MISSION VALLEY / ROCK COMPANY
ASPHALT COMPANY
READY MIX COMPANY

7999 ATHENOUR WAY SUNOL, CA 94586 (510) 862-2257

April 15, 1997

Mr. Scott O. Seery CHMM
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway Suite 250
Alameda, CA 94502-6577

Dear Mr. Seery:

Enclosed is one copy of the "Preliminary Site Assessment Report" prepared by Tank Protect Engineering for Mission Valley Rock Co.

The recommendations contained in this report may require some modification regarding excavation at SB-1 and SB-6 near our asphalt plant. We will seek a definition of the term "limited excavation" from Tank Protect. We are concerned that excavation in the area of SB-1 and SB-6 could result instability of the ground near the asphalt storage tanks.

At present we do not know the extent of these proposed excavations so we have not been able to assess the potential threat that they may present to the stability of the asphalt plant structures.

Very truly yours,
MISSION VALLEY ROCK CO.

W.M. Calvert

W.M. Calvert

PRELIMINARY SITE ASSESSMENT REPORT

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586 3-13-97

Prepared For:
MORT CALVERT
MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

Submitted By:
TANK PROTECT ENGINEERING
Of Northern California, Inc.
2821 WHIPPLE ROAD
UNION CITY, CA 94587
(510) 429-8088

March 13, 1997

Project Number 384

Lee N. Huckins
Registered Geologist

REGISTERED GEOLOGIST
LEE N.
HUCKINS
No. 6286
STATE OF CALIFORNIA

Expiration Date 5/31/97

Jeff J. Farhoomand, M.S.
Principal Engineer

PRELIMINARY SITE ASSESSMENT REPORT

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

Prepared For:
MR. MORT CALVERT
MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

March 13, 1997

This report has been prepared by the staff of **Tank Protect Engineering of Northern California, Inc.** under direction of an Engineer and/or Geologist whose seal(s) and/or signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

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APPENDICES

1.0 INTRODUCTION

The subject site is located at 799 Athenour Way in the City of Sunol in Alameda County, California (see Figure 1). The contact person for the site is Mr. Mort Calvert; telephone number (510) 862-2257.

This PRELIMINARY SITE ASSESSMENT REPORT (PSAR) presents site history, documents soil boring procedures and presents analytical results of soil and groundwater sampling.

2.0 SITE HISTORY

Tank Protect Engineering of Northern California, Inc. (TPE) was contracted by Mission Valley Rock (MVR) to remove two 10,000-gallon underground steel, diesel storage tanks and one 2,000-gallon underground steel, gasoline storage tank.

Because of obvious hydrocarbon contamination as evidenced by soil staining and odors from the excavation and the stockpiled soil, ACHCSA verbally authorized MVR to conduct overexcavation of the floor of the excavation to investigate for possible soil contamination. With the verbal approval of the ACHCSA and MVR, TPE conducted overexcavation activities on June 26, 1996. TPE excavated about 177 cyds of contaminated soil from the floor of the former diesel tanks and gasoline tank area. No horizontal excavation was conducted. Vertical excavation was conducted to an estimated maximum depth of about 15.5 feet (see Figure 2).

Verification sampling was conducted under the supervision of a representative from the ACHCSA. Six discrete verification soil samples were collected from the excavation sidewalls and floor at depths of 9.0 to 13.5 feet. Sixteen discrete verification soil samples were collected from the stockpiled soil for laboratory compositing into 4 composite samples (SP1-A,B,C,D through SP5-A,B,C,D). A "grab" groundwater sample (WS-1) was collected from the excavation at a depth of 10 feet (see Figure 2). Soil and groundwater samples were analyzed for total petroleum hydrocarbons as diesel

(TPHD), as gasoline (TPHG), benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl t-butyl ether (MTBE).

All discrete soil samples, with the exception of sample S-2, showed detectable limits of hydrocarbon contamination. TPHG was detected in soil samples S-1 and S-3 through S-6 in concentrations of 170 parts per million (ppm), 16 ppm, 790 ppm, 130 ppm and 670 ppm, respectively. TPHD was detected in samples S-4 through S-6 at concentrations of 12 ppm, 450 ppm and 49 ppm, respectively. Some or all BTEX chemicals were detected (see Table 1), with sample S-4 showing the highest detection levels. MTBE was nondetectable in all samples.

Chemical analysis of stockpile soil detected TPHG at a concentrations of 160 ppm, 4.5 ppm, 49 ppm, 280 ppm and 47 ppm for SP-1 through SP-5, respectively. TPHD was detected in stockpile samples SP-1 through SP-5 at concentrations of 150 ppm, 90 ppm, 39 ppm, 16 ppm and 45 ppm, respectively. Some or all BTEX chemicals were detected (see Table 1). MTBE was nondetectable in all samples.

Chemical analysis of "grab" groundwater sample WS-1 detected TPHG and TPHD at concentrations of 12,000 parts per billion (ppb) and 1,200 ppb, respectively. All BTEX chemicals were detected (see Table 2), and results for MTBE were nondetectable.

All soil and groundwater sample analytical results are summarized in Tables 1 and 2.

Tank removal and subsequent soil sampling activities are documented in TPE's August 12, 1996 TANK CLOSURE REPORT, MISSION VALLEY ROCK, 799 ATHENOUR WAY, SUNOL, CA 94586.

Because of soil and groundwater samples obtained during tank removal showed concentrations of hydrocarbons to be present, the Alameda County Health Care Services Agency (ACHCSA) requested on October 28, 1996 that a environmental investigation be conducted to determine the lateral and vertical extent of soil and groundwater impact resulting from a release at the site.

In response to ACHCSA request, TPE prepared a December 4, 1996 WORKPLAN FOR SOIL BORING INVESTIGATION AND STOCKPILE SOIL REMEDIATION,

MISSION VALLEY ROCK, 799 ATHENOUR WAY, SUNOL, CA 94586 proposing a scope of work to delineate the vertical and horizontal extent of soil and groundwater hydrocarbon contamination.

On December 13, 1996 the ACHCSA in a letter titled MISSION VALLEY ROCK, SUNOL FACILITY (see Appendix A) approved the workplan with the following modifications: 1) add an additional boring (SB-6) at the south end of the former tank excavation; and 2) adjust the spatial placement of the remaining borings. These modifications were intended to provide the coverage necessary to reflect observations made at the time of the underground storage tank closures.

3.0 SCOPE OF WORK

As a investigation of the vertical and horizontal extent of soil and groundwater contamination, TPE conducted the following scope of work:

- Obtained soil boring permits from the Alameda County Flood Control and Water Conservation District, Water Resources Management, Zone 7 (Zone 7).
- Drilled 6 exploratory soil borings to the depth of groundwater (approximately 15 feet) to further investigate the horizontal and vertical extent of contamination.
- Collected soil samples from each boring at approximately 5-foot depth intervals, changes in lithology, and occurrence of apparent soil contamination for construction of a boring log and selection for chemical analysis.
- Collected a groundwater "grab" sample from each boring for chemical analysis.
- Sealed the soil borings to ground surface with neat Portland cement.

- Analyzed soil and groundwater samples for TPHD, TPHG, BTEX, and MTBE.

- Prepared this PSAR.

Details of the proposed scope of work are presented below.

3.1 Predrilling Activities

Before commencing drilling activities, TPE obtained soil boring permits from Zone 7 and notified ACHCSA, so that a representative could be present to observe the soil borings, sampling procedures and site conditions.

3.2 Rationale for Soil Boring Locations

Soil borings, SB-1 through SB-5, were located to further delineate the extent of vadose zone hydrocarbon contamination defined in soil samples S-1 through S-6. SB-6 was located by ACHCSA to reflect the observations made at the time of the underground tank closures. Excavation of the southern portion of the former underground storage tank complex was conducted during tank removal as visible hydrocarbon staining and odors were noticeable at the time of tank removal (see Figure 3).

3.3 Soil Boring and Sampling Procedures

The exploratory soil borings were drilled to depths of about 15 feet by a State of California licensed water well driller (C-57 Water Well Driller contractor's license) using 7-inch diameter, solid-flight auger drilling equipment. Solid-flight augers were selected by the driller. The augers were steam-cleaned before drilling each boring to minimize the potential of cross-contamination between borings or introducing offsite contamination to the initial boring. Representative soil samples were collected for chemical analyses in the vadose zone at approximately 5-foot depth intervals below the ground surface, at changes in lithology, and the occurrence of apparent hydrocarbon

contamination by advancing a California split-spoon sampler, equipped with 2-inch diameter by 6-inch long brass tubes, into the undisturbed soil beyond the tip of the augers. The sampling equipment was cleaned before each sampling event by washing with an Alconox® solution and rinsing in tap water. Appendices B and C document TPE's protocols relative to hollow-stem auger drilling and soil sampling procedures, and waste handling and decontamination procedures, respectively.

All soil borings were sealed to ground surface by tremie with neat cement. Drill cuttings were added to onsite stockpiled soil for remediation at a future date.

Detailed boring logs were prepared from auger return material and split-spoon samples. The soil were logged according to the Unified Soil Classification System under the direction of a California Registered Geologist (see Appendix D).

3.3.1 Soil Sample Selection for Chemical Analyses

All vadose zone soil core samples were field-screened for the presence of apparent hydrocarbon soil contamination based on visible hydrocarbon stains, odors, and headspace analysis for volatile organic compounds using a Gastech, Inc., Trace-Techtor hydrocarbon vapor tester (HVT). Headspace analyses were conducted by partially filling a quart-size plastic bag with a soil sample, sealing the bag air tight, and warming the bag to promote volatilization of hydrocarbons, if any, into the air space of the bag. After allowing for volatilization, the headspace of the bag was sampled by the HVT and the response recorded in ppm.

Based upon groundwater levels within the original excavation at about 10 feet, soil samples from 6.0 to 6.5 feet and 10.0 to 11.5 feet were selected.

Selected samples were preserved in the brass tubes by quickly covering the open ends with Teflon sheeting and capping with plastic end-caps. The tubes were labeled to show site name, project number, date and time collected, sample name and depth, and sampler name; sealed in quart-size plastic bags; and placed in an iced-cooler for transport to a California Department of Health Services (DHS) certified laboratory accompanied by chain-of-custody documentation.

Appendix E documents TPE's protocol relative to sample handling procedures.

3.3.1.1 Chemical Analyses

Soil samples were analyzed for TPHD and TPHG by the United States Environmental Protection Agency (EPA) Methods 8015M and for BTEX and MTBE by EPA Method 8020.

3.4 Groundwater "Grab" Sampling for Chemical Analyses

Groundwater grab samples were obtained after each borehole had reached groundwater by using a dedicated teflon bailer to collect the sample from the boring. Since dedicated bailers were used for each groundwater sample, no decontamination of sampling equipment was necessary between borings. The water samples were collected in sterilized 1-liter glass bottles and two 40-milliliter glass vials having Teflon-lined screw caps, filled with no headspace, and labeled to include: date, time, sample location, project number, and sampler name. The samples were immediately stored in an iced-cooler for transport to a DHS certified laboratory accompanied by chain-of-custody documentation. Appendix E documents TPE's protocol relative to sample handling procedures

Appendices C and F document TPE's protocols relative to waste handling and decontamination procedures, and quality assurance and quality control procedures, respectively.

3.4.1 Chemical Analyses

The groundwater "grab" samples were analyzed for TPHD and TPHG by EPA Method 8015M and for BTEX and MTBE by EPA Method 602.

4.0 REMEDIATION OF STOCKPILED SOIL

Remediation of stockpiled soil will be conducted in the near future. Stockpile soil remediation was not conducted due to the large amount of precipitation during the last several months.

5.0 FINDINGS

5.1 Regional Setting

The site is located in the Coast Range physiographic Province of California. The site at an elevation of about 260 feet above MSL and has a southeasterly to northwesterly topographic gradient. The largest surface water body is the San Antonio Reservoir which lies approximately 1.5 miles to the east northeast. Alameda Creek, a seasonal creek, runs through the property about 2000 feet east northeast from the former underground storage tank complex.

5.2 Site Geology and Hydrogeology

Figure 3 presents the locations of cross section A-A'. As shown in cross-sections A-A' site stratigraphy consists of slightly weathered, poorly sorted, irregularly interbedded lenses of clay, silt, sand and gravels (see figure 4). Boring SB-3 was located in a backfilled section of a silt pond and SB-4 was located in area that was backfilled with material from the asphalt plant, based on conversations with Mr. Calvert.

5.3 Groundwater Levels

On January 15, 1997 TPE personnel noticed that the tank excavation was filled with water about 4 feet from the top of the excavation. Water in the borings was measured from 3.11 feet below ground surface (bgs) to 6.70 feet bgs. Water levels at the time of tank removal were about 10 feet bgs. Elevated water levels in the

boreholes were probably due to the increased amounts of precipitation during the months of December and January.

5.4 Results of Soil Chemical Analyses

TPHG was detected in samples SB-1(10.0 - 10.5), SB-4(10.0 - 10.50), SB-5(11.0 - 11.5), SB-6(6.0 - 6.5) and SB-6(10.0 - 10.5) in concentrations of 230 ppm, 2.6 ppm, 110 ppm, 160 ppm, and 5.4 ppm. TPHD was detected in all soil samples with the exception of soil samples SB-3(10.0 - 10.5), SB-4(6.0 - 6.5) and soil boring SB-5 ranging from 25 ppm in soil sample SB-2(6.0 to 6.5) to 2,500 ppm in soil sample SB-6(6.0-6.5).

Benzene and toluene were detected in soil samples SB-1(10.0-10.5) and SB-5(11.0-11.5) at concentrations of 1.9 ppm and 1.0 ppm and .550 ppm and .500 ppm, respectively. Ethylbenzene was detected in SB-1(10.0-10.5), SB-2(6.0-6.5) and SB-5(11.0-11.5) at concentrations of 12 ppm, .0072 ppm, and .690 ppm, respectively. Xylenes were detected in SB-1(10.0-10.5), SB-6(6.0-6.5) and SB-5 (11.0-11.5) at concentrations of 5.0 ppm, .320 ppm and .380 ppm, respectively. MTBE was detected in soil sample SB-1(6.0-6.5) in a concentration of 0.062 ppm. All other chemical analyses were non-detectable.

Results of soil chemical analyses are summarized in Table 1 and documented with certified analytical reports and chain-of-custodies in Appendix G.

Results of soil chemical analyses for TPHD, TPHG and benzene are also shown as isoconcentration maps on Figures 5 through 10.

5.5 Results of Groundwater "Grab" Sample Analyses

TPHG was detected in all borings in concentrations ranging from 380 parts per billion to 400,000 ppb. TPHD was detected in all borings ranging from nondetectable to 500,000 ppb. All borings with the exception of SB-4 detected some or all BTEX and MTBE chemicals. The reader is referred to Table 2 for a summary of BTEX chemical and MTBE concentrations.

Results of water chemical analyses are summarized in Table 2 and documented with a certified analytical report and chain-of-custody in Appendix G.

Results of groundwater chemical analyses for TPHD, TPHG and benzene are also shown as isoconcentration maps on Figures 11, 12 and 13, respectively.

6.0 CONCLUSIONS

TPHD concentrations in soil samples collected from the borings ranged from nondetectable to 2,500 ppm. TPHG concentrations ranged from nondetectable to 230 ppm. All BTEX chemicals were detected in soil samples SB-1(10.0-10.5) and SB-5(11.0-11.5). MTBE was only detected in soil sample SB-1(6.0-6.5) at a concentration of 0.062 ppm. The lack of MTBE and BTEX chemicals in soil samples collected from the soil borings is probably due to the elevated water levels at the site. Soil samples collected from the soil borings were in the most part from beneath the elevated water level, normally the vadose zone. The elevated water levels within the borings are probably due the large amount of precipitation received during the month of December and January.

Groundwater "grab" samples from the borings detected TPHD ranging from nondetectable to 500,000 ppb. TPHG ranged from 380 ppb to 400,000 ppb. Some or all BTEX chemical and MTBE were detected in all grab samples with the exception of SB-4. TPHG contamination in grab groundwater samples from previously backfilled areas (borings SB-3 and SB-4) was lower in concentration than in the other borings.

Hydrocarbon contamination in the vadose zone has been defined by borings SB-1 and SB-6. Groundwater contamination remains undefined at the site.

7.0 RECOMMENDATIONS

TPE recommends limited excavation in the area of SB-1 and SB-6 to remove concentrations of TPHD and TPHG from within the vadose zone. Limited groundwater pumping of the excavation water will aid in site remediation.

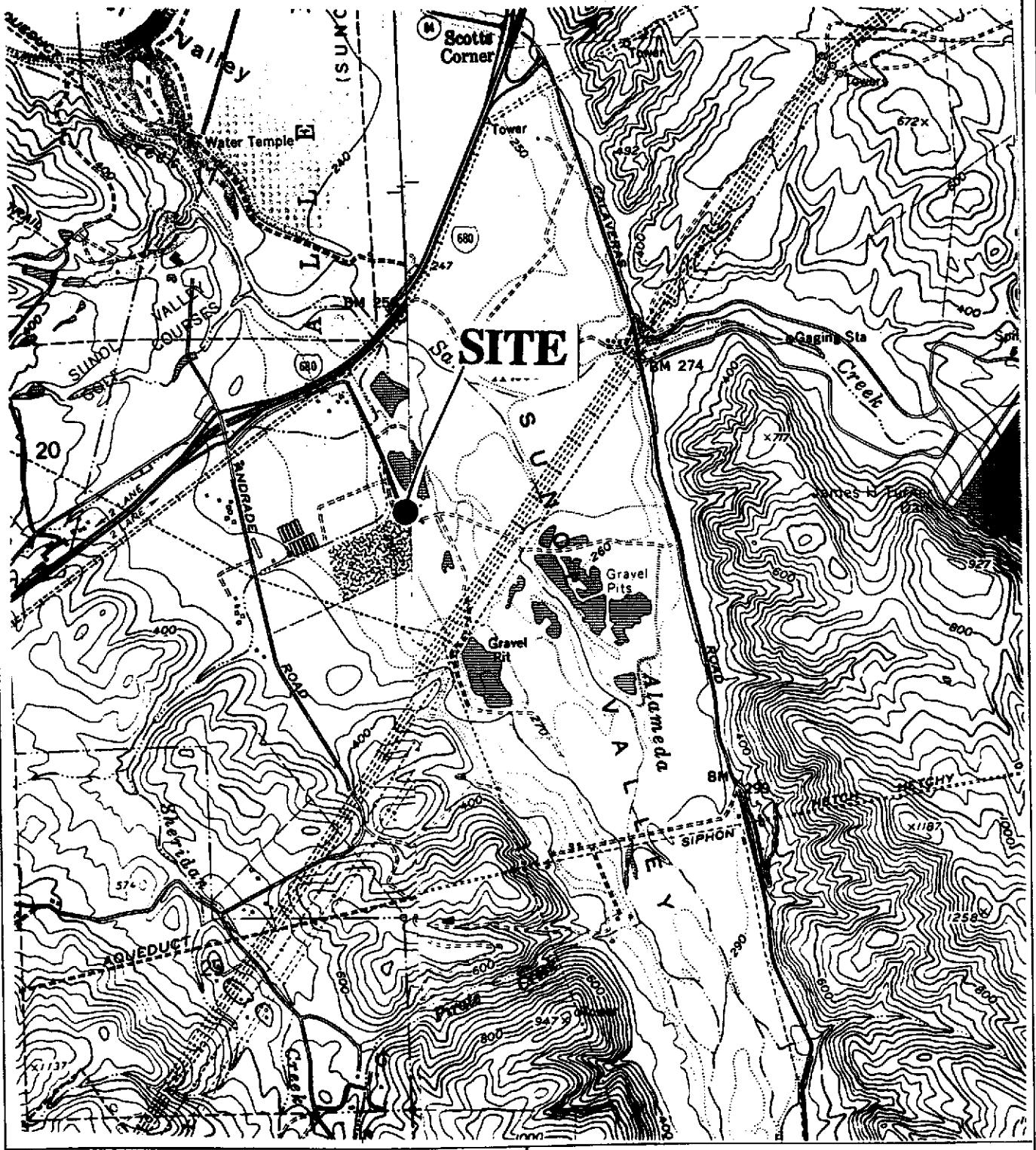
TPE recommends that 3 wells be installed at the site to monitor chemical concentrations, groundwater flow directions and gradient. TPE recommends that the wells be installed in the summer months after limited excavation has been conducted in order to place the screen interval of the wells at proper depths. Wells located within the backfilled areas may influence groundwater flow direction and gradient determinations.

8.0 STUDY LIMITATIONS

This PSAR is based on subsurface exploration, laboratory analyses of soil and groundwater samples, and subsurface geologic correlations. The chemical analytical results for the samples are considered applicable to that borehole or location from which they were collected. The soil encountered in the borings is believed to be representative of the site; however, the soil may vary in character between observation points. The conclusions contained herein are based on the field observations, analytical data, and professional judgement which is in accordance with current standards of professional practice. Representations made of soil and groundwater conditions between sample locations are extrapolations based on professional opinions and judgements and accepted industry practice. Therefore, TPE cannot and will not provide guarantees, certifications, or warranties that the subject property is or is not free of all contaminated soil or groundwater and such assessments are provided only in order that the client may make an informed decision.

The extent of testing and data collection directly affects the statistical confidence level of all work performed. As a practical matter, to reach or even approach a 100 percent statistical confidence level would be prohibitively expensive. Therefore, if a reassessment of the subject property becomes necessary in the future, TPE will not reassess the area at its own cost. No other warranty is expressed or implied.

The findings and conclusions of this report are valid as of the present time; however, the passing of time could change the conditions of the subsurface due to natural processes or the influence of man. Accordingly, the findings of this report may be invalidated, wholly or partly, by changes beyond TPE's control. Therefore, this report should not be relied upon after an extended period of time without being reviewed by a Civil Engineer or Registered Geologist.



LEGEND

REFERENCE: USGS 7.5 MINUTE
SERIES QUADRANGLE MAPS
LA COSTA VALLEY, CALIFORNIA
PHOTOREVISED 1968
NILES, CALIFORNIA
PHOTOREVISED 1980

N

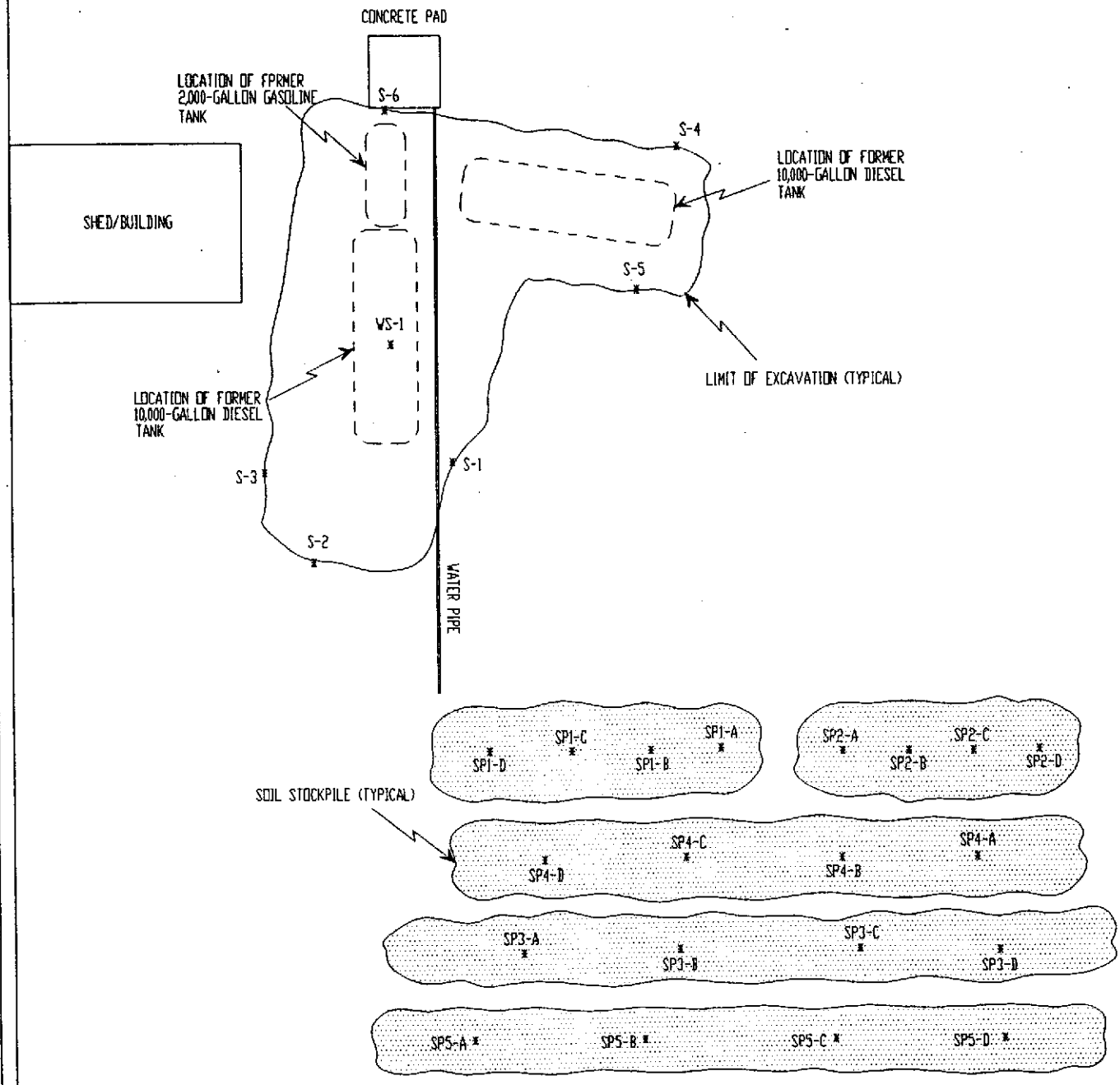
0 2,000
SCALE IN FEET

TANK PROTECT ENGINEERING

SITE VICINITY MAP

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	1
FILE #	384-1N
DRAWN BY	VK
CHECKED BY	LNH



LEGEND

SP1-A * NAME AND LOCATION OF SOIL SAMPLE

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOLE, CA 94586

DATE	3/3/97
FIGURE	2
FILE #	384-2N
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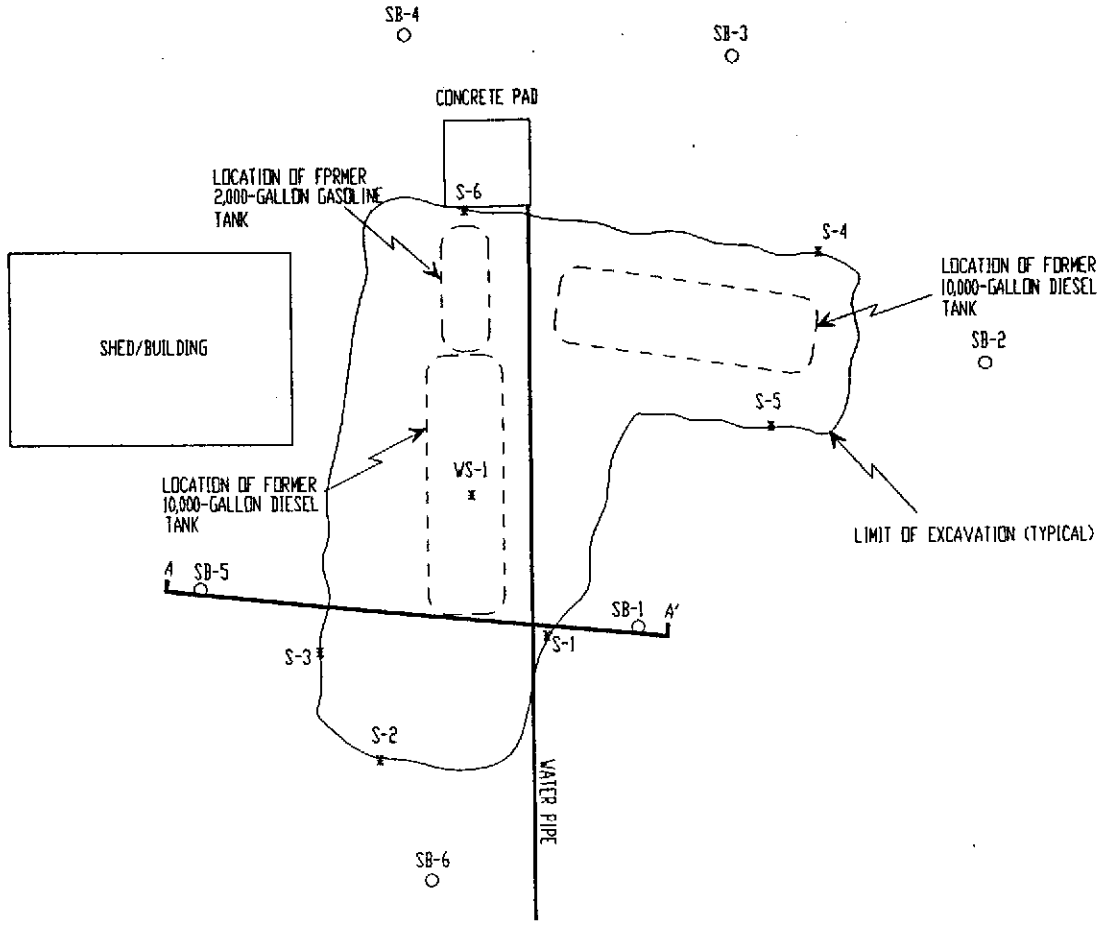
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

A ⌐ ¬ A' LOCATION OF GEOLOGIC CROSS SECTION

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN
LOCATION OF CROSS SECTION A-A'

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	3
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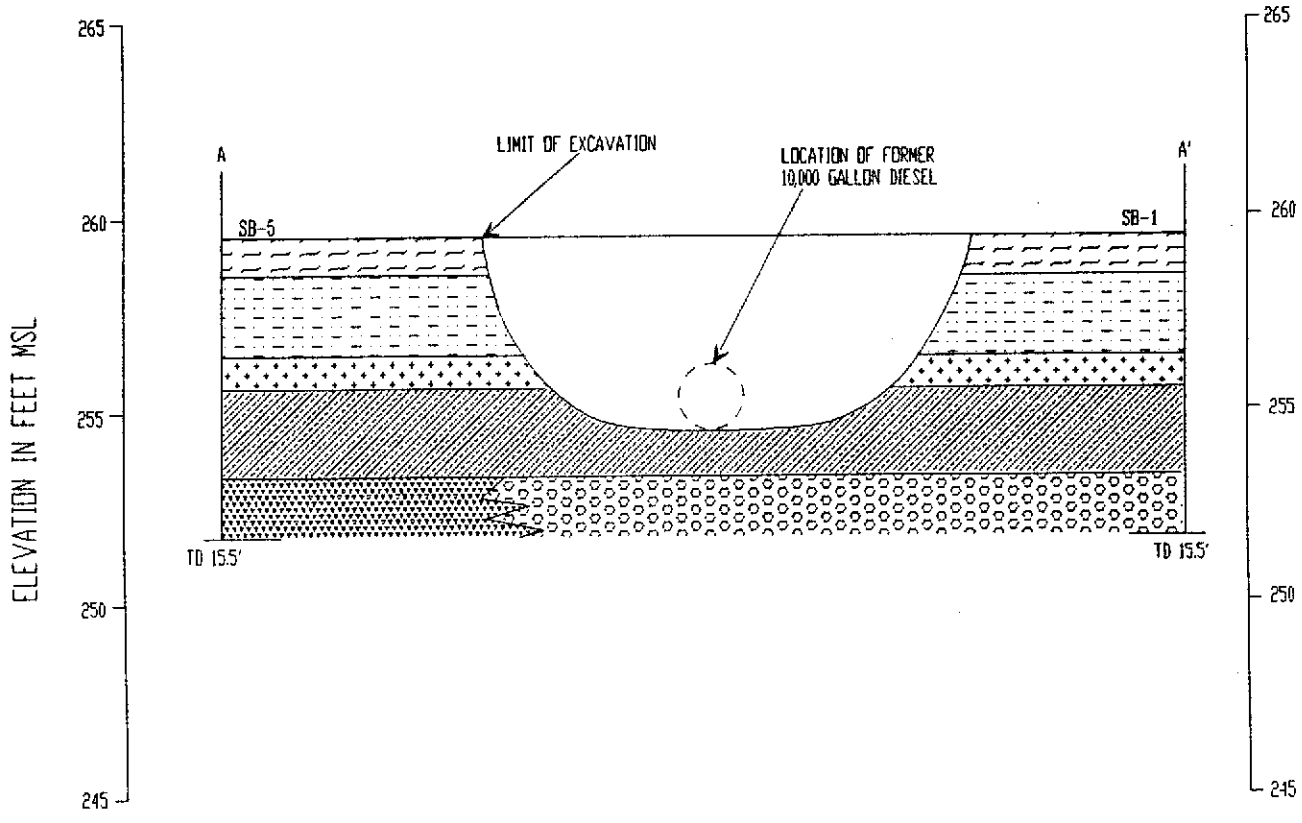

LEGEND

BOREHOLE

AGGREAGATE BASE (GW)
SANDY SILT (MH)
GRAVELLY CLAY (GC/CL)
GRAVELLY SAND (SP)
GRAVEL (GW)
CLAYEY SAND (SC)
CONTACT

NOTE: SEE FIGURE 3 FOR LOCATION OF GEOLOGIC CROSS SECTION

0 10
SCALE IN FEET

VERTICAL EXAGGERATION 2X
HORIZONTA EXAGGERATION 2X

TANK PROTECT ENGINEERING	MISSION VALLEY ROCK 799 ATHENDUR WAY SUNOL, CA 94586
SITE PLAN: GEOLOGIC CROSS SECTION A-A'	

DATE	3/3/97
FIGURE	4
FILE #	384-4N
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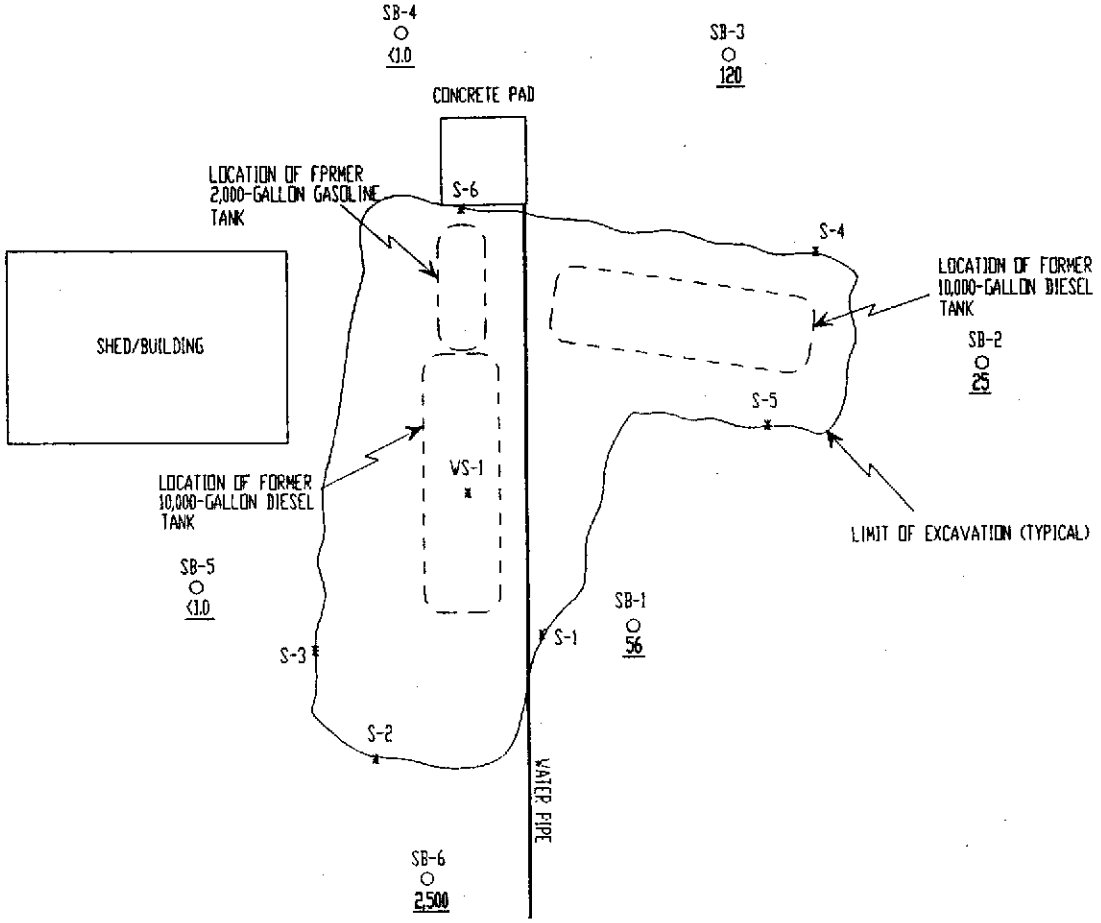
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

56 CONCENTRATION (ppm)

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
TPHD CONCENTRATIONS
5-6.5' DEPTH

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	5
FILE #	384-5N
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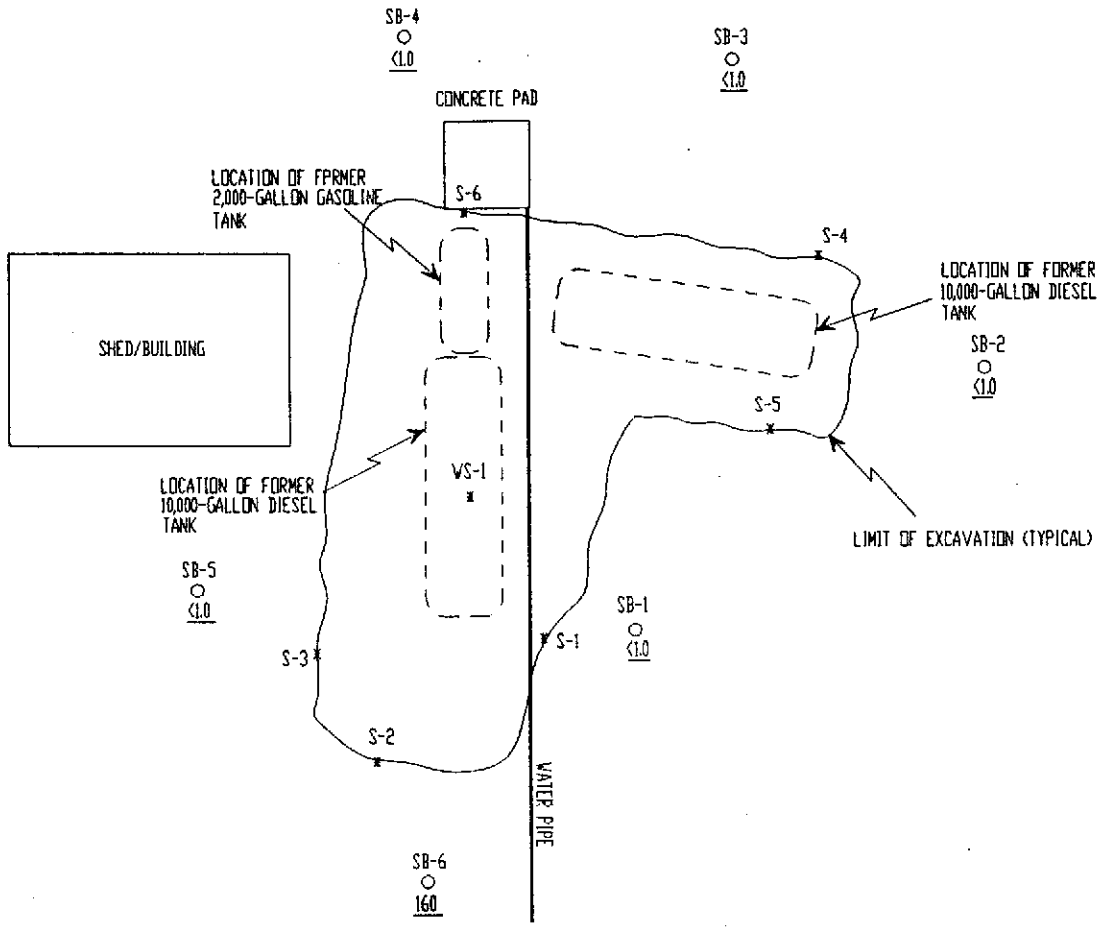
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

<1.0 CONCENTRATION (ppm)

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
TPHG CONCENTRATIONS
5-6.5' DEPTH (ppm)

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	6
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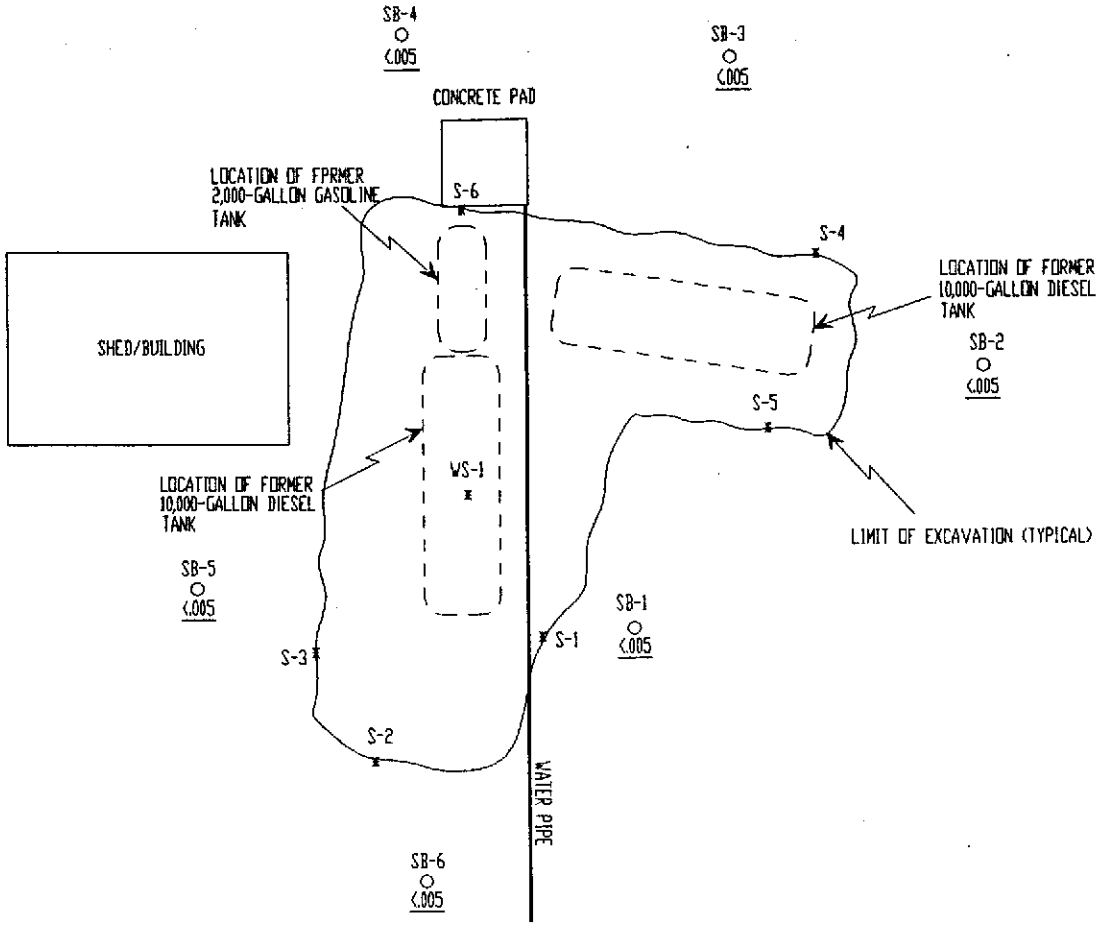


LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

<.005 CONCENTRATION (ppm)

-N-

0 20

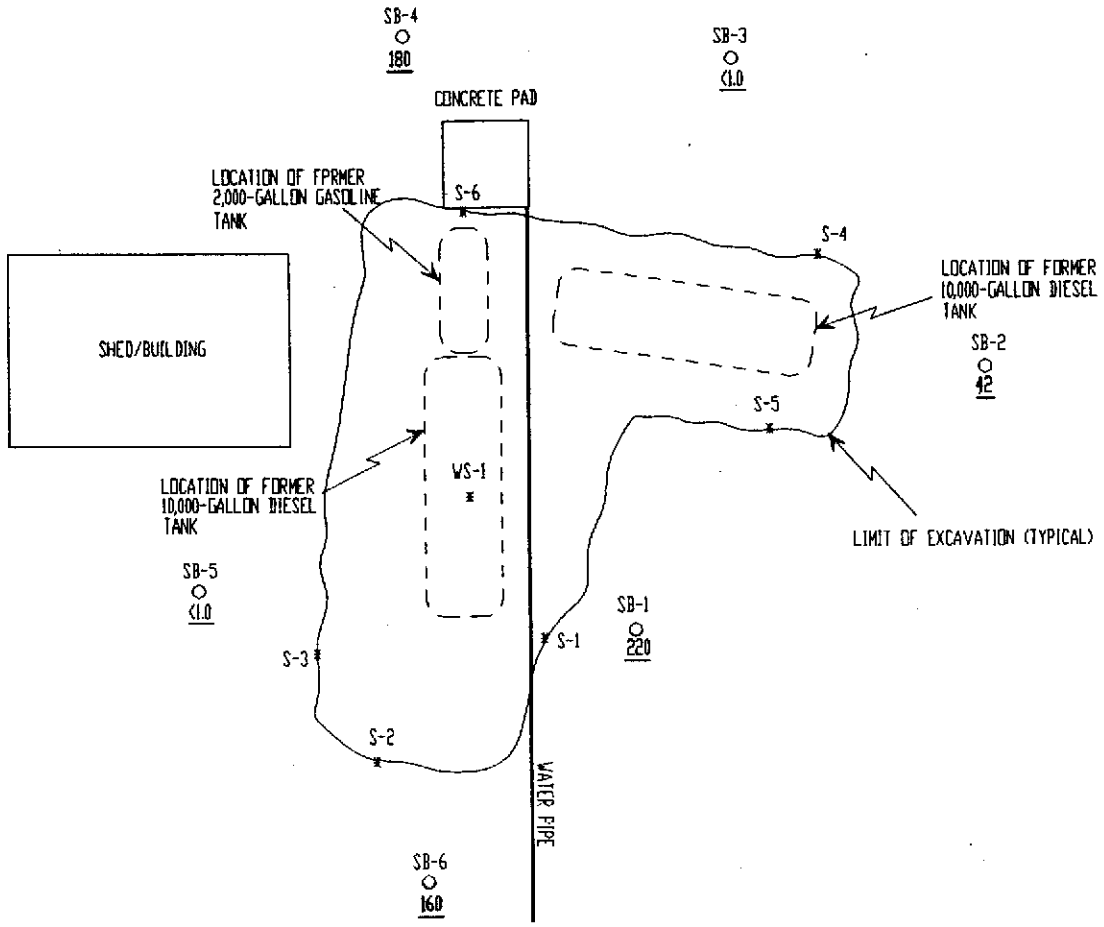
APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
BENZENE CONCENTRATIONS
5-6.5' DEPTH

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	7
FILE #	384-7N
DRAWN BY	VK
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

220 CONCENTRATION (ppm)

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
TPHD CONCENTRATIONS
10-11.5' DEPTH

MISSION VALLEY ROCK
799 ATHENDUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	B
FILE #	384-8N
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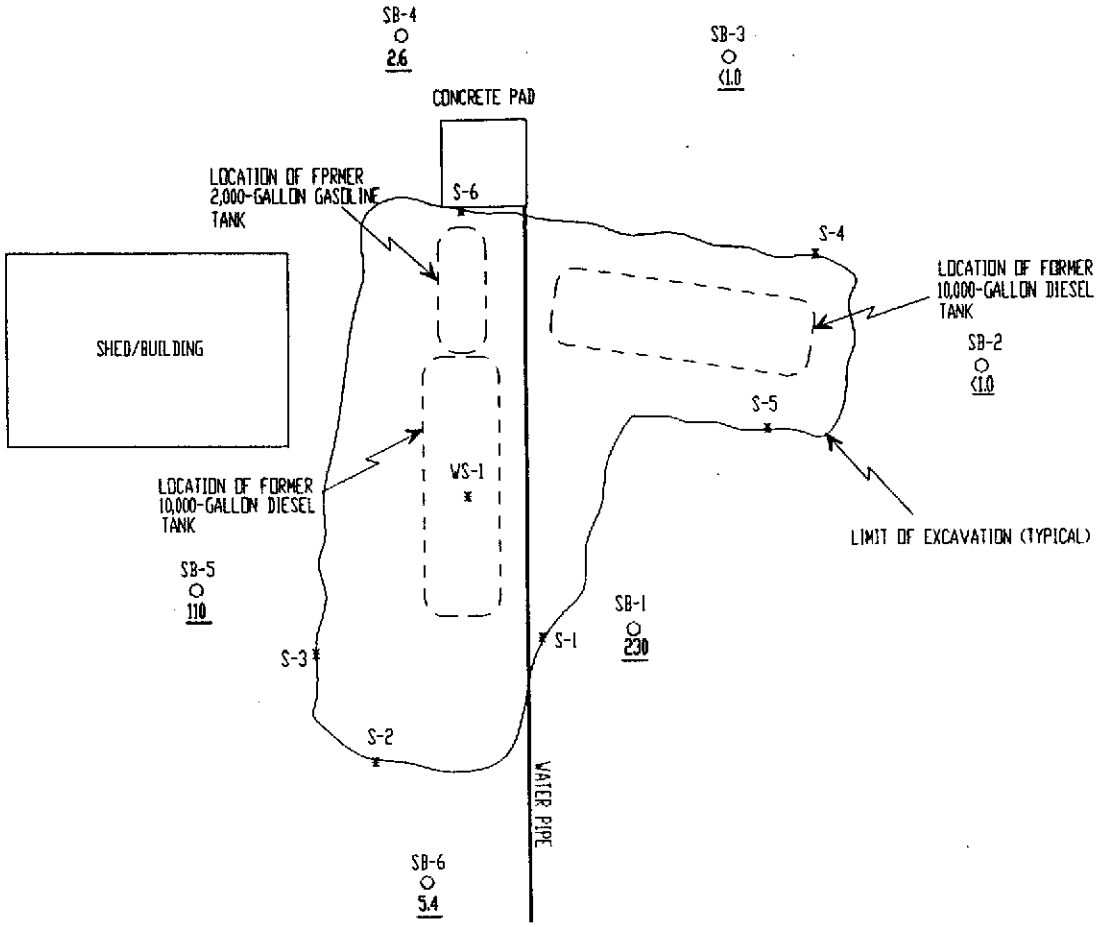

LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

230 CONCENTRATION (ppm)

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
TPHG CONCENTRATIONS
10-11.5' DEPTH

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	9
FILE #	384-9N
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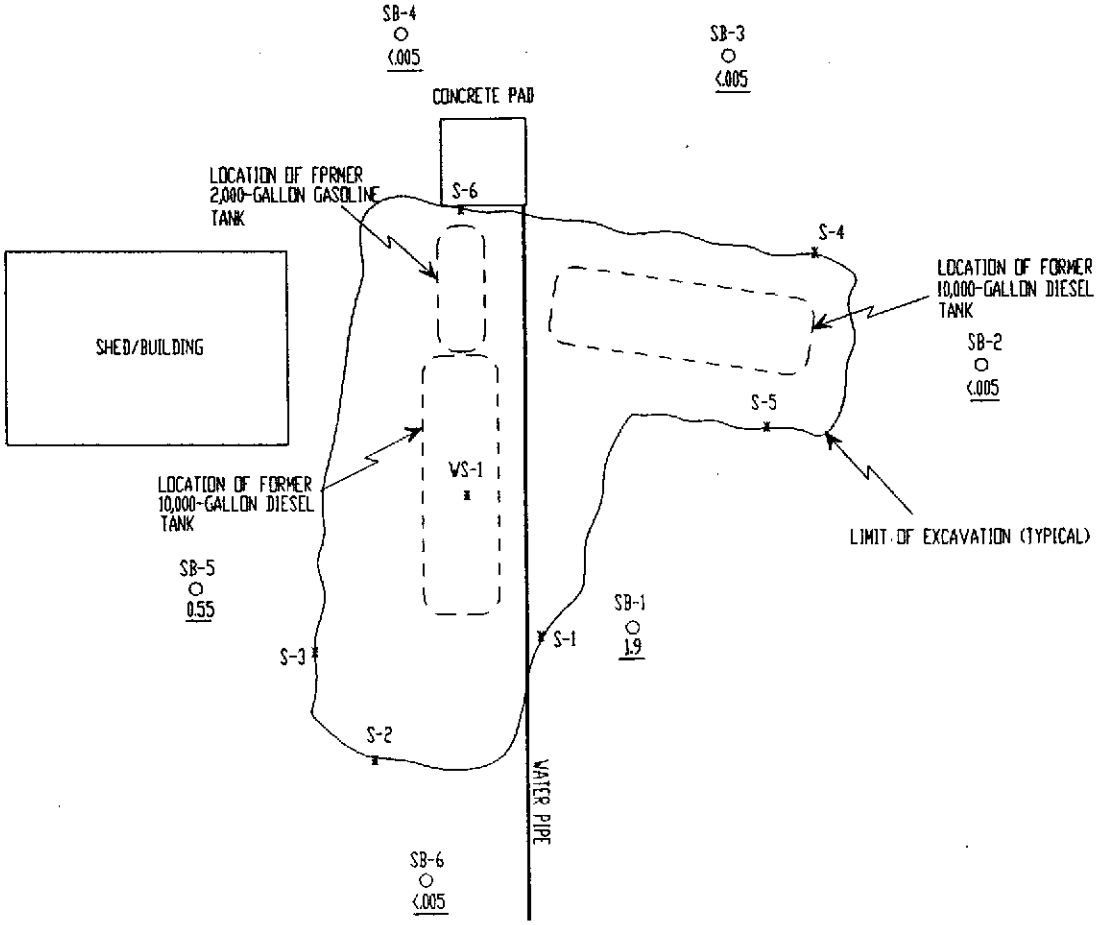
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

1.9 CONCENTRATION (ppm)

-N-

0 20

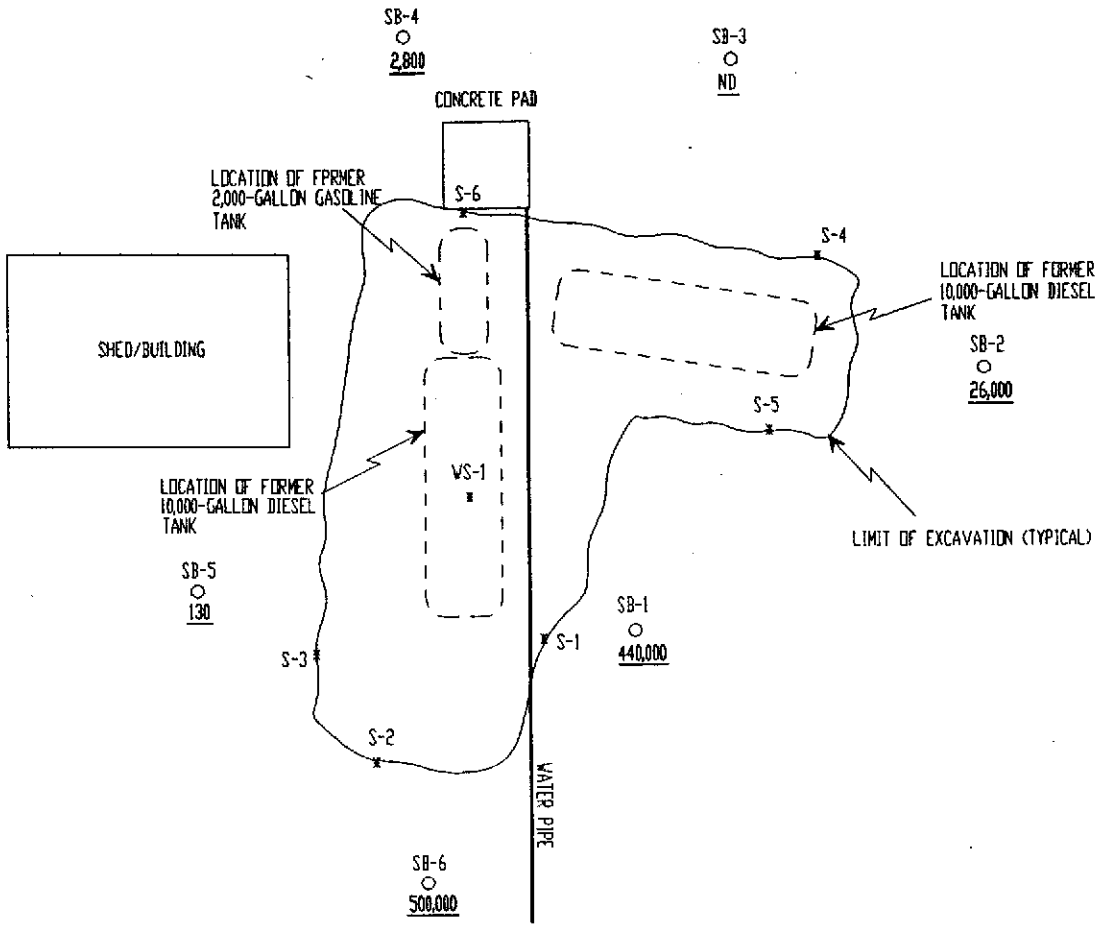
APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
BENZENE CONCENTRATION
10-11.5' DEPTH

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	10
FILE #	384-10N
DRAWN BY	VK
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

440,000 CONCENTRATION (ppb)

-N-

0 20

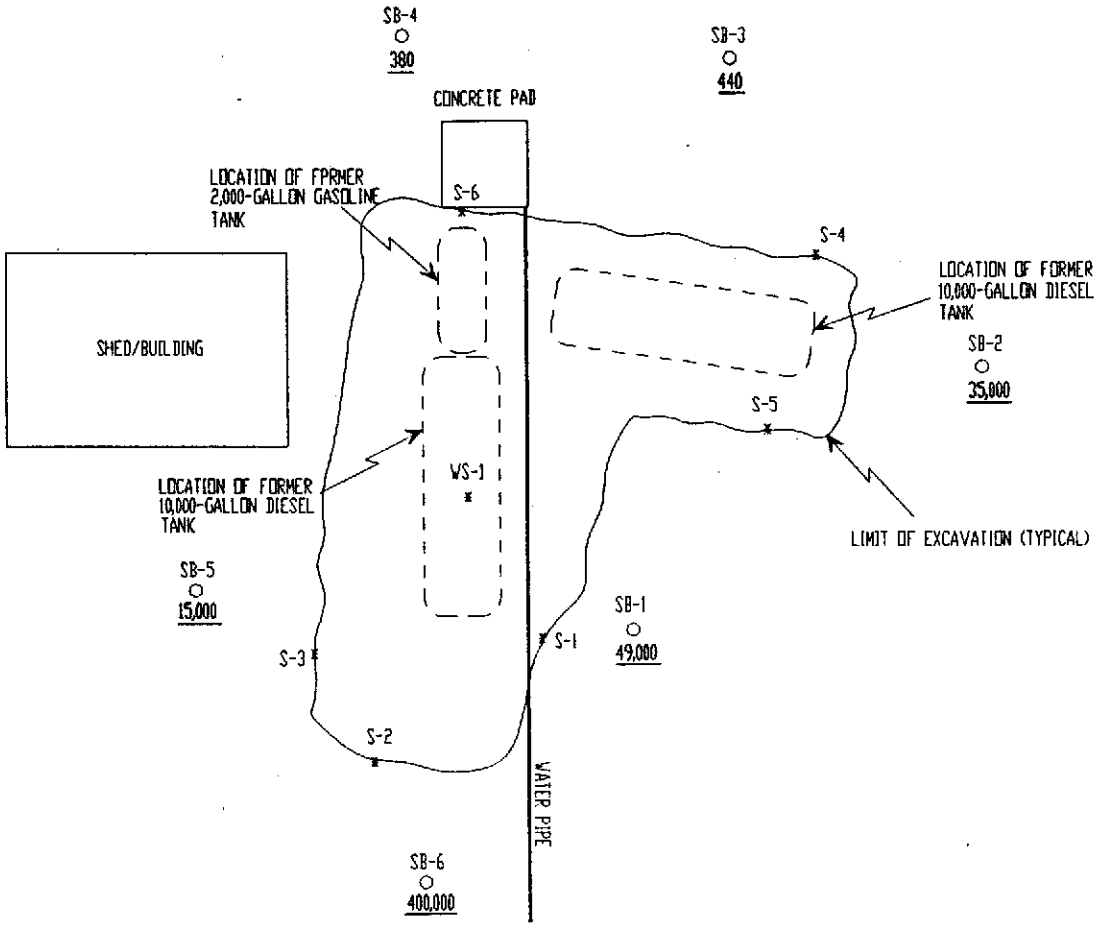
APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
GROUNDWATER TPHD CONCENTRATIONS

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	11
FILE #	384-11N
DRAWN BY	VK
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

49,000 CONCENTRATION (ppb)

-N-

0 20

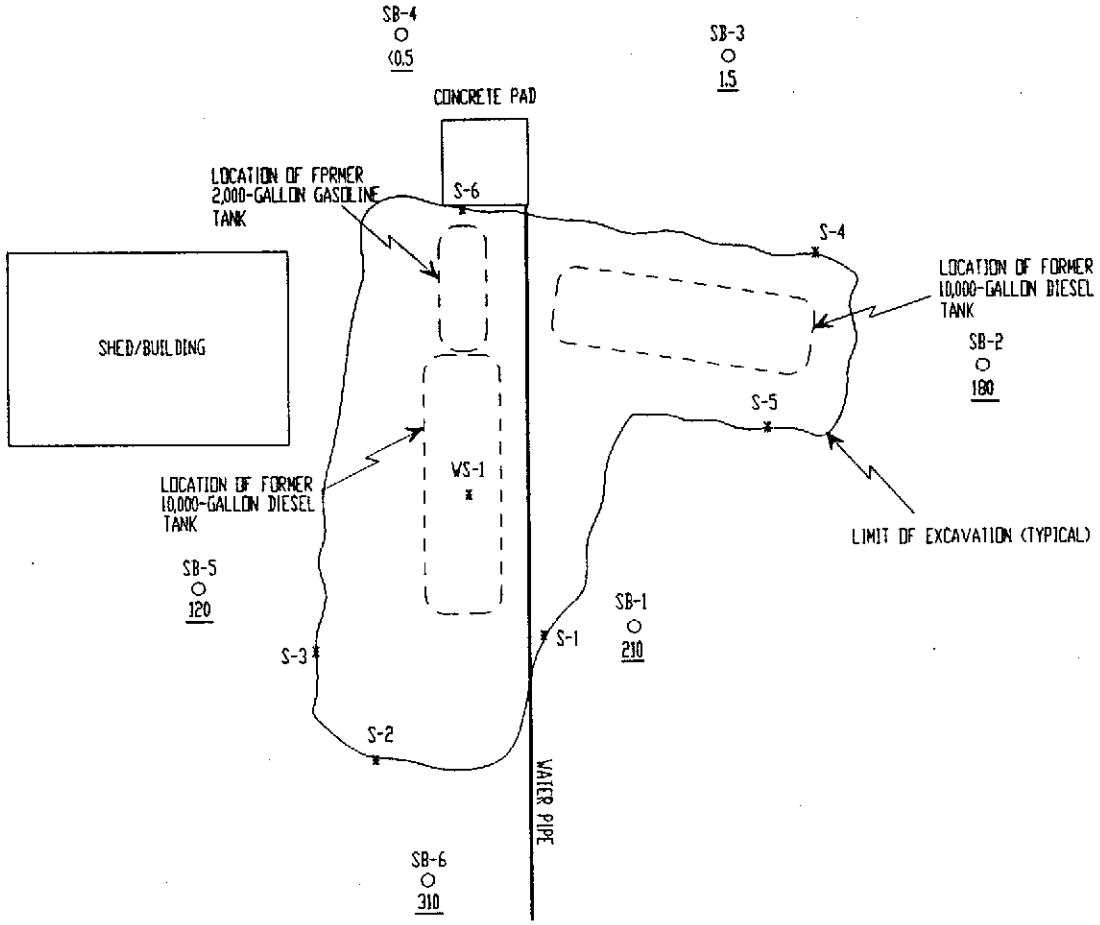
APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
GROUNDWATER TPHG CONCENTRATIONS

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	12
FILE #	384-12N
DRAWN BY	VK
CHECKED BY	LNH



LEGEND

S-1 * NAME AND LOCATION OF SOIL SAMPLE

SB-1 ○ SOIL BORING LOCATIONS

210 CONCENTRATION (ppb)

-N-

0 20

APPROXIMATE SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN:
GROUNDWATER BENZENE CONCENTRATIONS

MISSION VALLEY ROCK
799 ATHENOUR WAY
SUNOL, CA 94586

DATE	3/3/97
FIGURE	13
FILE #	384-13N
DRAWN BY	VK
CHECKED BY	LNH

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
(ppm[1])

Sample ID Name	Date	Depth (Feet)	TPHG	TPHD	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
S-1	06/18/96	13.5-14.0	170	<1.0	0.065	0.075	0.14	0.23	<0.005
S-2	06/18/96	13.0-13.5	<1.0	<1.0	<.0050	<.0050	<.0050	<.0050	<0.005
S-3	06/18/96	12.5-13.0	16	<1.0	0.0061	0.0071	0.027	0.047	<0.005
S-4	06/18/96	12.0-12.5	790	12	1.1	2.8	4.4	14	<0.005
S-5	06/18/96	12.0-12.5	130	450	0.6	0.21	0.7	28	<0.005
S-6	06/18/96	9.0-9.5	670	49	0.26	0.077	0.2	0.44	<0.005
SP1-A,B,C,D	06/18/96	2.0-2.5	160	150	0.033	0.028	0.13	0.19	<0.005
SP2-A,B,C,D	06/18/96	2.0-2.5	4.5	90	0.0096	<0.005	0.014	0.058	<0.005
SP3-A,B,C,D	06/18/96	2.0-2.5	49	39	0.021	0.023	0.12	0.13	<0.005
SP4-A,B,C,D	06/18/96	2.0-2.5	280	16	0.53	0.019	2.1	3.3	<0.005
SP5-A,B,C,D	06/26/96	2.0-2.5	47	45	0.35	0.13	0.53	1.6	<0.005
SB-1	01/15/97	6.0-6.5	<1.0	56	<0.005	<0.005	<0.005	<0.005	0.062
SB-1	01/15/97	10.0-10.5	230	220	1.9	1.0	12	5.0	<0.05
SB-2	01/15/97	6.0-6.5	<1.0	25	<0.005	<0.005	0.0072	<0.005	<0.05
SB-2	01/15/97	10.0-10.5	<1.0	42	<0.005	<0.005	<0.005	<0.005	<0.05
SB-3	01/15/97	6.0-6.5	<1.0	120	<0.005	<0.005	<0.005	<0.005	<0.05
SB-3	01/15/97	10.0-10.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-4	01/15/97	6.0-6.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05

← borings

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
(ppm[1])

Sample ID Name	Date	Depth (Feet)	TPHG	TPHD	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
SB-4	01/15/97	10.0-10.5	2.6	180	<0.005	<0.005	<0.005	<0.005	<0.05
SB-5	01/15/97	6.0-6.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05
SB-5	01/15/97	11.0-11.5	110	<1.0	0.55	0.50	0.69	0.38	<0.05
SB-6	01/15/97	6.0-6.5	160	2,500	<0.005	<0.005	<0.005	0.32	<0.05
SB-6	01/15/97	10.0-10.5	5.4	160	<0.005	<0.005	<0.005	<0.005	<0.05

[1] PARTS PER MILLION

TABLE 2
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
(ppb)[1]

Sample ID Name	Date	DEPTH (FEET)	TPHG	TPHD	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
WS-1	06/18/96	10.0-10.5	12,000	1,200	35	26	29	72	<0.5
SB-1	01/15/97	---	49,000	440,000	210	<0.5	570	200	<5.0
SB-2	01/15/97	---	35,000	26,000	180	220	1,100	2,000	710
SB-3	01/15/97	---	440	<50.0	1.5	0.93	7.2	13	11
SB-4	01/15/97	---	380	2,800	<0.5	<0.5	<0.5	<0.5	<5.0
SB-5	01/15/97	---	15,000	130	120	40	1,200	300	<5.0
SB-6	01/15/97	---	400,000	500,000	310	250	<0.5	<0.5	<5.0

[1] PARTS PER BILLION

APPENDIX A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTER, DATED DECEMBER 13, 1996

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

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

December 13, 1996

STID 2786

Mr. William M. Calvert
Mission Valley Rock
7999 Athenour Way
Sunol, CA 94586

RE: MISSION VALLEY ROCK, SUNOL FACILITY

Dear Mr. Calvert:

Thank you for submitting a copy of the December 4, 1996 Tank Protect Engineering (TPE) work plan for conducting a preliminary site assessment (PSA) and soil stockpile treatment. This work plan, submitted in response to the October 28, 1996 request from this office for such, proposes, in addition to the stockpile treatment and sampling plan, the advancement of 5 soil borings about the former underground storage tank (UST) cluster with soil and water samples collected from each.

After review of the case file, a determination was made to: 1) add an additional soil boring (SB-6) at the south end of the former UST cluster; and, 2) modify the spatial orientation of the remaining borings. Both modifications to the original scope of the TPE work plan are intended to provide the coverage necessary to better reflect observations made at the time of UST closures. These issues were discussed and agreed to today during a conversation with Mr. Lee Huckins, TPE's registered geologist for this project.

Therefore, the December 4, 1996 TPE work plan has been accepted as modified herein. Please contact me at (510) 567-6783 when field work is slated to begin.

Sincerely,

Scott O. Seery, CHMM
Senior Hazardous Materials Specialist

cc: Mee Ling Tung, Director, Environmental Health
Kevin Graves, RWQCB
Rob Weston, ACDEH
Jim Ferdinand, Alameda County Fire Department
Lee Huckins, Tank Protect Engineering

APPENDIX B

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

APPENDIX B

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples will be recovered from soil without introducing liquids into the borings. At a minimum, soil samples as core will be taken at 5-foot depth intervals, changes in lithology and when encountering apparent soil contamination to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings will be drilled with a hollow-stem auger and sampled with a California or modified California-type split-spoon sampler. Soil samples will be of sufficient volume to perform the analyses which may be required, including replicate analyses.

Soil from all borings will be described in detail using the Unified Soil Classification System and will be logged under the direction of a geologist, civil engineer or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System.

All wet zones above the free water zone will be noted and accurately logged.

Soil samples will be collected in clean brass or stainless steel sampling tubes in the split-spoon. Sediment traps will be used when unconsolidated sands and gravels fall from the sampler during retrieval. The brass tubes will be cut apart using a clean knife. The ends of the tubes will be covered with Teflon sheets or aluminum foil beneath plastic end caps and sealed with electrical or duct tape and properly labeled. In lieu of electrical or duct tape, the tubes may be individually sealed in plastic bags. The samples will be stored in an iced-cooler at a temperature of 4 degrees Celsius. In the Alameda County Water District, the samples will be stored in an iced-cooler containing dry ice.

Drill cuttings will be stored on site in 55-gallon drums or covered with plastic sheeting. Analytical results will be submitted immediately to the site owner for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement grout.

APPENDIX C

WASTE HANDLING AND DECONTAMINATION PROCEDURES

APPENDIX C

WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling or field measurement equipment that comes into contact with soil or groundwater will be properly decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Proper decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights and the drill bit will be steam-cleaned between the drilling of each well.

All sample equipment, including the split-spoon sampler and brass tubes, will be cleaned by washing with trisodium phosphate or alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results. Drums will be labeled to show material stored, known or suggested contaminant, date stored, expected removal date, company name, contact and telephone number.

APPENDIX D

LOGS OF EXPLORATORY BORINGS AND WELL COMPLETION DETAILS

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-1

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			ASPHALT
							AGGREGATE BASE (GW): Brown, dry, no odor.
				2			
.75/1.5	66	34		3			SANDY SILT (ML): Dark brown to black, scattered gravel hard, dry, hydrocarbon odor at 5.0 feet.
				4			
				5			
1.0/1.5	160	13		6			
			▽				GRAVELLY CLAY (GC/CL): Green, sandy, stiff, moist to wet, hydrocarbon odor.
				7			
				8			GRAVELLY SAND (SP): Green to brown, clayey, very dense wet, hydrocarbon odor.
				9			
.75/1.0	400	>50/0.5		10			
				11			
				12			
				13			GRAVEL (GW): Green to brown, sandy, dense, wet, hydrocarbon odor.
.75/1.5	440	49		14			
				15			Boring terminated at 14.0 feet. Boring sampled to 15.50 feet.
				16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-2

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			AGGREGATE BASE (GW): Brown, dry, no odor.
				2			
.75/1.5	10	22		3			SANDY SILT (ML): Grey to black, scattered gravel, clayey, very stiff, dry to moist, hydrocarbon odor.
				4			
			▽	5			
1.33/1.5	30	25		6			
				7			
				8			GRAVELLY SAND (SP/GW): Green to brown, clayey, very dense, wet, hydrocarbon odor.
				9			
.66/.75	38	>50/.50		10			
				11			
				12			
				13			GRAVEL (GW): Green to brown, very dense, wet, hydrocarbon odor.
.50/.50	--	>50/.50		14			Boring terminated at 14.0 feet. Boring sampled to 14.50 feet.
				15			
				16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-3

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			AGGREGATE BASE (GW): Brown, dry to moist, no odor.
.75/1.5	26	32		2			SANDY SILT (ML): Grey to black, gravelly, organics, stiff to very stiff, moist, no odor.
				3			
				4			
				5			
1.5/1.5	15	13		6			
				7			
				8			SILTY SAND (SP): Grey, gravelly, loose, wet, no odor.
				9			
				10			
1.0/1.5	26	9		11			
				12			
				13			SILTY CLAY (CL): Grey mottled brown, sandy, very soft, wet, no odor.
				14			
1.0/1.5	4	2		15			Boring terminated at 14.0 feet. Boring sampled to 15.50 feet.
				16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-4

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			AGGREGATE BASE (GW): Brown, moist, no odor.
				2			
1.0/1.5	4	40		3			BACKFILL: GRAVEL (GW): Brown, asphalt pieces, dry, dense, moist, no odor.
				4			
				5			
1.0/1.5	–	30		6			
				7			
				8			SILTY SAND (SP): Grey, gravelly, medium dense, wet, no odor.
				9			
1.0/1.5	10	16		10			
				11			
				12			
				13			GRAVEL (GW): Brown to green, very dense, wet, slight hydrocarbon odor.
.50/.50	–	>50/.50		14			Boring terminated at 14.0 feet. Boring sampled to 14.50 feet.
				15			
				16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-5

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			AGGREGATE BASE (GW): Brown, silty, dry, no odor.
				2			
1.33/1.5	38	33	N	3			SANDY SILT (ML): Dark brown to black, scattered gravel, very stiff to hard, dry, no odor.
				4			
				5			
1.5/1.5	36	25		6			
				7			GRAVELLY CLAY (GC/GW): Green-grey, sandy, very stiff, dry, no odor.
				8			GRAVELLY SAND (SP/GW): Green to brown, dense, wet, hydrocarbon odor.
				9			
				10			
1.33/1.5	6	41		11			
				12			
				13			CLAYEY SAND (SC): Green to brown, scattered gravel very dense, wet, hydrocarbon odor.
				14			
				15			Boring terminated at 15.0 feet. Boring sampled to 15.50 feet.
.25/.50	–	>50/.50		16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 384 — BORING NO. SB-6

PROJECT NAME 799 Athenour Way, Sunol CA 94586 — PAGE 1

BY LNH — DATE 1-15-97 — SURFACE ELEV. 260 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			AGGREGATE BASE (GW): Brown, dry, no odor.
				2			SANDY SILT (ML): Brown to black, clayey, scattered gravel, very stiff, dry to moist, hydrocarbon odor.
1.16/1.5	20	22		3			
				4			GRAVELLY CLAY (GC): Green to brown, sandy, medium dense, wet, hydrocarbon odor.
				5			
1.5/1.5	34	18		6			
				7			
				8			CLAYEY GRAVEL (GW/GC): Green to brown, sandy, dense wet, hydrocarbon odor.
				9			
1.5/1.5	160	48		10			
				11			
				12			
				13			CLAYEY SAND (SC): Green to brown, gravelly, very dense wet, hydrocarbon odor.
.25/.50	–	>50/.5		14			Boring terminated at 14.0 feet. Boring sampled to 14.50 feet.
				15			
				16			
				17			

REMARKS: Boring drilled with continuous-flight, solid stem, 7-inch O.D. augers. Samples collected in a 2.0-inch I.D. California sampler.

APPENDIX E

SAMPLE HANDLING PROCEDURES

APPENDIX E

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. The following sample packaging requirements will be followed.

- Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

- Samples will be secured in coolers to maintain custody, control temperature and prevent breakage during transportation to the laboratory.

- A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory.

- Ice, blue ice or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory.

- Water samples will be cooled with crushed ice. In the Alameda County Water District, water samples will be buried in the crushed ice with a thermometer, and the laboratory will be requested to record thermometer temperature at the time of receipt.

- Each sample will be identified by affixing a pressure sensitive, gummed label or standardized tag on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection and the collector's initials.

- Soil samples collected in brass tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will

be labeled, sealed in quart size bags and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be precleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this workplan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site file; all sample transfers will be documented in the chain-of-custody; samples will be identified with labels; all sample bottles will be custody-sealed. All information is to be recorded in waterproof ink. All TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: site identification, name of person collecting the samples, date and time samples were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used and signature of the TPE person relinquishing samples to a non-TPE person with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Records will be maintained by a designated TPE field employee for each sample: site identification, sampling location, station number, date, time, sampler's name, designation of the sample as a grab or composite, notation of the type of sample (e.g., groundwater, soil boring, etc.), preservatives used, onsite measurement data and other observations or remarks.

APPENDIX F

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

APPENDIX F

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits and proper sample preservation and holding times also provide assurance of accurate analytical data.

TPE will follow a quality assurance and quality control (QA/QC) program in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water

sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of trip and field blanks, and false identifying numbers will be put on the labels. Full documentation of these collection and decoy procedures will be made in the site log book.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates and sample spikes. Internal QC also requires adherence to written methods, procedural documentation and the observance of good laboratory practices.

APPENDIX G

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Entech Analytical Labs, Inc.

CA ELAP# 1369

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Tank Protect Engineering
2821 Whipple Road
Union City, CA 94587
Attn: Lee Huckins

Date:	1/20/97
Date Received:	1/16/97
Date Analyzed:	1/17/97
Project #:	384011597
P.O. #:	1373
Sampled By:	Client

Certified Analytical Report

Soil Sample Analysis:

Test	*SB-5 11-11.5*	*SB-6 6.0-6.5*	*SB-6 10.0-10.5*	*SB-1 6.0-6.5*	*Units*	*PQL*	*EPA Method #*
Sample Matrix	Soil	Soil	Soil	Soil			
Sample Date	1/15/97	1/15/97	1/15/97	1/15/97			
Sample Time	9:00	10:11	10:18	11:11			
Lab #	D1674	D1675	D1676	D1677			
DF-Diesel	1	10	1	1			
TPH-Diesel	**ND**	**2,500**	**160**	**56**	mg/kg	1.0 mg/kg	8015M
DF-Gas/BTEX	62.4	62.4	1	1			
TPH-Gas	**110**	**160[2]**	**5.4[2]**	**ND**	mg/kg	1.0 mg/kg	8015M
MTBE	**ND**	**ND**	**ND**	**0.062**	mg/kg	0.05 mg/kg	8020
Benzene	**0.55**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Toluene	**0.50**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Ethyl Benzene	**0.69**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Xylenes	**0.38**	**0.32**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020

1. DLR=DF x PQL
2. TPH-Gas chromatograms for Lab #D1675,76 although within the reporting range, do not match the typical Gas pattern
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
DLR=Detection Reporting Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above DLR

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 1369

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Tank Protect Engineering
2821 Whipple Road
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Attn: Lee Huckins

Date:	1/20/97
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Date Analyzed:	1/17/97
Project #:	384011597
P.O. #:	1373
Sampled By:	Client

Certified Analytical Report

Soil Sample Analysis:

Test	*SB-1 10-10.5*	*SB-2 6.0-6.5*	*SB-2 10.0-10.5*	*SB-3 6.0-6.5*	*Units*	*PQL*	*EPA Method #*
Sample Matrix	Soil	Soil	Soil	Soil			
Sample Date	1/15/97	1/15/97	1/15/97	1/15/97			
Sample Time	11:20	12:40	12:47	13:40			
Lab #	D1678	D1679	D1680	D1681			
DF-Diesel	1	1	1	1			
TPH-Diesel	**220**	**25**	**42**	**120[2]**	mg/kg	1.0 mg/kg	8015M
DF-Gas/BTEX	62.6	1	1	1			
TPH-Gas	**230**	**ND**	**ND**	**ND**	mg/kg	1.0 mg/kg	8015M
MTBE	**ND**	**ND**	**ND**	**ND**	mg/kg	0.05 mg/kg	8020
Benzene	**1.9**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Toluene	**1.0**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Ethyl Benzene	**12**	**0.0072**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Xylenes	**5.0**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020

1. DLR=DF x PQL
2. TPH-Diesel chromatogram for Lab #D1681, although within the reporting range, does not match the typical Diesel pattern
3. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
DLR=Detection Reporting Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above DLR

Entech Analytical Labs, Inc.

CA ELAP# 1

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Tank Protect Engineering
2821 Whipple Road
Union City, CA 94587
Attn: Lee Huckins

Date:	1/20/97
Date Received:	1/16/97
Date Analyzed:	1/17/97
Project #:	384011597
P.O. #:	1373
Sampled By:	Client

Certified Analytical Report

Soil Sample Analysis:

Test	*SB-3 10-10.5*	*SB-4 5.0-5.5*	*SB-4 10.0-10.5*	*SB-5 6.0-6.5*	*Units*	*PQL*	*EPA Method #*
Sample Matrix	Soil	Soil	Soil	Soil			
Sample Date	1/15/97	1/15/97	1/15/97	1/15/97			
Sample Time	13:45	14:45	14:50	8:50			
Lab #	D1682	D1683	D1684	D1685			
DF-Diesel	1	25[2]	1	1			
TPH-Diesel	**ND**	**ND**	**180**	**ND**	mg/kg	1.0 mg/kg	8015M
DF-Gas/BTEX	1	1	1	1			
TPH-Gas	**ND**	**ND**	**2.6[3]**	**ND**	mg/kg	1.0 mg/kg	8015M
MTBE	**ND**	**ND**	**ND**	**ND**	mg/kg	0.05 mg/kg	8020
Benzene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Toluene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Ethyl Benzene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Xylenes	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020

1. DLR=DF x PQL
2. Sample diluted due to high concentration of non-target compounds
3. TPH-Gas chromatogram for Lab #D1684, although within the reporting range, does not match the typical Gas pattern
4. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
DLR=Detection Reporting Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above DLR

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 1369

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Tank Protect Engineering
2821 Whipple Road
Union City, CA 94587
Attn: Lee Huckins

Date:	1/20/97
Date Received:	1/16/97
Date Analyzed:	1/17/97
Project #:	384011597
P.O. #:	1373
Sampled By:	Client

Certified Analytical Report

Water Sample Analysis:

Test	*SB-1*	*SB-2*	*SB-3*	*SB-4*	*Units*	*PQL*	*EPA Method #*
Sample Matrix	Water	Water	Water	Water			
Sample Date	1/15/97	1/15/97	1/15/97	1/15/97			
Sample Time	11:30	13:05	14:15	16:00			
Lab #	D1686	D1687	D1688	D1689			
DF-Diesel	125	2[2]	2.5[2]	8[2]			
TPH-Diesel	**440,000**	**26,000**	**ND**	**2,800**	µg/liter	50.0 µg/l	8015M
DF-Gas/BTEX	125	125	1	5[2]			
TPH-Gas	**49,000[3]**	**35,000**	**440**	**380[3]**	µg/liter	50.0 µg/l	8015M
MTBE	**ND**	**710**	**11**	**ND**	µg/liter	5.0 µg/l	8020
Benzene	**210**	**180**	**1.5**	**ND**	µg/liter	0.5 µg/l	8020
Toluene	**ND**	**220**	**0.93**	**ND**	µg/liter	0.5 µg/l	8020
Ethyl Benzene	**570**	**1,100**	**7.2**	**ND**	µg/liter	0.5 µg/l	8020
Xylenes	**200**	**2,000**	**13**	**ND**	µg/liter	0.5 µg/l	8020

1. DLR=DF x PQL
2. Sample diluted due to insufficient sample volume
3. TPH-Gas chromatograms for Lab #D1686,89 although within the reporting range, do not match the typical Gas pattern
4. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
DLR=Detection Reporting Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above DLR

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 1369

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Tank Protect Engineering
2821 Whipple Road
Union City, CA 94587
Attn: Lee Huckins

Date:	1/20/97
Date Received:	1/16/97
Date Analyzed:	1/17/97
Project #:	384011597
P.O. #:	1373
Sampled By:	Client

Certified Analytical Report

Water Sample Analysis:

Test	*SB-5*	*SB-6*	*Units*	*PQL*	*EPA Method #*
Sample Matrix	Water	Water			
Sample Date	1/15/97	1/15/97			
Sample Time	9:15	10:35			
Lab #	D1690	D1691			
DF-Diesel	2[2]	125			
TPH-Diesel	**130**	**500,000**	µg/liter	50.0 µg/l	8015M
DF-Gas/BTEX	50	500			
TPH-Gas	**15,000**	**400,000**[3]	µg/liter	50.0 µg/l	8015M
MTBE	**ND**	**ND**	µg/liter	5.0 µg/l	8020
Benzene	**120**	**310**	µg/liter	0.5 µg/l	8020
Toluene	**40**	**250**	µg/liter	0.5 µg/l	8020
Ethyl Benzene	**1,200**	**ND**	µg/liter	0.5 µg/l	8020
Xylenes	**300**	**ND**	µg/liter	0.5 µg/l	8020

1. DLR=DF x PQL
2. Sample diluted due to insufficient sample volume
3. TPH-Gas chromatogram for Lab #D1691, although within the reporting range, does not match the typical Gas pattern
4. Analysis performed by Entech Analytical Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
DLR=Detection Reporting Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above DLR

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

QC Batch #: DS970106
Matrix: Soil
Units: mg/Kg

Date analyzed: 01/18/97
Date extracted: 01/16/97
Quality Control Sample: D1685

PARAMETER	Method #	MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	SP %R	SPD mg/Kg	SPD %R	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<1.0	25	0.0	22.3	89	21.1	84	5.5	25	50-150

Definition of Terms:

MB: Method Blank
na: Not Analyzed in QC batch
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery
NC: Not Calculated

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography

QC Batch #: GBG2970117
Matrix: Soil
Units: ug/kg

Date Analyzed: 01/17/97
Quality Control Sample: D1685

PARAMETER	Method #	MB ug/kg	SA ug/kg	SR ug/kg	SP ug/kg	SP % R	SPD ug/kg	SPD %R	RPD	QC LIMITS (ADVISORY) RPD	QC LIMITS (ADVISORY) %R
Benzene	8020	<5.0	80.00	0.0	67.95	85	74.57	93	9.3	25	50-150
Toluene	8020	<5.0	80.00	0.0	68.52	86	74.46	93	8.3	25	50-150
Ethyl Benzene	8020	<5.0	80.00	0.0	68.45	86	75.31	94	9.5	25	50-150
Xylenes	8020	<5.0	240.00	0.0	209.09	87	226.58	94	8.0	25	50-150
Gasoline*	8015	<1000.00	1000.00	0.0	1070.00	107	1090.00	109	1.9	25	50-150

*LCS and LCSD were analyzed for this parameter.

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD(%): Duplicate Analysis - Relative Percent Difference
- SP: Spike Result
- SP (%R): Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R): Spike % Recovery
- NC: Not Calculated

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography

QC Batch #: GBG4970117
Matrix: Soil
Units: ug/kg

Date Analyzed: 01/17/97
Quality Control Sample: D1683

PARAMETER	Method #	MB ug/kg	SA ug/kg	SR ug/kg	SP ug/kg	SP % R	SPD ug/kg	SPD %R	RPD	QC LIMITS (ADVISORY) RPD	QC LIMITS (ADVISORY) %R
Benzene	8020	<5.0	80.00	0.0	109.53	137	104.57	131	4.6	25	50-150
Toluene	8020	<5.0	80.00	0.0	106.95	134	102.60	128	4.2	25	50-150
Ethyl Benzene	8020	<5.0	80.00	0.0	105.21	132	102.21	128	2.9	25	50-150
Xylenes	8020	<5.0	240.00	0.0	315.85	132	309.89	129	1.9	25	50-150
Gasoline*	8015	<1000.00	1000.00	0.00	1040.00	104	1110.00	111	6.5	25	50-150

*LCS and LCSD were analyzed for this parameter.

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD(%): Duplicate Analysis - Relative Percent Difference
- SP: Spike Result
- SP (%R): Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R): Spike % Recovery
- NC: Not Calculated

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography

QC Batch #: DW970102
Matrix: Water
Units: µg/L

Date analyzed: 01/09/97
Date extracted: 01/09/97
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB µg/L	SA µg/L	SR µg/L	SP µg/L	SP %R	SPD µg/L	SPD %R	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<50.0	950	ND	752	79	700	74	7	25	50-150

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD(%): Duplicate Analysis - Relative Percent Difference
- SP: Spike Result
- SP (%R) Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R) Spike Duplicate % Recovery
- NC: Not Calculated

TANK PROTECT ENGINEERING
of Northern California, Inc.
2821 Whipple Rd., Union City, CA 94587-1233
(510) 429-8088 ■ (800) 523-8088 ■ Fax (510) 429-8089

LAB: Entech
TURNAROUND: ~~15 day~~ 48 hrs
P.O. #: 1373

PAGE 1 OF 2

CHAIN OF CUSTODY

PROJECT NO.: 38401597
SITE NAME & ADDRESS: Mission Valley Rock 796 Athenour
SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER: Lee Huckins, 2821 WHIPPLE ROAD, UNION CITY, CA 94587 (415) 429-8088

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	POC SCAN (624's)	OTHER	REMARKS
SB-5 10.0-11.5	1/15	900	X		11.0-11.5	Brass	X	X	X				D1674
SB-6 6.0-6.5		10:11	X		6.0-6.5	Brass	X	X	X				D1675
SB-6 10.0-10.5		10:18	X		10.0-10.5	Brass	X	X	X				D1676
SB-1		1130		X	grab	1 Leglas 2-4oz	X	X	X				D1686 Sediment in jar
SB-2		1305		X	Grab	1 Leglas 2-4oz	X	X	X				D1687 "
SB-3		1415		X	Grab	1 Leglas 2-4oz	X	X	X				D1688 "
SB-4		1600		X	grab	1 Leglas 2-4oz	X	X	X				D1689 Jar full of sediment 3 vials collected
SB-5		915		X	Grab	1 Leglas 2-4oz	X	X	X				D1690 Sediment in jar
SB-6		1035		X	Grab	1 Leglas 2-4oz	X	X	X				D1691 "

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Lee Huckins	1/16/97 1:20				
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	

RUSH

DATE: _____

TANK PROTECT ENGINEERING
of Northern California, Inc
2821 Whipple Rd., Union City, CA 94587-1233
(510) 429-8088 ■ (800) 523-8088 ■ Fax (510) 429-8089

LAB: Entech

TURNAROUND: ~~5 day~~ 48 hrs

P.O. #: 1373

PAGE 2 OF 2

CHAIN OF CUSTODY

PROJECT NO.: 304 01 1597

SITE NAME & ADDRESS: Mission Valley Rock, 7614 Thunderbird

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER: Lee Hutchins, 2821 WHIPPLE ROAD, UNION CITY, CA 94587 (415) 429-8088

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	PCC SCAN (624's)	OTHER	REMARKS
SB-1 6.0-6.5	1/15	11:11	X		6.0-6.5	Brass	X	X	X				D1677
SB-1 10.0-10.5		11:20			10.0-10.5	Brass	X	X	X				D1678
SB-2 6.0-6.5		1240			6.0-6.5	Brass	X	X	X				D1679
SB-2 10.0-10.5		1247			10.0-10.5	Brass	X	X	X				D1680
SB-3 6.0-6.5		1340			6.0-6.5	Brass	X	X	X				D1681
SB-3 10.0-10.5		1345			10.0-10.5	Brass	X	X	X				D1682
SB-4 5.0-5.5		1445			5.0-5.5	Brass	X	X	X				D1683
SB-4 10.0-10.5		1450			10.0-10.5	Brass	X	X	X				D1684
SB-5 6.0-6.5		1500			6.0-6.5	Brass	X	X	X				D1685

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Lee Hutchins	1/16/97 12:30				
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	

DATE: _____

RUSH