BLYMYER
ENGINEERS, INC.

1829 Clement Avenue
ALAMEDA, CALIFORNIA 94501-1396
(510) 521-3773 FAX: (510) 865-2594

LETTER OF TRANSMITTAL

DATE October 15, 1992	BEI Job No. 92150
ATTENTION Ms. Juliet Shin	
SUBJECT: Encinal Terminals	
Phase I Subsurface Investigation	

Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

GENTLEMEN:

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items
☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change Order

Copies	Date	Number	Description
1	10/14/92		Preliminary Site Assessment - Phase I Subsurface Investigation
			Workplan

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REMARKS: Please call should you have any questions.

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SIGNED: Sue Black/mc

If enclosures are not as noted, kindly notify Blymyer Engineers at once.

Preliminary Site Assessment
Phase I Subsurface Investigation
Workplan

Encinal Terminals
Alameda, California

October 14, 1992 BEI Job No. 92150

Prepared by:

Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501

Site:

Encinal Terminals
1521 Buena Vista Avenue
Alameda, CA 94501

d:\wp\sb\92150wrk.pln

LIMITATIONS

The conclusions and recommendations presented herein were prepared in accordance with generally accepted professional engineering and/or geologic practices and principles. The scope of work for the project will be conducted within the limitations prescribed by the client. Our opinions are based upon observations made at the site; review of available environmental, climatological, and geological data pertaining to the site; review of bore logs and subsurface data obtained during the investigation; and evaluation of analytical soil and/or groundwater data provided by an approved testing laboratory. All data obtained from investigations of this type are reviewed by state or local regulatory agencies for conformance with their criteria. Therefore, there is no guarantee that additional bores, soil or groundwater analytical tests, or remedial work will not be required at the site. This warranty is in lieu of all other warranties either expressed or implied pertaining to this project.

Laurie A. Buckman
Project Geologist

Harry Short,RG-CEG
Registered Geologist

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Appendix A: Correspondence from Alameda County Health Care Service Agency, Department of Environmental Health, Dated April 15, 1992

Appendix B: Final Closure Report for Encinal Terminals, Blymyer Engineers, Inc., dated March 3, 1988

Appendix C: Letter to Alameda County Health Care Services Agency, doceumenting waste oil tank containments sump removal, Blymyer Engineers, Inc., dated March 21, 1989

1.0 INTRODUCTION

1.1 Background

Blymyer Engineers, Inc. has been retained by Encinal Terminals to conduct a Preliminary Site Assessment (PSA) at the property located at 1521 Buena Vista Avenue, Alameda, California (Figure 1). This report constitutes a workplan requested by the Alameda County Health Care Services Agency (ACHCSA), Department of Environmental Health in a letter to Encinal Terminals, dated April 15, 1992 (Appendix A). The work is required as a result of the removal of three gasoline underground storage tanks (USTs) and a concrete secondary containment sump, which was located beneath a buried waste oil aboveground storage tank (AST). The UST removal details were documented in Blymyer Engineers' *Final Closure Report*, dated March 3, 1988 (Appendix B). The removal of the concrete secondary containment sump is documented in Blymyer Engineers' letter to the ACHCSA, dated March 21, 1989 (Appendix C). This workplan is in accordance with the Regional Water Quality Control Board's (RWQCB) *Staff Recommendation for the Initial Evaluation and Investigation of Underground Tanks*, August 1990, and the State Water Resources Control Board's LUFT manual.

On January 27, 1988, three gasoline USTs with capacities of 1,500 gallons, 5,000 gallons, and 8,500 gallons (Figure 2) were removed from the site by Trace Environmental Services, Inc. Two soil samples were collected from beneath each tank and along the product piping run and analyzed for Total Volatile Hydrocarbons (TVH) by modified EPA Method 8015 and benzene, toluene, and total xylenes (BTX) by modified EPA Method 8020. Soil sample T-1 Fill contained 77,000 micrograms per kilogram (µg/kg) of TVH, and soil sample T-1 Vent contained 35,000 µg/kg of TVH, 410 µg/kg of benzene, 32 µg/kg of toluene, and 550 µg/kg of total xylenes. Soil sample T-2 Fill contained 1,300 µg/kg of TVH, 180 µg/kg of benzene, and 35 µg/kg of total xylenes, and soil sample T-2 Vent contained 95 µg/kg benzene. No concentrations of toluene were detected in either soil samples collected from UST excavation T-2. Benzene, at 230 µg/kg and 110 µg/kg, was the only analyzed constituent detected in the soil samples collected from the gasoline UST excavation T-3 (T-3 Fill and T-3 Vent, respectfully). Two soil samples (FRP Trench 20' and FRP Trench 40') were collected along the piping run from tank T-3. Only one of the piping run soil samples (FRP Trench 40') contained detectable concentrations of TVH at 1,900 µg/kg. BTX was not detected in either piping run soil sample analyzed. The soil sample analytical results from the UST are summarized in Table I. The laboratory analytical reports are included in Appendix B.

Groundwater samples were obtained from UST excavations T-1 and T-3 and analyzed for TVH by modified EPA Method 8015 and BTX by modified EPA Method

8020. Concentrations of TVH of 100,000 micrograms per liter (µg/L) in groundwater sample No. 1 collected from UST excavation T-1 and 1,800 µg/L in groundwater sample No. 3 collected from UST excavation T-3 were detected. Total concentrations of BTX of 1,780 µg\L were detected in the groundwater sample from UST excavation T-1 of and 16.37 µg\L in the groundwater sample T-3. The groundwater sample analytical results are summarized in Table II and the laboratory analytical report is included in Appendix B.

On February 1, 1988, 17 cubic yards of backfill and naturally occurring soils which appeared to contain petroleum contamination were removed from excavation T-1 and stockpiled on and covered with heavy plastic sheeting by Trace Environmental Services. Upon completion of the removal of the petroleum-contaminated soils, soil samples were collected along the north, south, and east sidewalls of the excavation and analyzed for TVH and BTX, using the above noted analytical methods. Concentrations of TVH and BTX were not detected in the analyzed soil samples. Following profiling of the stockpiled soil for disposal, the stockpiled soil was disposed of on August 8, 1988, at the Forward Landfill in Manteca, California.

On February 1, 1989, a concrete secondary containment sump , which previously contained a waste oil AST, was removed by Trace Environmental Services. Upon removal of the sump, soil that was apparently contaminated with petroleum was

excavated, excluding the petroleum hydrocarbon-impacted soil located underneath the adjacent building. Approximately 7 tons of concrete rubble and contaminated soil was disposed of at Casmalia Resources, Inc. in Casmalia, California. Following the excavation of petroleum-contaminated soil, one soil sample (No.-1) was obtained at an approximate depth of 2 feet below grade surface (bgs) and analyzed for Volatile Organics by EPA Method 8240 and Oil & Grease by Standard Method 503E. The laboratory analytical report is included in Appendix C. Volatile Organics were not detected. Oil & Grease were detected at a concentration of ~~250~~,000 ug/kg. 750,000

This workplan outlines the scope of work specified in the letter from the ACHCSA.

1.2 Site Conditions

The site is located at 1521 Buena Vista Avenue in Alameda, California. The surrounding area is light industrial and residential. The property is located along the southern shore of the Alameda-Oakland Estuary surrounding the Alaska and Fortmann Basins. A residential area and Pacific Mini Storage are located to the west across Sherman Street, Buena Vista Park is located to the south across Buena Vista Avenue, and Weyerhaeuser Containerboard Packaging is located to the east across Nautilus Street. The site is occupied by loading and distribution facilities which include ASTs, warehouses, loading docks, outdoor storage areas, offices, maintenance shops, and asphalt parking areas. A railroad easement runs through the southern

portion of the property with track traversing through the western, central, and eastern portion of the site. The site is relatively flat with a slight slope to the north.

1.3 Project Objectives

The primary objective of the preliminary site assessment is to assess the horizontal and vertical extent of petroleum contamination within the site soil and groundwater in the vicinity of the former USTs and ASTs. Other investigative objectives include the determination of local groundwater flow direction and gradient in order to comply with current RWQCB requirements.

2.0 ENVIRONMENTAL SETTING

2.1 Regional Geology and Anticipated Site Stratigraphy

The project site is located in the city of Alameda on the gently sloping East Bay Plain, approximately 1/2 mile northeast of San Francisco Bay, at an approximate elevation of 15 feet above mean sea level, based on the National Geodetic Vertical Datum (NGVD). The San Francisco Bay Area is a northwest-southeast trending region within the Coast Range Province of California. Rocks within the region range from Jurassic-aged sedimentary, metamorphic, and plutonic basement rocks to Holocene alluvium. The geologic structure of the region is dominated by a major fault system which includes the San Andreas Fault on the west side of the San Francisco Bay and the Hayward Fault at the base of the Berkeley Hills on the east side of the Bay. These faults are a result of the forces which have uplifted the Coast Range and dropped the section now covered by the open water of the San Francisco Bay and Quaternary alluvium (Goldman, 1967).

Alameda is currently an island, but was historically connected to the city of Oakland but a channel was dredged so as to eliminate the land connection to the remainder of the East Bay landmass. Alameda was originally formed as a near-shore deposit known as the Merritt Sand. "The Merritt Sand is a loose, well-sorted, fine to medium

grained sand and silt, with lenses of sandy clay and clay (Hickenbottom, et al., 1988). The sands grade laterally into the surrounding Bay Mud deposits. The generalized local stratigraphy of Alameda island, from the surface down, excepting the recently filled northernmost and easternmost portions, includes approximately 50 feet of Merritt Sand overlying several hundred feet of older alluvium (Hickenbottom et al., 1988).

2.2 Climate

The East Bay Plain exhibits a Mediterranean-type climate with cool, wet winters and warmer, dry summers. Mean annual precipitation in nearby Oakland is 25.42 inches. Mean monthly rainfall is 4.03 inches in January and 0.05 inches in August. At the time of this investigation, the entire Bay Area has experienced six years of below-normal precipitation. The mean monthly temperature in Oakland is 49.0 degrees Fahrenheit in January and 65.0 degrees Fahrenheit in September (NOAA, 1982).

3.0 METHODS OF INVESTIGATION

3.1 Soil Investigation

3.1.1 Soil Sample Collection

Blymyer Engineers proposes to install two soil bores (MW-1 and MW-3, Figure 2) to an approximate depth of 20 feet bgs using a hollow-stem auger drill rig. The bores will be placed within 10 feet of the former tank locations T-1 and T-3 in the assumed downgradient groundwater flow direction. Soil bores MW-1 and MW-3 will be completed as 2-inch-diameter groundwater monitoring wells. One additional soil bore (SB-1) will be drilled to a depth of 8 feet bgs adjacent to the removed waste oil AST.

Drill cuttings will be stored at the site in labeled, D.O.T.-approved, 55-gallon drums for proper disposal by the property owner.

Soil samples for lithologic identification will be collected at a minimum of 5-foot intervals. The soil samples will be collected with a split-spoon core barrel lined with three 2-inch-diameter by 6-inch-long brass sleeves. Each sample will be screened for volatile organic compounds (VOCs) using a photoionization detector (PID). One soil sample will be selected for analysis from the interval with the highest VOCs based

on PID readings and another soil sample from the interval directly above the water-bearing zone from each soil bore will be analyzed. One brass sleeve from each sample interval will be packaged for analysis by placing Teflon™ over each end of the brass sleeve and sealing the ends with plastic end caps and nonadhesive silicone tape. The soil samples will be placed on ice and shipped to NET Pacific, Inc., a California certified laboratory, for analysis.

Soil bore SB-1 will be sealed with a cement/bentonite grout upon completion.

3.1.2 Analytical Methods

All of the soil samples will be analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline by modified EPA Method 8015 and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8020. The soil samples collected from bore SB-1 (adjacent to the removed waste oil AST) and bore MW-3 (downgradient of the removed waste oil AST and UST excavation T-3) will also be analyzed for TPH as diesel by modified EPA Method 8015, Halogenated Volatile Organics (HVOs) by EPA Method 8010 or 8240, and Oil & Grease by Standard Method 5520D/F. All proper chain-of-custody procedures will be observed.

3.2 Groundwater Investigation

3.2.1 Monitoring Well Installation

The 20-foot deep soil bores, MW-1 and MW-3, will be converted to 2-inch diameter monitoring wells at the locations indicated in Figure 2. One groundwater piezometer (MW-2 on Figure 2) will be installed in the assumed upgradient groundwater flow direction of the former USTs, in order to establish an accurate groundwater direction and gradient at the site.

The wells and piezometer will be constructed of 2-inch-diameter, schedule 40 PVC casing. The casing will be 0.02-inch factory-slotted from the bottom of the bore to 5 feet above the water table. The remainder of the casing will be blank. A threaded cap or a slip cap with machine screws will be attached to the bottom of the casing.

The annulus between the borehole wall and the casing will be backfilled with clean sand, appropriate for the chosen slot size, from the bottom of the bore to 2 feet above the screened interval. Two feet of bentonite pellets will be placed in the annulus and hydrated to form a seal. The annulus will be backfilled to grade with a neat cement slurry. The top of the casing will be secured with a locking well cap and a flush-mounted traffic box will be installed over each well.

Each well will be developed by surging and pumping approximately 6 to 10 well volumes. Development water will be stored at the site in labeled, D.O.T.-approved, 55-gallon drums for proper disposal by the owner.

3.2.2 Groundwater Sample Collection

Groundwater samples will be collected from well MW-1 and MW-3 at least 24 hours after development. At least three well volumes will be removed prior to sampling using a decontaminated PVC hand pump or a Teflon™ bailer. Temperature, pH, and conductivity will be measured initially and after the removal of each well volume. Each well will be sampled when these measurements are all within 15% of each other for three consecutive well volumes. One bailer blank will be collected. The groundwater and bailer blank samples will be placed in appropriate containers provided by the laboratory, labeled, and placed on ice for transportation to the analytical laboratory. All proper chain-of custody procedures will be observed.

Purge water will be stored at the site in labeled D.O.T.-approved, 55-gallon drums for proper disposal by the owner.

3.2.3 Analytical Methods

The groundwater samples and bailer blank sample will be analyzed by NET Pacific, Inc. for TPH as gasoline by modified EPA Method 8015 and BTEX by EPA Method 8020. The groundwater sample collected from monitoring well MW-3 will also be

analyzed for TPH as diesel by modified EPA Method 8015, HVOs by EPA Method 8010 or 8240, and Oil & Grease by Standard Method 5520B/F.

3.2.4 Groundwater Elevation Survey

The water levels in all of the wells at the site will be measured from the top-of-casing (TOC) using an interface probe. The TOC elevation for each well will be surveyed with a rod and level to an arbitrary datum. This will allow the determination of the local groundwater gradient direction.

4.0 HEALTH AND SAFETY PLAN

A site-specific health and safety plan will be prepared by Blymyer Engineers which will cover all phases of the work. The plan will address key personnel and their responsibilities relative to health and safety, chemical and physical hazards, risk evaluation and management, personal protective equipment, and emergency procedures. A "tail-gate meeting" will be performed prior to each phase of the work to discuss pertinent health and safety issues and review the site safety plan with all site workers.

5.0 FINAL REPORT

Upon completion of the work described in the preceding sections, a final report will be prepared for submittal to the Alameda County Health Care Services Agency, Department of Environmental Health. The final report will include a description of all field work performed at the site, analytical results and interpretation, soil and groundwater contamination characterization, conclusions, and recommendations.

6.0 REFERENCES

Goldman, Harold B, 1967. Geology of San Francisco Bay, California Division of Mines and Geology, prepared for the San Francisco Bay Conservation and Development Commission, 58 p.

Hickenbottom, K. and Kenneth, M., 1988, *Geohydrogeology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, California*; 205(J) Report, submitted to the California Regional Water Quality Control Board, San Francisco Bay Region, 83 p.

National Oceanic and Atmospheric Administration, 1982, *Monthly Normal of Temperature Precipitation, and Heating and Cooling Degree Days 1951-1980, California.*

National Oceanic and Atmospheric Administration, 1982, Climatology of the United States No. 81 (by state). Monthly normals of temperature, precipitation, and heating and cooling degrees 1951-1980, California: National Climatic Center, Asheville, N.C.

Tables

Table I
Summary of Soil Sample Analytical Results
Encinal Terminals, Inc.
Alameda, California
REI Job No. 92150

Sample ID No.	Modified EPA Method 8015	EPA Method 8020	EPA Method 8020	EPA Method 8020	EPA Method 8240	Standard Method 503E
	TVH (µg/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Total Xylenes (µg/kg)	VOC (µg/kg)	Oil & Grease (µg/kg)
No. 1 Fill	77,000	<20	<10	<20	NA	NA
No. 1 Vent	35,000	410	32	550	NA	NA
No. 2 Fill	1,300	180	<10	35	NA	NA
No. 2 Vent	<600	95	<10	<20	NA	NA
No. 3 Fill	<600	230	<80	<20	NA	NA
No. 4 Vent	<600	110	<80	<20	NA	NA
No. 1, FRP Trench 20'	<300	<30	<20	<40	NA	NA
No. 2, FRP Trench 40'	1,900	<30	<20	<30	NA	NA
No.4, T-1 Redone	<300	<30	<20	<30	NA	NA
No. 5,T-1 Redone	<300	<30	<20	<30	NA	NA
No. 6, T-1 Redone	<300	<30	<20	<40	NA	NA
No. 1	NA	NA	NA	NA	<10	750,000

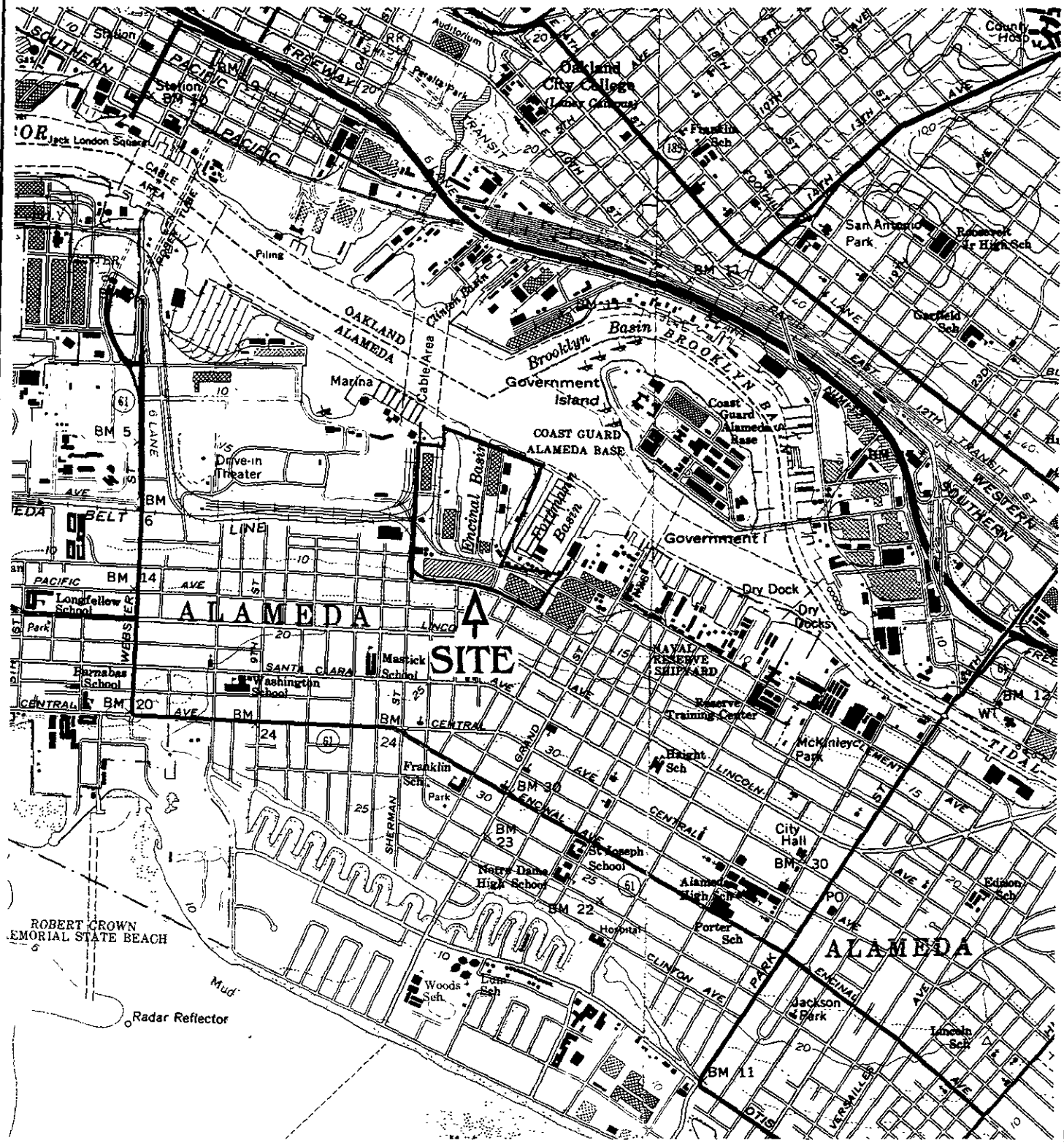
µg/kg = micrograms per kilogram (parts per billion)
NA = not analyzed for that parameter
< = below method detection limit
TVH = Total Volatile Hydrocarbons
VOCs = Volatile Organic Compounds

Table II
Summary of Groundwater Analytical Sample Results
Encinal Terminals, Inc.
Alameda, California
BEI Job No. 92150

Sample ID	Modified EPA Method 8015	EPA Method 8020	EPA Method 8020	EPA Method 8020
	TVH (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Total Xylenes (µg/L)
No. 1	100,000	910	750	120
No. 3	1,800	3	3	10

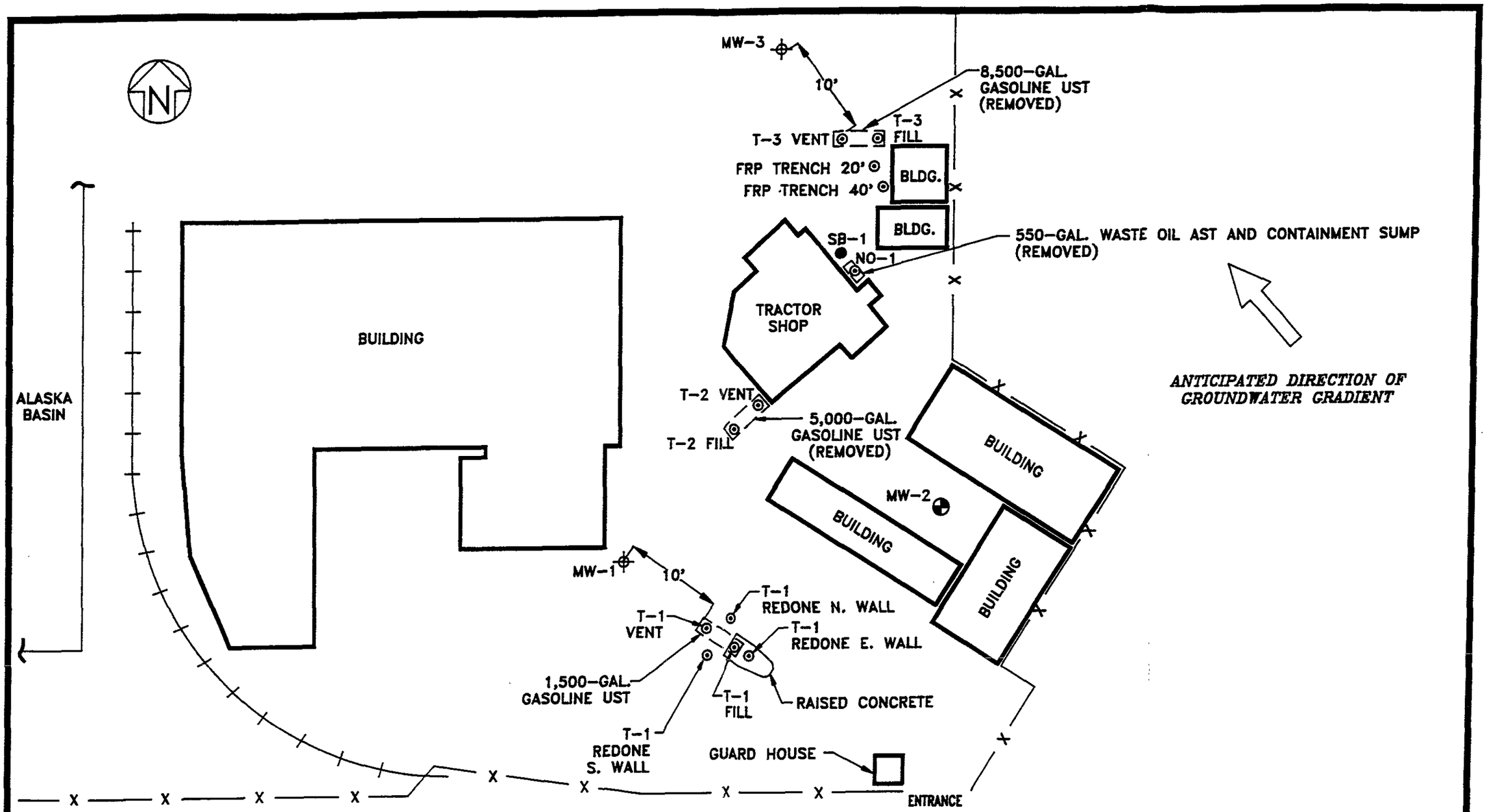
µg/L = micrograms per liter (parts per billion)
TVH = Total Volatile Hydrocarbons

Figures



SOURCE: UNITED STATES GEOGRAPHICAL SURVEY 7.5' QUAD. "OAKLAND WEST, CA" PHOTOREVISED 1980 AND "OAKLAND EAST, CA" PHOTOREVISED 1980.

BLYMYER ENGINEERS, INC. (BEI)	0 1000 2000 SCALE IN FEET (N)	SITE LOCATION MAP ENCINAL TERMINALS ALAMEDA, CA	FIGURE 1
BEI JOB NO. 92150	DATE 10/92		



NOT TO SCALE

BLYMYER ENGINEERS, INC. (BEI)	LEGEND PROPOSED GROUNDWATER MONITORING WELLS PROPOSED GROUNDWATER PIEZOMETER SOIL BORE SOIL SAMPLE	PROJECT ENCINAL TERMINALS ALAMEDA, CA SITE PLAN	FIGURE 2
BEI JOB NO. 92150 / DATE 10/15/92			

Appendix A

P2095

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, Assistant Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Division
1515 Clay Street, Rm. 200
Oakland, CA 94621
(510) 271-4320

April 15, 1992

Peter Wang
Encinal Terminals
1521 Buena Vista Avenue
Alameda, CA 94501

STID 3522

RE: Investigations at 1521 Buena Vista Avenue, Alameda, California

Dear Mr. Wang,

Alameda County Environmental Health Department, Hazardous Materials Division, has currently been delegated authority from the San Francisco Regional Water Quality Control Board (RWQCB) to oversee a large number of remediation cases within Alameda County. Therefore, we will be the lead contact agency for the oversight duties regarding this case.

The files for the case referenced above have recently been reviewed by our office. According to the Final Closure Report, dated March 8, 1988, three underground storage tanks (T-1, T-2, and T-3) were removed from the site on January 27, 1988. The analysis of groundwater samples collected from tank pits T-1 and T-3 identified up to 100,000 parts per billion (ppb) Total Petroleum Hydrocarbons (TPH) and 910 ppb Benzene. Additionally, the analysis of soil samples collected from these tank pits, and tank pit T-2, identified concentrations of TPH and Benzene.

Guidelines established by RWQCB requires that a groundwater investigation be conducted whenever an unauthorized release of product is suspected from an underground storage tank (UST). The groundwater contamination identified from the tank pits would indicate that such an event has occurred. The guidelines state that a groundwater monitoring well must be installed within ten feet downgradient of a former UST. Since groundwater contamination was documented in water collected from tank pits T-1 and T-3, monitoring wells will be required to be installed within 10 feet downgradient of these former USTs. Additionally, a third well must also be installed to complete the triangulation necessary to determine the groundwater gradient behavior.

You are required to submit a preliminary site assessment (PSA) work plan describing the proposed work at the site. It should include, among other elements, a depiction of the proposed locations for monitoring well installations and sampling plan. Initial soil and groundwater samples shall be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg) and Benzene, Toluene, Ethylbenzene, and Xylenes using appropriate EPA or DHS methods. Additionally, due to concern over the former above-ground waste oil tank, initial soil and groundwater samples should also be analyzed for TPH as diesel fuel, volatile organic compounds (EPA method 8010 or 8240) and oil and grease (EPA 5520 series).

The PSA must be conducted in accordance with the RWQCB's Staff Recommendation for the Initial Evaluation and Investigation of Underground Tanks, August 1990, and the State Water Resources Control Board's LUFT field manual. Please reference the attached Appendix A summarizing the technical scope of such a PSA proposal.

The PSA shall be conducted under the direction of a registered engineer/geologist. A technical report shall be submitted following completion of this intial stage of work at the site. Subsequent reports are to be submitted **quarterly** until this site qualifies for final RWQCB "sign-off".

The referenced initial and quarterly reports must describe the status of the investigation and must include, among others, the following elements:

- Details and results of all work performed during the designated period of time: records of field observations and data, boring and well construction logs, water level data, chain-of-custody forms, laboratory results for all samples collected and analyzed, tabulations of free product thicknesses and dissolved fractions, etc.
- Status of groundwater contamination characterization
- Interpretation of results: water level contour maps showing gradients, free and dissolved product plume definition maps for each target component, geologic cross sections, etc.
- Recommendations or plans for additional investigative work of remediation

The need for any follow-up investigative or remedial actions at this site will be based upon the data derived from this groundwater investigation.

If you have any questions or comments please contact Juliet Shin at (510) 271-4320.

Sincerely,

Scott O. Seery, CHMM
Senior Hazardous Materials Specialist

Attachment

cc: Richard Hiett, RWQCB
Richard Quarante, Alameda Fire Dept.

Appendix B

FINAL CLOSURE REPORT

FOR

ENCINAL TERMINALS, INC.
1521 BUENA VISTA AVENUE
ALAMEDA, CALIFORNIA 94501

BY

BLYMYER ENGINEERS, INC.
1829 CLEMENT AVENUE
ALAMEDA, CALIFORNIA 94501

BEI JOB NO. 87139
MARCH 3, 1988

On January 27, 1988, three underground gasoline tanks ranging in capacity from 1,500 gallons to 8,500 gallons were permanently closed at Encinal Terminals.

The tanks were high pressure rinsed prior to removal. All rinsate was transported by Refineries Service (Transporter I.D. No. CAD83166728) to their facility (State Faclity No. CAD981997570) for disposal. The tanks were also dry iced before removal.

Two soil samples were taken from the bottom of each tank excavation in locations dictated by Mr. Ariu Levi of the Alameda County Health Agency. In addition, water samples were obtained from the T-1 and T-3 excavations. It was noted at the time that the T-2 and T-3 excavations appeared relatively clean, while the T-1 excavations appeared to have some contamination. All samples were analyzed by Trace Analysis Laboratory for total volatile hydrocarbons and BTX. The analysis results and chain-of-custody documentation are attached in Appendix A.

Mr. Levi indicated that the 40 foot fiberglass piping run from T-3 would have to be removed and soil samples taken at 20' intervals. This work was performed on February 1, 1988. Two soil samples (labelled FRP Trench - 20' and FRP Trench - 40') were obtained from the locations indicated on the attached site plan and analyzed by Trace Analysis Laboratory for total volatile hydrocarbons and BTX. The analysis results and chain-of-custody documentation are attached in Appendix B.

The oil/water separator was removed intact on February 1, 1988. The discharge line was permanently capped with concrete. One soil sample was obtained from the bottom of the excavation

and analyzed by Trace Analysis Laboratory for total oil and grease. The analysis results and chain-of-custody documentation are attached in Appendix B. The oil/water separator is on site awaiting transport and disposal at a Class I facility.

The contaminated soil in the T-1 excavation was excavated on February 1, 1988, and stockpiled on Visqueen in a bermed area. The pile was then covered with Visqueen. Soil samples were obtained from the north, south and east walls of the excavation to confirm that grossly contaminated soil had been removed. The samples were analyzed by Trace Analysis Laboratories for total volatile hydrocarbons and BTX. The analysis results and chain-of-custody documentation are attached in Appendix B. The contaminated soil will be properly disposed of when contaminant concentrations are determined.

APPENDIX A

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

DATE: 2/17/88

LOG NO.: 5615

DATE SAMPLED: 1/27/88

DATE RECEIVED: 1/27/88

CUSTOMER: Blymyer and Sons Engineering, Inc.

REQUESTER: Michael S. Lewis

PROJECT: No. 87139, Encinal Terminals

		Sample Type: Water			
		No. 1, Water		No. 3, Water	
Method and Constituent	Units	Concentration	Detection Limit	Concentration	Detection Limit
Modified EPA Method 8015:					
Volatile Hydrocarbons	ug/l	100,000	1,000	1,800	2
Modified EPA Method 8020:					
Benzene	ug/l	910	80	3.3	0.2
Toluene	ug/l	750	400	3	0.8
Xylenes	ug/l	120	130	10	0.2

DATE: 2/17/88
LOG NO.: 5615
DATE SAMPLED: 1/27/88
DATE RECEIVED: 1/27/88
PAGE: Two

Sample Type: Soil

Method and Constituent	Units	No. 1, Fill Concentration	No. 1, Fill Detection Limit	No. 1, Vent Concentration	No. 1, Vent Detection Limit	No. 2, Fill Concentration	No. 2, Fill Detection Limit
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/kg	77,000	600	35,000	600	1,300	600
Modified EPA Method 8020:							
Benzene	ug/kg	< 20	20	410	10	180	10
Toluene	ug/kg	< 10	10	32	10	< 10	10
Xylenes	ug/kg	< 20	20	550	20	35	10

		No. 2, Vent		No. 3, Fill		No. 3, Vent	
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/kg	< 600	600	< 600	600	< 600	600
Modified EPA Method 8020:							
Benzene	ug/kg	95	10	230	20	110	20
Toluene	ug/kg	< 10	10	< 10	10	< 80	80
Xylenes	ug/kg	< 20	20	< 20	20	< 20	20

Hugh R. McLean
Supervisory Chemist

HRM:gmc

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

10 day TAT

no 1 likely to be high

PROJ NO.	PROJECT NAME
87139	Encinal Terminals

SAMPLERS: (Signature) Michael S. Lee

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Soil	Quart water	40ml water	TVH + BTX	Oil & Grease	REMARKS
3	1/27/88	2:30		X	Vent T-3	1	X			X		
3	1/27/88	2:35		X	Water T-3	1		X		X		one sample
3	1/27/88	2:36		X	Water T-3	1			X	X		
3	1/27/88	2:37		X	Water T-3	1			X	X		
3	1/27/88	2:45		X	Fill T-3	1	X			X		
1	1/27/88	3:15		X	Vent T-1	1	X			X		
1	1/27/88	3:25		X	Water T-1	1		X		X		one sample
1	1/27/88	3:26		X	Water T-1	1			X	X		
1	1/27/88	3:27		X	Water T-1	1			X	X		
1	1/27/88	3:30		X	Fill T-1	1	X			X		
2	1/27/88	3:50		X	Vent T-2	1	X			X		
2	1/27/88	3:55		X	Fill T-2	1	X			X		

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael S Lee	1/27/88 5:40pm				
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	
		Lorie Dunn	1/27/88 5:40pm		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

TRACE ANALYSIS LABORATORY
3423 INVESTMENT BLVD., UNIT J
HAYWARD, CA 94545
(415) 783-6960

3-0605

APPENDIX B

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

TAL

DATE: 2/26/88

LOG NO.: 5639

DATE SAMPLED: 2/1/88

DATE RECEIVED: 2/2/88

CUSTOMER: Blymyer and Sons Engineers, Inc.

REQUESTER: Michael S. Lewis

PROJECT: No. 87139, Encinal Terminals

Sample Type: Soil

Method and Constituent	Units	No. 1, FRP Trench - 20' Concentration	No. 1, FRP Trench - 20' Detection Limit	No. 2, FRP Trench - 40' Concentration	No. 2, FRP Trench - 40' Detection Limit	No. 3 - OWS Excavation Concentration	No. 3 - OWS Excavation Detection Limit
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/kg	< 300	300	1,900	300		
Modified EPA Method 8020:							
Benzene	ug/kg	< 30	30	< 30	30		
Toluene	ug/kg	< 20	20	< 20	20		
Xylenes	ug/kg	< 40	40	< 30	30		
Standard Method 503E, Hydrocarbons:							
Oil and Grease	ug/kg					700,000	10,000

DATE: 2/26/..
LOG NO.: 5639
DATE SAMPLED: 2/1/88
DATE RECEIVED: 2/2/88
PAGE: Two

Sample Type: Soil

Method and Constituent	Units	No. 4, T-1 Redone South Wall Concentration	No. 4, T-1 Redone South Wall Detection Limit	No. 5, T-1 Redone East Wall Concentration	No. 5, T-1 Redone East Wall Detection Limit	No. 6, T-1 Redone North Wall Concentration	No. 6, T-1 Redone North Wall Detection Limit
Modified EPA Method 8015:							
Volatile Hydrocarbons	ug/kg	< 300	300	< 300	300	< 300	300
Modified EPA Method 8020:							
Benzene	ug/kg	< 30	30	< 30	30	< 30	30
Toluene	ug/kg	< 20	20	< 20	20	< 20	20
Xylenes	ug/kg	< 30	30	< 30	30	< 40	40

Hugh R. McLean
Supervisory Chemist

HRM:mln

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
87139	ENCINAL TERMINALS

SAMPLERS: (Signature) Michael S. Ruth

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Soil	TVH + BTX	O.I.& Grease	REMARKS
1	2/1/88	9:15A		X	FRP Trench - 20'	1	X	X		10 day turnaround
2	2/1/88	9:25A		X	FRP Trench - 40'	1	X	X		↓
3	2/1/88	11:30A		X	OWS Excavation	1	X		X	↓
4	2/1/88	3:20P		X	T-1 Redone South wall	1	X	X		↓
5	2/1/88	3:40P		X	T-1 Redone East Wall	1	X	X		↓
6	2/1/88	3:50P		X	T-1 Redone North Wall	1	X	X		↓

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael S. Ruth	2/2/88 7:55A	[signature]	[signature]	2/2/88 3:30P	[signature]
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	

TAL

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3-0605

Appendix C

BLYMYER
ENGINEERS, INC.

March 21, 1989
BEI Job No. 88322

Mr. Ariu Levi
ALAMEDA COUNTY HEALTH AGENCY
80 Swan Way, Room #200
Oakland, CA. 94621

SUBJECT: ENCINAL TERMINALS
1521 BUENA VISTA AVENUE
ALAMEDA, CALIFORNIA

Dear Mr. Levi:

The old waste oil tank containment sump at the subject facility was removed on February 1, 1989. Approximately seven tons of concrete rubble and contaminated soil was removed and transported to Casmalia Resources, Inc. (copy of manifest attached) for disposal. One soil sample was obtained from the bottom center of the excavation. Captain Marvin Helms of the Alameda Fire Department was on site to witness the soil sampling. The sample was delivered to Trace Analysis Laboratory and analyzed for volatile organics (EPA Method #8240) and oil and grease (SM 503E). As indicated in the attached analytical report, 750 mg/kg oil and grease was detected in the sample. No volatile organic compounds were detected.

If you have any questions, please give me a call at 521-3773.

Cordially,

BLYMYER ENGINEERS, INC.

— Michael S. Lewis
Environmental Specialist

MSL/ds

Attachments

cc: Mr. Peter Wong -ENCINAL TERMINALS
Capt. Marvin Helms-ALAMEDA FIRE DEPARTMENT

of California—Health and Welfare Agency
Approved OMB No. 2050—0039 (Expires 9-3/
print or type. (Form designed for use on el ,12-pitch typewriter).

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Kinder Morgan Terminals
1521 Buena Vista Ave./ Alameda CA

A. State Manifest Document Number 88252632

4. Generator's Phone (415)

B. State Generator's ID

5. Transporter 1 Company Name
Dillard Trucking

6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone 707-101-4115-475-7862

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Casmalia Resources, Inc
HTU Road
Casmalia, CA 93439

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone 805-937-9449

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Contaminated Soil And Concrete California Regulated Waste Only		DT	7	T	State 54 EPA/Other Non-Reg
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
Concrete and Soil Contaminated With Less Than 1% Motor Oil

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information

16.
GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Allen DUTRA | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name | Signature | Month Day Year

GENERATOR

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

88252632

Do Not Write Below This Line

YELLOW: GENERATOR RETAINS

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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

TAL

DATE: 3/7/89

LOG NO.: 6979

DATE SAMPLED: 2/1/89

DATE RECEIVED: 2/2/89

CUSTOMER: Blymyer Engineers, Inc.

REQUESTER: Mike Lewis

PROJECT: No. 88322, Encinal - Alameda

		Sample Type: Soil	
		No. 1	
Method and Constituent	Units	Concentration	Detection Limit
Standard Method 503E, Hydrocarbons:			
Oil and Grease	ug/kg	750,000	20,000

TRACE ANALYSIS LABORATORY

ORGANIC ANALYSIS DATA SHEET

Client: Blymyer Engineers, Inc.

Contact: Mike Lewis

Client Project: No. 88322, Encinal - Alameda

Sample Point: _____

LAB Project: 6979

Sample ID: 01

Analyst: Lee Do QA/QC Supervisor: Dan Farah

Date Sampled: 2/1/89
Date Received: 2/2/89
Date Analyzed: 02/14/89
Date Reported: 02/14/89
Dilution Factor: 1.00
Analysis Method: _____
Sample Type: Soil

Comment: U, J = Compounds are below Detection Limit
10 ug/kg = Detection Limit

TARGET COMPOUNDS

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
74-87-3	CHLOROMETHANE	10.00	U
74-83-9	BROMOMETHANE	10.00	U
75-01-4	VINYL CHLORIDE	10.00	U
75-00-3	CHLOROETHANE	10.00	U
75-09-2	METHYLENE CHLORIDE	10.00	U
75-69-4	TRICHLOROFLOUROMETHANE	10.00	U
75-35-4	1 1-DICHLOROETHENE	10.00	U
107-6-2	1 2-DICHLOROETHANE	10.00	U
75-34-3	1 1-DICHLOROETHANE	10.00	U
156-60-5	TRANS-1 2-DICHLOROETHENE	10.00	U
67-66-3	CHLOROFORM	10.00	U
71-55-6	1 1 1-TRICHLOROETHANE	10.00	U
56-23-5	CARBONTETRACHLORIDE	10.00	U
75-27-4	BROMODICHLOROMETHANE	10.00	U
78-87-5	1 2-DICHLOROPROPANE	10.00	U
10061-02-6	TRANS 1 3-DICHLOROPROPENE	10.00	U
79-01-6	TRICHLOROETHENE	10.00	U
124-48-1	DIBROMOCHLOROMETHANE	10.00	U
71-43-2	BENZENE	10.00	0J
79-00-5	1 1 2-TRICHLOROETHANE	10.00	U
10061-01-5	CIS-1 3-DICHLOROPROPENE	10.00	U
110-75-8	2-CHLOROETHYLVINYLETHER	10.00	U
75-25-2	BROMOFORM	10.00	U
79-34-5	1 1 2 2 TETRACHLOROETHANE	10.00	U
127-18-4	TERTRACHLOROETHENE	10.00	U
108-88-3	TOLUENE	10.00	1J
108-90-7	CHLOROBENZENE	10.00	U
100-41-4	ETHYLBENZENE	10.00	U
541-73-1	1 3-DICHLOROBENZENE	10.00	U
3588-82-1	1 4-DICHLOROBENZENE	10.00	U
95-50-1	1 2-DICHLOROBENZENE	10.00	U

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

PROJ NO.: 80322
PROJECT NAME: Encinal - Alameda
SAMPLERS: (Signature) Michael S. Lee

EPA NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	0.1% Grease (SGT-EPA 8240)						REMARKS
1	2/1/89	12:30		X	Excavation - Center	1	X	X					10 day TAT

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael S. Lee	2-2-89 4:05 P.M.	Corrine Keller			
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	
					Invoice to: Blymyer Engineers

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

3- 0605

Appendix D

BLYMYER ENGINEERS, INC.

BAIL TEST PROCEDURE FOR OBTAINING HYDRAULIC CONDUCTIVITY ESTIMATES OF WATER-SATURATED SOILS

Introduction

The primary purpose of conducting a bail test is to obtain a localized in situ estimate of water-saturated soil hydraulic conductivity. This method of parameter estimation is very useful since estimates may be conducted in certain highly heterogeneous geologic deposits. The obtained parameter value may be used with other data to characterize the subsurface hydrology at a site and to assess remedial alternatives.

Briefly stated, the bail test procedure entails rapidly removing a prescribed volume of water from a well and then recording the water level response in that same well. The water level response data are then analyzed to produce an estimate of the hydraulic conductivity of the soils immediately adjacent to the well.

Field Test Procedures

EQUIPMENT

The following equipment is required to conduct a bail test:

Bailing device that will produce 1 to 2 feet drawdown (a 2-foot long, 3-inch diameter bailer for a 4-inch well)
Data logger and field printer
Pressure transducers (appropriate pressure range)
Cable hangers
Interface probe
5-gallon bucket calibrated at 1/2-gallon increments
Container for bailed water (about 5 gallons per test. This includes well discharge plus equipment decon rinse)
Decontamination equipment and supplies: soap and water
Personal protective gear

TEST PROCEDURE

All field test data other than the water level response data shall be recorded on field bail test sheets. The test procedure is as follows:

Power, program, and test the data logger/transducer system (see logger operation manual). Decrease sampling frequency with time. Record the sampling scheme.

Record the logger channel corresponding to the well tested.

Record inner diameter of well casing.

Record the depth to water with interface probe.

Record the depth of well with interface probe.

Set transducer in well approximately 10 feet below water level securing the cable at the well head with the probe hanger. Record the actual height of water above the transducer off of the logger as in the previous step. Record the stabilized transducer reading.

Submerge a clean bailing device (bailer, pump intake hose, etc.) in the well. The water level in the well will rise and will register on the logger output.

Allow the water level to drop back to the original level. Determine this by reading the logger display.

To start the test, begin data logging program (see manual) and then remove by bailer or pump, a slug of water, from the well.

Measure the volume of water removed from the well with the calibrated bucket. Record the measurement. Transfer the water to a drum for disposal.

Cease data collection when the water level has returned to at least 80% of the pretest level. Determine the water level with the interface probe not the logger.

Check data storage with the field printer (see manual).

Remove and decontaminate equipment with soap and water. Drum all rinsate.

Analytical Procedure

EQUIPMENT

The following equipment is required to analyze bail test data:

Computer with appropriate port and cable for data logger down loading
Data logger down loading, data management, and analytical software

Technical references on bail test analysis.

DATA ANALYSIS

Data analysis entails the following:

Data logger down loading (see manual)
Data storage backup: copy disk
Data formatting and standardization with Lotus software
Date sotrage backup: copy disk
Calculate effective well radius
Plot data
Perform curve matching

CURVE MATCHING

All data shall be numerically matched to curves described in Bouwer and Rice (1) by a curve matching method described by Kemblowski and Klein (2), as well as visually matched to theoretical water level response curves presented in Cooper, et al. (3).

ASSUMPTIONS

The following assumptions are made as part of the analysis:

(Note: Only the most stringent of the numerous curve matching assumptions are mentioned.)

100% well screen efficiency
Negligible effects upon groundwater levels from any nearby pumping
Bouwer and Rice: steady-state groundwater flow
Cooper et al: confined aquifer, fully penetrating well

Report

The report will consist of:

Description of field technique
Plots of data
Description of analysis with assumptions
Table of estimated parameter values and corresponding well ID's
Discussion of inferred accuracy of parameter estimates, including reference to expected parameter value ranges

Test Accuracy

The accuracy of the results depends upon how well the assumptions are met. In general, the accuracy of the hydraulic conductivity estimates is expected to be within one order of magnitude of the true parameter values. Estimates of the storage are expected to be less accurate because of inaccuracies associated with estimating storage from the curves.

References

1) Bouwer, H., and Rice, R.C., A Slug Test For Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells, Water Resources Research, 12(3), 423-428, 1976

2) Kemblowski, M.W., and Klein, C.L., Automated Numerical Evaluation of slug Test Data, Ground Water, 26(4), 435

3) Cooper, H.H., Bredehoeft, J.D., and Papadopulos, I.S., Response of a Finite-Diameter Well to an Instantaneous Charge of Water, Water Resources Research, 3(1), 263-269, 1967

aloftus\bail.JM