

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES

1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

May 14, 1997

Mr. Robert Mibach
Peralta Community College
333 East 8th Avenue
Oakland, CA 94606

Re: Fuel Leak Site Case Closure-College of Alameda, 555 Atlantic Avenue, Alameda, CA 94501; STID 3683

Dear Mr. Mibach,

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Environmental Protection Division is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed.

SITE INVESTIGATION AND CLEANUP SUMMARY

Please be advised that the following conditions exist at the site:

o Low levels of Total Extractable Hydrocarbons (TEH) remains in the groundwater at ~2,100 parts per billion (ppb) and in soil at 63 parts per million (ppm). Also, low levels of Oil & Grease at 60 ppm remains in the soil.

If you have any questions, please contact me at (510) 567-6700. Thank you.

Sincerely,

Juliet Shin
Senior Hazardous Materials Specialist

Enclosures:

1. Case Closure Letter
2. Case Closure Summary

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REMEDIAL ACTION COMPLETION CERTIFICATION

May 14, 1997

Mr. Robert Mibach
Peralta Community College
333 East 8th Avenue
Oakland, CA 94606

Re: College of Alameda, 555 Atlantic Avenue, Alameda, CA 94501-Five former underground storage tanks (one 550-gallon and one 325-gallon gasoline tank; one 4,000-gallon and one 10,000-gallon fuel oil tank; and one 225-gallon waste oil tank)

STID: 3683

Dear Mr. Mibach,

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks formerly located at the above described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tanks are greatly appreciated.

Based on information in the above-referenced file 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 tank release is required.

This notice is issued pursuant to a regulation contained in Section 2721(e) of Title 23 of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung
Director of Environmental Health Services

c: Chief, Hazardous Materials Division - files
Juliet Shin, ACDEH
Kevin Graves, RWQCB
Lori Casias, SWRCB (w/ Case Closure Summary)

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION

Date: August 27, 1996

Agency name: Alameda County-HazMat Address: 1131 Harbor Bay Pkwy.
City/State/Zip: Alameda, CA 94502 Phone: (510) 567-6700
Responsible staff person: Juliet Shin Title: Senior HMS

II. CASE INFORMATION

Site facility name: College of Alameda
Site facility address: 555 Atlantic Avenue, Alameda, CA 94501
RB LUSTIS Case No: N/A Local Case No./LOP Case No.: 3683
URF filing date: 12/10/93 SWEEPS No: N/A

<u>Responsible Parties:</u>	<u>Addresses:</u>	<u>Phone Numbers:</u>
Peralta Community College Contact: Robert Mibach	333 East 8th Avenue Oakland, CA 94606	(510)466-7340

<u>Tank No:</u>	<u>Size in gal.:</u>	<u>Contents:</u>	<u>Closed in-place or removed?:</u>	<u>Date:</u>
1	550 (a.k.a. A1)	gasoline	removed	8/15-20/91
2	4,000(a.k.a. A2)	fuel oil	"	"
3	10,000(a.k.a. A3)	fuel oil	"	"
4	225(a.k.a. A4)	waste oil	"	"
5	325(a.k.a. A5)	gasoline	"	"

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: Unknown for the most part, although holes were noted in the 225-gallon waste oil underground storage tank (UST).

Site characterization complete? YES

Date approved by oversight agency: August 27, 1996

Monitoring Wells installed? YES Number: Five

Leaking Underground Fuel Storage Tank Program

Proper screened interval? YES (Wells MW-1, MW-2, MW-4, and MW-5 are screened from 4- to 14-feet below ground surface (bgs). Well MW-3 is screened from 5- to 15-feet bgs).

Highest GW depth below ground surface: 1.64-feet bgs in Well MW-1 for just one quarter (anomaly) Lowest depth: 13.12-feet bgs in Well MW-3 during one quarter (anomaly)- Generally, the depth-to-water ranged from approximately 4- to 10-feet bgs in all the wells.

Flow direction: predominantly northwest, but has ranged from northeast to northwest.

Most sensitive current use: commercial

Are drinking water wells affected? NO Aquifer name: The groundwater that is currently screened appears to be lying in fill material according to the boring logs

Is surface water affected? NO Nearest affected SW name: San Francisco Bay

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

Report(s) on file? YES Where is report(s) 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</u> <u>or Disposal w/destination)</u>	<u>Date</u>
Tanks	Five	Erickson, Inc. 255 Parr Blvd. Richmond, CA 94801	8/15/91
Rinsate	558 gallons	Alviso Independent Oil 5002 Archer Alviso, CA 95002	8/14/91
Soil	~400 cubic yards	BFI Vasco Rd. Landfill Livermore, CA	Unknown

Leaking Underground Fuel Storage Tank Program

III. RELEASE AND SITE CHARACTERIZATION INFORMATION (Continued) Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before ⁵	After
TPH (Gas)	1.1 ¹	ND	800	ND
TEH**	1,400 ²	63 ⁴	5200 ⁶⁺	2100 ⁶⁺
Oil & Grease (O&G)	520 ³	60 ³	190	ND
Benzene	0.05 ²	ND	78	ND
Toluene	0.18 ²	ND	99	ND
Total Xylenes	0.56 ²	ND	52	ND
Ethylbenzene	0.15 ²	ND	10	ND
Lead	*		ND	
PNAs			ND	ND
Method 8010 (chlorinateds)			ND	ND

- 1-From sample collected below 325-gallon gasoline UST (Tank A5) @ 5-feet bgs
- 2-From sample collected below 10,000-gallon fuel oil UST (Tank A3) @ 3.5-feet bgs
- 3-sample collected from beneath the 225-gallon waste oil UST (Tank A4)@ 5- to 6.5-feet bgs
- 4-sample collected from beneath Tank A2 @ 5-feet bgs.
- 5-Analysis results from "grab" groundwater sample collected from Tank pit A1.
- 6-Sample chromatograms closely resemble hydraulic fluid
- *-Lead levels in soil and groundwater were below human health and ecological protective threshold levels.
- +--Samples from Well MW-5
- **--Total Extractable Hydrocarbons

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? **NO**

Monitoring wells Decommissioned: **NO** Will be decommissioned upon receipt of case closure.

Number Decommissioned: _____ Number Retained: _____

List enforcement actions taken: **None**

Leaking Underground Fuel Storage Tank Program

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: Juliet Shin Title: Senior HMS
Signature: *Juliet Shin* Date: 9/17/96

Reviewed by
Name: Eva Chu Title: Hazardous Materials Specialist
Signature: *Eva Chu* Date: 9/10/96

Name: Thomas Peacock Title: Supervising HMS
Signature: *Thomas Peacock* Date: 9-17-96

VI. RWQCB NOTIFICATION

Date Submitted to RB: RB Response: *Approved*
RWQCB Staff Name: Kevin Graves Title: *Man.* Engineering Asso. Date:

VII. ADDITIONAL COMMENTS, DATA, ETC. *2/1/96 10-10-96*

The site is currently used as the College of Alameda campus. This campus encompasses the northwest corner of the intersection of Webster Street and Atlantic Avenue in the City of Alameda. The study area is at the west end of the campus (refer to Figures 1 & 2).

Five underground storage tanks (USTs), (one 550-gallon gas UST (a.k.a. Tank A1); one 4,000-gallon fuel oil UST (a.k.a. Tank A2); one 10,000-gallon fuel oil UST (a.k.a. Tank A3); one 225-gallon waste oil UST (a.k.a. Tank A4); and one 325-gallon gasoline UST (a.k.a. Tank A5)), were removed from the site on August 15 and 20, 1991. Buried pipelines associated with the tanks were removed on September 6, 1991. However, pipelines were abandoned in-place where they extended beneath sensitive buried utilities and slab-on-grade floors. Pipelines abandoned in place from Tanks A2, A3, and A4 were pressure washed and plugged.

Holes were only noted in Tank A4. Groundwater was observed in the excavations for Tanks A1, A2, and A3. A total of 27 soil samples and one water sample were collected from the tank and piping excavations. Soil samples collected from Tank pits A4 and A5 were obtained from beneath these tanks, however, due to the presence of groundwater in the other excavations, sidewall soil samples were collected from the soil/water interface in the other tank pits. These soil samples were analyzed for Total Volatile Hydrocarbons (TVH), Total Extractable Hydrocarbons (TEH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and lead. Additionally, an O&G analysis was conducted on the soil samples collected from Tank pit A4 (waste oil tank pit). Sample analysis results identified up to 1,400 parts per million (ppm) TEH, 1.1ppm TVH, 0.05ppm benzene, 0.18ppm toluene, 0.15ppm ethylbenzene, 0.56ppm total xylenes, and 16ppm

Leaking Underground Fuel Storage Tank Program

lead, which is below human health protective threshold levels. Up to 520ppm O&G was identified in samples collected from Tank pit A4 (refer to Tables 1 through 4 and Figures 1 through 11 for sample locations and results).

Groundwater was observed at 6-feet bgs in tank excavations A1, A2, and A3. One "grab" groundwater sample was collected from tank pit A1. The analysis results for this sample identified 800 parts per billion (ppb) TVH, 78ppb benzene, 99ppb toluene, 10ppb ethylbenzene, and 52ppb xylenes. No free floating product nor sheen was observed in the Tank A1 excavation. Fuel oil was spilled onto the water surface in tank excavation A2 and A3 during tank removal activities. Visible fuel oil was absorbed using pads. Water which accumulated was removed by Alviso Independent Oil prior to backfilling. Approximately 2,000 gallons of water was transported by Alviso Independent Oil under manifest to their treatment facility (manifest included in Appendix B of the October 31, 1991 report).

Approximately 250 cubic yards of soil was generated during the removal of Tanks A1, A2, A3, and A5. Approximately 150 cubic yards of soil was generated during the removal of Tank A4. All the soil was transported to BFI Vasco Road Class III Sanitary Landfill in Livermore, California between September 5 and 23, 1991, according to Subsurface Consultants, Inc.

On February 6, 1992, three monitoring wells, MW-1 through MW-3, were installed adjacent to former USTs A1 through A4. Groundwater was encountered at 5-feet bgs in Wells MW-1 and MW-2 during drilling, however, groundwater was not encountered while drilling MW-3. Water was observed in Well MW-3 four days later (Well MW-3 is a poor producer of water and provides inconsistent Depth-To-Water data). Wells MW-1 and MW-2 appear to be screened from 4- to 14-feet bgs, and Well MW-3 appears to be screened from 5- to 15-feet bgs. One soil sample was collected from each of the well locations at 4.5- or 5-feet bgs. These samples were analyzed for TVH, kerosene, diesel, O&G, and BTEX. Additionally, the soil sample collected from Well MW-3 was analyzed for Method 8010 constituents (chlorinated hydrocarbons). Analysis results of these samples identified 3.8ppm diesel and 190ppm O&G. No other constituents were identified above detection limits (refer to Tables 5 through 8 and Figure 12 for sample results and well locations). Groundwater samples were collected on a quarterly basis for one year (1992), and then monitoring was discontinued until January 1994. In 1992, low levels of TEH as diesel were identified. Depth-to-groundwater data collected from the monitoring wells suggested that groundwater flowed towards the east and southeast at the site. Two additional monitoring wells, MW-4 (east of Tank A2) and MW-5 (east of Tank A4), were installed at the site. Wells MW-4 and MW-5 appear to be screened from 4- to 14-feet bgs. After four quarterly groundwater sampling events in 1994, low levels of TPHd continues to be detected in groundwater adjacent to the former fuel oil USTs (A2 and A4). According to the 1994 groundwater elevation data, the groundwater was calculated to flow towards

Leaking Underground Fuel Storage Tank Program

the northwest in that year. Elevated levels of TPHd, which resembles light weight oil, such as hydraulic oil, was consistently detected in MW-5.

In 1994, three underground hydraulic hoists were removed from inside Building B, situated east of former waste oil tank, Tank A4. Elevated concentrations of TEH were detected in two "grab" groundwater samples from the hoist area. It is possible that the contamination observed in Wells MW-3 and MW-5 may be associated with releases from the former hoists, rather than from the former waste oil tank.

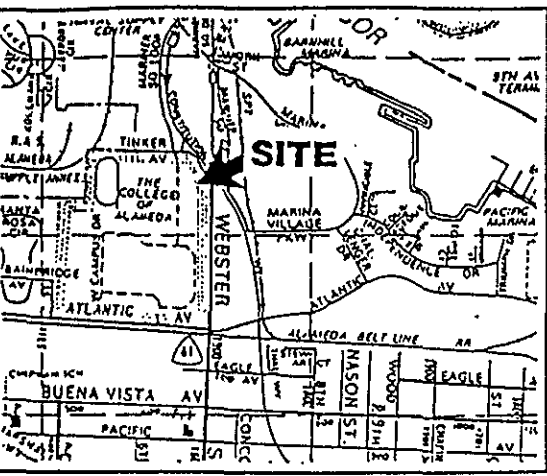
On April 1, 1996, during the removal of the site's hydraulic hoists, six additional soil borings (Borings H-1 through H-6) were drilled at the site to investigate potential releases from these hoists, and to better determine the extent of the already observed groundwater contaminant plume. Borings H-1 through H-3 were located to the north and northwest of Building B where the hoists were located. Borings H-4 through H-6 were located inside Building B (refer to Tables 6 and 8 and Figure 13 for sample results and locations). One soil and one "grab" groundwater sample was collected from each of these borings. The soil samples were analyzed for TEH and O&G. The groundwater samples were also analyzed for TEH and O&G, in addition to Polynuclear Aromatic Hydrocarbons (PNAs), Total Dissolved Solids (TDS), and Dissolved Oxygen (DO). Analysis results identified low to moderate levels of hydrocarbons which eluted in the diesel range, but whose chromatogram did not resemble the diesel standard. No PNAs were identified. TDS levels identified in the samples were high (>3,000 mg/L), indicating that the groundwater beneath the site is not potable, and the DO levels were low (0 to 3.0 mg/L), which is potentially indicative of anaerobic biodegradation. A short rainstorm occurred following drilling and the field engineer observed that boring H-1 was full of water 2 hours after drilling, even though measures had been implemented to prevent surface water from entering the borehole. A "grab" groundwater sample was not collected immediately following temporary well installation due to slow recharge of the aquifer. Therefore, the "grab" groundwater analytical test results from Boring H-1 was considered suspect and not representative of subsurface conditions (5,900 ppb TEH, with a hydrocarbon range from C22-C50).

In summary, this office is recommending closure for this site based on the following:

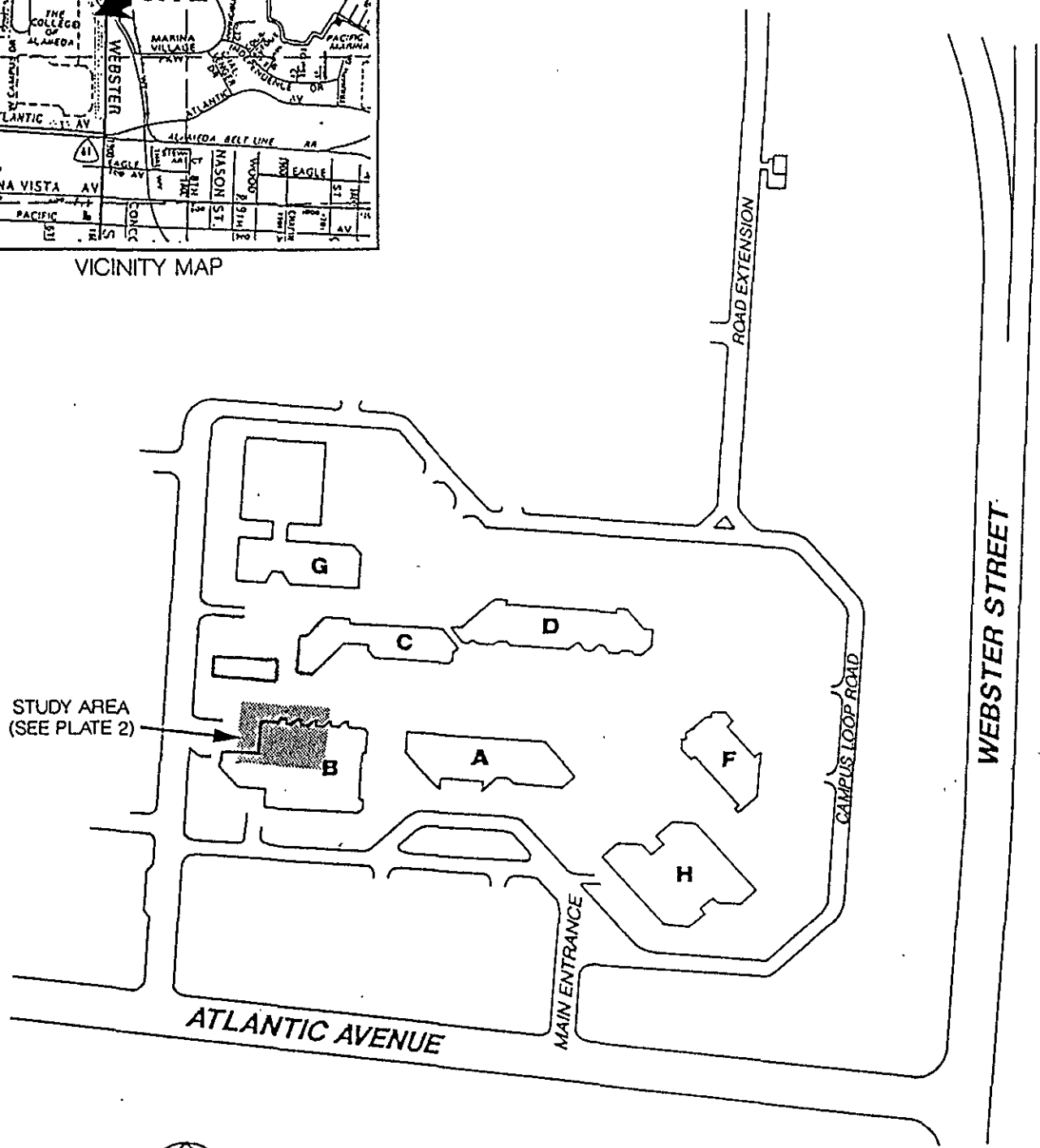
- o Benzene, which is a carcinogen and one of the more threatening constituents in petroleum, was only identified in soil samples collected from Tank pit A3 at 0.050ppm. This soil was further excavated down to Non Detectable levels. Benzene was identified in groundwater only in two instances during over two years of quarterly groundwater monitoring at the site: 1) 78ppb benzene was identified in the "grab" groundwater sample collected from Tank Pit A1; 2) benzene was identified for only one quarter in Well MW-3 at 14.5ppb.

Leaking Underground Fuel Storage Tank Program

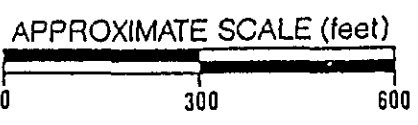
- O PNAs, which are the driving constituents of concern in heavier hydrocarbons, were not identified in any of the groundwater samples collected from the monitoring wells or the recently emplaced hydropunches.
- O The Total Extractable Hydrocarbons (TEH) that have been identified in all the wells appear to be partially resulting from the former hydraulic lifts. The wells located closest to the former hydraulic lifts, Wells MW-3 and MW-5, have been identifying significantly higher concentrations of TEH than the further downgradient wells MW-1 and MW-2. Additionally, per the sample chromatograms, most of the TEH appears to resemble hydraulic oil.
- O The heavier hydrocarbons being identified in the groundwater does not appear to be migrating very readily according to the sample results of the downgradient wells, MW-1 and MW-2. Heavier hydrocarbons, such as hydraulic oil, do not readily migrate.
- O Based on the Non Detect levels of BTEX and PNAs in the soil and groundwater, there appears to be no current threat to human health at the site. The closest ecological receptor is the Oakland Inner Harbor which is located approximately 3,000 feet downgradient of the site. Based on the monitoring information, which indicates minimal migration, there does not appear to be any current or future threat to this ecological receptor.



VICINITY MAP



STUDY AREA
(SEE PLATE 2)



SITE PLAN

Subsurface Consultants

COLLEGE OF ALAMEDA - ALAMEDA, CA

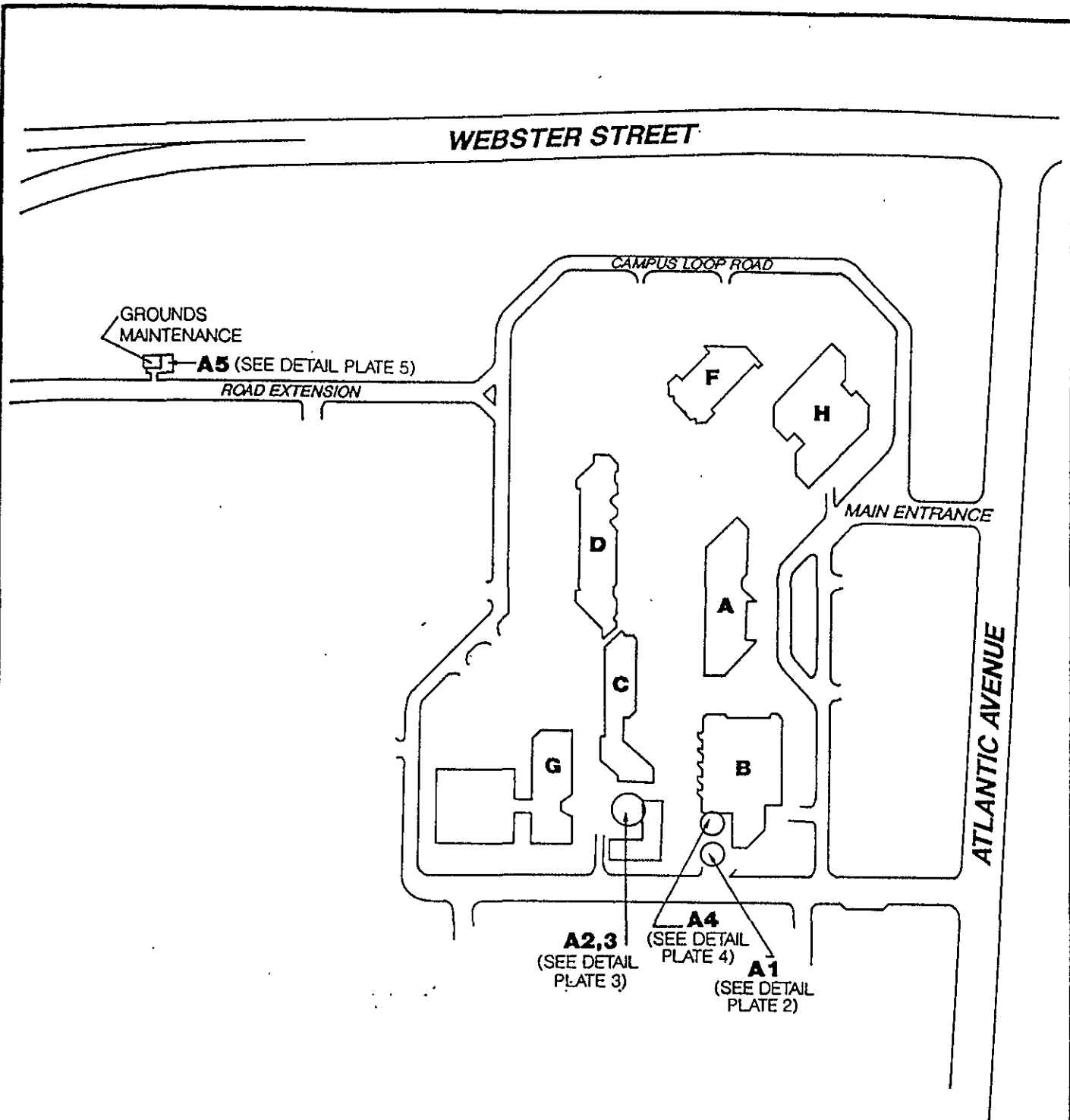
PLATE

JOB NUMBER
469.013

DATE
7/31/96

APPROVED
UW

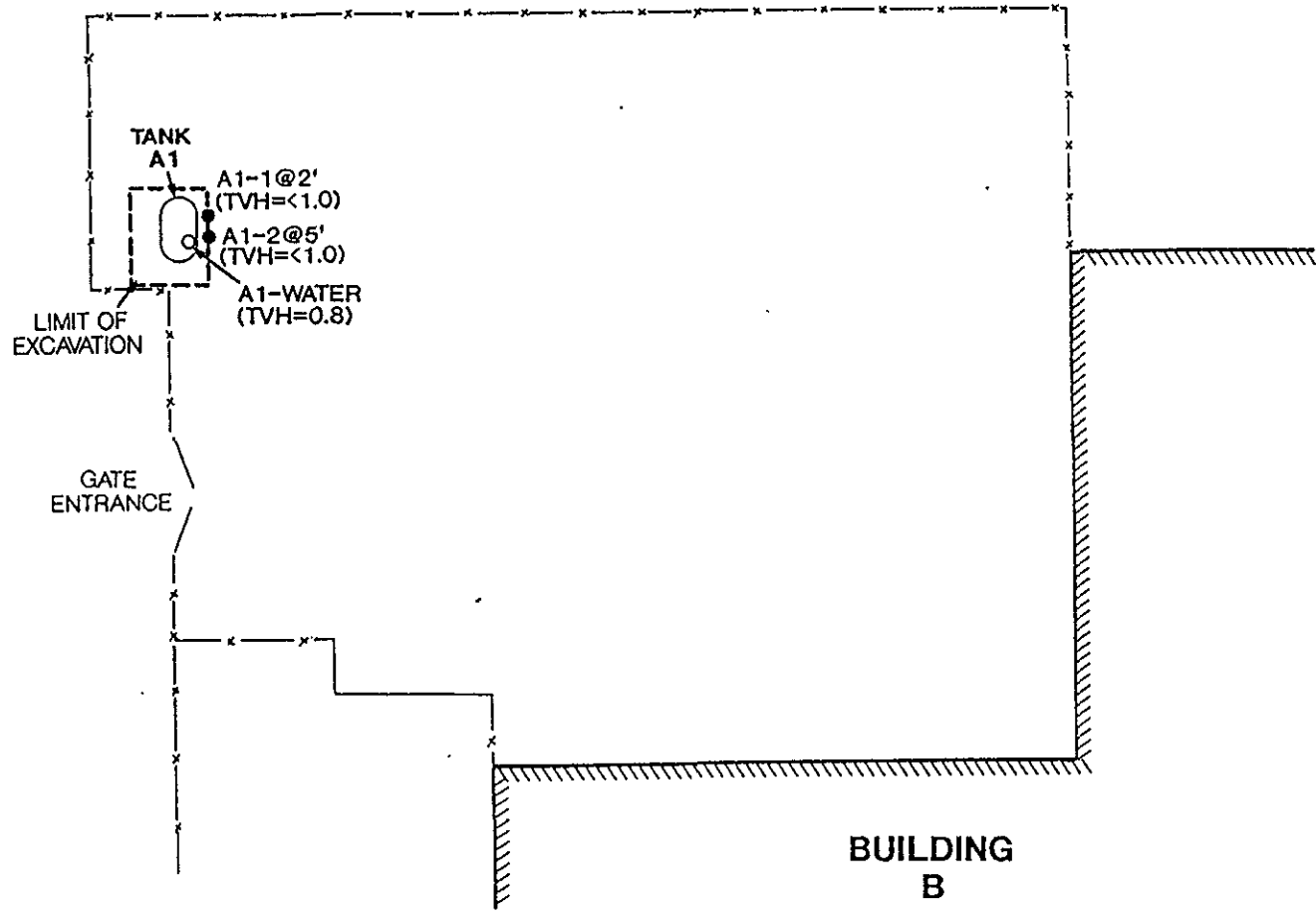
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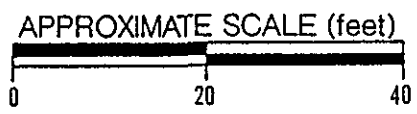
COLLEGE SITE PLAN

COLLEGE OF ALAMEDA - ALAMEDA, CA			PLATE :
JOB NUMBER 469.005	DATE 1/4/91	APPROVED JVS	1

Subsurface Consultants



●	LOCATION OF SIDEWALL SOIL SAMPLE
○	LOCATION OF WATER SAMPLE
A4-1@6.5'	SAMPLE NUMBER AND DEPTH
(TVH=28)	TOTAL VOLATILE HYDROCARBONS mg/kg



TANK A1 SITE PLAN

Subsurface Consultants

COLLEGE OF ALAMEDA - ALAMEDA, CA

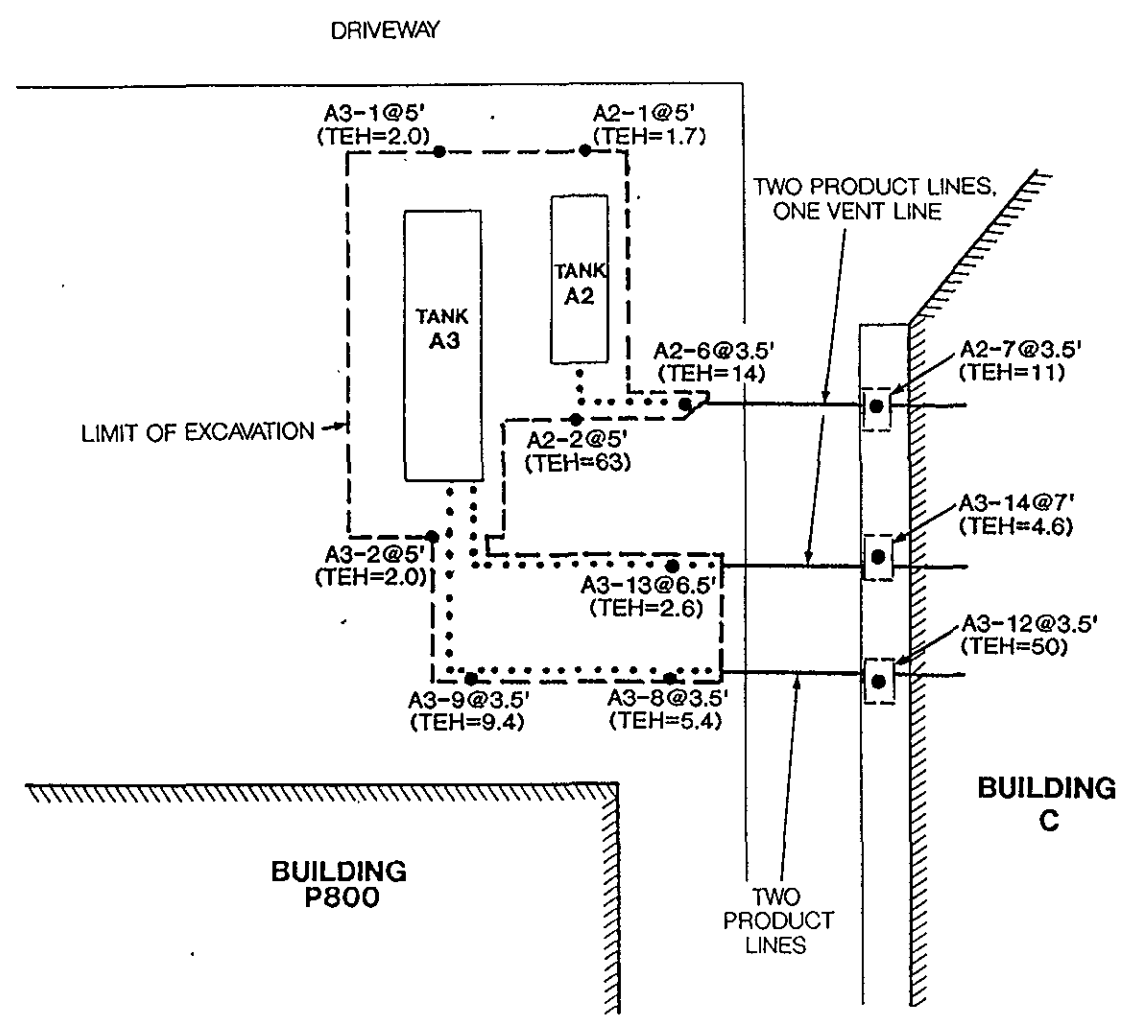
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469.005

DATE
8/29/91

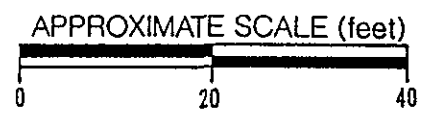
APPROVED
JVB

PLATE

2

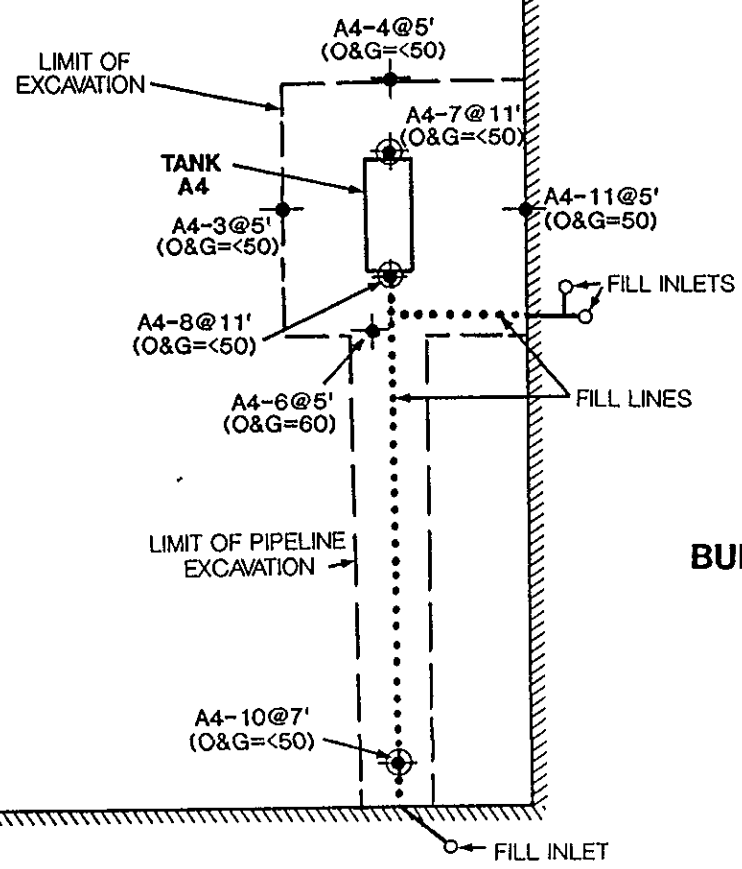






● LOCATION OF SIDEWALL OR TRENCH SOIL SAMPLE
 A3-2@5' SAMPLE NUMBER AND DEPTH
 (TEH=2.0) TOTAL EXTRACTABLE HYDROCARBONS mg/kg
 — PIPELINES REMOVED
 PIPELINES ABANDONED IN PLACE

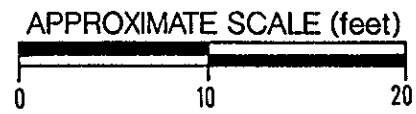


TANK A2 & A3 SITE PLAN			
COLLEGE OF ALAMEDA – ALAMEDA, CA			PLATE
JOB NUMBER 469.005	DATE 8/29/91	APPROVED JVB	3

Subsurface Consultants



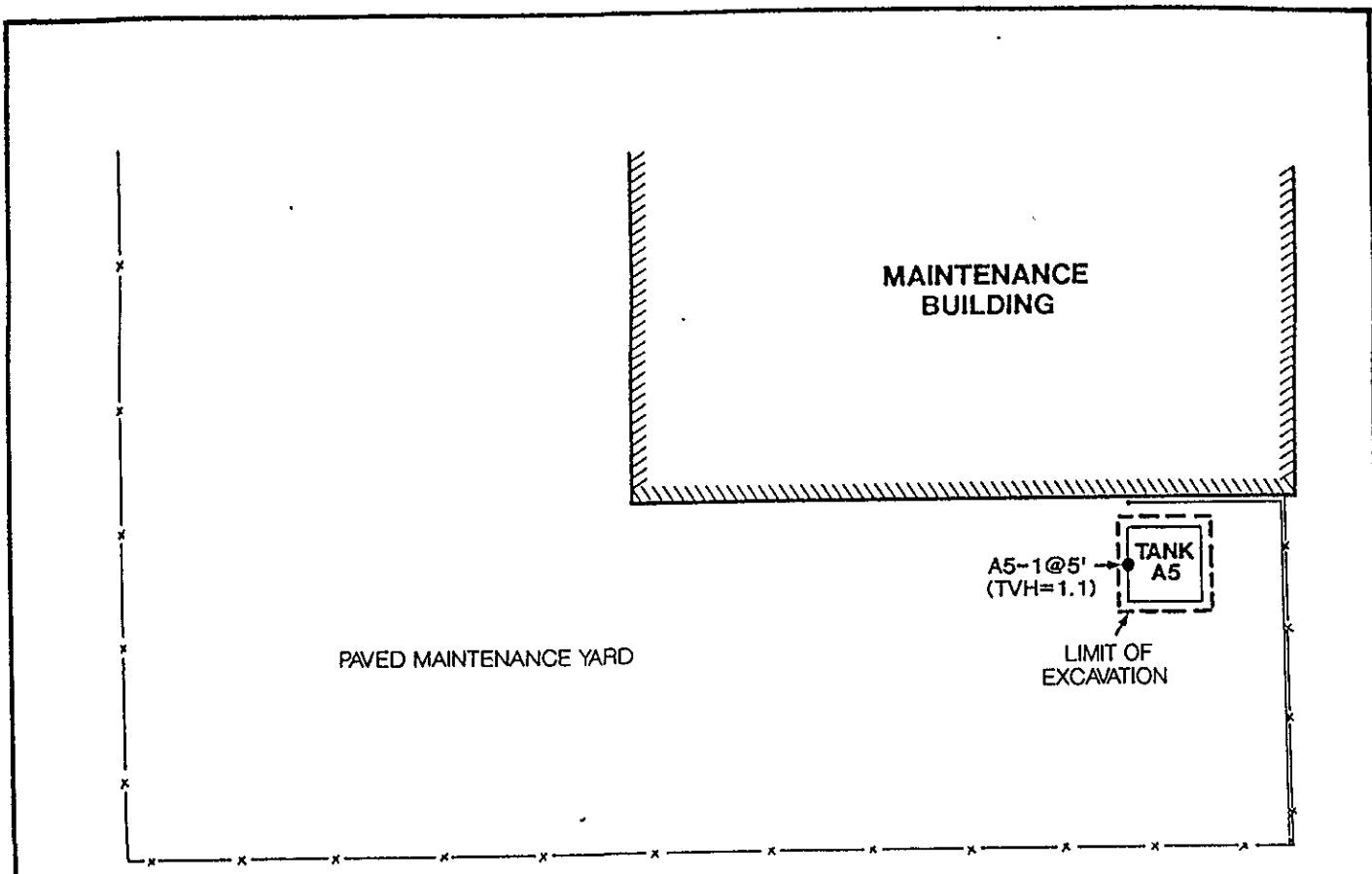
 LOCATION OF BOTTOM SOIL SAMPLE
 LOCATION OF SIDEWALL SOIL SAMPLE
 A4-1@6.5' SAMPLE NUMBER AND DEPTH
 (O&G=520) HYDROCARBON OIL AND GREASE mg/kg
 PIPELINES REMOVED
 PIPELINES ABANDONED IN PLACE



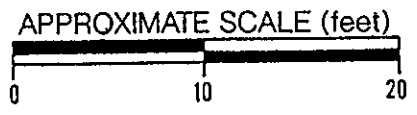
TANK A4 SITE PLAN

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COLLEGE OF ALAMEDA - ALAMEDA, CA			PLATE
JOB NUMBER 469.005	DATE 10/7/91	APPROVED JVB	4



● LOCATION OF SOIL SAMPLE
 A5-1@5' SAMPLE NUMBER AND DEPTH
 (TVH=1.1) TOTAL VOLATILE HYDROCARBONS mg/kg

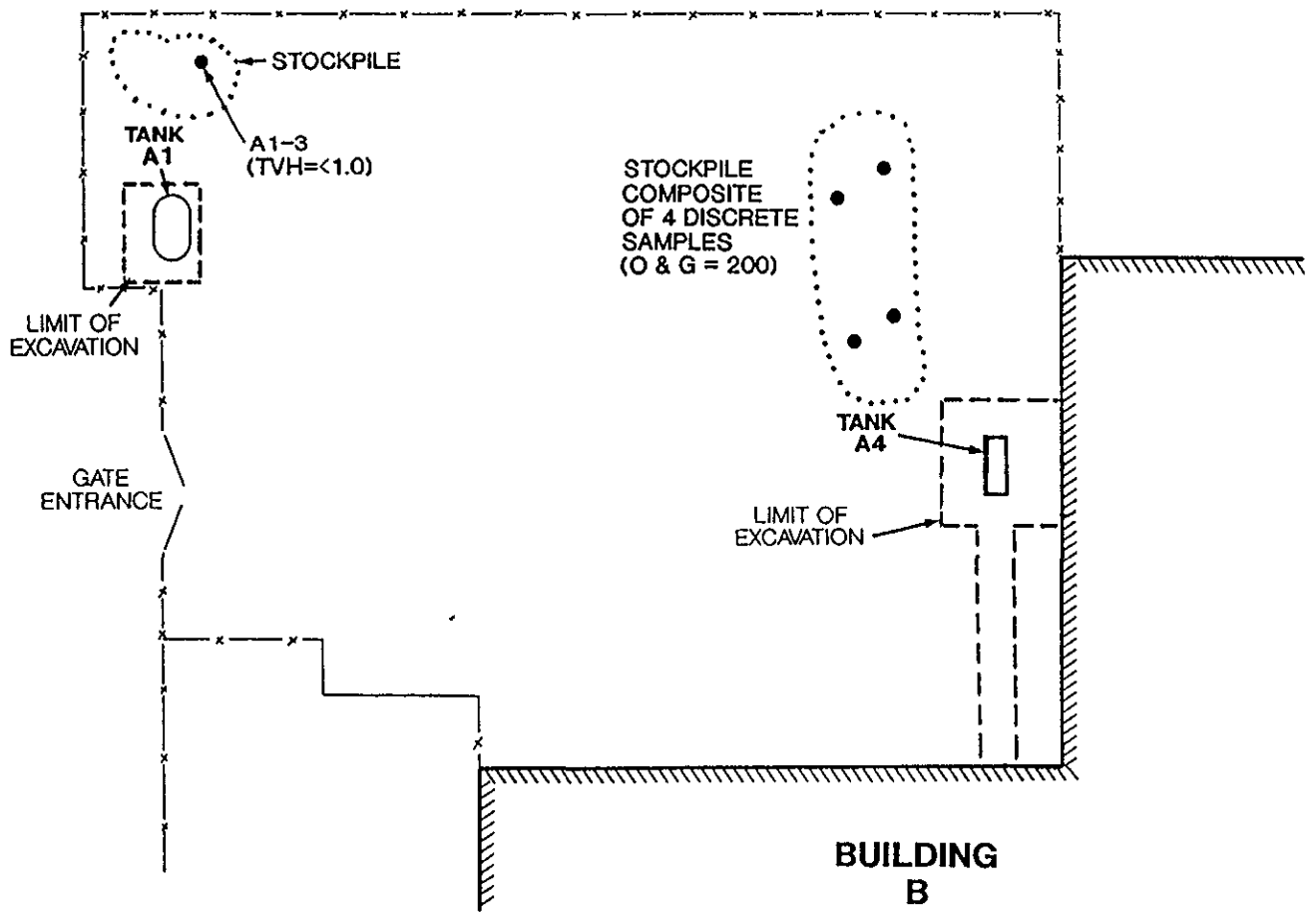


TANK A5 SITE PLAN

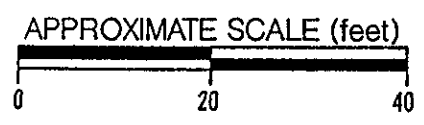
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COLLEGE OF ALAMEDA - ALAMEDA, CA
 JOB NUMBER 469.005 DATE 8/29/91 APPROVED JVB

PLATE
5



● LOCATION OF SOIL SAMPLE
 A1-3 SAMPLE NUMBER
 (TVH=<1.0) TOTAL VOLATILE HYDROCARBONS mg/kg
 (O&G=200) HYDROCARBON OIL & GREASE mg/kg



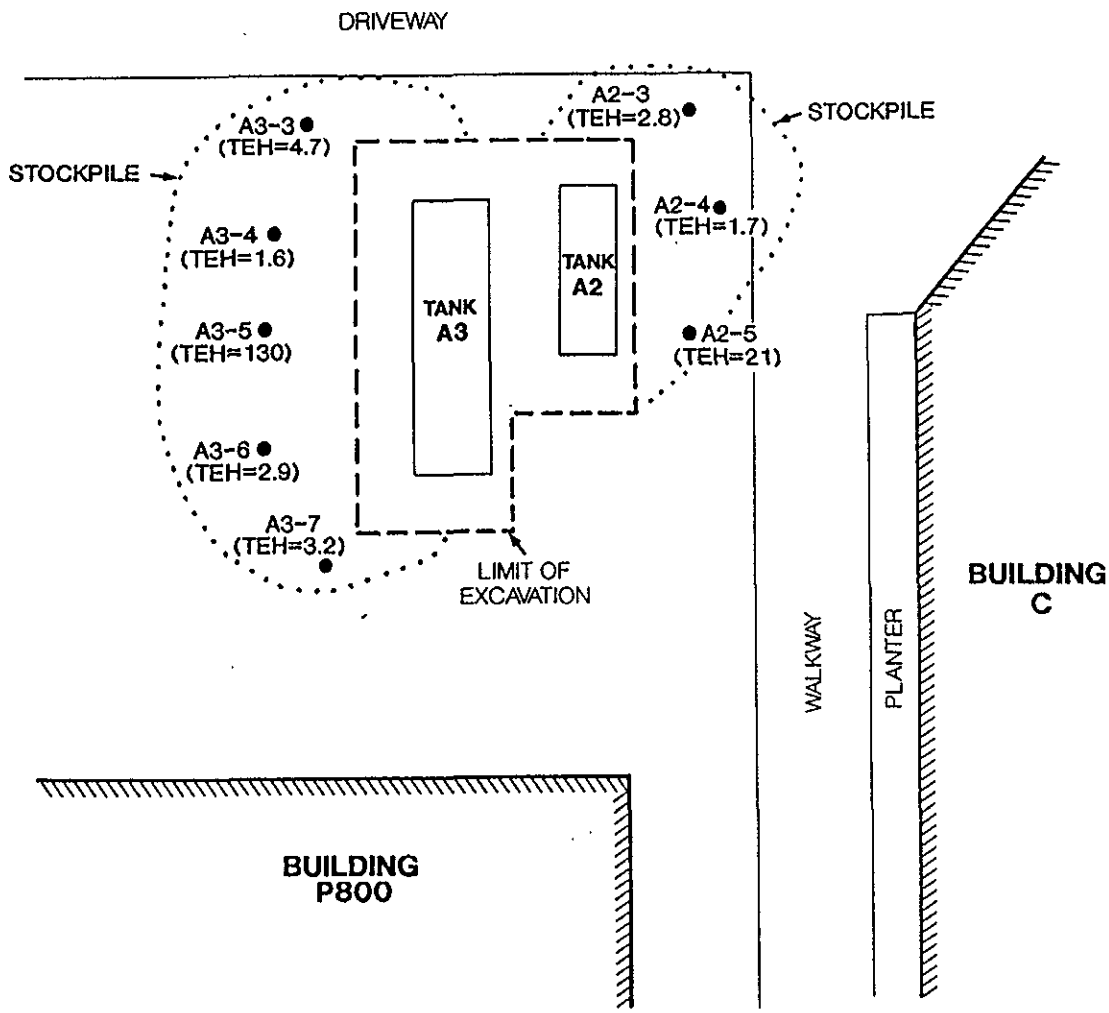
TANK A1 & A4 STOCKPILE PLAN

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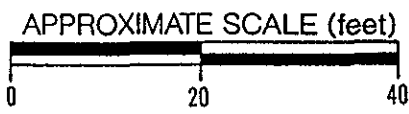
COLLEGE OF ALAMEDA -- ALAMEDA, CA

JOB NUMBER	DATE	APPROVED
469.005	8/29/91	JVB

PLATE
6



● LOCATION OF SOIL SAMPLE
 A3-7 SAMPLE NUMBER
 (TEH=2.9) TOTAL EXTRACTABLE HYDROCARBONS mg/kg

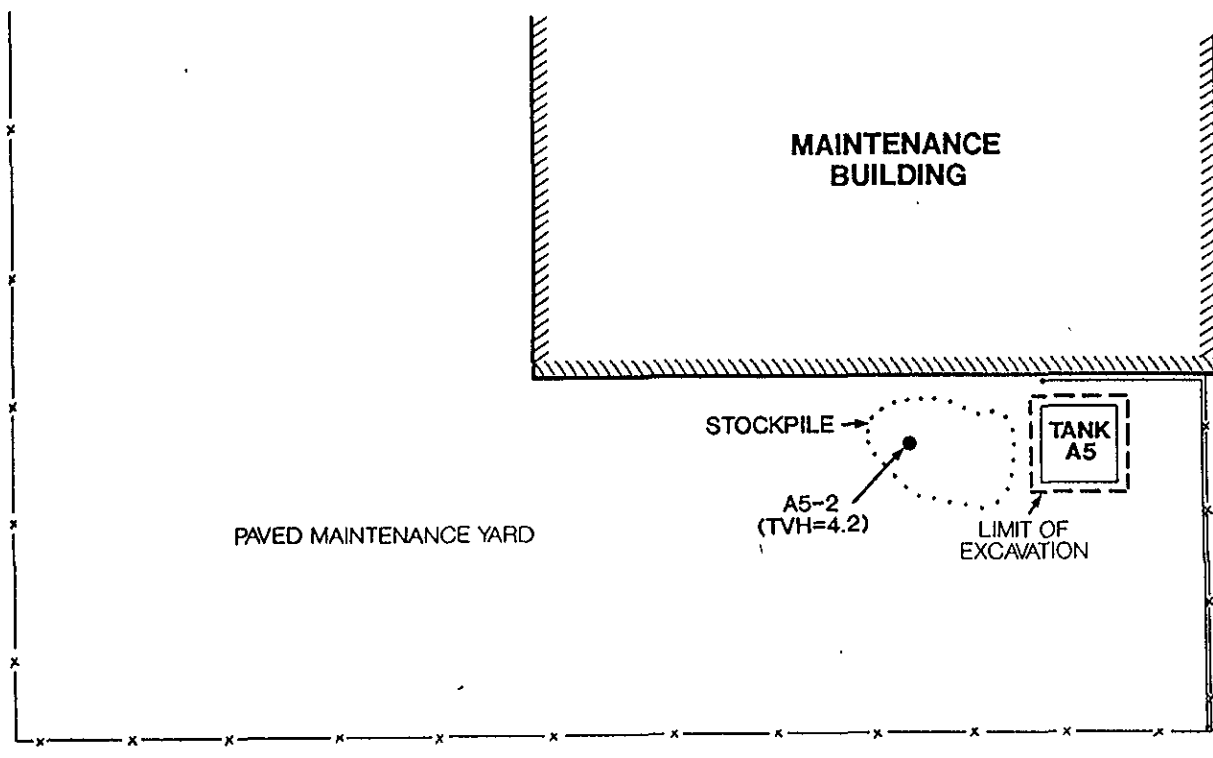


TANK A2 & A3 STOCKPILE PLAN

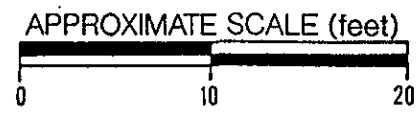
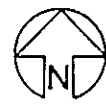
Subsurface Consultants

COLLEGE OF ALAMEDA - ALAMEDA, CA
 JOB NUMBER 469.005 DATE 8/29/91 APPROVED JVB

PLATE
7



● LOCATION OF SOIL SAMPLE
 A5-2 SAMPLE NUMBER
 (TVH=4.2) TOTAL VOLATILE HYDROCARBONS mg/kg





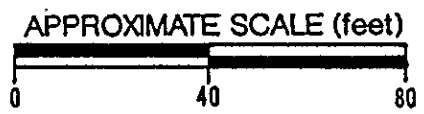
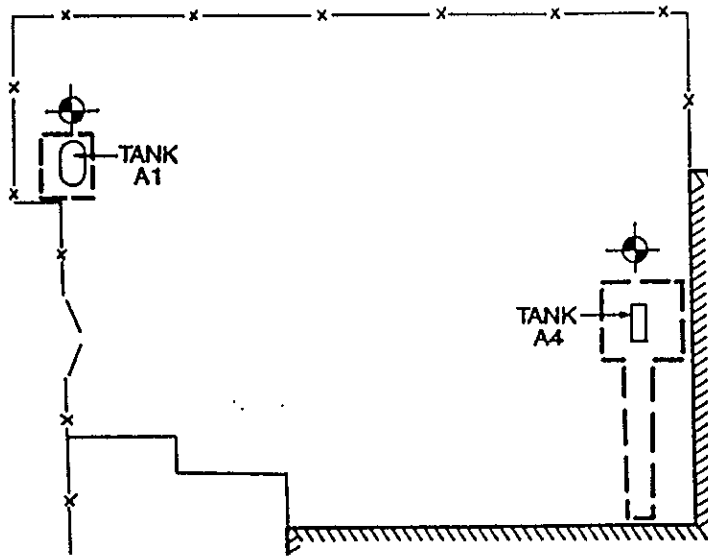
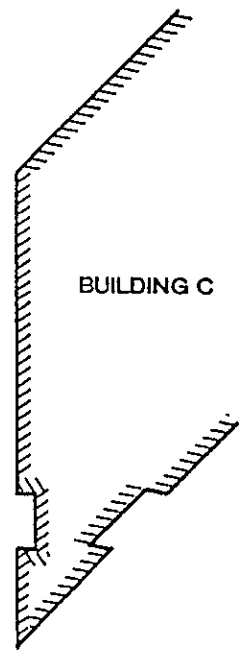
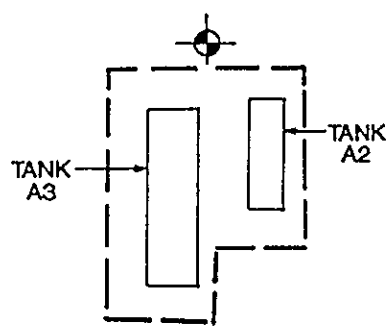
TANK A5 STOCKPILE PLAN

Subsurface Consultants

COLLEGE OF ALAMEDA - ALAMEDA, CA
 JOB NUMBER 469.005 DATE 8/29/91 APPROVED JVB

PLATE
8

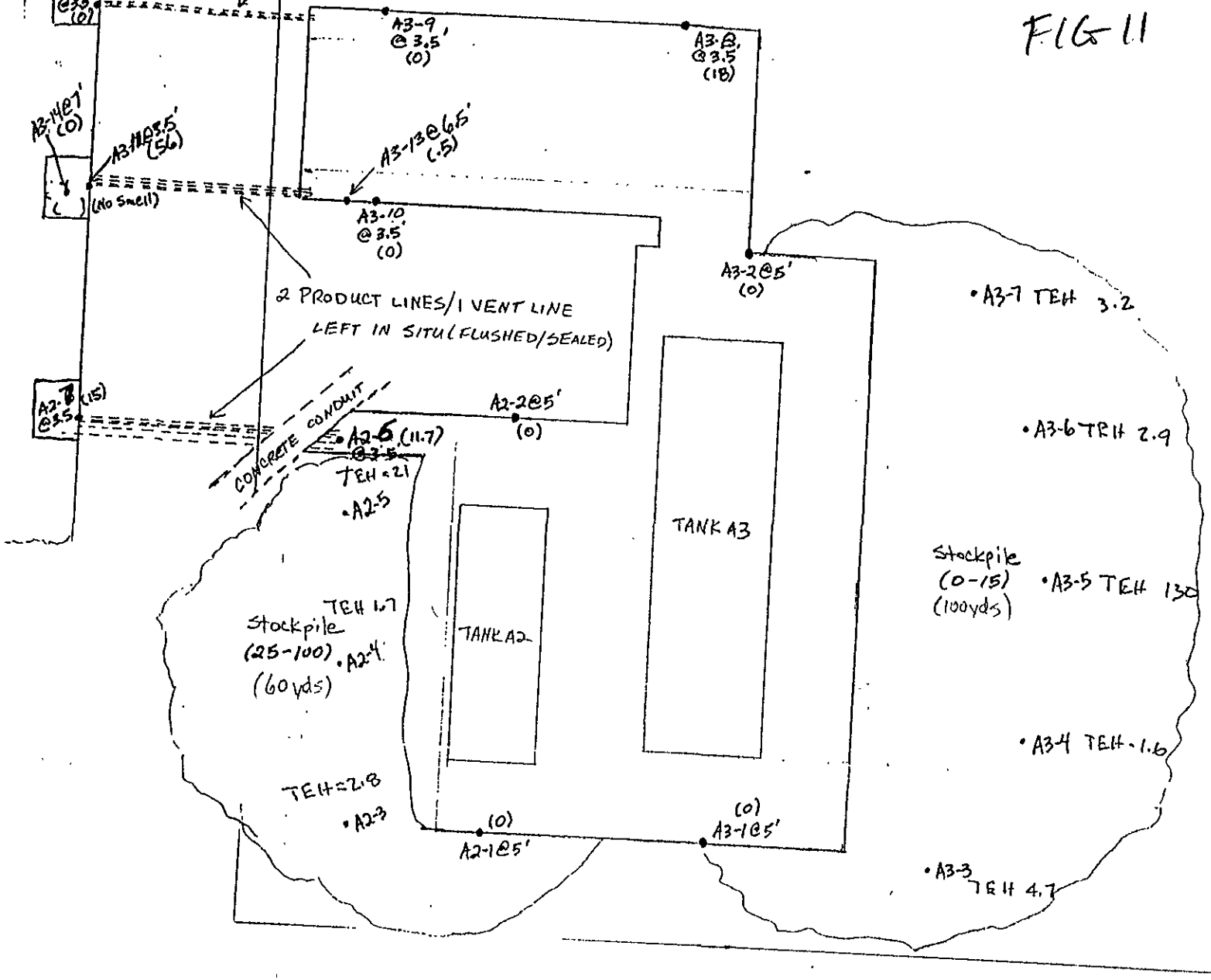
 LOCATION OF PROPOSED WELL
 LIMITS OF PREVIOUS EXCAVATIONS



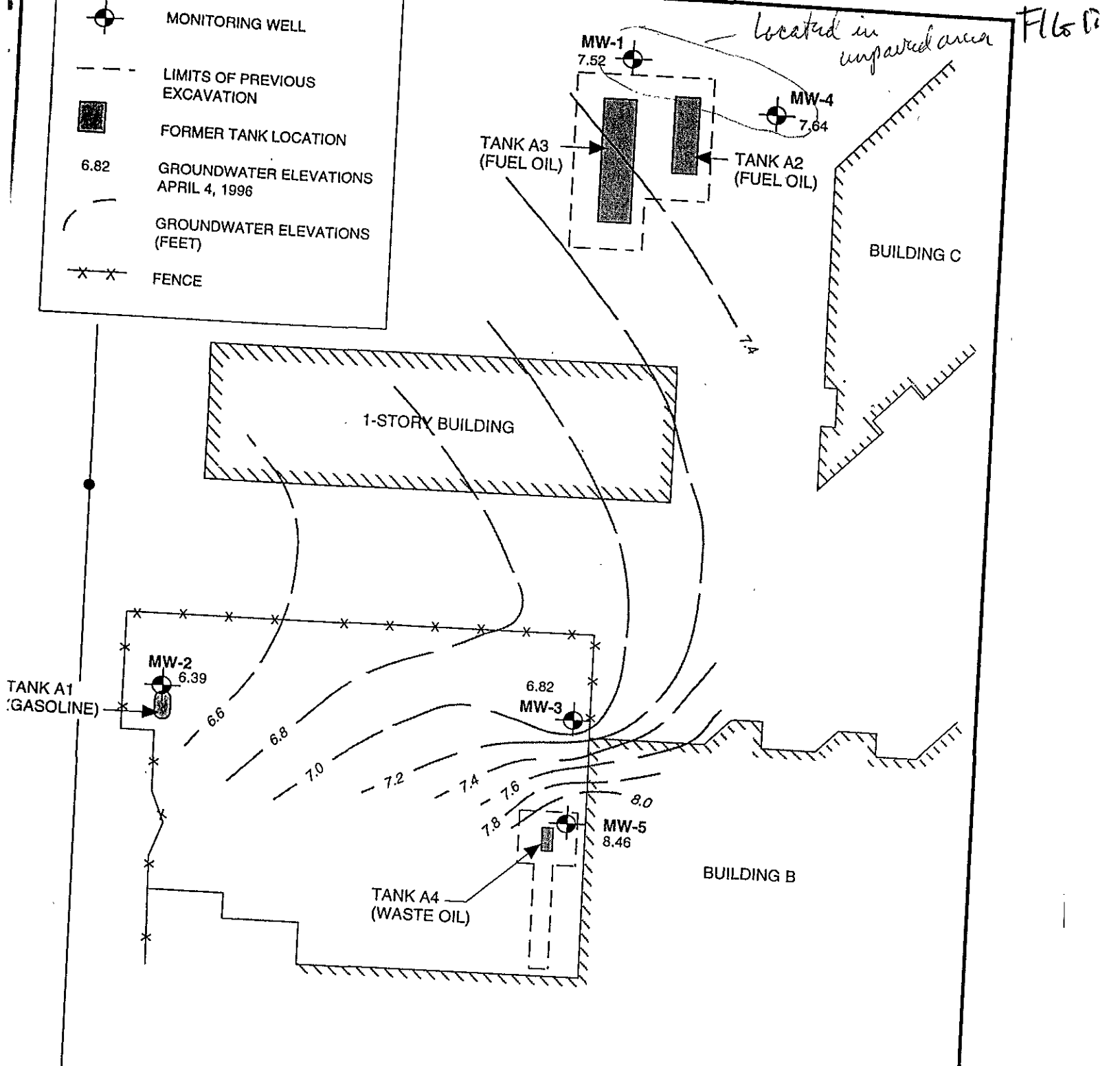
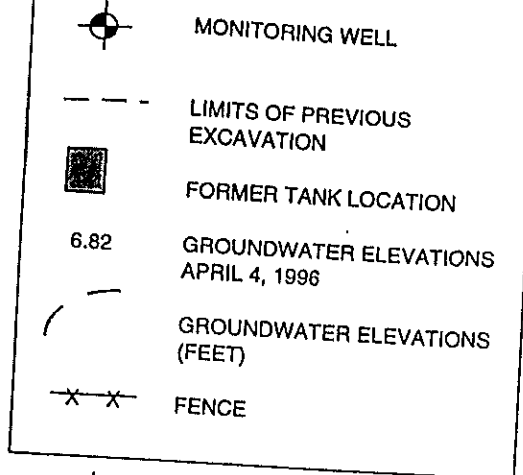
LOCATIONS OF PROPOSED WELLS

COLLEGE OF ALAMEDA -- ALAMEDA, CA		PLATE ?
JOB NUMBER 469.005	DATE 10/29/91	APPROVED JVB

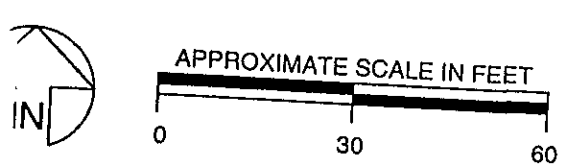
9



SAMPLE LOCATION MAP
 ALAMEDA COLLEGE (TANKS A2 + A3)
 SC# 469.005 | D. ALEXANDER
 8/19/91
 • SAMPLE LOCATION

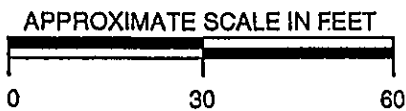
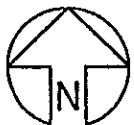
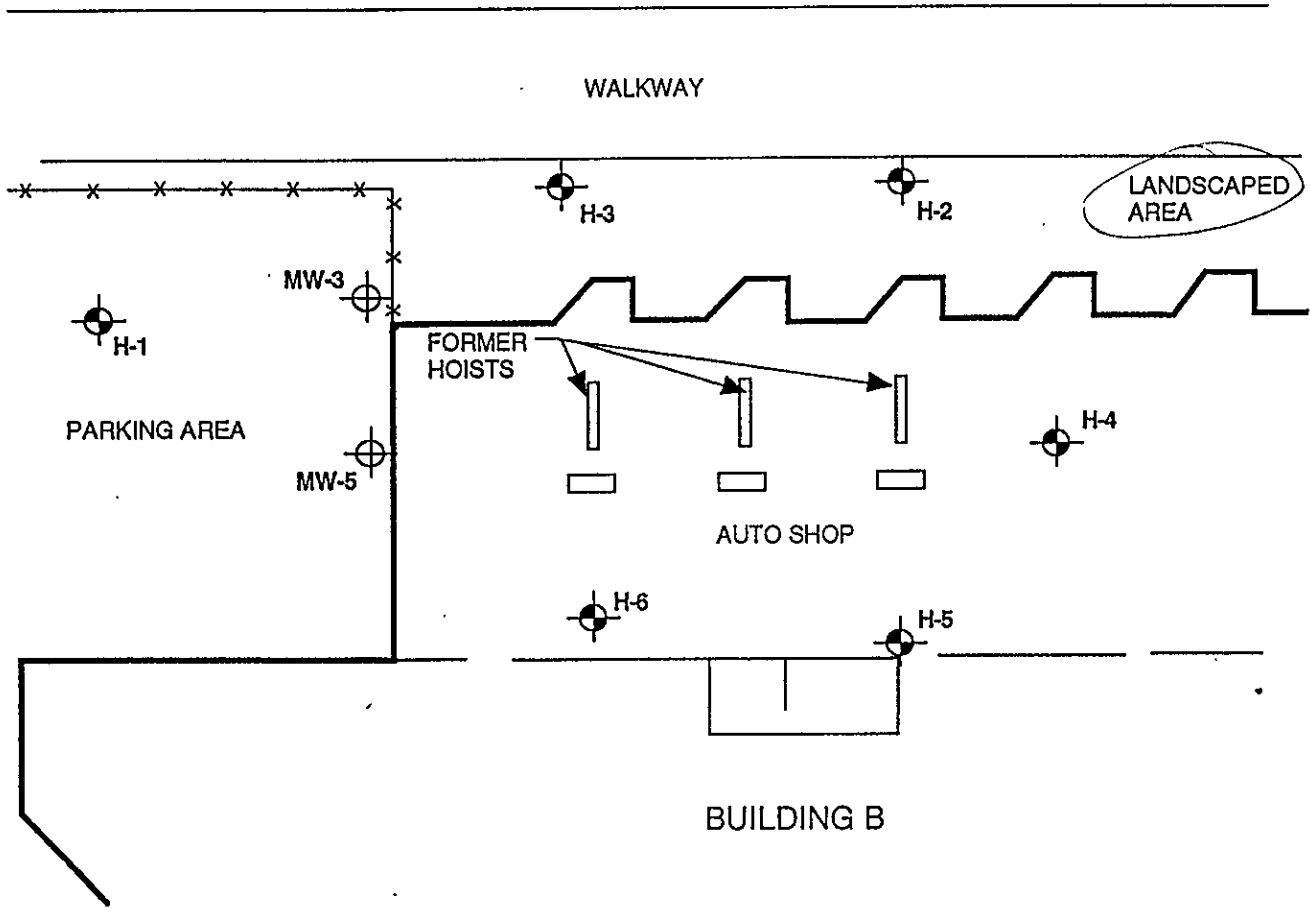
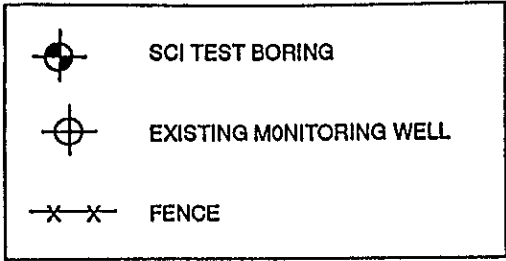


Flgs 02



GROUNDWATER ELEVATION CONTOURS		
COLLEGE OF ALAMEDA - ALAMEDA, CA		
JOB NUMBER 469.013	DATE 7/31/96	APPROVED <i>[Signature]</i>
		PLATE 3

Subsurface Consultants



HYDRAULIC HOIST STUDY AREA PLAN

COLLEGE OF ALAMEDA - ALAMEDA, CA		
JOB NUMBER 469.013	DATE 7/31/96	APPROVED <i>MM</i>

PLATE
2

Subsurface Consultants

Table 2.
Contaminant Concentrations in Soil
Gasoline and Fuel Oil Tank Areas
A1, A2, A3 and A5

Tank	Contents	Sample	TVH ¹ mg/kg ⁴	TEH ² mg/kg	B ³ ug/kg ⁵	T ³ ug/kg	E ³ ug/kg	X ³ ug/kg	Total Lead mg/kg
A1	Gasoline	A1-1 @ 2'	<1.0	-- ⁶	<5.0	<5.0	<5.0	<5.0	<3.0
		A1-2 @ 5'	<1.0	--	<5.0	<5.0	<5.0	<5.0	15
A2	Fuel Oil	A2-1 @ 5'	--	1.7	<5.0	<5.0	<5.0	<5.0	--
		A2-2 @ 5'	--	63	<5.0	<5.0	<5.0	<5.0	--
A3	Fuel Oil	A3-1 @ 5'	--	2.0	<5.0	<5.0	<5.0	<5.0	--
		A3-2 @ 5'	--	2.0	<5.0	<5.0	<5.0	<5.0	--
A5	Gasoline	A5-1 @ 5'	1.1	--	<5.0	<5.0	<5.0	<5.0	16
<u>Pipeline</u>									
A2	Fuel Oil	A2-6 @ 3.5'	--	14	<5.0	<5.0	<5.0	<5.0	--
		A2-7 @ 3.5'	--	11	<5.0	<5.0	<5.0	<5.0	--
A3	Fuel Oil	A3-8 @ 3.5'	--	5.4	<5.0	<5.0	<5.0	<5.0	--
		A3-9 @ 3.5'	--	9.4	<5.0	<5.0	<5.0	<5.0	--
		A3-10 @ 3.5', ⁷	--	560	50	180	150	560	--
		A3-11 @ 3.5', ⁸	--	1,400	<5.0	11	17	120	--
		A3-12 @ 3.5'	--	50	<5.0	<5.0	<5.0	<5.0	--
		A3-13 @ 6.5'	--	2.6	<5.0	<5.0	<5.0	<5.0	--
		A3-14 @ 7.0'	--	4.6	<5.0	<5.0	<5.0	<5.0	--

1 TVH = total volatile hydrocarbons
 2 TEH = total extractable hydrocarbons
 3 BTEX = benzene, toluene, ethylbenzene and total xylenes
 4 mg/kg = milligrams per kilogram
 5 ug/kg = micrograms per kilogram
 6 -- = Test not requested
 7 Soil sample removed by subsequent excavation, see sample A3-13
 8 Soil sample removed by subsequent excavation, see sample A3-14

Table 3.
Contaminant Concentration in Water
Tank A1 Excavation

Tank	Contents	Sample	TVH ¹ ug/l ³	B ² ug/l	T ² ug/l	E ² ug/l	X ² ug/l	Total Lead ug/l
A1	Gasoline	A1-Water	800	78	99	10	52	<3.0

1 TVH = total volatile hydrocarbons
 2 BTEX = benzene, toluene, ethylbenzene and total xylenes
 3 ug/l = micrograms per liter

Table 4.
Contaminant Concentrations in Soil
Waste Oil Tank Area A4

Sample	O&G ¹ mg/kg ⁵	TEH ² mg/kg	TVH ³ mg/kg	B ⁴ ug/kg ⁶	T ⁴ ug/kg	E ⁴ ug/kg	X ⁴ ug/kg
A4-1 @ 6.5' ⁷	520	220	28	<10	12	66	74
A4-2 @ 3'	<50	-- ⁸	--	--	--	--	--
A4-3 @ 5'	<50	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0
A4-4 @ 5'	<50	4.5	<1.0	<5.0	<5.0	<5.0	<5.0
A4-5 @ 5' ⁹	140	8.9	<1.0	<5.0	<5.0	<5.0	<5.0
A4-6 @ 5'	60	3.3	<1.0	<5.0	<5.0	<5.0	<5.0
A4-7 @ 11'	<50	8.6	<1.0	<5.0	<5.0	<5.0	<5.0
A4-8 @ 11'	<50	1.7	<1.0	<5.0	<5.0	<5.0	<5.0
A4-9 @ 4' ¹⁰	390	29	76	<80	400	370	2,400
A4-10 @ 7'	<50	3.4	<1.0	<5.0	<5.0	<5.0	<5.0
A4-11 @ 5'	50	--	--	--	--	--	--

1 O&G = Hydrocarbon Oil and Grease
2 TEH = Total extractable hydrocarbons
3 TVH = Total volatile hydrocarbons
4 BTEX = Benzene, toluene, ethylbenzene and total xylenes
5 mg/kg = milligrams per kilogram
6 ug/kg = micrograms per kilogram
7 Soil sample removed by subsequent excavation, see samples A4-7 and A4-8
8 -- = Test not requested
9 Soil sample removed by subsequent excavation, see sample A4-11
10 Soil sample removed by subsequent excavation, see sample A4-10

Table 5.
Contaminant Concentration in Soil
Waste Oil Tank Area A4

<u>Analysis/Chemical</u>	<u>Sample Identification</u>	
	<u>Stockpile</u> <u>A4-1 @ 6.5'</u>	<u>Composite</u>
<u>Metals</u>		
Antimony	-- ²	<3.0 mg/kg ¹
Arsenic	--	3.4 mg/kg
Barium	--	50.5 mg/kg
Beryllium	--	0.19 mg/kg
Cadmium	<0.25 mg/kg	<0.25 mg/kg
Chromium (total)	26.2 mg/kg	40.7 mg/kg
Cobalt	--	9.5 mg/kg
Copper	--	31.0 mg/kg
Lead	5.4 mg/kg	11.4 mg/kg
Mercury	--	0.19 mg/kg
Molybdenum	--	<0.70 mg/kg
Nickel	30 mg/kg	39.8 mg/kg
Selenium	--	<2.5 mg/kg
Silver	--	<0.50 mg/kg
Thallium	--	<2.5 mg/kg
Vanadium	--	31.4 mg/kg
Zinc	52.3 mg/kg	95.8 mg/kg
<u>Volatiles</u>		
1,2 Dichlorobenzene	250 ug/kg ³	ND
Other EPA 8010 Chemicals	ND ⁴	ND
<u>Semivolatiles</u>		
Phenanthrene	2900 ug/kg	230 ⁵ ug/kg
Fluoranthene	4200 ug/kg	240 ⁵ ug/kg
Pyrene	3100 ug/kg	210 ⁵ ug/kg
Benzo (a) anthracene	1400 ug/kg	<330 ug/kg
Chrysene	1800 ug/kg	<330 ug/kg
Benzo (b) fluoranthene	2500 ug/kg	<330 ug/kg
Benzo (a) pyrene	1600 ug/kg	<330 ug/kg
Indeno (1, 2, 3-cd) pyrene	990 ug/kg	<330 ug/kg
Benzo (g, h, i) perylene	970 ug/kg	<330 ug/kg
Other EPA 8270 Chemicals	ND	ND
<u>RCI⁶</u>		
Releasable Cyanide	--	<0.3 mg/kg
Releasable Sulfide	--	<1.0 mg/kg
Ignitability	--	Does not Ignite
pH	--	8.1
Corrosivity	--	<6.35 mm/yr

1 mg/kg = milligrams per kilogram
 2 -- = Test not requested
 3 ug/kg = micrograms per kilogram
 4 ND = None detected, chemicals not present at concentrations above detection limits
 5 Detected at concentration below reporting limit
 6 RCI = Reactivity, corrosivity and ignitability

Table 4

Table 6.
Contaminant Concentrations in Soil Stockpiles

<u>Sample</u>	<u>TVH¹</u> <u>(mg/kg)⁵</u>	<u>TEH²</u> <u>(mg/kg)</u>	<u>O&G³</u> <u>(mg/kg)</u>	<u>BTEX⁴</u> <u>(ug/kg)⁶</u>	<u>Total</u> <u>Lead</u> <u>(mg/kg)</u>
A1-3	<1.0	-- ⁷	--	<5.0	61
A2-3	--	2.8	--	--	--
A2-4	--	1.7	--	--	--
A2-5	--	21	--	--	--
A3-3	--	4.7	--	--	--
A3-4	--	1.6	--	--	--
A3-5	--	130	--	--	--
A3-6	--	2.9	--	--	--
A3-7	--	3.2	--	--	--
Tank A4 Composite	3.2	11	200	50 ⁸	5.4
A5-2	4.2	--	--	<5.0	4.5

-
- 1 TVH = total volatile hydrocarbons
 - 2 TEH = total extractable hydrocarbons
 - 3 O&G = Hydrocarbon oil and grease
 - 4 BTEX = benzene, toluene, ethylbenzene and total xylenes
 - 5 mg/kg = milligrams per kilogram
 - 6 ug/kg = micrograms per kilogram
 - 7 -- = Test not requested
 - 8 Detected 6.2 ug/kg ethylbenzene and 44 ug/kg total xylenes

Table 1.
Contaminant Concentrations In Soil

Sample	TVH ¹ (mg/kg) ⁴	TEH ²		TOG ³ (mg/kg)	Benzene (ug/kg) ⁵	Toluene (ug/kg)	Ethyl- Benzene (ug/kg)	Total Xylenes (ug/kg)	EPA 8010 Chemicals
		Kerosene Range (mg/kg)	Diesel Range (mg/kg)						
MW 1 @ 4.5'	-- ⁶	<1.0	3.8	--	<5.0 ⁷	<5.0	<5.0	<5.0	--
MW 2 @ 5'	<1.0	--	--	--	<5.0	<5.0	<5.0	<5.0	--
MW 3 @ 5'	<1.0	NR ⁸	13	190	<5.0	<5.0	<5.0	<5.0	ND ⁹

-
- 1 Total volatile hydrocarbons, as gasoline, EPA Method 5030/8015 modified
2 Total extractable hydrocarbons, EPA 3550/8015 modified
3 Total oil and grease, EPA 3550 and SMWW 17:5520 E&F
4 Milligrams per kilogram or parts per million (ppm)
5 Micrograms per kilogram or parts per billion (ppb)
6 Test not requested
7 Less than detection limit shown
8 Kerosene range not reported
9 None detected, less than detection limits with range from 5 to 20 ug/kg; 2 - chloroethyl ether failed the calibration criteria, therefore there are no results for this compound

Table 5

**Table 2.
Contaminant Concentrations in Soil**

Sample	Date	TVH (mg/kg)	TEH			TOG (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl- Benzene (ug/kg)	Total Xylenes (ug/kg)	EPA 8010 Compounds
			Kerosene Range (mg/kg)	Diesel Range (mg/kg)	Motor Oil Range (mg/kg)						
<u>Fuel Oil Tank Area</u>											
MW-1 @ 4.5'	2/6/92	--	<1.0	3.8	--	--	<5.0	<5.0	<5.0	<5.0	--
MW-4 @ 5'	1/10/94	<1.0	<1.0	2	--	<50	<5.0	<5.0	<5.0	9.0	--
<u>Gasoline Tank Area</u>											
MW-2 @ 5'	2/6/92	<1.0	--	--	--	--	<5.0	<5.0	<5.0	<5.0	--
<u>Waste Oil Tank Area</u>											
MW-3 @ 5'	2/6/92	<1.0	*	13	--	190	<5.0	<5.0	<5.0	<5.0	ND
<u>Hydraulic Hoist Area</u>											
H-1 @ 5.0	4/1/96	--	--	110†	290†	<50	--	--	--	--	--
H-2 @ 5.0	4/1/96	--	--	12†	73†	<50	--	--	--	--	--
H-3 @ 5.5	4/1/96	--	--	160†	380†	<50	--	--	--	--	--
H-4 @ 6.0	4/1/96	--	--	20†	82†	<50	--	--	--	--	--
H-5 @ 4.5	4/1/96	--	--	22†	100†	<50	--	--	--	--	--
H-6 @ 5.0	4/1/96	--	--	56†	190†	<50	--	--	--	--	--

TVH = Total volatile hydrocarbons

TEH = Total extractable hydrocarbons

TOG = Total oil and grease

mg/kg = Milligrams per kilogram or parts per million (ppm)

ug/kg = Micrograms per kilogram or parts per billion (ppb)

-- = Test not requested

<1.0 = Compound not detected at or above reporting limit shown

* = Quantitated as diesel range

ND = Not detected

† = Sample exhibits fuel pattern which does not resemble standard

Table 6

Table 1.
Groundwater Elevations

TABLE 7

<u>Well</u>	<u>TOC Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
MW-1	12.16	02/24/92	1.64	10.52
		03/09/92	4.28	7.88
		03/24/92	4.33	7.83
		04/28/92	4.54	7.62
		06/29/92	5.92	6.24
		07/27/92	5.74	6.42
		08/27/92	6.04	6.12
		09/24/92	6.16	6.00
		12/16/92	6.19	5.97
		01/21/93	6.83	5.33
		02/07/94	6.01	6.15
		05/03/94	5.03	7.13
		06/02/94	5.14	7.02
		08/23/94	5.20	6.96
		11/03/94	5.51	6.65
		02/13/95	5.30	6.86
		05/22/95	5.05	7.11
09/06/95	6.52	5.64		
04/01/96	4.64	7.52		
MW-2	11.07	02/24/92	4.45	6.62
		01/21/93	6.83	4.24
		03/24/92	3.73	7.34
		04/28/92	4.25	6.82
		06/29/92	4.40	6.67
		07/27/92	4.00	7.07
		08/27/92	4.33	6.74
		09/24/92	4.36	6.71
		12/16/92	4.08	6.99
		01/21/93	4.40	6.67
		02/07/94	3.60	7.47
		05/03/94	4.04	7.03
		06/02/94	4.17	6.90
		08/23/94	4.28	6.79
		11/03/94	4.33	6.74
		02/13/95	5.95	5.12
		05/22/95	4.10	6.97
09/06/95	4.54	6.53		
04/01/96	4.68	6.39		
MW-3	12.65	02/24/92	13.12	-0.47
		03/09/92	8.75	3.90
		03/24/92	6.87	5.78
		04/28/92	6.31	6.34
		06/04/92	7.10	5.55
		06/29/92	10.78	1.87

**Table 1.
Groundwater Elevations**

<u>Well</u>	<u>TOC Elevation</u>	<u>Date</u>	<u>Groundwater Depth (feet)</u>	<u>Groundwater Elevation (feet)</u>
		07/27/92	6.88	5.77
		09/24/92	7.38	5.27
		12/16/92	6.50	6.15
		01/21/93	10.25	2.40
		02/07/94	11.44	1.21
		05/03/94	7.02	5.63
		06/02/94	9.15	3.50
		08/23/94	7.13	5.52
		11/03/94	7.54	5.11
		02/13/95	5.80	6.85
		05/22/95	7.87	4.78
		09/06/95	6.47	6.18
		04/01/96	5.83	6.82
MW-4	12.22	02/07/94	5.92	6.30
		05/03/94	5.50	6.72
		06/02/94	5.17	7.05
		08/23/94	5.73	6.49
		11/03/94	6.41	5.81
		02/13/95	4.65	7.57
		05/22/95	4.77	7.45
		09/06/95	5.43	6.79
		04/01/96	4.58	7.64
MW-5	12.69	02/07/94	4.89	7.80
		05/03/94	4.50	8.19
		06/02/94	4.49	8.20
		08/23/94	4.83	7.86
		11/03/94	5.14	7.55
		02/13/95	4.19	8.50
		05/22/95	4.25	8.44
		09/06/95	4.68	8.01
		04/01/96	4.23	8.46

TOC = Top of Casing
 Groundwater depth measured below TOC
 TOC elevation surveyed relative to mean sea level

Table 3
Contaminant Concentrations in Groundwater

Sampling Date	TVH (ug/l)	TEH			TOG (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl- Benzene (ug/l)	Total Xylenes (ug/l)	EPA 8270 Compounds	EPA 8010 Compounds	TDS (mg/l)
		Kerosene (ug/l)	Diesel (ug/l)	Motor Oil (ug/l)								
<u>Fuel Oil Tank Area</u>												
MW-1	2/19/92	--	<50	94	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	6/29/92	--	<50	110	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	9/29/92	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	12/22/92	--	<50	180	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	1/26/94	--	60	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	5/4/94	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	8/25/94	--	*	480†	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	11/7/94	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	2/13/95	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	5/24/95	--	--	<50	--	9.7	<0.5	<0.5	<0.5	--	--	--
	9/7/95	--	--	140†	<1300	<0.5	<0.5	<0.5	<0.5	--	--	--
	4/4/96	--	--	240†	--	<0.5	--	--	--	ND	--	14,200
MW-4	1/26/94	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	8/25/94	--	*	530†	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	5/27/95	--	--	240†	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	4/4/96	--	--	190†	--	<0.5	--	--	--	ND	--	17,600
<u>Gasoline Tank Area</u>												
Tank Excavation	8/15/91	800	--	--	--	78	99	10	52	--	--	--
MW-2	2/19/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	6/29/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	9/29/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	12/22/92	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	1/25/94	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	5/4/94	--	*	50†	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	11/4/94	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--
	2/13/95	--	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--	--	--

TABLE 8

Table 3
Contaminant Concentrations in Groundwater

Sampling <u>Date</u>	TVH <u>(ug/l)</u>	TEH			TOG <u>(mg/l)</u>	Benzene <u>(ug/l)</u>	Toluene <u>(ug/l)</u>	Ethyl- Benzene <u>(ug/l)</u>	Total Xylenes <u>(ug/l)</u>	EPA 8270 <u>Compounds</u>	EPA 8010 <u>Compounds</u>	TDS <u>(mg/l)</u>
		Kerosene <u>(ug/l)</u>	Diesel <u>(ug/l)</u>	Motor Oil <u>(ug/l)</u>								
Fuel Oil Tank Area												
H-5	4/1/96	--	--	370†	<300	<11	--	--	--	--	--	35,400
H-6	4/1/96	--	--	680†	<300	<10	--	--	--	ND	--	28,900

TVH = Total volatile hydrocarbons as gasoline

TEH = Total extractable hydrocarbons

TOG = Total oil and grease,

PNAs = Polynuclear Aromatic Hydrocarbons

TDS = Total Dissolved Solids

ug/L = Micrograms per liter or parts per billion (ppb)

mg/L = Milligrams per liter or parts per million (ppm)

-- = Test not requested

<50 = Compound not detected at or above reporting limit shown

ND = Not detected at or above reporting limits

† = Samples exhibits pattern which does not resemble standard

* = Quantitated as diesel range

^h = Laboratory indicates that the sample chromatogram closely resembles hydraulic fluid.

** = Laboratory indicates value is estimated since surrogate recovery fell outside of proper QC limits

Note:

1. Analytical results for the grab groundwater sample collected from Boring H-1 are not presented due to sample contamination.