 34	90			
-42						
-44	S-45	8 17 50	4	SP	Gravelly sand, brown, moist, dense.	
-46					Total Depth = 45-1/2 feet.	
-48						
-50						



PROJECT 69013-6

LOG OF BORING B-13/VW-5

ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE

11



Depth of boring: 45-1/2 feet Diameter of boring: 8 inches Date drilled: 1-17-91  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen Interval: N/A Slot size: N/A  
 Drilling Company: Exploration GeoServices Driller: Mike and John  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	▽▽▽▽
				GW	Sandy gravel, brown, damp, loose: Fill.	▽▽▽▽
2				CH	Silty clay, brown, damp, high plasticity, hard.	▽▽▽▽
4	S-5	8	0			▽▽▽▽
		15				
		34				
6						▽▽▽▽
8						▽▽▽▽
10	S-10	16	0	CL	Silty clay, slightly sandy, brown, low plasticity, hard.	▽▽▽▽
		29				
		10				▽▽▽▽
12				ML	Clayey silt, brown, moist, low plasticity, hard.	▽▽▽▽
14	S-15	8	1			▽▽▽▽
		13				
		22				
16						▽▽▽▽
18				CH	Silty clay, brown, moist, high plasticity, very stiff.	▽▽▽▽
20	S-20	8	0			▽▽▽▽
		8				
		13				▽▽▽▽

(Section continues downward)



PROJECT: 69013-6

LOG OF BORING B-14  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 12

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-22				CH	Silty clay, brown, moist, high plasticity, very stiff.	▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽ ▽▽▽▽
-24	S-25	10 20 31	0	SP	Gravelly sand, medium-grained with subrounded gravel to 1/4", brown, damp, very dense.	
-26						
-28						
-30	S-30	10 24 32	0		Increase gravel size.	
-32						
-34	S-35	12 23 35	2	CL	Silty clay, brown mottled with gray, damp, low plasticity, hard.	
-36						
-38						
-40	S-40	29 48 50	55		Noticeable product odor.	
-42						
-44	S-45	30 50 50	0	GC	Clayey gravel with some sand, brown, damp, very dense	
-46					Total Depth = 45-1/2 feet.	
-48						
-50						



PROJECT 69013-6

LOG OF BORING B-14  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 13

Depth of boring: 10-1/2 feet Diameter of boring: 8 inches Date drilled: 1-17-91

Well depth: N/A Material type: N/A Casing diameter: N/A

Screen Interval: N/A Slot size: N/A

Drilling Company: Exploration GeoServices Driller: Mike and John

Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman

Signature of Registered Professional: \_\_\_\_\_

Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	
		7				
		12				
2	S-2	15	0	GW	Sandy gravel, brown, damp, loose: Fill.	▽▽▽▽
				CH	Silty clay, gray, damp, high plasticity, very stiff.	▽▽▽▽
4		50				▽▽▽▽
		50		ML	Clayey silt, brown, dry, low plasticity, hard.	▽▽▽▽
	S-5	50	0			▽▽▽▽
6						▽▽▽▽
8						▽▽▽▽
		15				▽▽▽▽
		37				▽▽▽▽
10	S-10	50	0			▽▽▽▽
					Total Depth = 10-1/2 feet.	
12						
14						
16						
18						
20						



PROJECT: 69013-6

LOG OF BORING B-15  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 14

Depth of boring: 10-1/2 feet Diameter of boring: 8 inches Date drilled: 1-17-91  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen Interval: N/A Slot size: N/A  
 Drilling Company: Exploration GeoServices Driller: Mike and John  
 Method Used: Hollow-Stem Auger Field Geologist: Steve Bittman  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt.	▽▽▽▽
		2				▽▽▽▽
		4		GW	Sandy gravel, brown, damp, loose: Fill.	▽▽▽▽
2	S-2	4	26	CH	Silty clay, gray, moist, high plasticity, stiff; obvious product odor.	▽▽▽▽
		8				▽▽▽▽
		17				▽▽▽▽
4	S-5	35	0		Brown, damp, hard.	▽▽▽▽
6						▽▽▽▽
8						▽▽▽▽
		10				▽▽▽▽
		15		CL	Silty clay, brown, damp, low plasticity, hard.	▽▽▽▽
10	S-10	45	0			▽▽▽▽
					Total Depth = 10-1/2 feet.	
12						
14						
16						
18						
20						



PROJECT: 69013-6

LOG OF BORING B-16  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 15

Depth of boring: 21-1/2 feet Diameter of boring: 6 inches Date drilled: 2-21-91  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen Interval: N/A Slot size: N/A  
 Drilling Company: Gregg Drilling Co. Driller: Pierce  
 Method Used: Hollow-Stem Auger Field Geologist: Mike Barminski  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Pea gravel to 5 feet.	▽▽▽▽
2						▽▽▽▽
4					Bottom of pea gravel backfill.	▽▽▽▽
6	S-5 S-5.5 S-6		1.1	CL	Silty clay, brown, damp, low plasticity, hard.	▽▽▽▽
8						▽▽▽▽
10	S-10 S-10.5 S-11		3.6		With sand.	▽▽▽▽
12						▽▽▽▽
14						▽▽▽▽
16	S-15 S-15.5 S-16		2.2			▽▽▽▽
18						▽▽▽▽
20	S-20.5 S-21		1.3		Mottled brown and green, very hard.	▽▽▽▽
Total Depth = 21-1/2 feet.						



LOG OF BORING B - 17  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 16

PROJECT: 69013-6

Depth of boring: 22 feet Diameter of boring: 8 inches Date drilled: 2-21-91  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen interval: N/A Slot size: N/A  
 Drilling Company: Garret Drilling Co. Driller: Pierce  
 Method Used: Hollow-Stem Auger Field Geologist: Mike Barminski  
 Signature of Registered Professional: \_\_\_\_\_  
 Registration No.: \_\_\_\_\_ State: \_\_\_\_\_

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Cement	
2					Pea gravel to 5 feet.	▽▽▽▽
					Bottom of pea gravel backfill.	▽▽▽▽
4	S-3.5		138	CL	Silty clay, brown mottled black, dry, low plasticity, hard; noticeable product odor.	▽▽▽▽
8	S-8		133	CL	Sandy clay, red-brown, damp, low plasticity, hard; noticeable product odor.	▽▽▽▽
12	S-12.5		1078			▽▽▽▽
14	S-14				Brown, medium plasticity.	▽▽▽▽
16	S-15 S-15.5 S-16 S-17		27.1		Low plasticity.	▽▽▽▽
18				GW	Sandy gravel, brown to dark gray, moist to very moist, dense.	▽▽▽▽
20	S-21 S-21.5		1.3			▽▽▽▽

Total Depth = 22 feet.

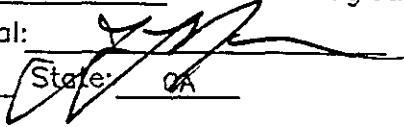


LOG OF BORING B- 18  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 17

PROJECT: 69013-6

Depth of boring: 50-1/2 feet Diameter of boring: 12.25 inches Date drilled: 02/12/92  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen interval: N/A Slot size: N/A  
 Drilling Company: Exploration Drilling Driller: Bruce  
 Method Used: Hollow-Stem Auger Field Geologist: Rob Campbell

Signature of Registered Professional:   
 Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (3 inches) and baserock (6 inches); gravelly sand gray, damp, dense.	▽▽▽▽
2				CL	Sandy clay with some silt, dark gray, moist, low plasticity very stiff.	▽▽▽▽
4	S-4.5	5 9 19	0	ML	Color change to brown with black mottling. Sandy silt, brown, damp, low plasticity, very stiff.	▽▽▽▽
6						▽▽▽▽
8				CL	Silty clay, brown, damp, medium plasticity, very stiff.	▽▽▽▽
10	S-9.5	9 12 14	0	SC	Clayey sand, fine-grained, brown, damp, medium dense.	▽▽▽▽
12						▽▽▽▽
14	S-14.5	5 6 10	0			▽▽▽▽
16						▽▽▽▽
18					Rougher drilling.	▽▽▽▽
20	S-19.5	10 16 16	0	SP	Gravelly sand, fine-grained gravel and coarse-grained sand, brown, damp, dense.	▽▽▽▽

(Section continues downward)



PROJECT: 69013.08

LOG OF BORING B-19  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 4

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				SP	Gravelly sand, fine-grained gravel and coarse-grained sand, brown, damp, dense. Encountered cobbles (3-1/2 to 4 inches in diameter), mixed with medium-grained sand, brown, at 21 to 24 feet.	▽▽▽▽
24	S-25	10 12 13	0		Sand, fine-grained, brown, moist, medium dense.	▽▽▽▽
26						▽▽▽▽
28						▽▽▽▽
30	S-29.5	6 16 29	0	SW	Gravelly sand, fine-grained gravel and fine- to coarse-grained sand, brown, damp, dense. <u>Rougher drilling at 31 feet.</u>	▽▽▽▽
32				GC	Clayey coarse-grained gravel with some medium-grained sand, brown, damp, dense.	▽▽▽▽
34	S-34.5	6 18 20	0			▽▽▽▽
36						▽▽▽▽
38				GP	Sandy gravel, coarse-grained sand and gravel, brown with dark brown streaks, damp, very dense.	▽▽▽▽
40	S-39.5	22 38 50/1"	0		No sample due to cobble.	▽▽▽▽
42						▽▽▽▽
44	S-44.5	30 50/5"0				▽▽▽▽
46				GC	Clayey gravel with some coarse-grained sand, brown, moist, very dense. Easier drilling at 48 feet. Moist soil on end of bit.	▽▽▽▽
48				SC	Clayey sand with gravel, medium-grained sand and coarse-grained gravel; brown, moist, very dense; very moist at 50 feet.	▽▽▽▽
50	S-49.5	25 50/5"0				▽▽▽▽
					Total depth = 50-1/2 feet.	



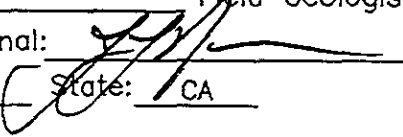
PROJECT 69013.08

LOG OF BORING B-19  
ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE  
5



Depth of boring: 53-1/2 feet Diameter of boring: 8.25 inches Date drilled: 02/13/92  
 Well depth: N/A Material type: N/A Casing diameter: N/A  
 Screen interval: N/A Slot size: N/A  
 Drilling Company: Exploration Drilling Driller: John  
 Method Used: Hollow-Stem Auger Field Geologist: Rob Campbell

Signature of Registered Professional:   
 Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (3 inches) and baserock (6 inches): gravelly sand, gray, damp, dense.	▽▽▽▽
2				ML	Sandy silt, medium-grained sand, brown, damp, low plasticity, very stiff.	▽▽▽▽
4	S-4.5	14 28 29	0			▽▽▽▽
6					Harder drilling at 7 feet.	▽▽▽▽
8				SM/SC	Silty sand with some clay, fine- to medium-grained sand, brown, damp, medium dense.	▽▽▽▽
10	S-9.5	9 12 14	0			▽▽▽▽
12					Clay layers interbedded with sand; clay is grayish-brown, moist, possesses medium plasticity.	▽▽▽▽
14	S-14.5	6 12 19	0		Grades to medium-grained sand.	▽▽▽▽
16				SP	Sand, medium-grained, brown, damp, medium dense.	▽▽▽▽
18					Harder drilling at 18 feet.	▽▽▽▽
20	S-19.5	6 11 11	0	GP	Sandy gravel, coarse-grained sand and fine-grained gravel, brown, damp, medium dense.	▽▽▽▽
(Section continues downward)						▽▽▽▽



LOG OF BORING B-20  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 6

PROJECT: 69013.08

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GP	Sandy gravel, coarse-grained sand and fine-grained gravel, brown, damp, medium dense.	▽▽▽▽
24	S-24.5	7 9 13	0	SP	<u>Grades back into sands; easier drilling at 23 feet.</u> Sand, fine-grained, brown, damp, medium dense.	▽▽▽▽
26						▽▽▽▽
28				SW	Gravelly sand, medium- to coarse-grained sand, brown damp, dense; particles consist of subrounded clasts of	▽▽▽▽
30	S-29.5	10 12 18	0			▽▽▽▽
32				GW	<u>Very rough drilling beginning at about 31 feet.</u> Sandy gravel, fine-grained sand and coarse-grained gravel to cobbles, brown, damp, very dense.	▽▽▽▽
34	S-34.5	27 50/6"0				▽▽▽▽
36						▽▽▽▽
38						▽▽▽▽
40	S-39.5	50/6"0			Becoming silty with medium-grained sand and coarse-grained gravel, moist.	▽▽▽▽
42				SC	<u>Easier drilling at 42 feet.</u> Clayey sand with gravel, fine-grained sand and coarse-grained gravel, gray, moist, medium dense.	▽▽▽▽
44	S-44.5	6 7 20	0			▽▽▽▽
46						▽▽▽▽
48						▽▽▽▽
50	S-50	33 25	0			▽▽▽▽

(Section continues downward)



PROJECT 69013.08

LOG OF BORING B-20  
ARCO Station 2152  
22141 Center Street  
Castro Valley, California

PLATE  
7

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
-52	S-52.5	27 50/1"0			Feldspathic, arkosic sandstone, brown, very moist, low hardness, interbedded with saturated clay seams, moderately weathered; with clay cement.	▽▽▽▽ ▽▽▽▽
					Water at 53 feet.	
-54					Total depth = 53-1/2 feet.	
-56						
-58						
-60						
-62						
-64						
-66						
-68						
-70						
-72						
-74						
-76						
-78						
-80						



PROJECT 69013.08

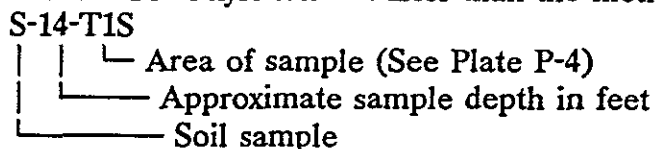
LOG OF BORING B-20  
 ARCO Station 2152  
 22141 Center Street  
 Castro Valley, California

PLATE  
 8

TABLE 3  
 RESULTS OF LABORATORY ANALYSES OF TANK-PIT SOIL SAMPLES  
 ARCO Station No. 2152  
 22141 Center Street, Castro Valley, California

Date	Sample Number	TPHg	B	T	E	X
<u>Tank-Pit Excavation</u>						
08/18/89	S-14-T1S	<2	0.24	<0.05	<0.05	<0.05
08/18/89	S-13-T2S	<2	<0.05	<0.05	<0.05	<0.05
08/18/89	S-13-T3S	4.3	0.09	<0.05	<0.05	<0.05
08/18/89	S-13-T4S	<2	<0.05	<0.05	<0.05	<0.05
08/18/89	S-13-T5S	2.4	<0.05	<0.05	<0.05	<0.05
08/18/89	S-14-T1N	1,400	0.72	6.1	11	130
08/18/89	S-13-T2N	<2	0.076	<0.05	1.1	8.5
08/18/89	S-13-T3N	12	0.29	0.29	0.22	1.3
08/18/89	S-13-T4N	4.4	<0.05	<0.05	<0.05	0.23
08/18/89	S-13-T5N	700	4.6	2.0	4.6	83
08/18/89	S-18-T1N	430	<0.05	<0.05	1.1	8.5
08/18/89	S-18-T2N	<2	0.076	<0.05	<0.05	0.092
08/18/89	S-19-T3N	93	0.11	0.11	0.74	3.5
08/18/89	S-19-T4N	<2	<0.05	<0.05	<0.05	<0.05
08/18/89	S-19-T5N	3,800	<0.05	15	18	150
08/24/89	S-22-T5N	6.5	<0.05	0.36	0.093	0.82
08/22/89	S-14-NW1	<2	<0.05	<0.05	<0.05	<0.05
08/22/89	S-14-EW1	<2	<0.05	<0.05	<0.05	<0.05
08/30/89	S-14-NW2	3.4	<0.005	<0.005	<0.005	.030
08/30/89	S-14-WW1	<1	<0.005	<0.005	<0.005	<0.005
08/30/89	S-14-SF1	<1	<0.005	<0.005	<0.005	<0.005
08/30/89	S-14-SF2	<1	<0.005	<0.005	<0.005	<0.005
08/30/89	S-14-VR1	2,300	<2	<2	19	146
08/30/89	S-22-VR1	37,000	<40	510	380	2,600

Results in parts per million (ppm). TPHg: Total petroleum hydrocarbons as gasoline;  
 B: Benzene T: Toluene E: Ethylbenzene X: Total xylenes. <: Less than the method  
 detection limit. Sample ID:



**TABLE A2**  
**RESULTS OF LABORATORY ANALYSES OF PRODUCT-LINE SOIL SAMPLES**  
**ARCO Station 2152**  
**Castro Valley, California**

Date	Sample #	TPHg	B	T	E	X
<u>Center Street Dispensers</u>						
09/06/89	S-4-PL3	43	1.0	3.2	0.74	4.0
09/06/89	S-2-PL9	4.9	0.24	0.18	0.16	0.64
09/06/89	S-4-PL10	3.4	0.21	0.18	0.11	0.25
09/06/89	S-3.5-PL11	43	1.0	3.2	0.74	4.0
09/06/89	S-2-PL12	73	0.13	<0.050	0.60	3.6
09/11/89	S-3-PL14	<2	<0.050	<0.050	<0.050	<0.050
09/11/89	S-3.5-PL15	<2	<0.050	<0.050	<0.050	0.087
09/15/89	S-3-PL16	21	0.14	0.84	0.42	2.5
09/15/89	S-3-PL17	190	0.85	7.4	2.3	14
09/15/89	S-3-PL18	100	0.72	3.3	1.2	7.2
09/15/89	S-2.5-PL19	<2	<0.050	<0.050	<0.050	<0.050
09/15/89	S-3-PL20	<2	<0.050	<0.050	<0.050	<0.050
09/15/89	S-5-PL21	<2	<0.050	<0.050	<0.050	<0.050
09/15/89	S-3-PL22	<2	<0.050	<0.050	<0.050	<0.050
<u>Grove Street Dispensers</u>						
09/06/89	S-1.5-PL1	130	1.6	3.8	2.4	13
09/19/89	S-4-PL22	13	0.20	0.97	0.16	1.2
10/04/89	S-3-PL25	<2	<0.050	<0.05	<0.050	<0.050
10/04/89	S-3-PL26	<2	<0.050	<0.050	<0.050	<0.050

Results in milligrams per kilogram (mg/kg) or parts per million (ppm).

TPHg: Total petroleum hydrocarbons as gasoline

B: Benzene T: Toluene E: Ethylbenzene X: Total xylenes

<: Less than the detection limit for the analysis method.

Sample identification:

S-4-PL3

