BASELINE

ENVIRONMENTAL CONSULTING

15 June 1988
S8-123

Mr. John Guillory
Grubb and Ellis
475 - 14th Street
Oakland, CA

Subject: **Report on Soil Sampling Activities at the Proposed Tidewater Business Park, Parcel No. 6-17, Oakland, California**

Dear Mr.Guillory:

Attached please find our report describing soil sampling activities at the proposed Tidewater Business Park located on Parcel No. 6-17 on Tidewater Avenue in Oakland, California. The analytical data presented are representative of material encountered at the depths and locations that samples were collected at the time of sampling. The conclusions and recommendations contained herein are based on applicable regulatory and professional standards of our industry at the time this report has been prepared.

Should you have any further questions or require further assistance, please contact us.

Sincerely,

Yane Nordhav
Principal
Reg. Geologist No. 4009

Steven Wisbaum
Senior Associate

YN/SW/mb/s8
Attachments

SAH

Report on

SOIL SAMPLING ACTIVITIES

PROPOSED TIDEWATER BUSINESS PARK
PARCEL NUMBER 6-17
TIDEWATER AVENUE AND LESSER STREET
OAKLAND, CALIFORNIA

Prepared for

TIDEWATER PROPERTIES

June 1988

Prepared by

BASELINE ENVIRONMENTAL CONSULTING
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415/763-7037

S8-123

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Proposed Tidewater Business Park
Oakland, California

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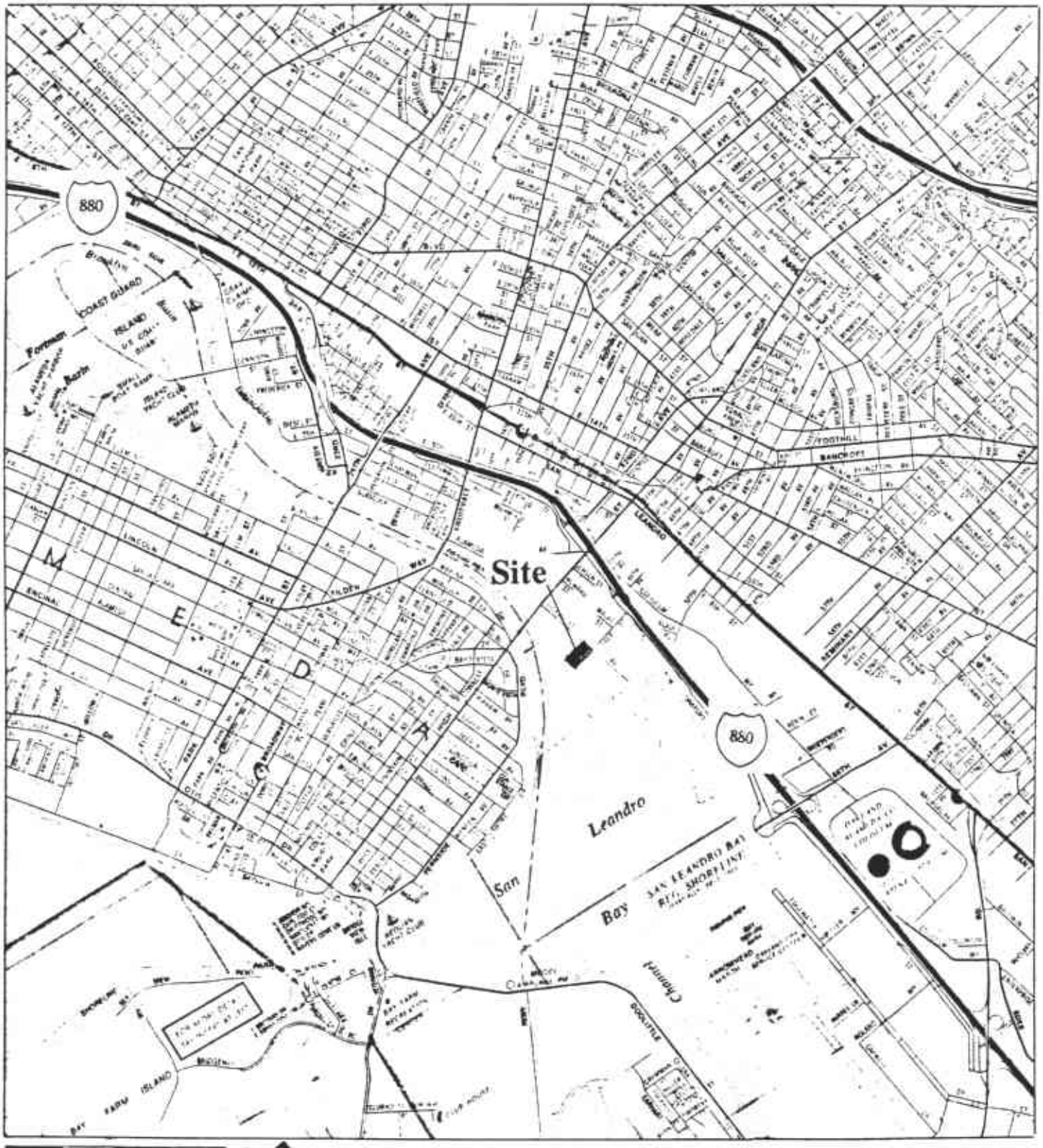


BASELINE

REPORT ON
SOIL SAMPLING ACTIVITIES

PROPOSED TIDEWATER BUSINESS PARK
PARCEL NUMBER 6-17
TIDEWATER AVENUE AND LESSER STREET
OAKLAND, CA

INTRODUCTION

BASELINE ENVIRONMENTAL CONSULTING has been retained by Tidewater Properties to conduct soil sampling at the proposed Tidewater Business Park located on Tidewater Avenue near Lesser Street in Oakland, California (Figure 1). A preliminary report prepared by BASELINE in April 1988 concluded that the historical land uses associated with this site may have affected surface and sub-surface soils (Appendix A). The purpose of this sampling effort is to identify the potential presence of non-native materials in the subsurface on this property.

The 5.64-acre site is bordered on the north by Arkansas-Best Freight Systems (4575 Tidewater Avenue), to the south by White Brothers' Forest Products (4801 Tidewater Avenue), to the east by Tidewater Avenue, and to the west by tidal flats and the San Leandro Bay Inner Harbor (Figure 2). A railroad spur enters the site from the north-east. The site is generally level with compacted soil and gravel which is covered with vegetation including grasses, shrubs, and a small grove of trees. The site also contains construction debris and concrete pads from previous buildings.

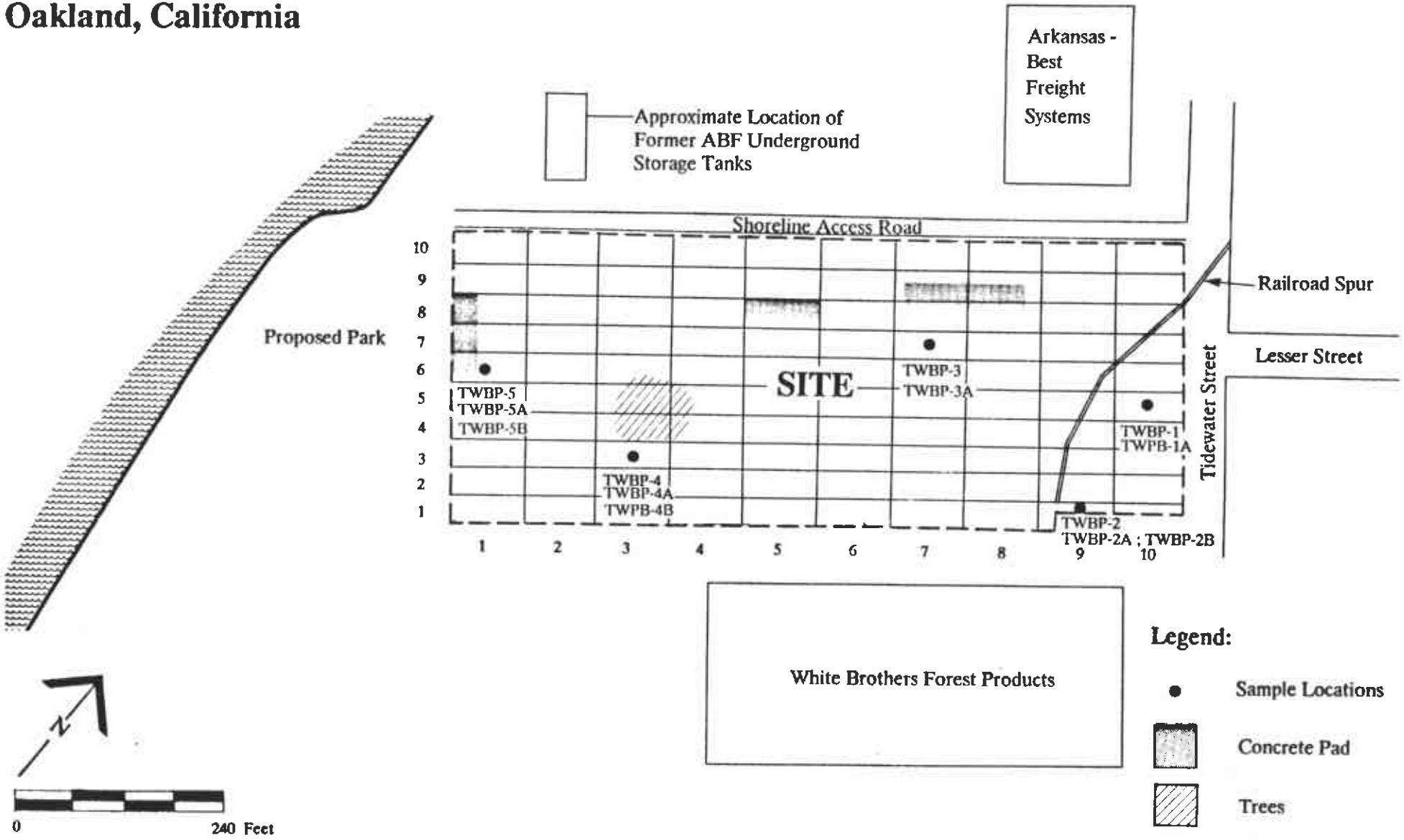
ADJACENT SITE

another site has UGTs.

During the course of this investigation, a record search was conducted at the Regional Water Quality Control Board San Francisco Bay Region (RWQCB) and the Oakland Fire Department to locate any available reports describing sub-surface investigations on the Tidewater Business Park property and those properties immediately adjacent to it. Documents obtained indicate that the Arkansas-Best Freight terminal has had at least one release of potentially hazardous materials from one or more of the four underground storage tanks located at their maintenance garage and fueling station. The size and contents of these tanks were as follows:

SITE PLAN -
Proposed Tidewater Business Park
Oakland, California

Figure 2



Source: IDG Architects, Proposed Developments Tidewater Business Park and East Bay Regional Park District.

BASELINE

- Two 10,000-gallon diesel tanks
- One 800-gallon waste oil tank
- One 800-gallon new-oil tank

In June 1986, the two 800-gallon tanks were removed by Azonic Technology. Following removal, an oily sludge was observed beneath the tanks, and analyses of soil samples identified elevated levels of total petroleum hydrocarbon (TPH) ranging from 10 to 14 mg/kg. Elevated TPH levels were also detected in grab water samples collected from the bottom of soil borings in amounts ranging from 0.7 to 100 mg/l.[1]

On 12 September 1986, Tetra Tech, Inc. initiated a follow-up investigation to determine the extent of contamination. The highest TPH levels detected in soils was 34 mg/kg, benzene was detected in the amount of 0.012 mg/kg, toluene 0.010 mg/kg, and xylene in the amount of 0.058 mg/kg. Analyses of groundwater samples revealed TPH levels in the amount of 4.5 mg/l, benzene 1.56 mg/l, and xylene in the amount of 1 mg/l. The former locations of the tanks and all soil and groundwater sample locations are shown in the Underground Storage Tank Investigation, Tetra Tech, 14 October 1986, and included as Appendix B to this report.

One of the 10,000-gallon diesel tanks was removed in January 1987 by Weston Consultants. During removal operations a small section of the tank was found to be corroded and a film of hydrocarbons was observed on the surface of water inside the excavation. TPH levels were detected in water samples in the amount of 721 mg/l and in soils samples at 681 mg/l. No benzene, toluene or xylenes were detected in any of the samples. The details of this tank removal and sampling operation can be found in the Report of Underground Storage Tank Removal, Weston Consultants and included as Appendix C to this report.

---

[1]Tetra Tech, Inc., Underground Storage Tank Investigation. ABF Freight Maintenance Facility in Oakland, California. October 1986.

TIDEWATER BUSINESS PARK SOIL SAMPLING PROGRAM

The Tidewater Business Park site has been vacant since at least 1976.[2] Historical uses for the site and adjacent properties include machine shops, automotive repair, and truck fabrication.[3] Various organic compounds, lubricating oils, fuel products, and metals such as chromium, nickel, lead, barium, and titanium are associated with these operations. Fill materials historically placed on this property are of unknown origin.[4]

The purpose of the soil sampling conducted for this study is to identify any non-native materials in near and sub-surface soils on this site. A random soil sampling program was developed by dividing the site into 100 equal sections on the site map; each section was numbered and five sample locations were selected using a random number generating program. Each of the randomly selected sample locations was then located on the site with a compass and tape measure.

Sampling Methods

Soil samples were collected with a stainless steel corer fitted with a 6-inch brass liner. The brass liner containing the soil sample was removed from the steel corer after being driven into the ground with a slide hammer. The brass liners containing the soil samples were then capped with aluminum foil and a plastic cap, taped, placed in zip-lock bags, and iced for shipment to the laboratory for analyses. Soil samples were collected from depths ranging from 1 to 3.5 feet. Formal chain-of-custody (COC) procedures were followed. The COC form is included in Appendix D. All sampling equipment was decontaminated with a tri-sodium phosphate (TSP) wash followed by an initial acetone rinse and a final rinse with deionized water. Decontamination was performed prior to initiating collection of the first sample and between collection of each subsequent sample.

---

[2]Personal communication. Inspector Hallert, Oakland Fire Department.

[3]Sanborn Map Company, 1925, 1930, 1950. Sanborn Fire Insurance Map of Oakland, California, on file, Map Library, University of California, Berkeley.

[4]BASELINE ENVIRONMENTAL CONSULTING. Report on Historical Land Uses, Proposed Tidewater Business Park, April 1988.

A total of thirteen discrete soil samples were collected from the five sampling locations (Figure 2). One sample from each location was collected at a one-foot depth for metals analyses. One sample was also collected at each location just above the water table for total petroleum hydrocarbons (TPH), volatile organic compounds (VOC), and semi-volatile organic compounds (SVOC) analyses. In sample locations where groundwater was encountered below two feet (sample locations 2, 4, and 5), an additional sample was collected at the shallower 1-foot depth for VOC and SVOC analysis. Portions of the thirteen samples were composited in the laboratory into three samples, as presented in Table 1.

TABLE 1

SOIL SAMPLE COMPOSITE SUMMARY
PROPOSED TIDEWATER BUSINESS PARK
Tidewater Avenue and Lesser Street
Oakland, California

Composite Sample 1 CAM[1] Metals		Composite Sample 2 VOC[2], SVOC[3], & TPH[4]		Composite Sample 3 VOC & SVOC	
Sample ID	Depth (ft.)	Sample ID	Depth (ft.)	Sample ID	Depth (ft.)
TWBP-1	1.0-1.5	TWBP-1A	1.5-2.0	TWBP-2A	1.0-1.5
TWBP-2	1.0-1.5	TWBP-2B	2.0-2.5	TWBP-4A	1.0-1.5
TWBP-3	1.0-1.5	TWBP-3A	2.0-2.5	TWBP-5A	1.0-1.5
TWBP-4	1.0-1.5	TWBP-4B	3.0-3.5		
TWBP-5	1.0-1.5	TWBP-5B	3.0-3.5		

[1] California Assessment Manual.
[2] Volatile Organic Analysis, EPA Method 8240.
[3] Semi-Volatile Organic Analysis, EPA Method 8270.
[4] Total Petroleum Hydrocarbon Analysis, EPA Method 3550/8015.

Analytical Results

Metals

As shown in Table 2, initial analyses of Composite Sample No. 1 indicated that metal concentrations are below Department of Health Services (DHS) Total Threshold Limit Concentration (TTLC) for definition as hazardous waste as outlined in the California Code of Regulations, Title 22. However, since the concentrations of lead, nickel, and vanadium were above the Soluble Threshold Limit Concentration (STLC), the sample was reanalyzed for these three metals using the Waste Extraction Test (WET). The results from this follow-up analyses indicated the metal concentrations were below the STLC and are therefore not hazardous. Laboratory reports are included in Appendix E.

Total Petroleum Hydrocarbons

A total of five discrete soil samples were collected for analysis of total petroleum hydrocarbons (TPH). An initial analysis of the composite of these five samples identified TPH concentrations in the amount of 611 mg/kg. The laboratory further indicated that the molecular structure of the hydrocarbons detected most closely resembled motor oil. Following receipt of these results, the five discrete samples were reanalyzed individually. As shown in Table 3, the results of these follow-up analyses indicated TPH concentrations in the amount of 80 mg/kg in Sample TWBP-1A and 527 mg/kg in Sample TWBP-2B. TPH concentrations in the remaining three samples were all below detection limits. The laboratory results are included in Appendix E.

Volatile and Semi-Volatile Organic Compounds

Eight of the thirteen soil samples were analyzed for volatile and semi-volatile organic compounds. No organic compounds were identified in any of the samples above the detection limits. The laboratory results are included in Appendix E.

TABLE 2

ANALYTICAL RESULTS SUMMARY FOR METALS ANALYSES
COMPOSITE SAMPLE 1
PROPOSED TIDEWATER BUSINESS PARK
Tidewater Avenue and Lesser Street
Oakland, California

Analyte	Results		Regulatory Limits	
	Total Metals (mg/kg)[1]	Soluble Metals (mg/l)[2]	STLC[3] (mg/l)	TTLC[4] (mg/kg)
Antimony (Sb)	0.02	--[5]	15.0	500.0
Arsenic (As)	4.79	--	5.0	500.0
Barium (Ba)	96.2	--	100.0	10,000.0
Beryllium (Be)	ND[6]	--	0.75	75.0
Cadmium (Cd)	ND	--	1.0	100.0
Chromium (Cr)	26.1	--	560.0	2,500.0
Cobalt (Co)	5.48	--	80.0	8,000.0
Copper (Cu)	17.5	--	25.0	2,500.0
Lead (Pb)	43.6	2.05	5.0	1,000.0
Mercury (Hg)	0.181	--	0.2	20.0
Molybdenum (Mo)	ND	--	350.0	3,500.0
Nickel (Ni)	28.8	0.57	20.0	2,000.0
Selenium (Se)	ND	--	1.0	100.0
Silver (Ag)	0.26	--	5.0	500.0
Thallium (Tl)	ND	--	7.0	700.0
Vanadium (V)	46.8	0.696	24.0	2,400.0
Zinc (Zn)	91.4	--	250.0	5,000.0

[1] Milligrams per kilogram (parts per million [ppm]).
[2] Milligrams per liter (parts per million [ppm]).
[3] Soluble Threshold Limit Concentration.
[4] Total Threshold Limit Concentration.
[5] Analyses not performed.
[6] Not detected.

TABLE 3

ANALYTICAL RESULTS SUMMARY FOR TOTAL PETROLEUM HYDROCARBONS (TPH)
PROPOSED TIDEWATER BUSINESS PARK
Tidewater Avenue and Lesser Street
Oakland, California

Sample ID	Depth (feet)	TPH as Motor Oil (mg/kg)[1]	Detection Limit (mg/kg)
Composite Sample 2	various	611.0	10
TWBP-1A	1.5 - 2.0	80.0	10
TWBP-2B	2.0 - 2.5	527.0	10
TWBP-3A	2.0 - 2.5	ND[2]	10
TWBP-4B	3.0 - 3.5	ND	10
TWBP-5B	3.0 - 3.5	ND	10

[1] Milligrams per kilograms (parts per million [ppm]).
[2] ND = not detected.

CONCLUSIONS

The results from laboratory analyses of soil samples collected at the Tidewater Business Park property identified elevated levels of lead, nickel, and vanadium. However, the concentrations of metals identified are all below Title 22 standards for definition as hazardous waste. No organic compounds were found above detection limits in soil samples collected at the site.

BASELINE found no historical evidence to indicate the presence of underground storage tanks on this property. However, elevated concentrations of total petroleum hydrocarbons were detected in two soil samples. Although there are currently no regulatory standards or policies for TPH concentrations in soils not associated with underground storage tanks, Department of Health Services generally considers TPH concentrations over 1,000 mg/kg to be hazardous.

A release of petroleum products has occurred in one or more underground storage tanks at the Arkansas-Best Freight (ABF) terminal. The tanks were located near the northwest corner of the Tidewater Business Park property. Subsurface investigations conducted following removal of

the tanks identified elevated concentrations of total petroleum hydrocarbons and the organic compounds benzene, toluene, and xylene in soils and groundwater underlying ABF property.

It is not known whether materials released from the underground storage tanks at the ABF terminal have migrated to soils and groundwater underlying the Tidewater Business Park property. However, as previously indicated, no benzene, toluene, or xylene were identified in subsurface soils during BASELINE'S recent Tidewater sampling program, and the petroleum hydrocarbons identified on the project site were at the southeast corner of the property. The adjacent property's underground tank releases have affected the shallow groundwater underlying that site. The shallow groundwater gradient is unknown but is likely toward the Bay, east of the project site; thus, the project site would not be downgradient from the ABF site and any releases from ABF would migrate toward the Bay and not toward the project site.

RECOMMENDATIONS

Although the concentrations of total petroleum hydrocarbons in soil samples collected at Tidewater property are not hazardous, there is the possibility that higher TPH concentrations may exist in areas not sampled. Therefore, it is recommended that a Site Safety Plan be developed prior to initiation of construction activities at the site. This plan should include procedures for visually inspecting soils during excavation activities and if oil-stained soils are found, these soils should be isolated and sampled for total petroleum hydrocarbon concentration. The Site Safety Plan should also outline appropriate air monitoring procedures and protective gear to be worn by workers who may come in contact with these soils during site excavation.

Consultants only recommend inspecting pad for oil stains, and if found isolating the soil

APPENDIX A

REPORT ON HISTORICAL LAND USES
PROPOSED TIDEWATER BUSINESS PARK
April 1988

REPORT ON HISTORICAL LAND USES
PROPOSED TIDEWATER BUSINESS PARK

PARCEL NUMBER 6-17
TIDEWATER AVENUE AND LESSER STREET

OAKLAND, CALIFORNIA

Prepared for

TIDEWATER PROPERTIES

APRIL 1988

Prepared by

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S8-123

REPORT ON HISTORICAL LAND USES

PROPOSED TIDEWATER BUSINESS PARK
PARCEL NUMBER 6-17
TIDEWATER AVENUE AND LESSER STREET
OAKLAND, CA

INTRODUCTION

BASELINE ENVIRONMENTAL CONSULTING was retained by Tidewater Properties to conduct a record search regarding prior land uses on Parcel Number 6-17 (Assessor's Map 34 Oakland, California) currently being considered for construction of the Tidewater Business Park. The 5.64-acre site is located on Tidewater Street near Lesser Street approximately 0.3 miles south of High Street (Figure 1). The site is bordered to the north by Arkansas-Best Freight Systems (4575 Tidewater Avenue), to the south by White Brothers Forest Products (4801 Tidewater Avenue), to the east by Tidewater Avenue, and to the west by tidal flats and the San Leandro Bay inner harbor. The site is currently vacant (Figure 2).

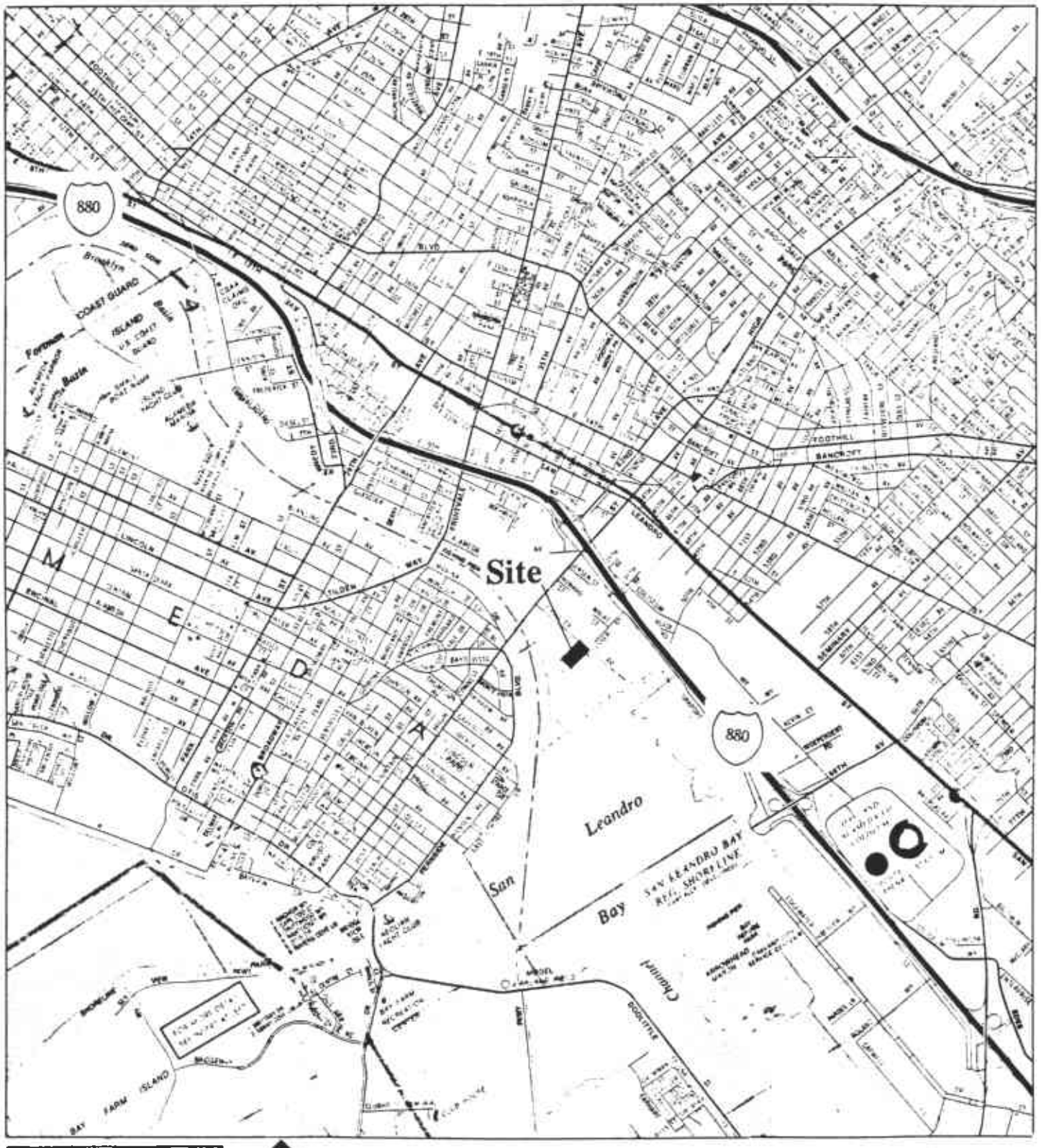
The purpose of the record search is to identify previous land uses which may have resulted in the presence of non-native materials in the site sub-surface. Relevant information was obtained from the Sanborn Fire Insurance Maps of Oakland held at the Bancroft Library at U.C. Berkeley. Records are available from the year 1925, 1930, and 1950.

SITE HISTORY

Data from the Sanborn maps indicate that the site was part of a larger parcel containing improvements since at least 1925. While specific changes on the site, such as the time of construction or removal of structures, are generally unknown, detailed mapping by Sanborn Fire Insurance depicts specific improvements on the site through time. The Sanborn maps indicate that the site was part of a larger parcel of land which has since been divided into separate adjoining parcels. Below is a description of structures on the site and adjoining parcels for each year of record.

SITE LOCATION -
Proposed Tidewater Business Park
Oakland, California

Figure 1



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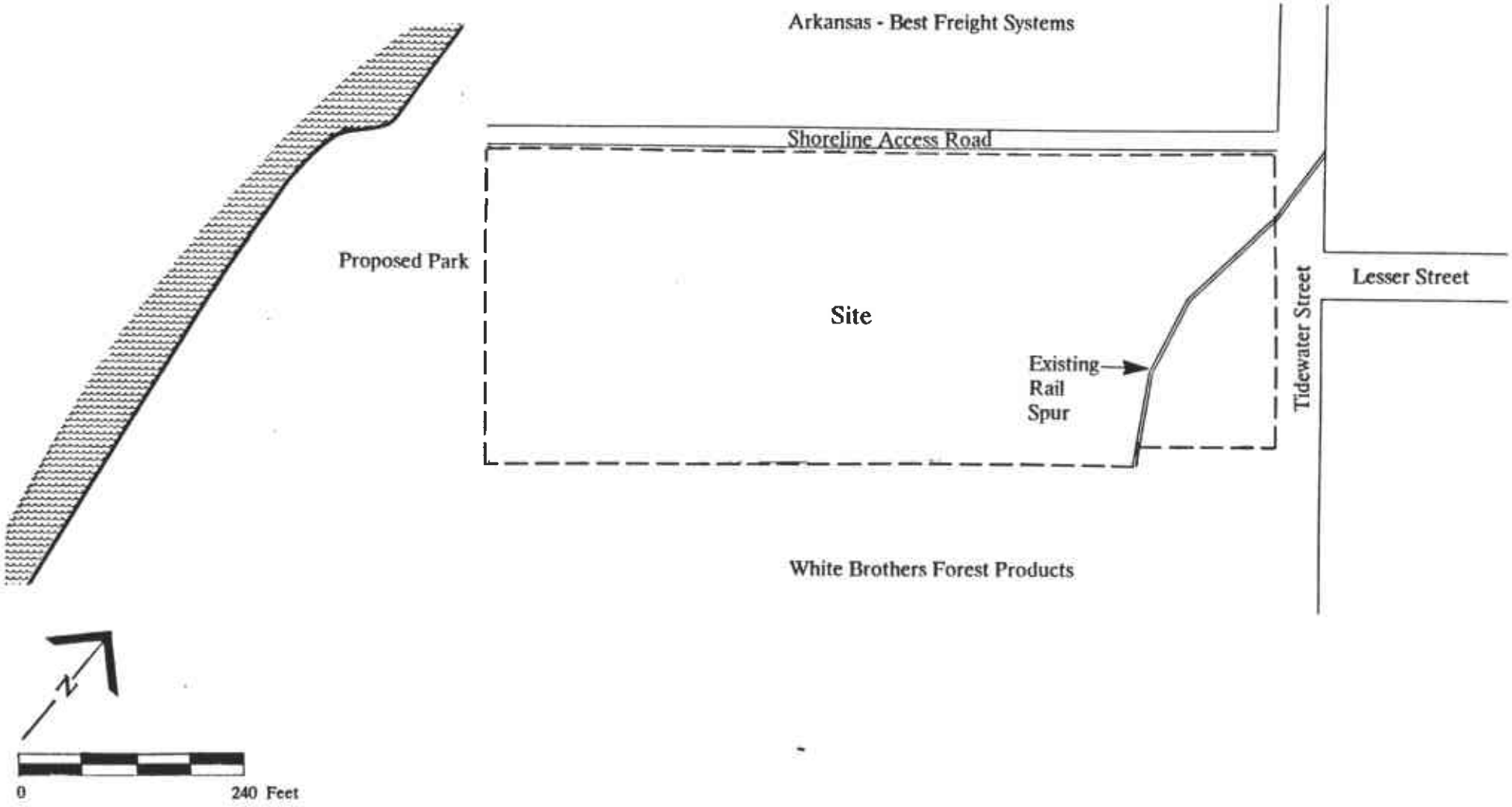
SITE PLAN -
Proposed Tidewater Business Park
Oakland, California

Figure 2



Source: IDG Architects, Proposed Developments Tidewater Business Park and East Bay Regional Park District.

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1925

In 1925, the site was part of a larger parcel occupied by structures owned by National Mill and Lumber Company and Pacific Tank and Pipe Company. The entire parcel, including the site, contained structures related primarily to lumber milling:

- electric shop
- shipping
- auto shop
- dry kilns
- glazing
- wooden tank factory
- wire shop
- fuel bin
- dry kilns
- sash and door department
- general mill work
- wood pipe factory
- cabinet cutting department
- tank stock storage

The lands located immediately adjacent to the project site had related uses. The structures depicted on the Sanborn maps include the following:

- machine shop
- auto repairing
- oil house
- tank storage shed
- wall board department
- varnish room
- tin shop
- engine room
- frame department
- saw and planing mill

1930

Between 1925 and 1930, no significant construction or demolition of structures had occurred on the site. However, the owners of the properties were now listed as Tilden Lumber and Mill Company.

1950

Between 1930 and 1950 a number of the structures on the property were demolished and the remaining structures were occupied by Trim-Set Industries and Eastshore Lumber and Mill Company, as well as Pacific Tank & Pipe Company and National Mill and Lumber Company.

Records indicate the uses of these buildings included steel sash and glass manufacturing, contractors storage, glazing, and truck body fabrication.

CONCLUSIONS OF RECORDS SEARCH

On the basis of the information obtained during the record search, Parcel Number 6-17 and those properties immediately adjacent to it had several operations that could potentially be a source of non-native materials in the sub-surface soils. The materials from site operations that may have affected the surface and sub-surface include: petroleum products from auto repair and machine shops and chromium, lead, barium, and titanium from truck fabrication.

It is unknown whether underground fuel storage tanks have been located on the site; therefore, no determination can be made at this time regarding the potential for contamination related to leaks or spills from such tanks. It is also unknown whether wood preservation has taken place on-site. Customarily, wood preservation would occur at the lumber mill prior to shipment. Additionally, the site may be underlain by fill materials of unknown origin.

BIBLIOGRAPHY

Sanborn Map Company

1925 Sanborn Fire Insurance Map of Oakland, California. On file, Map Library, University of California, Berkeley.

1930 Sanborn Fire Insurance Map of Oakland., California. On file, Map Library, University of California, Berkeley.

1950 Sanborn Fire Insurance Map of Oakland, California. On file, Map Library, University of California, Berkeley.

Handbook of Industrial Waste Composition in California. David L. Storm, California Department of Health Services, November 1978.

APPENDIX B

REPORT ON UNDERGROUND STORAGE TANK INVESTIGATION
AT ABF FREIGHT MAINTENANCE FACILITY, OAKLAND, CALIFORNIA
October 1986

- Greg Zontnet -

8767

TETRA TECH, INC.
3746 MT. DIABLO BOULEVARD
LAFAYETTE, CALIFORNIA 94549
SUITE 300 • (415) 283-3771

October 14, 1986
File No. 3335

Mr. Jim Halladay
ABF Freight System, Inc.
301 South 11th Street
Fort Smith, AR 72902

Re: Underground Storage Tank Investigation -Oakland Facility

Dear Mr. Halladay:

Please find enclosed our report on the field investigation conducted at the truck maintenance facility located at 4575 Tidewater in Oakland, California. The conclusions from this work are that hydrocarbon contamination appears to be local. The highest level of total fuel hydrocarbons (TFH) found in the soil was 34 mg/Kg. This is below the 100 mg/Kg action level for TFH used by the Regional Water Quality Control Board. The results from the two monitoring wells show that hydrocarbons are present close to the site but that they decrease markedly midway between the site and the estuary. Given the clay soil and reversing hydraulic gradient due to the tidal influence of the estuary, high levels of hydrocarbons are unlikely to reach the estuary. These results indicate that remedial actions are not needed at this time. The excavation made by removing the waste oil tank can be filled in. Continued monitoring of the two wells (MW-1 and MW-2) is recommended on a biannual basis.

If we can be of any further assistance, please call me at (415) 283-3771.

Sincerely,

Karen Summers

Karen Summers
Principal Hydrogeologist
Environmental Systems Engineering

KS:tr
Enclosure

ccs: Fritz Kohler

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Underground Storage Tank Investigation

ABF Freight Maintenance Facility in Oakland, California

Prepared by

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Prepared for

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Lafayette, California 94549

Underground Storage Tank Investigation for ABF Freight

INTRODUCTION

In June, 1986, ABF Freight System, Inc. initiated a tank testing and monitoring program at its facility located at 4575 Tidewater in Oakland. This field investigation program was designed to comply with the State of California Underground Storage Tank regulations. The work was done in two phases. Phase 1 was done by Azonic and included tank testing, soil sampling, and groundwater monitoring. Phase 2 was directed by Tetra Tech and involved additional soil and groundwater monitoring. This report describes the field work done under Phase 2 and the results of the laboratory analyses.

SITE DESCRIPTION

The ABF Freight facility is located on San Leandro Bay. The facility includes a maintenance garage and gas station. Originally, there were four fuel tanks at the site:

- two 10,000 gallon diesel tanks
- one 800 gallon waste oil tank
- one 800 gallon new oil tank.

A map showing the location of the tanks relative to the garage and San Leandro Bay is shown in Figure 1. Prior to three years ago, one of the 10,000 gallon tanks was used for gasoline. A leak in the gasoline piping was discovered three years ago and repaired.

The geologic materials in the general vicinity of the site consist of up to 10 ft of compacted fill underlain by tidal marsh deposits and then bay mud. At the location of the underground storage tanks, there appears to be shallow fill with gray, sandy clay and clay tidal deposits overlying the bay mud.

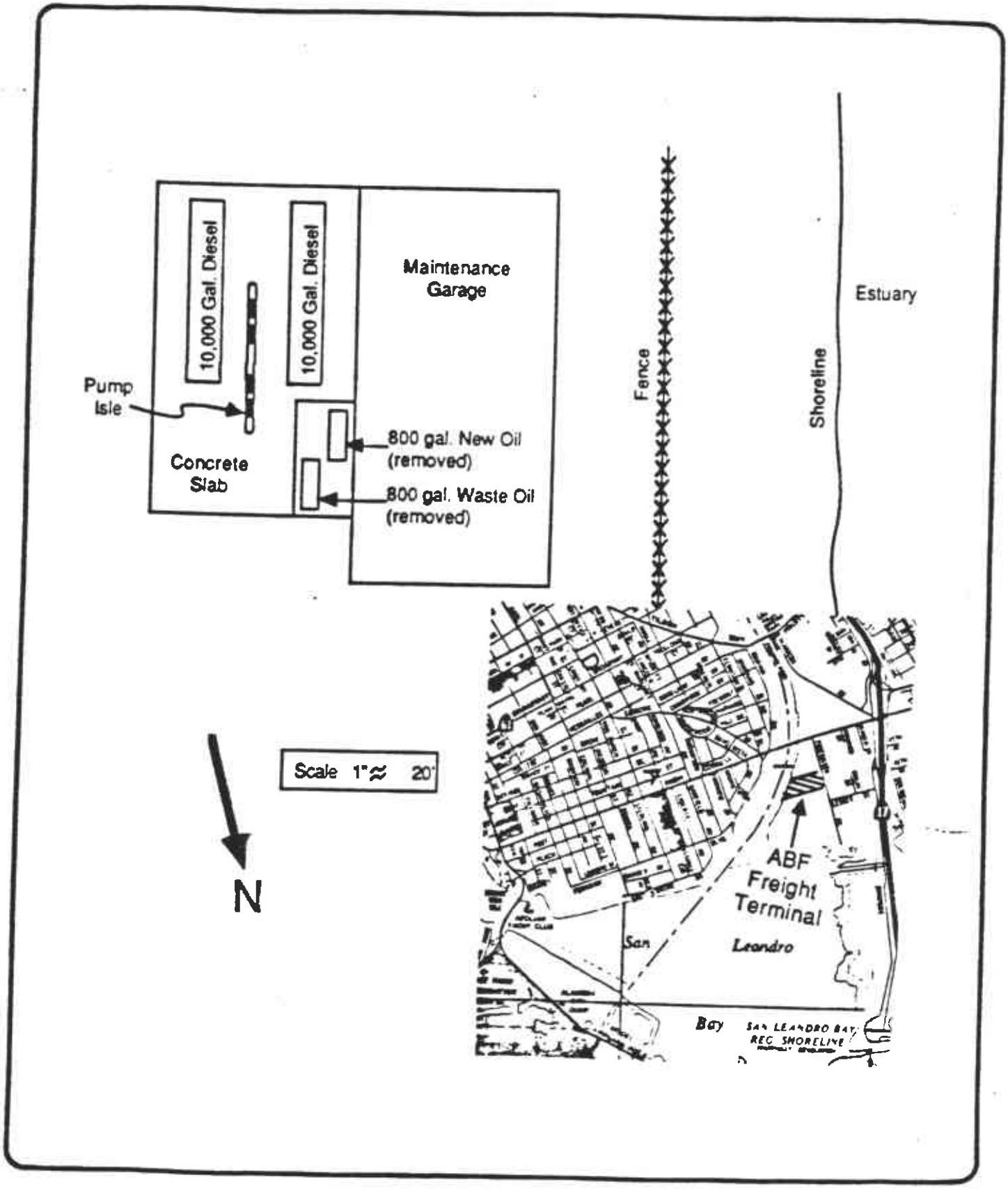


Figure 1. Location of Tanks at ABF Freight Terminal

PREVIOUS SITE INVESTIGATION

Field work performed by Azonic Technology included the following activities:

- Removal of two 800 gallon tanks and removal of sludge beneath the leaking tank
- Drilling of 4 soil borings
- Collection of soil samples from each boring and analysis for total hydrocarbons
- Collection of water samples from the bottom of each boring and analysis for total hydrocarbons.

The location of the soil borings (A1-A4) drilled by Azonic are shown in Figure 2. The total hydrocarbon levels in the soil samples ranged from less than 10 mg/Kg to 14 mg/Kg. The total hydrocarbon levels in grab water samples taken from the bottom of the soil borings ranged from 0.7 mg/l to 100 mg/l. No information was available regarding the methods used to collect or preserve the samples.

All four tanks were precision tested. The two 800 gallon oil tanks underlying the northwest corner of the concrete slab were found to have leaked and were excavated and removed by Azonic. Upon excavation, sludge was found underlying the tank site which was also removed by Azonic.

PRESENT SITE INVESTIGATION

Objectives

The objectives of the present field investigation were to determine if hydrocarbons were present in the shallow groundwater underlying the site, and if so, the extent of contamination.

Description of Field Work Conducted

On September 12, 1986, two shallow groundwater monitoring wells were installed and three shallow soil borings were drilled. An eight-inch hollow

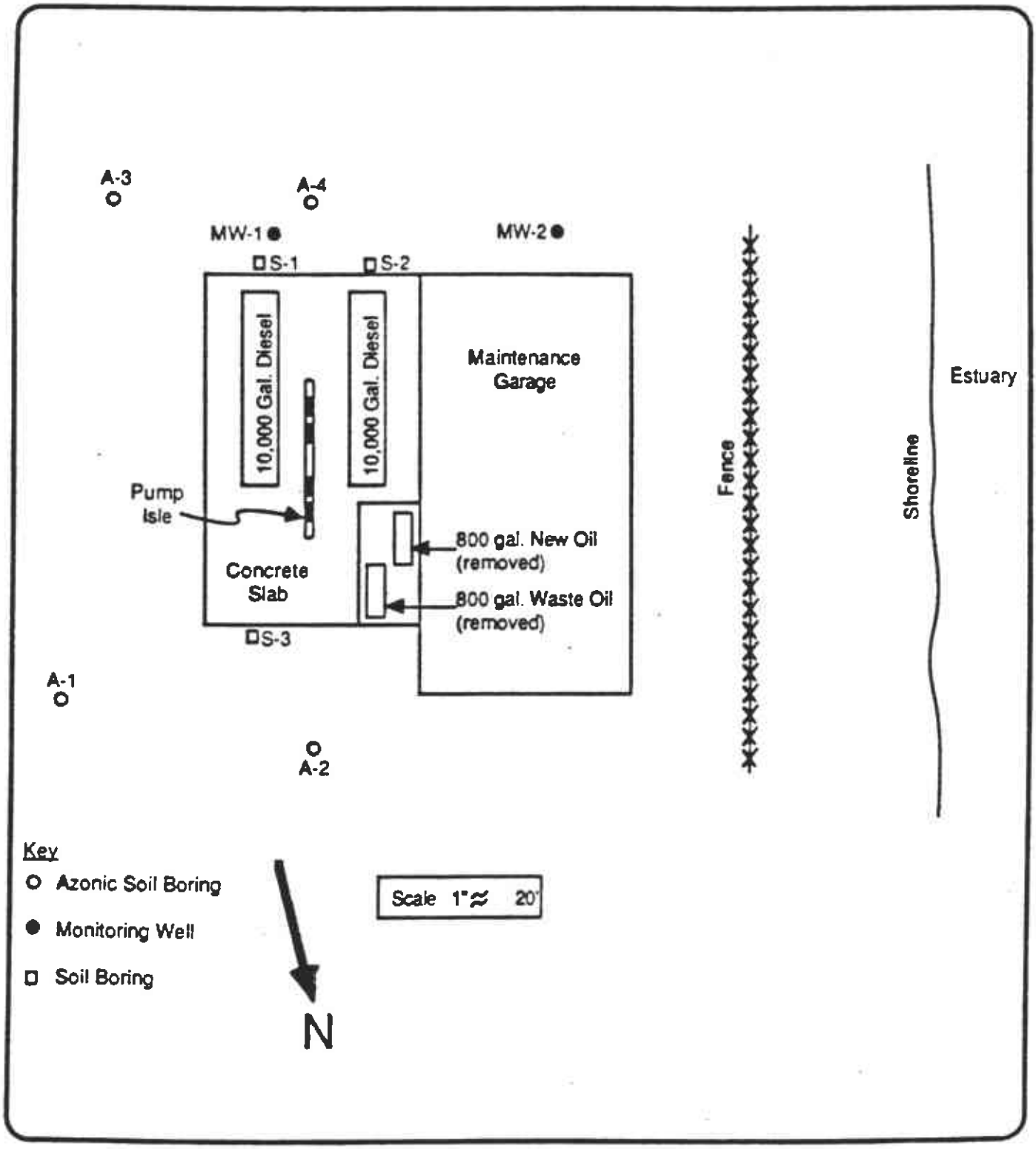


Figure 2. Location of Monitoring Wells and Soil Borings

stem auger with an 11-inch drill head was used to drill the wells. Soil samples were obtained with a steel split barrel sampler containing three brass liners inside of the core barrel. The split barrel was driven into the soils to the desired depth. The brass liners containing the soil samples were then removed from the core barrel and the bottommost liner immediately sealed with a cap. The samples were immediately placed in an ice chest and kept at approximately 4°C until delivered to the laboratory for analysis. All samples were shipped in accordance with chain-of-custody procedures. The split barrel was steam-cleaned between sampling and the auger was steam-cleaned between wells.

The two monitoring wells, MW-1 and MW-2, were drilled to depths of 20 ft and 15 ft, respectively. MW-1 is located approximately 10 ft south of the concrete slab and MW-2 is located approximately mid distance between MW-1 and the estuary (a total distance of approximately 90 ft) as shown in Figure 2. Both wells were constructed of 4 inch PVC casing and screen with the screen extending up to within 4 ft of the ground surface. Details of well construction and soils encountered are presented in the well logs (see Appendix).

The wells were developed immediately following completion on September 12 by bailing six bore volumes from each well. Water level measurements were taken on September 15. The depth to water at both wells was 6.2 ft. The ground surface at this portion of the site is also flat suggesting that there is a minimal hydraulic gradient to the shallow groundwater system. The hydraulic gradient at this location is most likely a reversing gradient in response to tidal changes in the estuary.

Three soil borings (S-1 through S-3 shown in Figure 2) were drilled to depths of approximately 5 ft to evaluate potential for soil contamination in the immediate vicinity of the underground storage tanks. One set of soil samples was taken at the bottom of each of the soil borings. Drilling techniques and sampling methodology were as previously described.

Sampling Results

Soil samples were taken at the 5 ft level in MW-1, 5 and 10 ft depths in MW-2, and at the 5 ft level in the three soil borings, S-2, S-2, and S-3. Soil samples were analyzed for total fuel hydrocarbons (TFH), benzene, toluene and xylene (BTX). The results of the analyses are presented in Table 1. A copy of the laboratory report and chain-of-custody form is included in the Appendix. The highest level of fuel hydrocarbons, 34 mg/Kg, was detected in soil boring S-3. While indicating the presence of hydrocarbons, this level of concentration is still quite low. Fuel hydrocarbons in other soil samples were less than 1 mg/Kg. BTX levels were less than 0.1 mg/Kg in all the soil samples. The highest BTX levels were in the sample from S-3.

Ground water samples were collected at both MW-1 and MW-2. These samples were also analyzed for TFH and BTX. The results of the laboratory analysis are also shown in Table 1. Concentrations in the groundwater at well MW-1 were TFH at 4.5 mg/l, Benzene at 1.6 mg/l and Xylene at 1.0 mg/l. These concentrations are most likely a residual effect from the gasoline piping leak that occurred prior to 3 years ago. Samples from well MW-2 showed detectable levels only for benzene at 0.009 mg/l. TFH at well MW-2 was below detection (<0.05 mg/l).

CONCLUSIONS

- Contamination of soil and shallow groundwater at the site by hydrocarbons appears to be local and contained within the site boundaries.

- The groundwater at MW-1 showed detectable levels of BTX, apparently caused by a gasoline source. This source is most likely the piping leak which was repaired 3 years ago. Since that time, gasoline has been replaced by diesel and thus, a continuous source of gasoline is no longer present.

Table 1

RESULTS OF SOIL AND WATER SAMPLING

Water Samples

Well No.	Sample Date/Time	Sample Depth, ft	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
MW-1	9/15 11:30 am	5-10	4.52	1.59	0.012	1.0	Gasoline
MW-2	9/15 11:45 am	5-10	<0.05	0.009	<0.001	<0.001	Gasoline

Soil Samples

Well No.	Sample Date/Time	Sample Depth, ft	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type
MW-1	9/12	4.5-5	<0.05	<0.001	<0.001	<0.001	Gasoline
MW-2	9/12	4.5-5	<0.05	<0.001	<0.001	<0.001	Gasoline
MW-2	9/12	9.5-10	<0.05	<0.001	<0.001	<0.001	Gasoline
S-1	9/12	4.5-10	<0.05	<0.001	<0.001	0.022	Gasoline
S-2	9/12	4.5-5	0.44	<0.001	<0.001	<0.001	Aged Gas
S-3	9/12	4.5-5	34	0.012	0.010	0.056	Aged Gas
	Detection Limit		0.050	0.001	0.001	0.001	Gasoline

Laboratory analytical methods were EPA 5020/8015 for total motor fuel and fuel type and EPA 8020 for benzene, toluene and xylene.

- Levels of hydrocarbon concentrations drop markedly from MW-1 to MW-2. This is most likely the result of attenuation by the clay soil, the short duration of the gasoline piping leak, and the presence of a reversing gradient.

- In order to further substantiate these conclusions, it is recommended that groundwater samples be taken for total fuel hydrocarbon analysis at MW-1 and MW-2 on a biannual basis.

- Levels of hydrocarbon concentrations drop markedly from MW-1 to MW-2. This is most likely the result of attenuation by the clay soil, the short duration of the gasoline piping leak, and the presence of a reversing gradient.

- In order to further substantiate these conclusions, it is recommended that groundwater samples be taken for total fuel hydrocarbon analysis at MW-1 and MW-2 on a biannual basis.

WATER WELL DRILL LOG

WELL NUMBER MW-2 | REF POINT | DATE 9-12-86 11:00am
WELL TYPE Monitoring well | LOCATION ABF Terminal, | NAME P. Castro
DRILL METHOD Hollow Stem Auger | Oakland, CA | PAGE 1 OF 1
WATER LEVEL encountered | while drilling | final 6.2 ft

DEPTH in	LITH. SOIL SAMPLE	LITHOLOGIC DESCRIPTION	OBSERVATIONS
0		Asphalt	
1		Aggregate Base	
2		Dark Gray Sandy Clay (SC) soft, moist	
3		Gray Clayey Gravel (GC) Moist Loose	
4		Dark Gray Clayey Sand (SW)	SPT Sample Blows 3, 11 and 13 Bottom section of 3 piece brass sleeve was used for analysis - sample # MW2-1
5		moist, Dense	
6		↓ clay increases with depth	
7		Dark Gray Sandy Clay (SC) wet, soft	
8		Brown silty clay (CL) wet, soft	
9		Gray Sandy Clay (SC) wet, very soft	SPT Sample Blows 1, 1 and 1 Bottom section of 3 piece brass sleeve was used for analysis - Sample # MW2-2
10			
11		Brown Sandy Clay (SC)	
12		very wet, very soft	
13		Dark Gray Silty clay (CL) very wet, very soft	
14			
15		Terminated at 15 ft	

WELL DESIGN: Cement Grout; 4" Blank PVC Casing; Bentonite; 4" PVC Screen (20 slot); Gravel Pack Monterey #3 Sand

Reviewed 25 Sep BC
CR Comstock
CEG 1010

WATER WELL DRILL LOG

WELL NUMBER MW-1
WELL TYPE Monitoring Well
DRILL METHOD Hollow Stem auger
WATER LEVEL encountered ____ while drilling ____ final 6.2 ft

REF POINT ____
LOCATION ABF Terminal, Oakland, CA

DATE 9-12-86 8:30a
NAME P. Castro
PAGE 1 OF 1

DEPTH in ft	TYPE & SAMPLE	LITHOLOGIC DESCRIPTION	OBSERVATIONS	WELL DESIGN
0		Asphalt		
1		Aggregate Base		Cement Grout
		Brown Silty Sand (SW)		4" Blank PVC Casing
2		Wet, loose		
		Dark Gray Sandy Clay (SC)		Bentonite
3		Moist, Soft		
4			SPT Sample Blows 4, 6 and 7	
5			Bottom section of 3 piece brass sleeve was used for analysis - Sample # MW1-1	
6				
7		Dark Gray Clayey Sand (SC/SM) Wet, Soft		4" PVC Screen (20 slot)
8				
9		More clay with depth		
10		Gray Sandy Clay (SC)		Gravel Pack
11		Wet, Soft		Monterey #3 Sand
12				
13				
14		Dark Gray Sandy Silt (ML)		
15		Very Wet, Very Soft		
16				
17		Gradational Contact		
18		Dark Gray Silty Clay (CH)		
19		Very Wet, Very Soft		
20		Terminated at 20 ft		

Reviewed 25 Sep 86
CR Comstock
CEG 1010

WATER WELL DRILL LOG

3 ing

~~WELL~~ NUMBER SJ | REF. POINT | DATE 9.12.96 1:16 p

WELL TYPE Sample Boring #1 | LOCATION ABF Terminal, | NAME P. Castro

DRILL METHOD Hollow stem Auger | Oakland, CA | PAGE 1 OF 1

WATER LEVEL encountered | while drilling | final

DEPTH in FT	LOG OF SAMPLE	LITHOLOGIC DESCRIPTION	OBSERVATIONS	WELL DESIGN
0		Asphalt (4 inches)		
		Brown Gravelly Sand (SW) Moist, Loose		
		Brown Sand Wet, Loose (SP)		
		Gray Sandy Clay (CL) Wet, Soft		
3				
4			SPT Sample Blows 2, 4 and 6.	
		Gray Clayey Sand (SC) very Soft, wet	Bottom Section of 3 piece brass sleeve was used for analysis - Sample # SJ-1	
5		Terminated at 5.0 ft		

Reviewed 25 Sep 96
CR Comments
CEG 1010

WATER WELL DRILL LOG

Boring

WELL NUMBER S-2 | REF. POINT | DATE 9.12.86 1:11 p

WELL TYPE Sample Boring #2 | LOCATION ARE Terminal | NAME P. Castro

DRILL METHOD Hollow Stem Auger | Oakland CA | PAGE 1 OF 1

WATER LEVEL encountered | while drilling | final

DEPTH in	LITH COL SAMPLE	LITHOLOGIC DESCRIPTION	OBSERVATIONS	WELL DESIGN
0		Asphalt (4 inches)		
1		Aggregate Base		
		Brown Sand (SW) Wet, Loose		
2		Gray Clayey Sand (SC) wet, Loose		
3		Gray Sandy Clay (CL) Wet, Soft		
4			SPT Sample Blows 5, 6 and 8 Bottom Section of 3 piece brass sleeve was used for analysis - Sample # S2-2	
		Gray, Clayey Sand (SC) Wet, Loose		
5		Terminated at 5.0 ft		

Removed 25 Sp BC
CR Contacts
LEG 1010

WATER WELL DRILL LOG

boring
WELL NUMBER S-3 REF. POINT _____ DATE 9.12.86 1:00p

WELL TYPE Sample Boring #3 LOCATION AGF Terminal, NAME P. Castro

DRILL METHOD Hollow Stem Auger Oakland, CA PAGE 1 OF 1

WATER LEVEL encountered _____ while drilling _____ final _____

DEPTH in	LITHOLOGIC DESCRIPTION	OBSERVATIONS	WELL DESIGN
0	Asphalt (4 inches)		
	Aggregate Base		
1	Brown Silty Sand (SM) Wet, Loose		
2	Dark Gray Sandy Clay (SC) Wet, Soft		
3	Dark Gray Sand (SM) Wet Loose Petroleum Odor	SPT Sample Blows 7, 4 and 4 Bottom Section of 3 piece brass sleeve was used for analysis - Sample # S3-1	
4			
5	Terminated at 5.0 ft.		

Reviewed 25 Sep 86
CR Comments
CRG 1010

WESCO Laboratories

Date: September 23, 1986

Client: Groundwater Technology

Submitted by: Eric

Report to: Chuck Constock

WESCO Job #: GWT 8616

Client Job/P.O. #: 20-8154/0586

Date collected: 9-15-86

Date submitted: 9-15-86

& type of sample(s): 2 Water
6 Soil

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Xylene (mg/l)	Fuel Type	
5408	Water Monitor Well #1 - 9/15 @ 11:30	4.52	1.59	0.012	1.0	Gasoline	
5409	Water Monitor Well #2 - 9/15 @ 11:45	< 0.05	0.009	< 0.001	< 0.001	Gasoline	

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Xylene (mg/kg)	Fuel Type	
5410	Soil MW1-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline	
5411	Soil MW2-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline	
5412	Soil MW2-2 @ 9-1/2-10 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline	
5413	Soil S1-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	0.022	Gasoline	
5414	Soil S2-1 @ 4-1/2-5 feet	< 0.44	< 0.001	< 0.001	< 0.001	Aged Gas	
5415	Soil S3-1 @ 4-1/2-5 feet	34	0.012	0.010	0.058	Aged Gas	
	Detection Limit	0.050	0.001	0.001	0.001	Gasoline	
	METHOD(S): Note 1						

NOTES:

Note 1 - EPA Methods 5020/8015/8020.

Analytical Supervisor

14 Galli Drive Suite A
Novato, California 94947 415 883-6425
A Division of Western Ecological Services Company

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Oil Recovery Systems

PROJ. NO	PROJECT NAME
20-9154	ABF FREIGHT

SAMPLERS: (Signature)

I.D. NO	DATE	TIME	COMP	GRAB	STATION & LOCATION	NO. OF CONTAINERS	ANALYSIS TYPE REQUESTED: BTX THC	REMARKS
MW1	9/12/91	0905		✓	MONITOR WELL #1 @ 4½-5FT	1	✓	
MW2-1	9/12/91	1120		✓	MONITOR WELL #2 @ 4½-5FT	1	✓	
MW2-2	9/12/91	1145		✓	MONITOR WELL #2 @ 9½-10FT	1	✓	
S1-1	9/12/91	1:30		✓	SOIL BORING #1 @ 4½-5FT	1	✓	
S2-1	9/12/91	1:15		✓	SOIL BORING #2 @ 4½-5FT	1	✓	
S3-1	9/12/91	1:00		✓	SOIL BORING #3 @ 4½-5FT	1	✓	

Send To: GROUNDWATER TECHNOLOGY LABORATORY
Division of Oil Recovery Systems
4 Mill Street
Greenville, NH 03048
(603) 878-2500

Groundwater Technology Laboratory

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	9/15/91	1200	[signature] WEED				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:	Date	Time	REMARKS (Shipping Related):	

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Oil Recovery Systems Inc.

PROJ. NO	PROJECT NAME
20-854	ABF FREIGHT

SAMPLERS: (Signature)

I.D. NO.	DATE	TIME	COMP	GRAB	STATION & LOCATION	NO. OF CONTAINERS	ANALYSIS TYPE REQUESTED: EPA 602 (BTX + THC)	REMARKS
MW1	9/15/86	11:30		✓	MONITOR WELL #1	3	✓	No Preservative
MW2	9/15/86	11:45		✓	MONITOR WELL #2	3	✓	

Send To: GROUNDWATER TECHNOLOGY LABORATORY
Division of Oil Recovery Systems
4 Mill Street
Greenville, NH 03048
(603) 878-2500

Groundwater Technology Laboratory

Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
[signature]	9/15/86	12:00	[signature] UTXO				
Relinquished by:	Date	Time	Received by:	Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:	Date	Time	REMARKS (Shipping Related):	

APPENDIX C

REPORT ON ABF FREIGHT SYSTEMS, OAKLAND TERMINAL
February 1987

Greg Dentner 8767

WESTON
MANAGERS DESIGNERS/CONSULTANTS
1001 GALAXY WAY
SUITE 107
CONCORD, CA 94520
PHONE (415) 682-7960

25 February 1987

Mr. Jim Halladay
ABF Freight System, Inc.
301 South 11th Street
Fort Smith, AR 72902

Re: Removal of Underground Storage Tank at Oakland Terminal

Dear Mr. Halladay:

Enclosed is our report discussing excavation of one of the 10,000 gallon tanks from the above-referenced facility. Soil contamination of total petroleum hydrocarbons (TPH) under the tank ranged from over 100 mg/kg to almost 700 mg/kg. These concentrations were less than the 1000 mg/kg levels of TPH that trigger off-site disposal of excavated soils, however, they are above the 100 mg/kg concentrations of TPH which require periodic groundwater monitoring. The tank's tar coating had several small corroded areas which may be suggestive of previous leakage. Based on the levels of TPH in the soil it does not appear that contamination was widespread. The tank was sent to a scrap yard which has provided a "certificate-of-scrap" as evidence of destruction.

It is recommended that bi-annual monitoring of the two wells be performed to check levels of contamination.

If I can be of any further assistance, please call me.

Sincerely,

ROY F. WESTON, INC.

Steven P. Viani, P.E.
Project Engineer

SPV:ed

Enclosure

cc: Fritz Kohler
Ted Gerow, ALCO, Department of Environmental Health
Dale Boyer, RWQCB, San Francisco Bay Region

WESTON

ABF FREIGHT SYSTEMS

OAKLAND TERMINAL

February 1987

Charles Comstock, P.G.
Project Manager

Steven P. Viani, P.E.
Project Engineer

WESTON

TABLE OF CONTENTS

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

In December 1986, Roy F. Weston, Inc. (WESTON) was retained by ABF Freight Systems to monitor the removal of a 10,000 gallon underground diesel tank from their Oakland Freight Terminal, located at 4575 Tidewater Avenue. Previous work at the site, conducted by other consulting firms, showed petroleum hydrocarbon and BTX present in low concentrations in the soil and shallow groundwater at the site. ABF had exposed the top of the tank to inspect the piping after tank testing yielded inconclusive results. ABF directed Weston to secure a removal permit from the City of Oakland, observe the tank removal process, take both soil and water samples from the excavation and submit a final report with results, conclusions and recommendations.

1.1 Site Description

The ABF Freight Terminal is located on San Francisco Bay adjacent to an estuary (Figure 1). The Terminal facility that this report focuses on consists of a maintenance garage and fueling station. Initially four tanks were located on site:

- Two 10,000 gallon diesel tanks
- One 800 gallon waste oil tank
- One 800 gallon new oil tank

At this point, all tanks have been removed except one diesel tank. This tank has not shown signs of leakage, however, it may be removed after an aboveground tank is installed.

The geologic materials at the site consist of up to 10 feet of compacted fill underlaid by tidal marsh deposits and then Bay mud. At the location of the tanks, the Bay mud is overlain with gray, sand clay and clay tidal deposits.

1.2 Site History

In June 1986 ABF instituted a tank testing and monitoring program which included a field investigation segment. Previously, the only leakage noted by ABF was the result of piping leaks from the diesel tank which had previously contained gasoline. The first phase of the work was performed

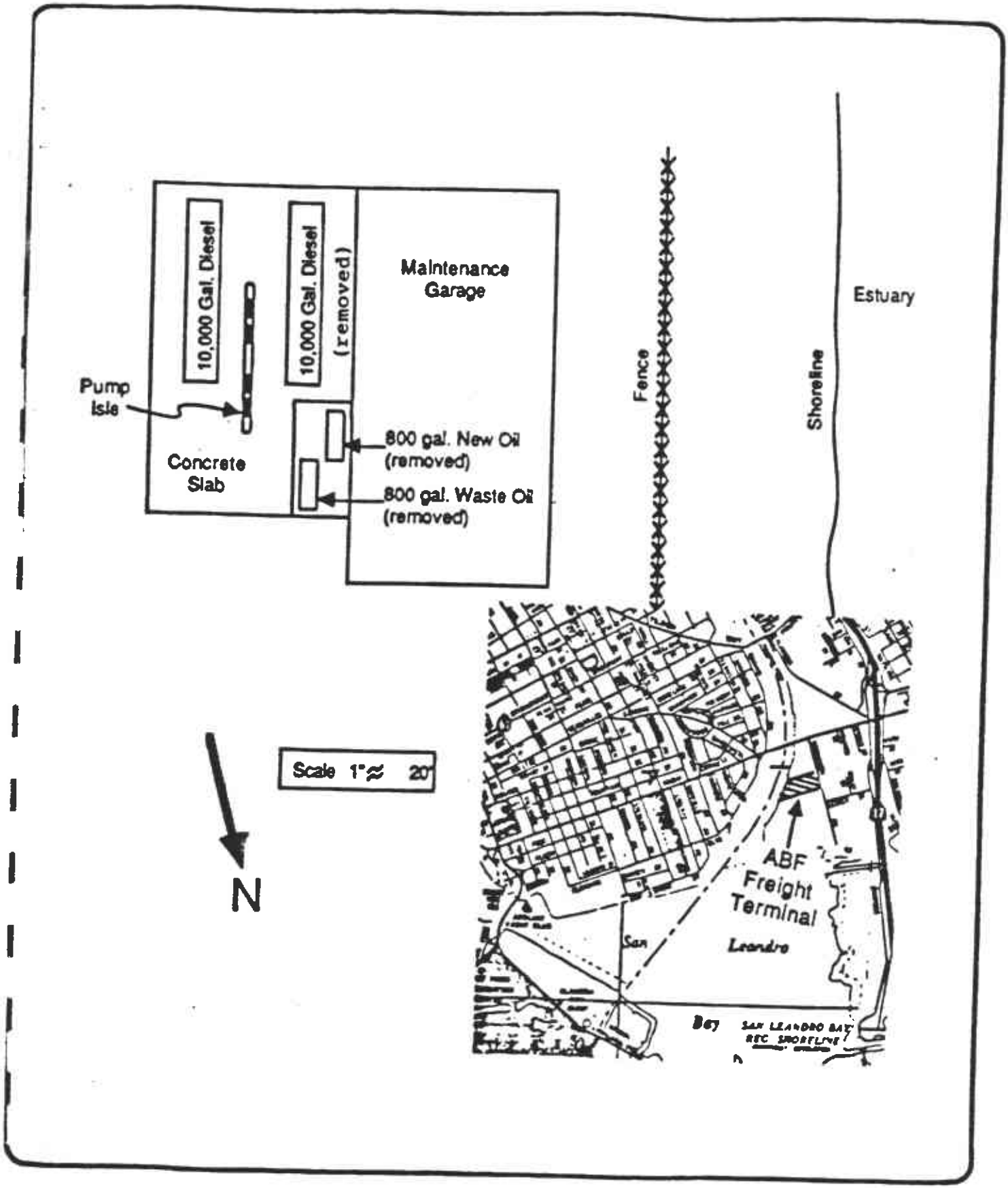


Figure 1. Location of Tanks at ABF Freight Terminal

by Azonic and included tank testing, tank removal, soil sampling and groundwater monitoring. All tanks were tested and the two oil tanks were removed. The second phase consisted of additional soil borings, soil sampling, monitoring well installation and groundwater sampling. (See Figure 2.)

Soil boring S-3 contained the highest level of total petroleum hydrocarbons (TPH), 34 mg/kg. TPH levels in the remaining soil samples were less than 1 mg/kg and benzene, toluene, xylene (BTX) levels were less than 0.1 mg/kg for all soil samples. Previous soil sampling by Azonic in four boring locations (A1-A4) showed TPH ranging from 10 mg/kg to 14 mg/kg.

Groundwater samples were collected and analyzed in October 1986 from monitoring wells MW-1 and MW-2. Concentrations in the groundwater at MW-1 were TPH at 4.5 mg/l, benzene at 1.6 mg/l and xylene at 1.0 mg/l. Concentrations in MW-2 only showed benzene at .009 mg/l and no TPH was detected.

The above results show that hydrocarbon levels in the soils and groundwater are quite low. Based on this information, the hydrocarbon contamination appears localized and has not migrated. This is probably due to tidal action which causes a reversing of the hydraulic gradient. As stated previously, all leaking tanks or tanks suspected of leaking have been removed. Thus, no continuous sources of leaked gasoline, diesel or oil remain on site.

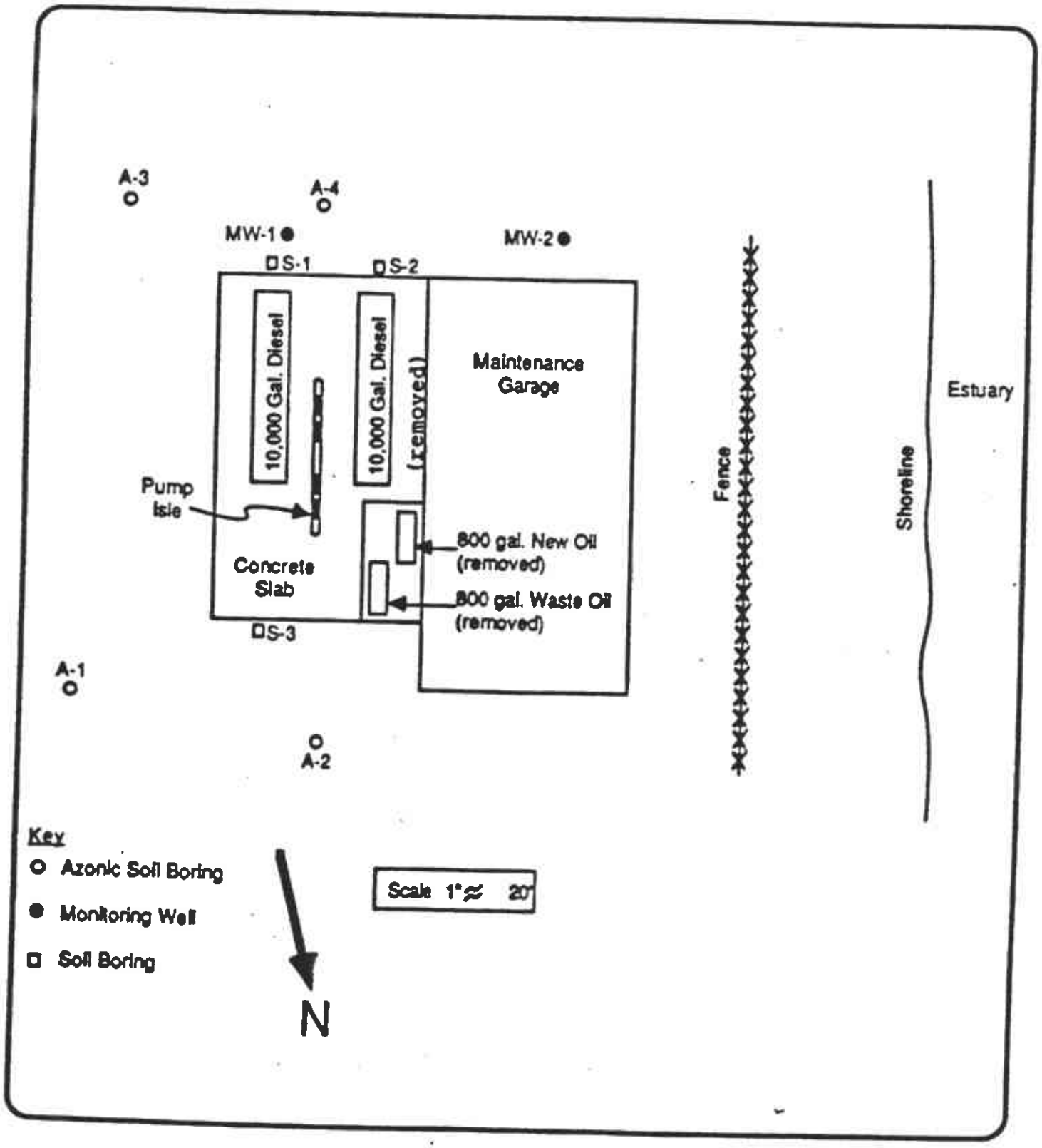


Figure 2. Location of Monitoring Wells and Soil Borings

SECTION 2.0

TANK REMOVAL WORK

ABF decided to remove one of the 10,000 gallon diesel tanks because previous testing provided inconclusive results. ABF wanted to prevent any possibility of leakage by immediately removing the suspected tank.

WESTON contacted the Alameda County Environmental Health Department and Oakland City Fire Department for specific directives related to underground tank removal. The following instructions were received:

- A tank removal permit was required.
- The tank must be made inert with the addition of dry ice.
- A registered engineer is required to take soil and water samples.
- Contaminated soils with levels above 1000 mg/kg total petroleum hydrocarbons must be removed and disposed of in a Class I disposal site. Contaminated soils with levels between 100 mg/kg and 1000 mg/kg can remain but monitoring wells must be installed.
- At least two soil samples and one water sample should be taken from each tank excavation.
- A report documenting activities is needed.

A tank removal permit was obtained from the Oakland City Fire Department on January 6 and the Fire Department was contacted approximately 24 hours before removal occurred on January 8, 1987.

ABF had completely exposed the tank two months earlier and had stockpiled excavation spoils on-site. Prior to tank removal, all electrical connections and piping were removed or disconnected and 200 pounds of dry ice were added to the tank in order to render a non-explosive atmosphere. The lifting eyes on the tank were examined prior to attachment of the slings and found to be sound and not rusted. The tank was pulled and placed on the asphalt parking area in

the vicinity of the excavation and blocked to prevent rolling. A representative of the Fire Department was on hand during the removal process.

The removed tank was installed approximately 12-15 years ago and was tar coated to inhibit corrosion. Overall the appearance of the tank showed it to be in good condition, however, there were several areas on the southern end of the tank bottom approximately 6 inches by 6 inches where the tar coating had lost adhesion. The steel surface of the tank underneath these areas was badly corroded especially on the southerly end of the tank. No holes were found, however, dry ice vapors were seen escaping from two of these areas. Due to the variances in tank levels and groundwater levels it was impossible to estimate amounts of leakage.

Under the direction of WESTON, ABF removed several yards of soils after sampling from under the tank. These soils were placed on a layer of visqueen and covered with visqueen pending a decision on a disposal method. Further, ABF removed approximately 500 gallons of water from the excavation which appeared to have a surface film of hydrocarbons.

The water removed from the excavation will be sent to a licensed oil recycler when ABF's next used oil pickup is made. The covered soil pile will remain on-site pending a decision regarding removal of the remaining tank.

The tank was removed from the site by Crosby and Overton, a registered hazardous waste hauler, who in turn disposed of the tank at H and H Shipyards in San Francisco. Crosby and Overton has forwarded a "certificate of scrap" as evidence of the tank's destruction.

At ABF's direction, WESTON has requested approval from the City of Oakland Fire Department to allow an aboveground tank. The City has approved conceptual design of the aboveground tank and ABF will be issuing design drawings and starting construction shortly.

SECTION 3.0

SAMPLING AND ANALYSIS

3.1 Sampling

Prior to excavation cleaning efforts, two soil samples were taken by a registered civil engineer above the water table. These two samples were taken from each side of the tank approximately three feet from the corroded southerly end of the tank. Soil was placed directly into the container without utilizing a sampling trowel. In addition one set of VOA vials were taken for water analysis also at the southerly end of the tank. Both soil and water were examined for total petroleum hydrocarbons (EPA Method 418.7) and BTX (EPA Method 8020). The samples were immediately placed into an ice chest and were shipped to WESTON's Stockton, California Laboratory as recorded on the chain-of-custody form.

3.2 Analysis

Laboratory analysis results are summarized below:

		Sample ID	
Parameter	SPU-01/02	SPU-03	SPU-04
Matrix	Water	Soil	Soil
Total Petroleum Hydrocarbon (TPH)	721 mg/l	681 mg/kg	108 mg/kg
Benzene	2ND	10ND	10ND
Toluene	2ND	10ND	10ND
Ethylbenzene	2ND	10ND	10ND
o - xylene	2ND	10ND	10ND
m - xylene	2ND	10ND	10ND
p - xylene	2ND	10ND	10ND

ND: Not detected at detection limit preceding ND in ug/l.

Additional testing was performed by WESTON's laboratory and found that the sediments within the water sample were the source of TPH contamination. Therefore, while petroleum hydrocarbons are present in the water, their source appears to be aged sources; probably oil and aged gas from previous leakage.

Based on the above results with soil contamination less than 1000 mg/kg, WESTON advised ABF on January 27 to backfill the excavation with both excavated and clean materials in order to prevent hazards to ABF personnel and equipment.

No water samples were taken from either of the previously installed monitoring wells. However, WESTON recommends sampling these wells and will monitor the groundwater on a bi-annual basis (twice yearly).

SECTION 4.0

CONCLUSIONS

- The removed tank showed evidence of leakage, however, the amount of leakage and duration of leakage cannot be determined.
- Diesel leakage had probably occurred shortly before tank removal as the BTX components were indicative of oil or aged gas.
- The levels of water and soil contamination are low enough to be adsorbed by the soil and thus remain on-site.
- The reversing hydraulic gradient will aid in keeping any contamination on-site.
- Water samples should be taken from each of the monitoring wells on a bi-annual basis and analyzed for BTX and TPH.
- The remaining tank should be periodically tested and removed after the aboveground facility is in operation.

WESCO Laboratories

RECEIVED
OCT - 8 1986

TETRA TECH INC
LAFAYETTE CALIF

Date: September 23, 1986

Client: Groundwater Technology

Submitted by: Eric

Report to: Chuck Constock

WESCO Job #: GWT 8616

Client Job/P.O. #: 20-8154/0586

Date collected: 9-15-86

Date submitted: 9-15-86

& type of sample(s): 2 Water
6 Soil

Lab No.	Client ID	Motor Fuel (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Xylene (ug/l)	Fuel Type
5408	Water Monitor Well #1 - 9/15 @ 11:30	4.52	1.59	0.012	1.0	Gasoline
5409	Water Monitor Well #2 - 9/15 @ 11:45	< 0.05	0.009	< 0.001	< 0.001	Gasoline

Lab No.	Client ID	Motor Fuel (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Xylene (ug/kg)	Fuel Type
5410	Soil MW1-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
5411	Soil MW2-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
5412	Soil MW2-2 @ 9-1/2-10 feet	< 0.05	< 0.001	< 0.001	< 0.001	Gasoline
5413	Soil S1-1 @ 4-1/2-5 feet	< 0.05	< 0.001	< 0.001	0.022	Gasoline
5414	Soil S2-1 @ 4-1/2-5 feet	< 0.44	< 0.001	< 0.001	< 0.001	Aged Gas
5415	Soil S3-1 @ 4-1/2-5 feet	34	0.012	0.010	0.058	Aged Gas
	Detection Limit	0.050	0.001	0.001	0.001	Gasoline
	METHOD(S): Note 1					

NOTES:

Note 1 - EPA Methods 5020/8015/8020.

Analytical Supervisor

14 Gall Drive, Suite A
Novato, California 94947 415 883-6425
A Division of Western Ecological Services Company

Excavation Permit Granted _____ No. 8849

CITY OF OAKLAND

Tank Permit

Permit to Excavate and Install, Repair, or Remove Inflammable Liquid Tanks. No. _____

Oakland, California, JANUARY 6, 1987 19__

PERMISSION IS HEREBY GRANTED TO Install , remove repair Gasoline tank and excavate commencing _____ feet Inside _____ line

on the EAST side of TIDEWATER AVENUE Street Avenue _____ feet _____ of _____ Street Avenue

known as 7 TIDEWATER AVENUE Street Avenue Present Storage 2 DIESEL FUEL

Owner OVERRIGHT Address 4575 TIDEWATER AVENUE Phone 533-8575

Architect or Engineer WESTON, INC Address 1001 GALAXY WAY, CONCORD Phone _____

Dimensions of excavation to be disturbed 0 x 0 Number of Tanks 2 Capacity 10,000 Gallons each

This Permit is granted in accordance with existing City Ordinances.

Owner hereby agrees to remove tanks on discontinuance of use or when notified by the City Authorities.

When installing, removing or repairing tanks, no open flame to be on or near premises.

Approved _____ Fire Marshal

Approved _____ Drainage Division - Engineering Dept.

EXCAVATING PERMIT

Issued in accordance with Ord. No. 276 C.M.S. Sec. 5-2.04

_____ square feet of digging (or removal) granted.

Receipt of _____ special deposit is hereby acknowledged.

GENERAL DEPOSIT.

BUREAU OF PERMITS AND LICENSES.

Inspection Fee Paid $ 0.00 REC. #110123

Received by F.B. LANGOSCH

FIRE PREVENTION BUREAU

N

W E

S

CERTIFICATE OF TANK AND EQUIPMENT INSPECTION

Inspected and passed on _____ 19__

By _____ Fire Marshal

NOTICE

Before Covering Tanks, Above Certificate Must Be Signed.

When ready for inspection notify Fire Prevention Bureau, 273-3851

THIS PERMIT MUST BE LEFT ON THE WORK AS AUTHORITY THEREFOR.

000-00 (6-67)

CROSBY AND OVERTON
Environmental Managment Inc.
8430 Amelia Street • Oakland, California 94621
(415) 633-0336

February 25, 1987

Roy Weston
1001 Galaxy Way
Concord, Calif 94520

ATTN: Mr. Steve Viani

Dear Mr. Viani,

Here is the Certificate of Scrap for the 10,000 gallon diesel storage tank that was located at 4575 Tidewater, Oakland, California.

If you should have any other questions, please feel free to call me at (415) 633-0336.

Sincerely,

CROSBY & OVERTON, E.M.I.

Kevin M. Postlethwaite

Kevin M. Postlethwaite
Field Supervisor

KMP/mer

Enclosure

H&H
SHIP SERVICE COMPANY
W. J. HARRIS

220 CHINA BASIN, P.O. BOX 77363 · SAN FRANCISCO, CA 94107 · DAY AND NIGHT: 543-4835

CERTIFICATE OF DISPOSAL

28 February 1987

H & H Ship Service Company hereby certifies to CROSBY & OVERTON that:

1. The storage tank(s) removed from the A B F TRUCKING facility at 4575 Tidewater, Oakland, California

(address)

were transported to H & H Ship Service Company, 220 China Basin Street, San Francisco, California 94107.

2. The following tank(s), H & H Job Number: 4499, have been steam cleaned, cut with approximately 2' x 2' holes, rendered harmless and disposed of as scrap metal.

3. Disposal site: LEVIN METALS CORPORATION

4. The foregoing method of destruction/disposal is suitable for the materials involved, and fully complies with all applicable regulatory and permit requirements.

5. Should you require further information, please call (415) 543-4835.

Very Truly Yours,

CLEVELAND VALREY
Q.A. & Safety Coordinator

WESTON

SV -
YOUR COPY

WESTON

CHAIN OF CUSTODY RECORD

2977-01-01-00

SAMPLERS: (Signature) [signature]
Phone: RF 415 682-7960

SHIP TO:
Roy F. Weston
7720 Lorraine Ave #105
Stockton CA 95210

ATTENTION: David Ben-Hur
Phone No. 209 957 3405

SHIPPING INFORMATION
Location: ABF Freight
Shipper: Roy F Weston
Address: 1001 Galaxy Way
Concord, Ca 94520
Date Shipped: 9 Jan 97
Shipment Service: Fed Exp
Airbill No. 2490 5324 61
Cooler No. 1 of 1

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
[signature]		
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received for laboratory by: (Signature)	Date/Time

Analysis laboratory should complete "sample cond. upon receipt" section below, sign and return copy to Shipper

Sample Number	No. Of Cont.	Site Identification	Date Sampled	Analysis Requested	Sample Cond. Upon Receipt
SPV-01	1	ABF-OAK	9 Jan 97	Total fuel type, BTX	Total 721 mg/L
SPV-01A	1	ABF OAK	9 Jan 97	" " " "	BTX ND
SPV-02	1	ABF-OAK	9 Jan 97	(Add'l Sample of -01, 01A	
SPV-02A	1	ABF OAK	9 Jan 97	is damaged)	
SPV-03	1	ABF-OAK	9 Jan 97	Total fuel type BTX (Soil)	BTX ND T 691 mg/kg
SPV-04	1	ABF OAK	9 Jan 97	" " " (Soil)	T 105 mg/kg ND

Remarks: Proj. No. 2977.01.01.00

FIGURE 2-14 EXAMPLE of CHAIN-of-CUSTODY FORM

WESTON

ABF FREIGHT

February 12, 1987

Analysis of Soils and Water for Total Petroleum Hydrocarbons and Volatile Aromatic Hydrocarbons

Lab No. 87-01-13

Two water samples and two soil samples, collected on January 8, 1987, were received in the laboratory on January 12, 1987 for analysis for total petroleum hydrocarbons and BTX. The results are summarized below:

Total Petroleum Hydrocarbons (TPH)

Sample ID	Matrix	TPH
SPU-02	Water	721 mg/L
SPU-03	Soil	681 mg/kg (wet weight)
SPU-04	Soil	108 mg/kg (wet weight)

The analysis was performed in accordance with EPA Method 418.1. The samples were extracted on January 23, 1987 and the extracts analyzed on January 27, 1987.

BTX

Compound	Sample SPU-01 ug/L	Sample SPU-03 ug/L	Sample SPU-04 ug/L
Benzene	2 U	10 U	10 U
Toluene	2 U	10 U	10 U
Ethylbenzene	2 U	10 U	10 U
o-Xylene	2 U	10 U	10 U
m-Xylene	2 U	10 U	10 U
p-Xylene	2 U	10 U	10 U

U = Not detected at the detection limit preceding the "U".

Initial analysis of these samples displayed a large number of peaks. Confirmatory analysis, however, showed these peaks to be compounds other than the BTX compounds. In the case of the water sample, the compounds that were initially observed in the chromatogram are not due to BTX compounds but to some hydrocarbons other than BTX. Also these compounds are associated with the sediment, not with the water fraction.

WESTON

Analysis for the BTX was performed during the period January 19-22, 1987 using EPA Method 8020.

The high levels of total petroleum hydrocarbons, coupled with the absence of the most volatile aromatic hydrocarbons, implies that a petroleum product is present; but it is probably aged, and consists principally of oils.

Reviewed and approved David Ben-Hur

David Ben-Hur, Ph.D.

DB/vk

WESTON
MANAGERS DESIGNERS/CONSULTANTS
1001 GALAXY WAY, SUITE 107
CONCORD, CA 94520
PHONE 415-682-7960

22 January 1987

Mr. Paul Bailey
Fire Prevention Bureau
#1 City Hall Plaza
Oakland, CA 94612

W.O. #2977-01-01

Dear Mr. Bailey:

WESTON has been retained by ABF Freight Systems to prepare design drawings and specifications for an aboveground diesel fuel tank at their Oakland Terminal located at 4575 Tidewater Avenue.

We have attached a location sketch and a design sketch for the purpose of seeking conceptual approval for an aboveground tank at this location. An aboveground diesel tank in this location is a safe and environmentally sound alternative and ABF is committed to replacing its buried tanks with aboveground, contained tanks. These drawings are not meant to be construction drawings, rather they present our current thoughts on a reliable design.

At a minimum our design will include the following elements:

- 100% containment of tank contents and freeboard for containment of precipitation.
- All underground piping will also have secondary containment.
- Grounding of tank.
- Waterstops and sealants will be installed to maintain liquid integrity.
- Wiring will not be present inside the containment area.
- A low profile tank will be used to minimize vandalism.
- The area where the tank will be located is fenced and patrolled.

ABF is interested in seeking your conceptual approval at your earliest convenience; please include any requirements or standards to which you require adherence. ABF understands that your approval of these drawings does not constitute approval for construction.

Should you have any questions, please do not hesitate to call me.

Sincerely,

ROY F. WESTON, INC.

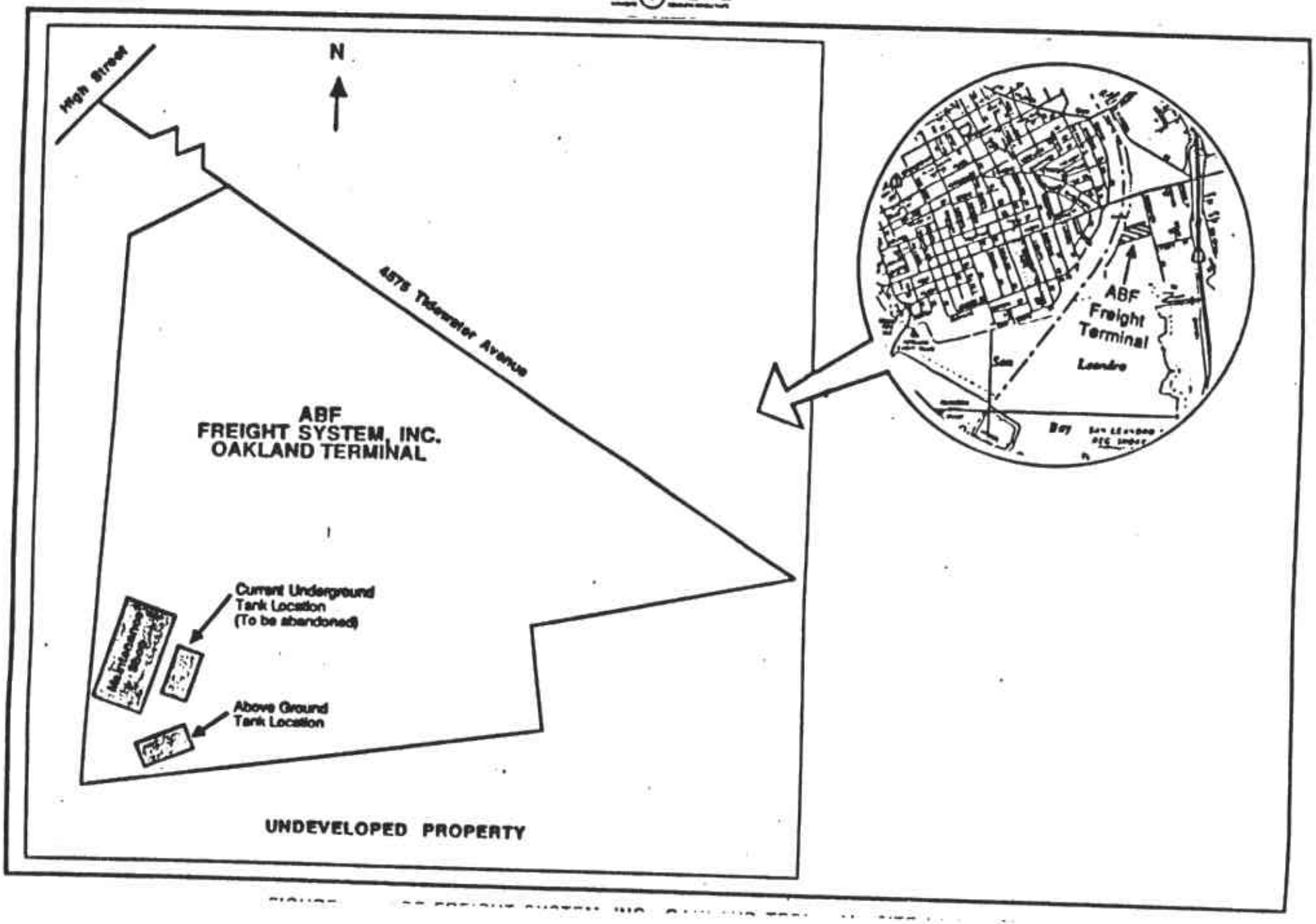
Steven P. Viani, P.E.
Project Engineer

SPV:ed

Enclosures

cc: Jim Halliday, ABF

WESTON


N
High Street
4575 Tidewater Avenue
ABF
FREIGHT SYSTEM, INC.
OAKLAND TERMINAL
Current Underground
Tank Location
(To be abandoned)
Above Ground
Tank Location
UNDEVELOPED PROPERTY
ABF
Freight
Terminal
San
Leandro
Bay

NOTES:

1. Concrete Block Exposure enclosure provides containment for contents plus 2 feet of freeboard (interior will be waterproofed).
2. Access to interior by steel stairs.
3. Location will be adjacent to undeveloped property.
4. Fill piping will be located within containment area.
5. Tank will be grounded.

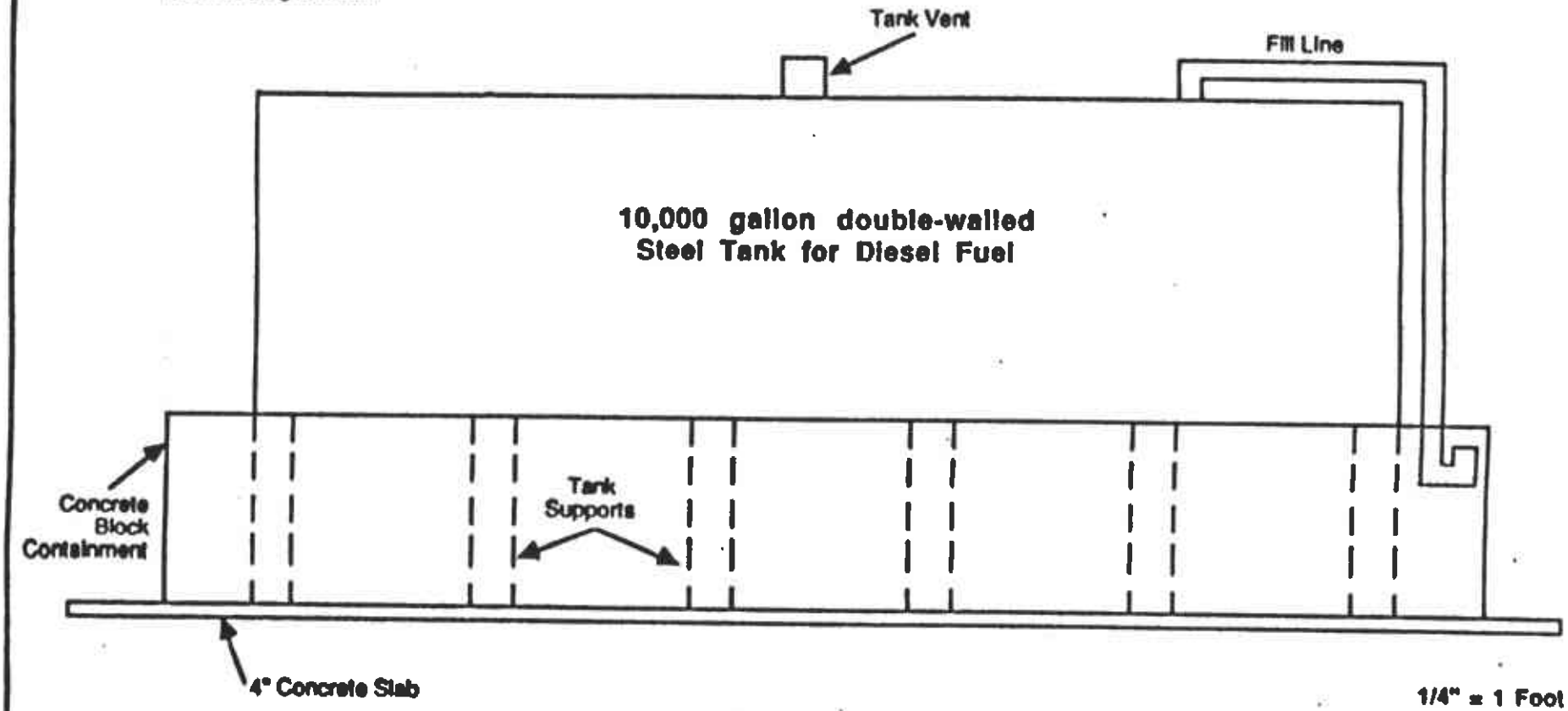


FIGURE 2 ABOVE GROUND DIESEL TANK - ABF FREIGHT SYSTEM, INC., OAKLAND TERMINAL

WESTON
MANAGERS DESIGNERS/CONSULTANTS
1001 GALAXY WAY
SUITE 107
CONCORD, CA 94520
PHONE (415) 682-7960

16 February 1987

City of Oakland
Fire Prevention Bureau
#1 City Hall Plaza
Oakland, CA 94612

Attention: Mr. Paul Bailey

Re: Ground Storage Tank Approval Confirmation for
ABF Freight, 4575 Tidewater Avenue

Dear Mr. Bailey:

This confirms our conversation of January 29, 1987 regarding conceptual approval for an aboveground diesel fuel storage tank at the above reference facility pursuant to my letter of January 22, 1987. During our conversation you indicated the following:

- The City of Oakland utilizes the 1982 Fire Code for design considerations.
- Particular attention should be paid to water removal from inside the containment area (Section 79.408 (d)).
- Some means of extinguishing fuel fires is needed in that area.

ABF will be contacting you shortly with detailed design plans and specifications for an aboveground diesel storage tank.

Thank you for your cooperation and timely response in this matter.

Sincerely,

ROY F. WESTON, INC.

Steven P. Viani, P.E.

SPV:ed

cc: Jim Halladay

BLYMYER & SONS engineers, inc.

August 11, 1987
BSE Job No. 8767III

GZ
8/26/87

Mr. Greg Zentner
SAN FRANCISCO BAY REGIONAL
WATER QUALITY CONTROL BOARD
1111 Jackson Street
Oakland, CA. 94607

CALIFORNIA REGIONAL WATER
AUG 13 1987
QUALITY CONTROL BOARD

SUBJECT: CONTAMINATION INVESTIGATION
UNDERGROUND STORAGE TANK REMOVAL
ABF FREIGHT SYSTEM, INC.
4575 TIDEWATER DRIVE
OAKLAND, CALIFORNIA

Dear Greg:

Enclosed are laboratory analyses of soil and water samples taken at the subject facility. The samples were taken in association with the removal of one 10,000 gallon capacity underground fuel storage tank. As indicated by the results, only one soil sample shows hydrocarbon levels above 100 ppm, at 170 ppm. Because this sample was obtained at the fill end of the tank, it is believed that incidents of overfilling over a number of years have caused the contamination. The water samples taken from the excavation and one monitoring well on site are essentially clean.

A previous consultant has had two groundwater monitoring wells installed at the site downgradient from the old location of the removed tank. This should satisfy the requirement for a groundwater monitoring well for sites with over 100 ppm hydrocarbon contamination. Copies of previous investigations from two prior consultants have been included for your use.

Because the levels of contamination are so low, it is believed that little impact on the environment will occur. Therefore, no further monitoring work is proposed. If you have any questions, please call.

Cordially yours,

BLYMYER & SONS ENGINEERS, INC.

Chris Falbo

CF/ds

Attachments

cc: Mr. Jim Halladay -ABF FREIGHT SYSTEM, INC., FORT SMITH, AR.
Mr. Fritz Kohler -ABF FREIGHT SYSTEM, INC., OAKLAND, CA.
Mr. Steven Hallert-CITY OF OAKLAND FIRE PREVENTION BUREAU
Ms. Sue Stack -DEPARTMENT OF HEALTH SERVICES

"total responsibility engineering"

1829 Clement Avenue, Alameda, California 94501-1396 • Phone (415) 521-3773 • TLX 364412 INTR

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545 (415) 783-6960

Greg Zentner ABF File
Jim Halliday 8767-original
ccp-1
TAL

DATE: 7/9/87 Lsent 7/10

LOG NO.: 4934 and 4953

DATE SAMPLED: 7/1/87 and 7/6/87

DATE RECEIVED: 7/1/87 and 7/6/87

CUSTOMER: A.B.F. Freight Systems

REQUESTER: Chris Falbo

PROJECT: 4575 Tidewater Avenue, Oakland, CA

Sample Type: Soil

Method and Constituent	Units	Detection Limit	#1-Fill & Vent End from Wall at Water Level Concentration	#2-Fill & Vent End Under Water Concentration
Modified EPA Method 8015:				
Extractable Hydrocarbons	mg/kg	0.3	12	170

Method and Constituent	Units	Detection Limit	#3-Opposite End Under Water Concentration
Modified EPA Method 8015:			
Extractable Hydrocarbons	mg/kg	0.3	44

DATE: 7/9/87
LOG NO.: 4934 and 4953
DATE SAMPLED: 7/1/87 and 7/6/87
DATE RECEIVED: 7/1/87 and 7/6/87
PAGE: Two

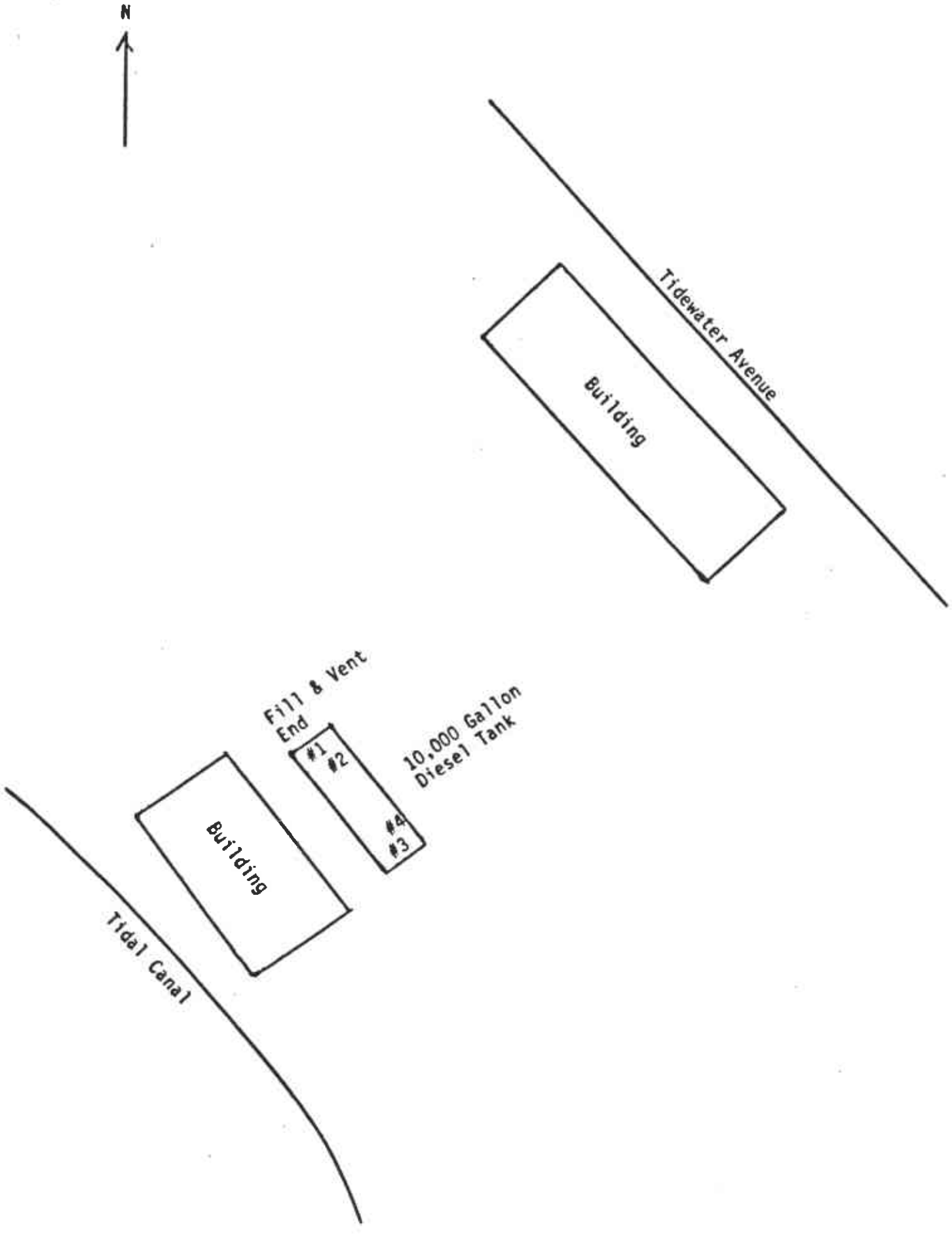
Sample Type: Water

Method and Constituent	Units	Detection Limit	#4-Water from Excavation Concentration	Monitoring Well No. 2 Concentration
Modified EPA Method 8015:				
Extractable Hydrocarbons	mg/l	0.05	0.46	< 0.05

Ronald H. Ming Chew
Supervisory Chemist

RHC:mln

A.B.F. Freight Systems
4575 Tidewater Avenue
Oakland, California



APPENDIX D

CHAIN OF CUSTODY RECORD
TIDEWATER BUSINESS PARK SOIL SAMPLING
29 April 1988

[illegible]

CHAIN OF CUSTODY RECORD

BASELINE

PROJ. NO.	PROJECT NAME
SE 125	TWBP

SAMPLERS: *(Signature)* William K. Scott

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS	E1HC	E3TC	TPH (heavy)	CAM Metals			REMARKS
TWBP 1	4/29/88	12:15		X	TWBP-1, 1.0-1.5 ft	X				X			
TWBP-2	4/29/88	12:35		X	TWBP-2, 1.0-1.5 ft	1				X			
TWBP-3	4/29/88	13:34		X	TWBP-3, 1.0-1.5 ft	1				X			
TWBP-4	4/29/88	13:58		X	TWBP-4, 1.0-1.5 ft	1				X			Composite
TWBP-5	4/29/88	14:38		X	TWBP-5, 1.0-1.5 ft	1				X			
TWBP-1A	4/29/88	12:20		X	TWBP-1A, 1.5-2.0 ft	1				X			
TWBP-2B	4/29/88	12:52		X	TWBP-2B, 2.0-2.5 ft	1	X	X	X				
TWBP-3A	4/29/88	13:47		X	TWBP-3A, 2.0-2.5 ft	1	X	X	X				
TWBP-4B	4/29/88	14:15		X	TWBP-4B, 3.0-3.5 ft	1	X	X	X				Composite
TWBP-5B	4/29/88	14:55		X	TWBP-5B, 3.0-3.5 ft	1	X	X	X				
TWBP-2A	4/29/88	12:30		X	TWBP-2A, 1.0-1.5 ft	1	X	X	X				
TWBP-4A	[illegible]	14:06		X	TWBP-4A, 1.0-1.5 ft	1	X	X	X				Composite
TWBP-5A	4/29/88	14:45		X	TWBP-5A, 1.0-1.5 ft	1	X	X					

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
William K. Scott	4/29/88 16:30	[signature]	[signature]	5/3/88 13:00	Donald Zakarski [illegible]
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*

Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks
		M Blanchard	5/2/88	

APPENDIX E

ANALYTICAL RESULTS
TIDEWATER BUSINESS PARK SOIL SAMPLING
29 April 1988

Report Date:	16-May-88	Client Contract/PO:	S8-123
Client: Baseline	Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site:	TW BP
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	07-May-88
Preservatives:	none	Analysis Completion Date:	09-May-88
Analyst:	Libby/Kiibler	Hold Time:	8 days
WESCO JOB #:	BEC 0809-L		
Analysis: CAM METALS			

LAB #: 8-4587 - 8 -4591 (composite) MATRIX: SOIL
CLIENT ID: TWBP-1-5

COMPOUND	RESULT (mg/kg)	Detection limit(mg/kg)	Method number
Antimony (Sb)	0.02	0.01	EPA 7041
Arsenic (As)	4.79	0.05	EPA 7061
Barium (Ba)	96.2	1.0	APHA 304
Beryllium (Be)	N.D.	0.5	EPA 7090
Cadmium (Cd)	N.D.	1.0	EPA 7130
Chromium (Cr)	26.1	1.0	EPA 7190
Cobalt (Co)	5.48	1.0	EPA 7200
Copper (Cu)	17.5	1.0	EPA 7210
Lead (Pb)	43.6	1.0	EPA 7420
Mercury (Hg)	0.181	0.03	EPA 7470
Molybdenum (Mo)	N.D.	5.0	EPA 7480
Nickel (Ni)	28.8	1.0	EPA 7520
Selenium (Se)	N.D.	0.08	EPA 7741
Silver (Ag)	0.26	1.0	EPA 7760
Thallium (Tl)	N.D.	0.01	EPA 7841
Vanadium (V)	46.8	5.0	EPA 7911
Zinc (Zn)	91.4	1.0	EPA 7950

N.D.: Not Detected

Susan Libby
Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809-L

COMPOUND	Blank (mg/kg)	Spike Duplicate % deviation	Spike % recovery
Antimony (Sb)	N.D.	*	*
Arsenic (As)	N.D.	3	120
Barium (Ba)	N.D.	5	94
Beryllium (Be)	N.D.	3	53
Cadmium (Cd)	N.D.	3	97
Chromium (Cr)	N.D.	3	101
Cobalt (Co)	N.D.	5	92
Copper (Cu)	N.D.	13	102
Lead (Pb)	N.D.	7	107
Mercury (Hg)	N.D.	2	86
Molybdenum (Mo)	N.D.	6	84
Nickel (Ni)	N.D.	2	96
Selenium (Se)	N.D.	3	87
Silver (Ag)	N.D.	0	97
Thallium (Tl)	N.D.	5	76
Vanadium (V)	N.D.	10	122
Zinc (Zn)	N.D.	0	111

N.D.: Not Detected
* : Matrix interference. Spike was not recovered.
Recovery from DI water was 84%.

Susan Lutz

Analytical Supervisor

Report Date:	02-Jun-88	Client Contract/POS8-123	
Client: Baseline	Environmental Cons.	Date Sampled:	29-Apr-88
Attn:	William Scott	Site: TW BP	
Sampled by:	William Scott	Date Received:	02-May-88
Submitted by:	William Scott	Extract/Digest/Purge	
Preservatives:	none	Date:	25-May-88
Analyst:	Libby/Kiibler	Analysis Completion	
WESCO JOB #:	BEC 0809.ES-L	Date:	01-Jun-88
Analytical Method:	STLC Metals	Hold Time	26 days

MATRIX: SOIL

LAB #	CLIENT ID	Lead STLC (Pb) (mg/l)	Nickel STLC (Ni) (mg/l)	Vanadium STLC (V) (mg/l)
8-5115	Comp TWBP 1-5	2.05	0.57	0.696
Detection limit		1.0	0.20	0.001
Method number		EPA 7420	EPA 7520	EPA 7911

QUALITY CONTROL DATA
BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809.ES-L

COMPOUND	Blank (mg/l)	Spike Duplicate % deviation	Spike % recovery
Lead	N.D.	5	93
Nickel	N.D.	4	86
Vanadium	N.D.	18	71

N.D.: Not Detected

Susan Libby
Analytical Supervisor

WESCO Laboratories

RECEIVED
MAY 23 1988

BASELINE

Report Date:	19-May-88	Client Contract/PO:	S8-123
Client:	Baseline Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site:	TW BP
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla	Hold Time:	6 days
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 3550/8015		

MATRIX: SOIL

LAB #	CLIENT ID	Motor oil (mg/kg)	Detection Limit(mg/kg)
8-4592- 8-4596 (composite)	TWBP-1A, 2B,3A TWBP-4B, 5B	611	10

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809-L
METHOD : EPA 3550/8015

COMPOUND	Blank (mg/l)	Spike Duplicate % deviation	Spike % recovery
Diesel	N.D.	0	84

N.D.: Not Detected

Analytical Supervisor

14 Galli Drive, Suite A
Novato, California 94949 415 883-6425
A Division of Western Ecological Services Company, Inc

WESCO Laboratories

Report Date:	08-Jun-88	Client Contract/PO:	S8-123
Client:	Baseline Environmental Cons.	Date Sampled:	29-Apr-88
Attn:	William Scott	Site:	TW BP
Sampled by:	William Scott	Date Received:	02-May-88
Submitted by:	William Scott	Extract/Digest/Purge Date:	27-May-88
Preservatives:	none	Analysis Completion Date:	31-May-88
Analyst:	Attalla	Hold Time:	28 days
WESCO JOB #:	BEC 0809.ES-L, revised		
Analytical Method:	EPA 3550/8015		

MATRIX: SOIL

LAB #	CLIENT ID	Total Petroleum Hydrocarbons (heavy) (mg/kg)	Quantified As	Detection Limit(mg/kg)
8-5116	TWBP-1A	80	Motor oil	10
8-5117	TWBP-2B	527	Motor oil	10
8-5118	TWBP-3A	N.D.		10
8-5119	TWBP-4B	N.D.		10
8-5120	TWBP-5B	N.D.		10

QUALITY CONTROL DATA
BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809.ES-L, revised

COMPOUND	Blank (mg/l)	Spike Duplicate % deviation	Spike % recovery
Diesel	N.D.	21	93

N.D.: Not Detected

Analytical Supervisor

14 Galli Drive, Suite A
Novato, California 94949 415 883-6425
A Division of Western Ecological Services Company, Inc.

Report Date:	16-May-88	Client Contract/PO:	SB-123
Client: Baseline	Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site: TW BP	
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla	Holding Time, Days:	6
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 8270		

LAB #:	8-4592(com)	8-4598(com)	MATRIX: SOIL
CLIENT'S ID:	TWBP 1-5	TWBP 2A-5A	

BASE NEUTRALS	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
N-Nitrosodimethylamine	N.D.	N.D.	n.d.
Aniline	N.D.	N.D.	n.d.
Bis(2-chloroethyl) ether	N.D.	N.D.	44
1,3-Dichlorobenzene	N.D.	N.D.	44
1,4-Dichlorobenzene	N.D.	N.D.	44
1,2-Dichlorobenzene	N.D.	N.D.	44
Bis(2-chloroisopropyl)ether	N.D.	N.D.	44
N-Nitroso-di-N-propylamine	N.D.	N.D.	44
Hexachloroethane	N.D.	N.D.	44
Nitrobenzene	N.D.	N.D.	44
Isophorone	N.D.	N.D.	44
Bis(2-chloroethoxy)methane	N.D.	N.D.	44
1,2,4-Trichlorobenzene	N.D.	N.D.	44
Naphthalene	N.D.	N.D.	44
Hexachlorobutadiene	N.D.	N.D.	44
Hexachlorocyclopentadiene	N.D.	N.D.	44
2-Chloronaphthalene	N.D.	N.D.	44
Dimethylphthalate	N.D.	N.D.	44
Acenaphthylene	N.D.	N.D.	44
2,6-Dinitrotoluene	N.D.	N.D.	44
Acenaphthene	N.D.	N.D.	44
Dibenzofuran	N.D.	N.D.	44
2,4-Dinitrotoluene	N.D.	N.D.	44
Diethyl phthalate	N.D.	N.D.	44
Fluorene	N.D.	N.D.	44
4-Chlorophenylphenyl ether	N.D.	N.D.	44
N-Nitrosodiphenyl amine	N.D.	N.D.	44
1,2-Diphenylhydrazine	N.D.	N.D.	n.d.
4-Bromophenylphenyl ether	N.D.	N.D.	44
Hexachlorobenzene	N.D.	N.D.	44
Phenanthrene	N.D.	N.D.	44
Anthracene	N.D.	N.D.	44
Di-n-butyl phthalate	N.D.	N.D.	44
Fluoranthene	N.D.	68	44
Benzidine	N.D.	N.D.	n.d.
Pyrene	N.D.	82	44
Butylbenzyl phthalate	N.D.	N.D.	44

Report Date:	16-May-88	Client Contract/PO:	SB-123
Client: Baseline	Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site: TW BP	
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla	Holding Time, Days:	6
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 8270		

LAB #:	B-4592(com)	B-4598(com)	MATRIX:	SOIL
CLIENT'S ID:	TWBP 1-5	TWBP 2A-5A		

BASE/NEUTRALS (cont)	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Benzo(a)anthracene	N.D.	N.D.	44
3,3'-Dichlorobenzidine	N.D.	N.D.	87
Chrysene	N.D.	N.D.	44
Bis(2-ethylhexyl) phthalate	N.D.	N.D.	44
Di-n-octyl phthalate	N.D.	N.D.	44
Benzo(b)fluoranthene	N.D.	N.D.	44
Benzo(k)fluoranthene	N.D.	N.D.	44
Benzo(a)pyrene	N.D.	N.D.	44
Indeno(1,2,3-cd)pyrene	N.D.	N.D.	44
Dibenzo(a,h)anthracene	N.D.	N.D.	44
Benzo(g,h,i)perylene	N.D.	N.D.	44
QUALITY CONTROL DATA			
Base/Neutral Surrogate Spike Recovery			
Nitrobenzene-d5	54%	72 %	
2-Fluorobiphenyl	52%	67 %	
Terphenyl-d14	102%	74 %	

Report Date:	16-May-88	Client Contract/PO:	88-123
Client: Baseline	Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site: TW BP	
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla		
WESCO JOB #:	BEC 0809-L	Holding Time, Days:	6
Analytical Method:	EPA 8270		

LAB #:	8-4592(com)	8-4598(com)	MATRIX: SOIL
CLIENT'S ID:	TWBP 1-5	TWBP 2A-5A	

ACID COMPOUNDS	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Phenol	N.D.	N.D.	44
2-Chlorophenol	N.D.	N.D.	44
2-Methylphenol	N.D.	N.D.	44
4-Methylphenol	N.D.	N.D.	44
2-Nitrophenol	N.D.	N.D.	44
2,4-Dimethylphenol	N.D.	N.D.	44
Benzoic Acid	N.D.	N.D.	220
2,4-Dichlorophenol	N.D.	N.D.	44
4-Chloro-3-methylphenol	N.D.	N.D.	87
2,4,6-Trichlorophenol	N.D.	N.D.	44
2,4,5-Trichlorophenol	N.D.	N.D.	44
2,4-Dinitrophenol	N.D.	N.D.	220
4-Nitrophenol	N.D.	N.D.	220
2-Methyl-4,6-dinitrophenol	N.D.	N.D.	220
Pentachlorophenol	N.D.	N.D.	220
QUALITY CONTROL DATA			
Acid Surrogate Spike Recovery			
2-Fluorophenol	74%	68%	
Phenol-d5	68%	64%	
2,4,6-Tribromophenol	82%	84%	

Report Date:	16-May-88	Client Contract/PO:	88-123
Client:	Baseline Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site:	TW BP
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla	Holding Time, Days:	6
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 8270		

LAB #:	8-4592(com)	8-4598(com)	MATRIX:	SOIL
CLIENT'S ID:	TWBP 1-5	TWBP 2A-5A		

PESTICIDE COMPOUNDS	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
alpha-BHC	N.D.	N.D.	n.d.
beta-BHC	N.D.	N.D.	n.d.
gamma-BHC	N.D.	N.D.	n.d.
delta-BHC	N.D.	N.D.	n.d.
Heptachlor	N.D.	N.D.	n.d.
Aldrin	N.D.	N.D.	n.d.
Heptachlor epoxide	N.D.	N.D.	n.d.
Endosulfan I	N.D.	N.D.	n.d.
4,4'-DDE	N.D.	N.D.	n.d.
Dieldrin	N.D.	N.D.	n.d.
Endrin	N.D.	N.D.	n.d.
Endosulfan II	N.D.	N.D.	n.d.
4,4'-DDD	N.D.	N.D.	n.d.
Endrin Aldehyde	N.D.	N.D.	n.d.
4,4'-DDT	N.D.	N.D.	n.d.
Endosulfan Sulfate	N.D.	N.D.	n.d.

QUALITY CONTROL DATA Pesticide Surrogate Spike Recovery		
Nitrobenzene-d5	54%	72 %
2-Fluorobiphenyl	52%	67 %
Terphenyl-d14	102%	74 %

OTHER EXTRACTABLES	RESULT (ug/kg)	RESULT (ug/kg)	Detection limit (ug/kg)
Acetophenone	N.D.	N.D.	n.d.
4-Aminobiphenyl	N.D.	N.D.	n.d.
Arochlors	N.D.	N.D.	n.d.
Benzyl Alcohol	N.D.	N.D.	n.d.
Chlordane	N.D.	N.D.	n.d.
4-Chloroaniline	N.D.	N.D.	n.d.
1-Chloronaphthalene	N.D.	N.D.	n.d.
Dibenz(a,j)acridine	N.D.	N.D.	n.d.
2,6-Dichlorophenol	N.D.	N.D.	n.d.
p-Dimethylaminoazobenzene	N.D.	N.D.	n.d.

Report Date:	16-May-88	Client Contract/PO:	S8-123
Client: Baseline	Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site: TW BP	
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	05-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Attalla	Holding Time, Days:	6
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 8270		

LAB #:	8-4592(com)	8-4598(com)	MATRIX: SOIL
CLIENT'S ID:	TWBP 1-5	TWBP 2A-5A	

OTHER EXTRACTABLES (cont)	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
7,12-Dimethylbenz(a)-anthracene	N.D.	N.D.	n.d.
alpha,alpha-Dimethylphen-ethylamine	N.D.	N.D.	n.d.
Endrin Ketone	N.D.	N.D.	n.d.
Ethylmethane sulfonate	N.D.	N.D.	n.d.
Methoxychlor	N.D.	N.D.	n.d.
3-Methylchloranthene	N.D.	N.D.	n.d.
Methylmethane sulfonate	N.D.	N.D.	n.d.
2-Methylnaphthalene	N.D.	N.D.	n.d.
1-Naphthylamine	N.D.	N.D.	n.d.
2-Naphthylamine	N.D.	N.D.	n.d.
2-Nitroaniline	N.D.	N.D.	n.d.
3-Nitroaniline	N.D.	N.D.	n.d.
4-Nitroaniline	N.D.	N.D.	n.d.
N-Nitrosophenylamine	N.D.	N.D.	n.d.
N-Nitrosopiperidine	N.D.	N.D.	n.d.
Pentachlorobenzene	N.D.	N.D.	n.d.
Pentachloronitrobenzene	N.D.	N.D.	n.d.
2-Picoline	N.D.	N.D.	n.d.
Pronamide	N.D.	N.D.	n.d.
1,2,4,5-Tetrachlorobenzene	N.D.	N.D.	n.d.
2,3,4,6-Tetrachlorobenzene	N.D.	N.D.	n.d.
Toxaphene	N.D.	N.D.	n.d.
Biphenyl	N.D.	N.D.	n.d.
Diphenylamine	N.D.	N.D.	n.d.
beta-Naphthylamine	N.D.	N.D.	n.d.
Dibenzothiophene	N.D.	N.D.	n.d.

N.D.: Not Detected
n.d.: not determined
N.A.: Not Applicable

Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809-L
METHOD EPA 8270

COMPOUND	Blank (ug/l)	Spike Dupl. % Deviation	% Spike Recovery
BASE NEUTRAL COMPOUNDS			
N-Nitrosodimethylamine	N.D.	n.s.	n.s.
Aniline	N.D.	n.s.	n.s.
Bis(2-chloroethyl) ether	N.D.	n.s.	n.s.
1,3-Dichlorobenzene	N.D.	n.s.	n.s.
1,4-Dichlorobenzene (MS)	N.D.	6	79
1,2-Dichlorobenzene	N.D.	n.s.	n.s.
Bis(2-chloroisopropyl)ether	N.D.	n.s.	n.s.
N-Nitroso-di-N-propylamine	N.D.	n.s.	n.s.
Hexachloroethane	N.D.	n.s.	n.s.
Nitrobenzene-d5 (SS)	N.A.	17	77
Nitrobenzene	N.D.	n.s.	n.s.
Isophorone	N.D.	n.s.	n.s.
Bis(2-chloroethoxy)methane	N.D.	n.s.	n.s.
1,2,4-Trichlorobenzene	N.D.	n.s.	n.s.
Naphthalene	N.D.	n.s.	n.s.
Hexachlorobutadiene	N.D.	n.s.	n.s.
Hexachlorocyclopentadiene	N.D.	n.s.	n.s.
2-Fluorobiphenyl (SS)	N.A.	3	75
2-Chloronaphthalene	N.D.	n.s.	n.s.
Dimethylphthalate	N.D.	n.s.	n.s.
Acenaphthylene	N.D.	n.s.	n.s.
2,6-Dinitrotoluene	N.D.	n.s.	n.s.
Acenaphthene (MS)	N.D.	4	54
Dibenzofuran	N.D.	n.s.	n.s.
2,4-Dinitrotoluene (MS)	N.D.	33	75
Diethyl phthalate	N.D.	n.s.	n.s.
Fluorene	N.D.	n.s.	n.s.
4-Chlorophenylphenyl ether	N.D.	n.s.	n.s.
N-Nitrosodiphenyl amine	N.D.	n.s.	n.s.
1,2-Diphenylhydrazine	N.D.	n.s.	n.s.
4-Bromophenylphenyl ether	N.D.	n.s.	n.s.
Hexachlorobenzene	N.D.	n.s.	n.s.
Phenanthrene	N.D.	n.s.	n.s.
Anthracene	N.D.	n.s.	n.s.
Di-n-butyl phthalate	N.D.	n.s.	n.s.
Fluoranthene	N.D.	n.s.	n.s.
Benzidine	N.D.	n.s.	n.s.
Pyrene (MS)	N.D.	15	56
Terphenyl-d12 (SS)	N.A.	11	83
Butylbenzyl phthalate	N.D.	n.s.	n.s.
Benzo(a)anthracene	N.D.	n.s.	n.s.
3,3'-Dichlorobenzidine	N.D.	n.s.	n.s.
Chrysene	N.D.	n.s.	n.s.
Bis(2-ethylhexyl) phthalate	N.D.	n.s.	n.s.
Di-n-octyl phthalate	N.D.	n.s.	n.s.
Benzo(b)fluoranthene	N.D.	n.s.	n.s.
Benzo(k)fluoranthene	N.D.	n.s.	n.s.

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809-L
METHOD EPA 8270

COMPOUND	Blank (ug/l)	Spike Dupl. % Deviation	% Spike Recovery
Benzo(a)pyrene	N.D.	n.s.	n.s.
Indeno(1,2,3-cd)pyrene	N.D.	n.s.	n.s.
Dibenzo(a,h)anthracene	N.D.	n.s.	n.s.
Benzo(g,h,i)perylene	N.D.	n.s.	n.s.

QUALITY CONTROL DATA

Base/Neutral Blank Surrogate Spike Recovery	percent
Nitrobenzene-d5	70 %
2-Fluorobiphenyl	78 %
Terphenyl-d14	66 %

ACID COMPOUNDS

2-Fluorophenol (SS)	N.A.	1	84
Phenol-d5 (SS)	N.A.	1	72
Phenol (MS)	N.D.	5	81
2-Chlorophenol	N.D.	n.s.	n.s.
2-Methylphenol	N.D.	n.s.	n.s.
4-Methylphenol	N.D.	n.s.	n.s.
2-Nitrophenol	N.D.	n.s.	n.s.
2,4-Dimethylphenol	N.D.	n.s.	n.s.
Benzoic Acid	N.D.	n.s.	n.s.
2,4-Dichlorophenol	N.D.	n.s.	n.s.
4-Chloro-3-methylphenol (MS)	N.D.	6	100
2,4,6-Trichlorophenol	N.D.	n.s.	n.s.
2,4,5-Trichlorophenol	N.D.	n.s.	n.s.
2,4-Dinitrophenol	N.D.	n.s.	n.s.
4-Nitrophenol (MS)	N.D.	11	113
2-Methyl-4,6-dinitrophenol	N.D.	n.s.	n.s.
2,4,6-Tribromophenol (SS)	N.A.	8	89
Pentachlorophenol (MS)	N.D.	16	97

QUALITY CONTROL DATA

Acid Surrogate Blank Spike Recovery	percent
2-Fluorophenol	86 %
Phenol-d5	73 %
2,4,6-Tribromophenol	94 %

BLANK, SPIKE DUPLICATE AND SPIKE REPORT JOB # BEC 0809-L
METHOD EPA 8270

COMPOUND	Blank (ug/l)	Spike Dupl. % Deviation	% Spike Recovery
PESTICIDES			
alpha-BHC	N.D.	n.s.	n.s.
beta-BHC	N.D.	n.s.	n.s.
gamma-BHC	N.D.	n.s.	n.s.
delta-BHC	N.D.	n.s.	n.s.
Heptachlor	N.D.	n.s.	n.s.
Aldrin	N.D.	n.s.	n.s.
Heptachlor epoxide	N.D.	n.s.	n.s.
Endosulfan I	N.D.	n.s.	n.s.
4,4'-DDE	N.D.	n.s.	n.s.
4-Terphenyl-d14 (SS)	N.A.	11	83
Dieldrin	N.D.	n.s.	n.s.
Endrin	N.D.	n.s.	n.s.
Endosulfan II	N.D.	n.s.	n.s.
4,4'-DDD	N.D.	n.s.	n.s.
Endrin Aldehyde	N.D.	n.s.	n.s.
4,4'-DDT	N.D.	n.s.	n.s.
Endosulfan Sulfate	N.D.	n.s.	n.s.

N.D.: Not Detected
n.s.: Not Spiked
N.R.: Not Recovered

(SS): Surrogate Spike
(MS): Matrix Spike
N.A.: Not Applicable

Analytical Supervisor

Report Date:	16-May-88	Client Contract/PO:	88-123
Client:	Baseline Envt. Consulting	Date Sampled:	29-Apr-88
Attn:	W. Scott	Site:	TW BP
Sampled by:	W. Scott	Date Received:	02-May-88
Submitted by:	D. Tokarski	Extract/Digest/Purge Date:	06-May-88
Preservatives:	none	Analysis Completion Date:	06-May-88
Analyst:	Siegmund/Moezzi	Holding time, days:	7
WESCO JOB #:	BEC 0809-L		
Analytical Method:	EPA 8240		

Matrix: SOIL

LAB #:	8-4592(comp)	8-4597(comp)
CLIENT ID:	TWBP-1A-5B	TWBP 2A-5A

COMPOUND	RESULT (ug/kg)	RESULT (ug/kg)	Detection Limit (ug/kg)
Dichlorodifluoromethane	N.D.	N.D.	0.05
Methyl Chloride	N.D.	N.D.	0.05
Vinyl Chloride	N.D.	N.D.	0.05
Methyl Bromide	N.D.	N.D.	0.05
Ethyl Chloride	N.D.	N.D.	0.05
Trichlorofluoromethane	N.D.	N.D.	0.05
2-Butanone(MEK)	N.D.	N.D.	0.05
Iodomethane	N.D.	N.D.	0.05
1,1-Dichloroethene	N.D.	N.D.	0.05
Carbon Disulfide	N.D.	N.D.	0.05
Acrylonitrile	N.D.	N.D.	0.05
Methylene Chloride	N.D.	N.D.	0.05
trans-1,2-dichloroethene	N.D.	N.D.	0.05
1,1-Dichloroethane	N.D.	N.D.	0.05
Chloroform	N.D.	N.D.	0.05
1,1,1-trichloroethane	N.D.	N.D.	0.05
1,2-Dichloroethane	N.D.	N.D.	0.05
Carbon Tetrachloride	N.D.	N.D.	0.05
Benzene	N.D.	N.D.	0.05
1,2-Dichloropropane	N.D.	N.D.	0.05
Trichloroethene	N.D.	N.D.	0.05
Dibromomethane	N.D.	N.D.	0.05
Bromodichloromethane	N.D.	N.D.	0.05
trans-1,3-Dichloropropene	N.D.	N.D.	0.05
3-Methyl-2-pentanone(MIBK)	N.D.	N.D.	0.05
Toluene	0.7	1.5	0.05
cis-1,3-dichloropropene	N.D.	N.D.	0.05
1,1,2-Trichloroethane	N.D.	N.D.	0.05
2-Chloroethylvinyl ether	N.D.	N.D.	0.05
Ethylmethacrylate	N.D.	N.D.	0.05
Dibromochloromethane	N.D.	N.D.	0.05
Tetrachloroethene	N.D.	N.D.	0.05
Chlorobenzene	N.D.	N.D.	0.05
Ethylbenzene	N.D.	N.D.	0.05
Bromoform	N.D.	N.D.	0.05
Xylene	N.D.	N.D.	0.05
1,1,2,2,-Tetrachloroethane	N.D.	N.D.	0.05
1,2,3-Trichloropropane	N.D.	N.D.	0.05
1,4-Dichloro-2-butene	N.D.	N.D.	0.05

QUALITY CONTROL DATA	Surrogate Spike % Recovery	
1,2-Dichloroethane-d4	108 %	112 %
Toluene-d8	122 %	107 %
4-Bromofluorobenzene	96 %	93 %

N.D.: Not Detected

Analytical Supervisor

BLANK, SPIKE DUPLICATE AND SPIKE REPORT FOR JOB # BEC 0809-L
METHOD: EPA 8240

COMPOUND	Blank (ug/l)	Spike Duplicate % deviation	Spike % recovery
Dichlorodifluoromethane	N.D.	-	N.S.
Methyl Chloride	N.D.	-	N.S.
Vinyl Chloride	N.D.	-	N.S.
Methyl Bromide	N.D.	-	N.S.
Ethyl Chloride	N.D.	-	N.S.
Trichlorofluoromethane	N.D.	-	N.S.
2-Butanone(MEK)	N.D.	-	N.S.
Iodomethane	N.D.	-	N.S.
1,1-Dichloroethene	N.D.	-	N.S.
Carbon Disulfide	N.D.	-	N.S.
Acrylonitrile	N.D.	-	N.S.
Methylene Chloride	N.D.	-	N.S.
trans-1,2-dichloroethene	N.D.	-	N.S.
1,1-Dichloroethane (M.S.)	N.D.	10	103
Chloroform	N.D.	-	N.S.
1,1,1-trichloroethane	N.D.	-	N.S.
1,2-Dichloroethane	N.D.	-	N.S.
Carbon Tetrachloride	N.D.	-	N.S.
Benzene (M.S.)	N.D.	9	94
1,2-Dichloropropane	N.D.	-	N.S.
Trichloroethene (M.S.)	N.D.	5	97
Dibromomethane	N.D.	-	N.S.
Bromodichloromethane	N.D.	-	N.S.
trans-1,3-Dichloropropene	N.D.	-	N.S.
3-Methyl-2-pentanone(MIBK)	N.D.	-	N.S.
Toluene (M.S.)	N.D.	6	101
cis-1,3-dichloropropene	N.D.	-	N.S.
1,1,2-Trichloroethane	N.D.	-	N.S.
2-Chloroethylvinyl ether	N.D.	-	N.S.
Ethylmethylacrylate	N.D.	-	N.S.
Dibromochloromethane	N.D.	-	N.S.
Tetrachloroethene	N.D.	-	N.S.
Chlorobenzene (M.S.)	N.D.	2	93
Ethylbenzene	N.D.	-	N.S.
Bromoform	N.D.	-	N.S.
Xylene	N.D.	-	N.S.
1,1,2,2,-Tetrachloroethane	N.D.	-	N.S.
1,2,3-Trichloropropane	N.D.	-	N.S.
1,4-Dichloro-2-butene	N.D.	-	N.S.
QUALITY CONTROL DATA			
Surrogate Spike % Recovery			
1,2-Dichloroethane-d4	118 %	117 %	109 %
Toluene-d8	94 %	119 %	99 %
4-Bromofluorobenzene	85 %	100 %	98 %

N.D.: Not Detected
N.S.: Not Spiked
M.S.: Matrix Spike

Analytical Supervisor