

James P. Bowers, PE
R. William Rudolph, Jr., PE

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September 1, 1992
SCI 615.003

Mr. Paul Smith
Alameda County Health Care Services Agency
2101 Webster Street
Oakland, California

Request for Site Closure
Dignity Housing
15th and Castro Streets
Oakland, California

690 15th St. 94607

Dear Mr. Smith:

This letter transmits our request for closure of the referenced site. Subsurface Consultants, Inc. (SCI) has conducted several phases of environmental services for the project as summarized in the letters and reports listed below:

05/08/91 Preliminary Environmental Assessment
05/16/91 Phase 2 Hydrocarbon Assessment/Remediation Work Plan
06/28/91 Water Well Abandonment
07/02/91 Results of Soil Remediation
08/29/91 Quarterly Groundwater Monitoring Report
11/26/91 Quarterly Groundwater Monitoring Report
03/09/92 Quarterly Groundwater Monitoring Report

In accordance with your request we have summarized the request for closure in the format suggested by the Regional Water Quality Control Board (RWQCB).

Site History

Prior to the 1900's, the property was a small portion of a large parcel which occupied most of the block bounded by Grove, Castro, 15th and 16th Streets. Sanborn Fire Insurance maps from 1901 indicate that the large parcel was occupied by a dwelling, a church and various other structures. The dwelling and the church were situated outside the current property boundaries. A carriage house, various sheds, a water storage tank and an outhouse apparently occupied the site. In 1911, the Sanborn maps identify a groundwater well and water storage tank on the property. The next available information was from April 1922, when a permit was

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drawn to build a garage/warehouse structure that covered the entire site. The 1935 Sanborn map shows that the structure was occupied by the Pacific Gas and Electric Company. The 1954 Sanborn map shows the structure as an auto repair shop. Based on discussions with PG&E employees, PG&E leased the property into the mid 1960's. In 1965, the building department issued a sign permit for an auto service company and an auto towing service. On December 31, 1979 the property was sold to the City of Oakland.

At the time the property was sold to the City of Oakland, two underground tanks were identified on the property. The tanks were removed by a contractor retained by the City of Oakland. A representative of the Alameda County Health Care Services Agency observed tank removal. However, the case was never closed.

In 1990, the property was acquired by Dignity Housing West to construct housing for homeless people. SCI was retained by Dignity to perform a preliminary environmental assessment of the site. The investigation revealed that contaminated soils had been left in place following initial tank removal activities. Further investigation defined the vertical and horizontal extent of soil contamination. In addition, three monitoring wells were installed to access impacts to groundwater. Subsequently, SCI prepared a remediation work plan which was approved by the Alameda County Health Care Services Agency. Remediation involved removing approximately 430 cubic yards of soil from the site and monitoring groundwater for four consecutive quarters.

Following completion of soil remediation activities, construction began on the Dignity Housing West development. The new building, which essentially occupies the entire site, is nearing completion.

Investigative Methods

In general, the site has been investigated by obtaining samples following tank removal, drilling and sampling 12 test borings, installing 3 groundwater monitoring wells and analytically testing soil and groundwater samples. The investigations were conducted in accordance with appropriate environmental protocols.

During tank removal, soil samples were obtained by others from beneath the tank and from the sidewalls of the limited excavation undertaken to remove contaminated soil. The results of these tests are presented in Table 1.

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During SCI's preliminary environmental assessment Test Borings 5, 6, 7 and 8, as shown on Plate 1, were drilled within and near the previous tank excavation to evaluate previous clean-up activities. The results of analytical tests on soil samples from these borings are also shown in Table 1.

Once the presence of hydrocarbon contamination was confirmed, Test Borings 10, 12 and 13 and Monitoring Wells MW-1, MW-2 and MW-3 were drilled to determine the lateral and vertical extent of soil contamination and to assess whether groundwater had been impacted. The results of the analytical tests on soil samples are summarized in Table 1.

SCI Test Borings 1 through 4 were drilled for both geotechnical and environmental assessment purposes. Selected shallow soil samples from these borings were analytically tested for heavy metals and cyanide. The results of these tests are presented in Table 2.

During remediation, soil samples were obtained from the final excavation sidewalls and bottom to confirm the extent of soil remediation. The location of these samples are shown on Plates 2 and 3. The results of the analytical tests are presented in Table 3.

Groundwater from the monitoring wells has been monitored for 4 consecutive quarters for petroleum hydrocarbons (TVH and TEH), BTXE and purgeable halocarbons. The results of the analytical tests on groundwater samples are summarized in Table 4. Groundwater levels measured during the monitoring events are presented in Table 5.

During grading for site development, an SCI field engineer was on-site on a regular basis. The engineer observed conditions exposed by grading to check for conditions of environmental concern i.e. tanks, sumps, stained soil or chemical odors. No conditions of concern were noted. Hence, no additional analytical testing of soil samples was conducted during grading.

Hydrocarbons in Soil

SCI investigations in 1991 indicated that hydrocarbon contaminated soils were left in-place following tank removal. The contamination was quantified as stoddard solvent, gasoline, and its constituents, benzene, toluene, xylene, and ethylbenzene (BTXE). Borings drilled

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near the center of the former tank excavation detected concentrations of gasoline up to 750 mg/kg and stoddard solvent at a concentration of 720 mg/kg. Significant contamination was not detected in soils below 20 feet in any of the borings. The data suggested that the soil contamination was associated with a gasoline release of limited quantity. Although the contaminants were quantified as both gasoline and stoddard solvent, we suspect the reported stoddard solvent may actually have consisted of older gasoline which had weathered such that its chromatograph was similar to that of stoddard solvent.

SCI submitted a work plan for soil remediation to the ACHCSA and the RWQCB on May 16, 1991. The plan was approved and implemented in June 1991. In accordance with the plan, approximately 430 cubic yards (loose) were excavated and removed from the site. The soil was disposed of at an appropriate landfill. Confirmation soil samples obtained at the excavation limits did not contain TVH or TEH at concentrations above detection limits (i.e., <1 mg/kg). Very low concentrations of toluene and xylene were left in-place at the limits of excavation. The resulting excavation was backfilled with clean soil.

Groundwater Contamination

The results of groundwater monitoring indicates that groundwater has not been impacted by gasoline, stoddard solvent or BTXE. However, the volatile organic compound, tetrachloroethene (PCE) has been detected in each monitoring well during the study. PCE concentrations have ranged from 1.1 to 2.5 ug/l. Additionally, chloroform has been detected in Monitoring Well MW-1 at concentrations of 1.2 and 1.4 ug/l. Because the PCE was detected in the two upgradient wells, we conclude that the source of the PCE contamination is off-site.

The drinking water maximum contaminant level for PCE is 5 ug/l. On this basis we conclude that the PCE contamination detected does not represent a significant degradation of groundwater. Similarly, very low levels of chloroform, such as that detected in MW-1, have been detected in several other monitoring wells in the area. The source of the chloroform is currently unknown. However, it likely does not represent a significant degradation of groundwater quality.

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Shallow Soil Contamination

Shallow soil samples were obtained randomly across the site and screened for Title 22 metals and cyanide. The analytical results were well within the range of typical background levels for the area.

Local Hydrology

The site is situated within the Northern California Coast Ranges Geomorphic Province. Locally, the site is mapped as being underlain by the Merritt Sand Formation. This Quaternary age deposit consists primarily of fine-grained silty and clayey sand deposited by wind and water as beach and near shore deposits. The Merritt Sand overlies the Alameda Formation, also deposited in Quaternary time. The Alameda Formation consists of continental and marine sediment deposited in the valley of the San Francisco Bay.

The surface of the site was covered with a two to four foot thick layer of loose to medium dense sand or sandy gravel during SCIs 1991 investigations. These soils represent natural soils which were disturbed during demolition of the former structure. The loose soils were overexcavated and recompactd during site grading. The surface layer is underlain by dense silty and clayey sand of the Merritt Sand formation. Other borings in the area show the Merritt Sands extend to a depth of about 45 feet.

Groundwater at the site exists at a depth of about 25 feet and flows westward toward Interstate-980 at a gradient of 0.6 percent. Seasonal groundwater fluctuation has been limited to plus or minus 2 feet at the site. The direction of groundwater flow in the area is likely controlled by dewatering for the adjacent depressed freeway. To our knowledge, the aquifer is currently not used as a source for drinking or irrigation water.

Within the area, the Merritt Sands have a saturated thickness of about 20 feet. Pump tests conducted at a nearby site indicate a transmissivity of about 283 feet²/day and a corresponding permeability of about 5×10^{-3} cm/sec.

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Remediation Effectiveness

Based on the analytical test results, we conclude remediation activities have been successful. Groundwater at the site has been monitored for four consecutive quarters and no petroleum related contaminants i.e. TVH, TEH or BTXE have been detected. Since the contaminated soils have been removed, with the exception of some very low concentrations of toluene and xylenes, we judge that there is essentially no future risk of groundwater contamination from the tank release. We conclude that the presence of PCE and chloroform in the groundwater is unrelated to the former gasoline tanks. These contaminants most likely migrated with groundwater from an up gradient source.

Sign Off

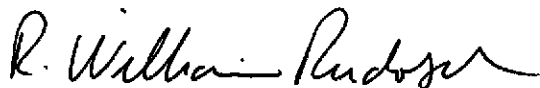
Since 1) soil remediation has removed all contaminated soils to the extent which is practical, and 2) there is no evidence to suggest that groundwater at the site has been impacted by the former gasoline tanks, we conclude that the site should be considered closed.

We look forward to your correspondence regarding site closure.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



R. William Rudolph
Geotechnical Engineer 741 (expires 12/31/92)

CP:RWR:WA:egh

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Attachments: Table 1 Hydrocarbons concentrations in Soil Prior
to Remediation
Table 2 Heavy metals and Cyanide
Table 3 Hydrocarbon Concentrations Following
Remediation
Table 4 Organic Chemicals in Water
Table 5 Ground Water Elevations

Plate 1 Site Plan
Plate 2 Soil Remediation Excavation Plan
Plate 3 Remediation Cross Section

cc: (1) Fei Tsen
Tsen and Associates

(2) Mr. Willie Pettus
Pyatok Associates

Table 1.

Hydrocarbon Concentrations in Soil Prior to Remediation

Soil Samples Taken by Others Following Tank Removal

<u>Sample Location</u>	<u>Sampling Date</u>	<u>TPH¹ (mg/kg)</u>
Pit - West End	11/12/87	2400
Pit - East End	11/12/87	5600
Pit - North End	01/15/88	<50
Pit - South End	01/15/88	<50
Pit - East End	01/15/88	<50
Pit - West End	01/15/88	<50
Pit - Bottom	01/15/88	760
Pit - North End	02/12/88	960
Pit - South End	02/12/88	490
Pit - East End	03/15/88	<50
Pit - West End	03/15/88	89

Soil Samples Taken During SCI Investigation

<u>Boring</u>	<u>Depth (ft.)</u>	<u>TVH (mg/kg)</u>	<u>TEH (mk/kg)</u>	<u>Benzene (ug/kg)</u>	<u>Toluene (ug/kg)</u>	<u>Ethyl Benzene (ug/kg)</u>	<u>Total Xylenes (ug/kg)</u>	<u>Oil & Grease (ng/kg)</u>
5	7.5	<1	<1	<5	<5	<5	<5	<50
8	13.0	750	720	55	1,300	14,000	38,000	<50
8	19.5	24	58	40	110	170	910	<50
9	26.0	<1	<1	<5	<5	<5	<5	--
10	26.0	2.4	<1	<5	<5	<5	<5	--
12	26.0	2.4	<1	<5	<5	<5	<5	--
12	31.0	<1	<1	<5	<5	<5	12	--
13	26.0	<1	<1	<5	<5	<5	<5	--

TPH = Total petroleum hydrocarbons
 TVH = Total volatile hydrocarbons, quantified as gasoline
 TEH = Total extractable hydrocarbons, quantified as Stoddard Solvent (diesel not detected in these analysis)
 mg/kg = milligrams per kilogram
 ug/kg = micrograms per kilogram
 ND = None detected, chemicals not present at concentrations above detection limits
 -- = Test not requested
 < = Contaminant not present at a concentration in excess of the detection limit shown

Table 2.
Heavy Metals and Cyanide
Concentrations in Soil

<u>Boring</u>	<u>Depth</u> <u>(ft.)</u>	<u>Cadmium</u> <u>(mg/kg)</u>	<u>Chromium</u> <u>(mg/kg)</u>	<u>Lead</u> <u>(mg/kg)</u>	<u>Nickel</u> <u>(mg/kg)</u>	<u>Zinc</u> <u>(mg/kg)</u>	<u>Cyanide</u> <u>(mg/kg)</u>
1	1.0	<0.5	17	21	5.1	24	<0.3
2	1.0	<0.5	20	25	6.9	18	<0.3
3	1.0	1.2	29	36	26	48	<0.3
4	1.0	0.6	24	<2.5	8.7	31	<0.3

< = Contaminant not present at a concentration in excess of detection limit shown.

Table 3.
Hydrocarbon Concentrations in
Confirmation Soil Samples
Following Remediation

<u>Sample Designation</u>	<u>TVH (mg/kg)</u>	<u>TEH (mg/kg)</u>	<u>Benzene (ug/kg)</u>	<u>Toluene (ug/kg)</u>	<u>Ethyl-Benzene (ug/kg)</u>	<u>Total Xylenes (ug/kg)</u>
13 @ 15 ft	<1	<1	<5	<5	<5	<5
14 @ 15 ft	<1	<1	<5	<5	<5	<5
15 @ 18 ft	<1	<1	<5	<5	<5	<5
16 @ 15 ft	<1	<1	<5	7.4	<5	<5
17 @ 22 ft	<1	<1	<5	5.8	<5	7.3
44 @ 25 ft	<1	<1	<5	<5	<5	<5

TVH = Total volatile hydrocarbons (as gasoline)
TEH = Total extractable hydrocarbons (kerosene and diesel range)
mg/kg = milligrams per kilogram = parts per million = ppm
ug/kg = micrograms per kilogram = parts per billion = ppb
< = Contaminant not present at a concentration in excess of the detectin limit shown.

Table 4.
Concentrations of Organic Chemicals in Water
During Four Monitoring Events

<u>Well</u>	<u>Sample Date</u>	<u>TVH</u> <u>ug/l</u>	<u>TEH</u> <u>ug/l</u>	<u>B</u> <u>ug/l</u>	<u>T</u> <u>ug/l</u>	<u>X</u> <u>ug/l</u>	<u>E</u> <u>ug/l</u>	<u>Chloro-</u> <u>form</u> <u>ug/l</u>	<u>PCE</u> <u>ug/l</u>	<u>Other</u> <u>EPA 8010</u> <u>Chemicals</u> <u>ug/l</u>
MW-1	05/08/91	<50	<50	<1	<1	<1	<1	1.2	2.5	<1
	08/13/91	<50	<50	<1	<1	<1	<1	<1	<1	<1
	11/08/91	<50	<50	<0.5	<0.5	<0.5	<0.5	1.4	3.3	<1
	02/13/92	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	2.6	<1
MW-2	05/08/91	<50	<50	<1	<1	<1	<1	<1	<1	<1
	08/13/91	<50	<50	<1	<1	<1	<1	<1	<1	<1
	11/08/91	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	1.3	<1
	02/13/92	<50	<50	<1	<1	<1	<1	<1	<1	<1
MW-3	05/08/91	<50	<50	<1	<1	<1	<1	<1	1.1	<1
	08/13/91	<50	<50	<1	<1	<1	<1	<1	<1	<1
	11/08/91	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	<1	<1
	02/13/92	<50	<50	<0.5	<0.5	<0.5	<0.5	<1	<1	<1

TVH = Total Volatile Hydrocarbons

TEH = Total Extractable Hydrocarbons

BTXE = benzene, toluene, xylene and ethylbenzene

PCE = Tetrachloroethylene

ug/l = micrograms per liter or parts per billion (ppb)

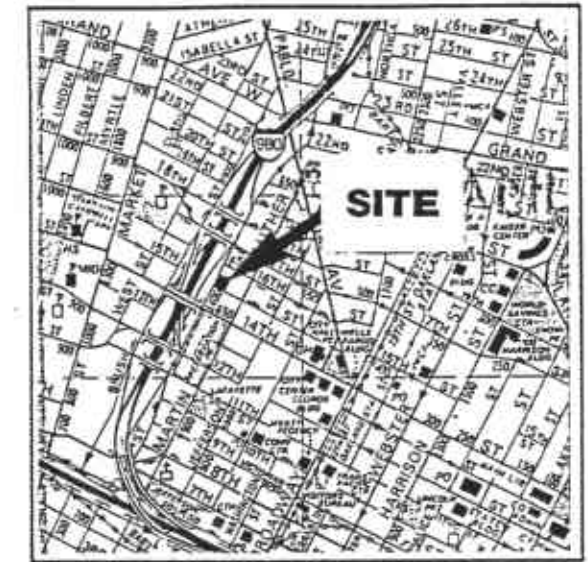
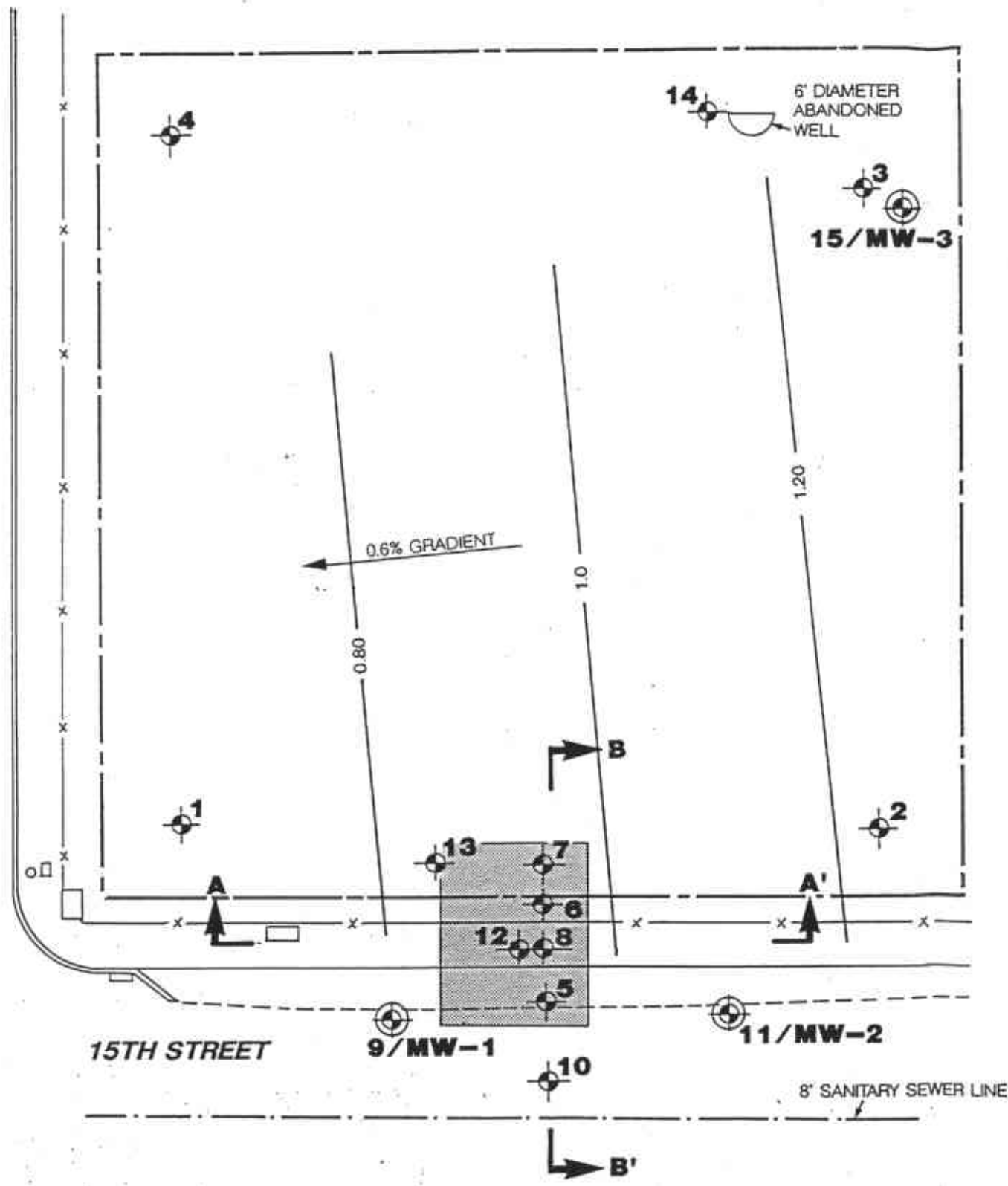
< = Contaminant not present at a concentration in excess of the detection limit shown.

**Table 5.
Groundwater Elevations**

<u>Well</u>	<u>Date</u>	<u>Top of Casing Elevation</u>	<u>Depth to Groundwater (ft)</u>	<u>Groundwater Elevation (ft)</u>
MW-1	05/08/91	27.62	26.82	0.80
	08/13/91		27.06	0.56
	11/08/91		27.05	0.57
	02/13/92		26.58	1.04
MW-2	05/08/91	27.97	26.88	1.09
	08/13/91		27.11	0.86
	11/08/91		27.11	0.86
	02/13/92		26.85	1.12
MW-3	05/08/91	29.90	28.54	1.31
	08/13/91		28.82	1.08
	11/08/91		28.88	1.02
	02/13/92		28.92	0.98

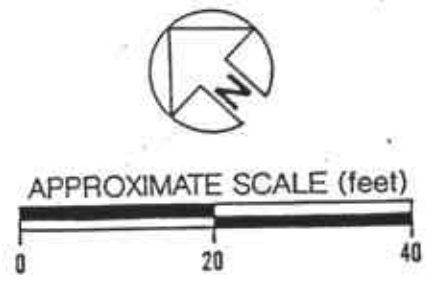
Elevations are referenced to project datum established by Bates and Bailey on the Land Survey and Topographic Plan dated February 25, 1991.

CASTRO STREET



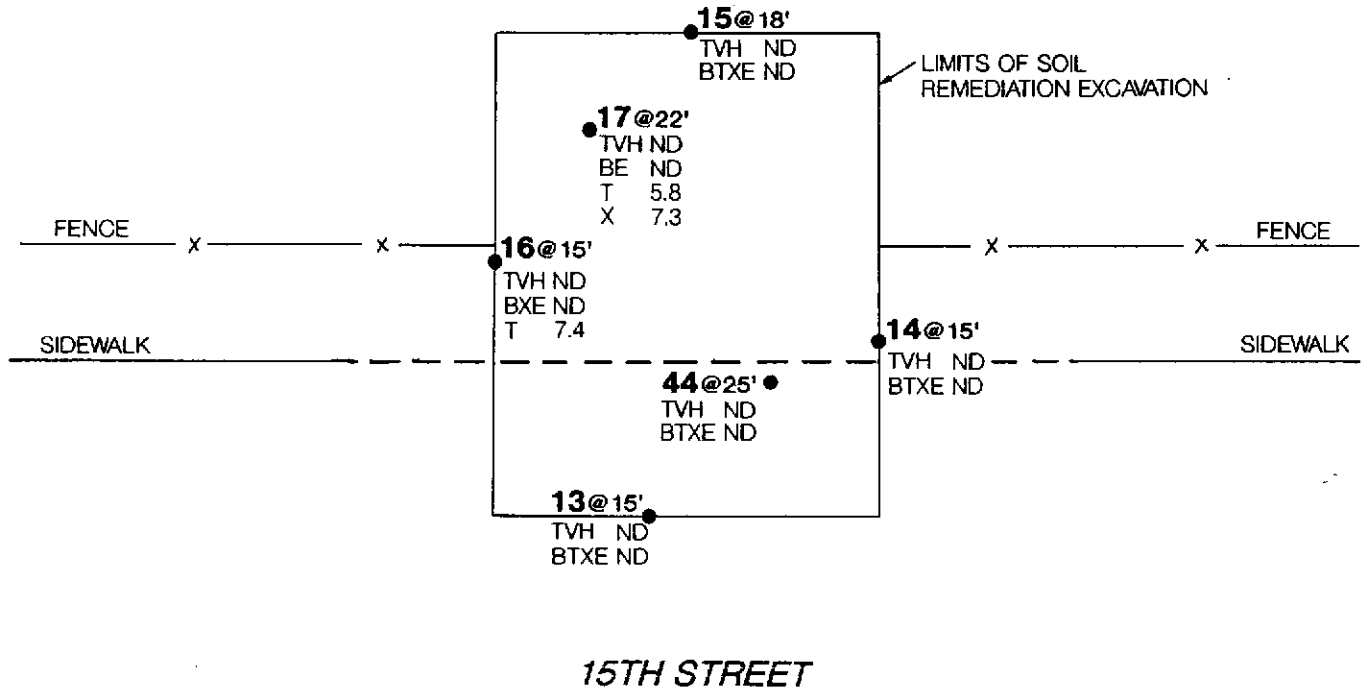
VICINITY MAP

- TEST BORING/MONITORING WELL
- TEST BORING
- SOIL REMEDIATION EXCAVATION
- EDGE OF PAVEMENT
- 1.0 GROUNDWATER GRADIENT CONTOUR
- CROSS SECTION



REFERENCE: TOPOGRAPHIC MAP PREPARED BY BATES AND BAILEY, LAND SURVEYORS ENTITLED 'PROPERTY AT 690 15TH STREET, OAKLAND', DATED FEBRUARY 1991.

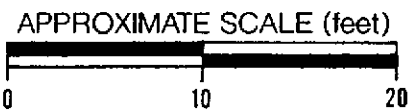
Subsurface Consultants			SITE PLAN		PLATE 1
			DIGNITY HOUSING WEST - OAKLAND, CA		
JOB NUMBER 615.003	DATE 6/27/91	APPROVED JVB			



14@15' ● FINAL CONFIRMATION
SAMPLE LOCATION, NUMBER AND DEPTH

TVH TOTAL VOLATILE HYDROCARBONS AS
GASOLINE (mg/kg)

BTXE BENZINE, TOLUENE ETHYLBENZINE
& TOTAL XYLENE (ug/kg)



SOIL REMEDIATION
EXCAVATION PLAN

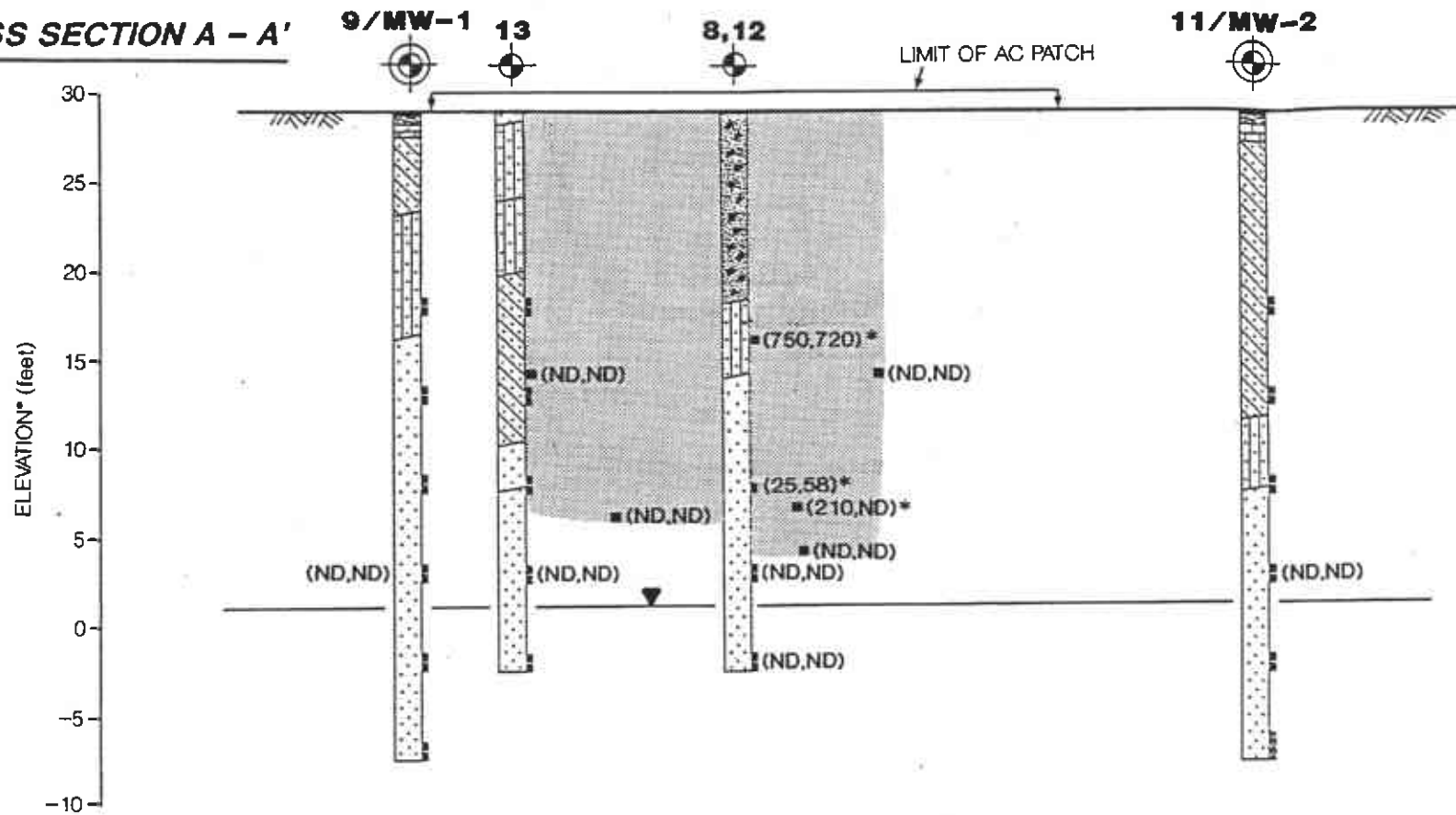
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DIGNITY HOUSING WEST – OAKLAND, CA

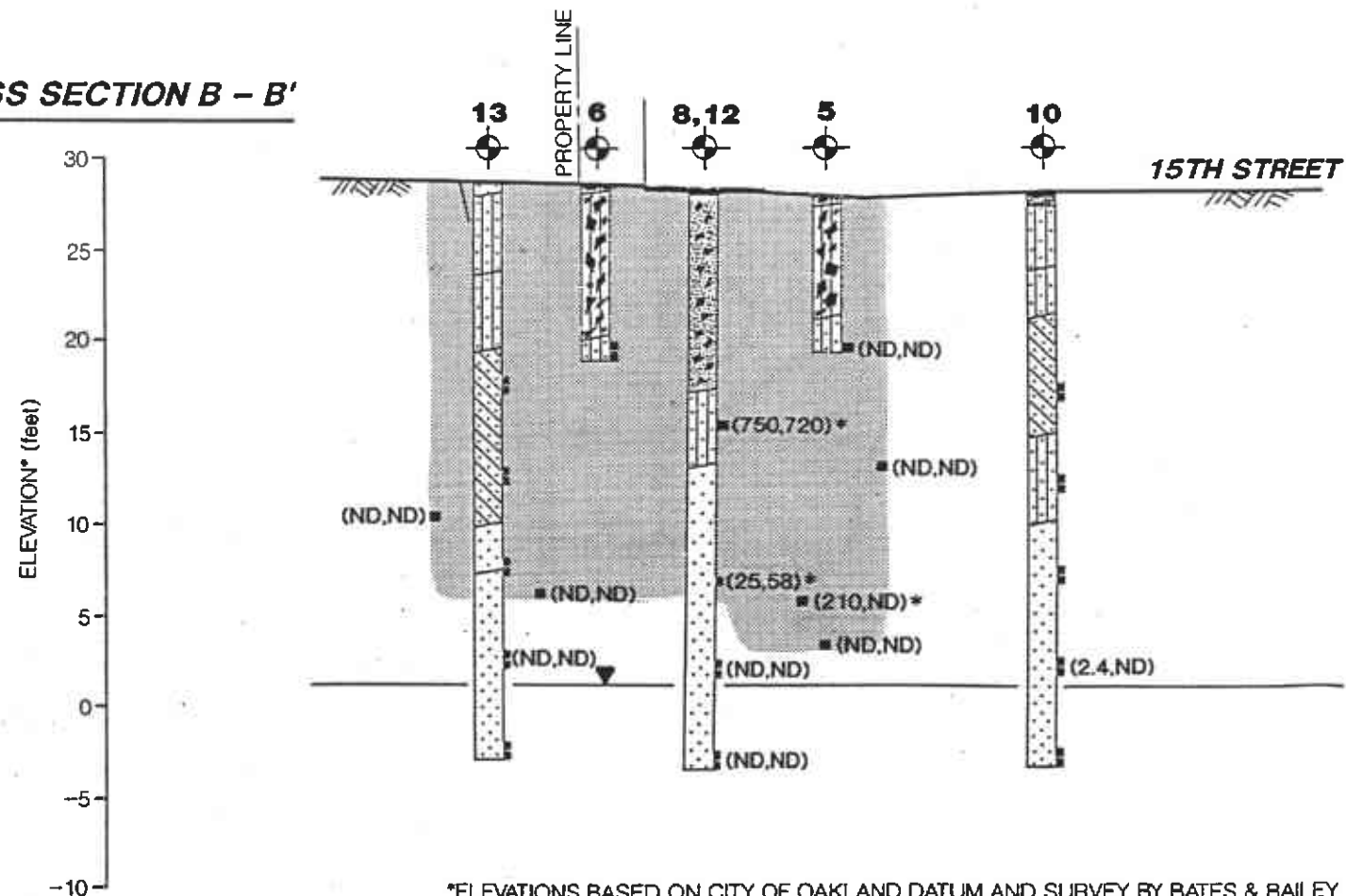
JOB NUMBER 615.003 DATE 6/27/91 APPROVED JVB

PLATE
2

CROSS SECTION A - A'



CROSS SECTION B - B'



- TEST BORING/MONITORING WELL
- TEST BORING
- SAMPLE LOCATION
- (750,720)
 TEH
 TVH
- ND NONE DETECTED
- APPROXIMATE LIMIT OF SOIL REMOVAL
- * SOIL REMOVED BY EXCAVATION

HORIZONTAL SCALE: 1" = 10'

*ELEVATIONS BASED ON CITY OF OAKLAND DATUM AND SURVEY BY BATES & BAILEY, DATED FEBRUARY 1991, ENTITLED PROPERTY AT 690 15TH STREET, OAKLAND, CA.

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REMEDATION CROSS SECTION

DIGNITY HOUSING WEST - PHASE II		PLATE
JOB NUMBER	DATE	APPROVED
615.002	5/10/91	JVB
		3