REMEDIATION SERVICE, INT'L.

P.O. BOX 1601, OXNARD, CALIFORNIA 93032
(805) 644-5892 • FAX (805) 654-0720

August 29, 1990

Gil Wistar
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

RE: Desert Petroleum station #795
2008 First Street
Livermore, CA

Dear Mr. Wistar:

Enclosed for your review is RSI's Work Plan for Further Site Assessment at station #795. The one groundwater well was sampled and tested for BTXE and TPH. Since low levels of hydrocarbons were found, a groundwater assessment is part of the work plan.

If you have any questions or concerns, please give me a call.

Sincerely,

Wendy J. Wittl
Senior Project Geologist

encl.

cc: Desert Petroleum, J. R.

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WORK PLAN FOR FURTHER SITE ASSESSMENT DESERT PETROLEUM, INC. Station #795 2008 First Street Livermore, California

Prepared for:
DESERT PETROLEUM, INC.
2060 Knoll Drive
Ventura, CA 93003

Prepared by:
RSI - REMEDIATION SERVICE, INT'L
P.O. Box 1601
Oxnard, CA 93032

August 15, 1990

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	2
	1.1 Site Description	2
	1.2 Background Summary	2
2.0	GROUNDWATER SAMPLING	3
3.0	FUTURE SITE ASSESSMENT	4
	3.1 Work Plan	4
	3.2 Drilling, Sampling and Completion Procedures	4
	3.3 Work Schedule	5
4.	LIMITATIONS OF INVESTIGATIONS	5

FIGURES

1. Location Map
2. Site Plan

APPENDICES

A. References
B. Official Laboratory Reports
   Chain of Custody
C. Drilling and Sampling Procedures
   Typical Monitoring Well Construction
D. Groundwater Sampling Procedures
   Groundwater Sampling Field Logs

1.0 INTRODUCTION

This work plan presents the proposed site assessment work to be completed at the Desert Petroleum Station #795 (dba British Petroleulm). Remediation Service Int'l (RSI) has been retained by Desert Petroleum, Inc. to develop a work plan to further assess hydrocarbon contamination migration.

1.1 Site Description

The site is located at 2008 First Street, Livermore, Alameda County, California (Figure 1). The site is currently occupied by a retail gasoline outlet; improvements consist of an office/garage, two pump islands and three underground storage tanks - one 8,000 gallon (unleaded premium) and two 10,000 gallon (leaded and unleaded regular).

1.2 Background Summary

In late February, 1988, Geonomics installed four vapor recovery wells, surrounding the tanks, to monitor the subsurface for hydrocarbon leaks. Gasoline contamination was identified in two of the wells, DPL-1 and -2. A soil sample from DPL-1 at approximately 12 ft below ground surface (bgs) had 400 parts per million (ppm) total petroleum hydrocarbon (TPH). Both wells had high initial vapor readings, over 13,000 ppm as measured by a Gastechtor meter.

On-Site Technologies conducted the first site assessment in August 1988. They drilled and sampled three borings, then completed boring number GX-136 as a groundwater monitoring well. Soil contamination was identified in all three borings, at 30 or more feet below the surface. Concentrations of TPH ranged from 0.8 ppm (DPL-5) to 1600 ppm (DPL-6). Groundwater was analyzed but no hydrocarbon compounds were detected.

2.0 GROUNDWATER SAMPLING

On August 2, one groundwater well, GX-136, was purged and sampled. Superior Analytical, a State certified laboratory, tested the sample. The results below are in parts per billion (ppb).

Well I.D.	Benzene	Toluene	Xylenes	Ethyl Benzene	TPH
GX-136	1,300	1,300	2,700	400	24,000

DRO: 45.1

The level of gasoline and its components now exceed the State maximum concentration for contaminants in drinking water. The laboratory report, chain of custody and field log are in Appendix B.

3.0 FUTURE SITE ASSESSMENT

3.1 Work Plan

RSI proposes to drill and sample four soil borings and then

complete these as groundwater monitoring wells (Figure 2). To determine the possibility of contamination migrating on-site, RS-3 will be advanced and sampled. Two wells, RS-1 and -2, will be installed in the area of known contamination to effect remediation. These two wells will be screened to treat both the soil and groundwater, if necessary. The fourth well, RS-4, is along the northern property boundary and will be used to assess possible downgradient migration of the contamination.

3.2 Drilling, Sampling and Completion Procedures

Under the supervision of an RSI geologist, four soil borings will be advanced using a truck mounted hollow-stem auger drilling rig. Soil samples will be collected at five foot intervals and at the groundwater-soil interface. Collection procedures are discussed in detail in Appendix C. Representative samples will be delivered to a state certified laboratory for analyses. Analyses will include total petroleum hydrocarbons (TPH) as well as benzene, toluene, ethylbenzene and xylenes (BTXE) using DOHS methodology and/or modified EPA methods 8015/8020/8240.

Each soil boring will be completed as a groundwater monitoring well, with 4-inch diameter PVC casing. Each well will extend approximately 20 feet past the first encountered groundwater, unless a significant aquitard is encountered. The wells will be constructed in the manner depicted in Appendix E.

After the wells have been completed, the wells will be developed and the wellhead elevations will be surveyed. Groundwater samples will be collected following the procedures outlined in

Appendix D. The samples will be analyzed by a state certified laboratory for TPH and BTXE using DOHS methodology and/or EPA methods 602 or 8240.

3.3. Work Schedule

Upon approval of this proposal by the Alameda County Health Care Services Agency, RSI will apply for the appropriate permits and schedule drilling.

4.0 LIMITATIONS OF INVESTIGATIONS

The discussion and recommendation presented in this report are based on the following:

1. The professional performance of the personnel who conducted the investigations.
2. The observations of the field personnel.
3. The results of laboratory analyses performed by a state certified laboratory.
4. Any referenced documents.
5. Our understanding of the regulations of the State of California; also, if applicable, other local regulations.

The services performed by Remediation Service Int'l have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently

practicing under similar conditions in the State of California. Please note that contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

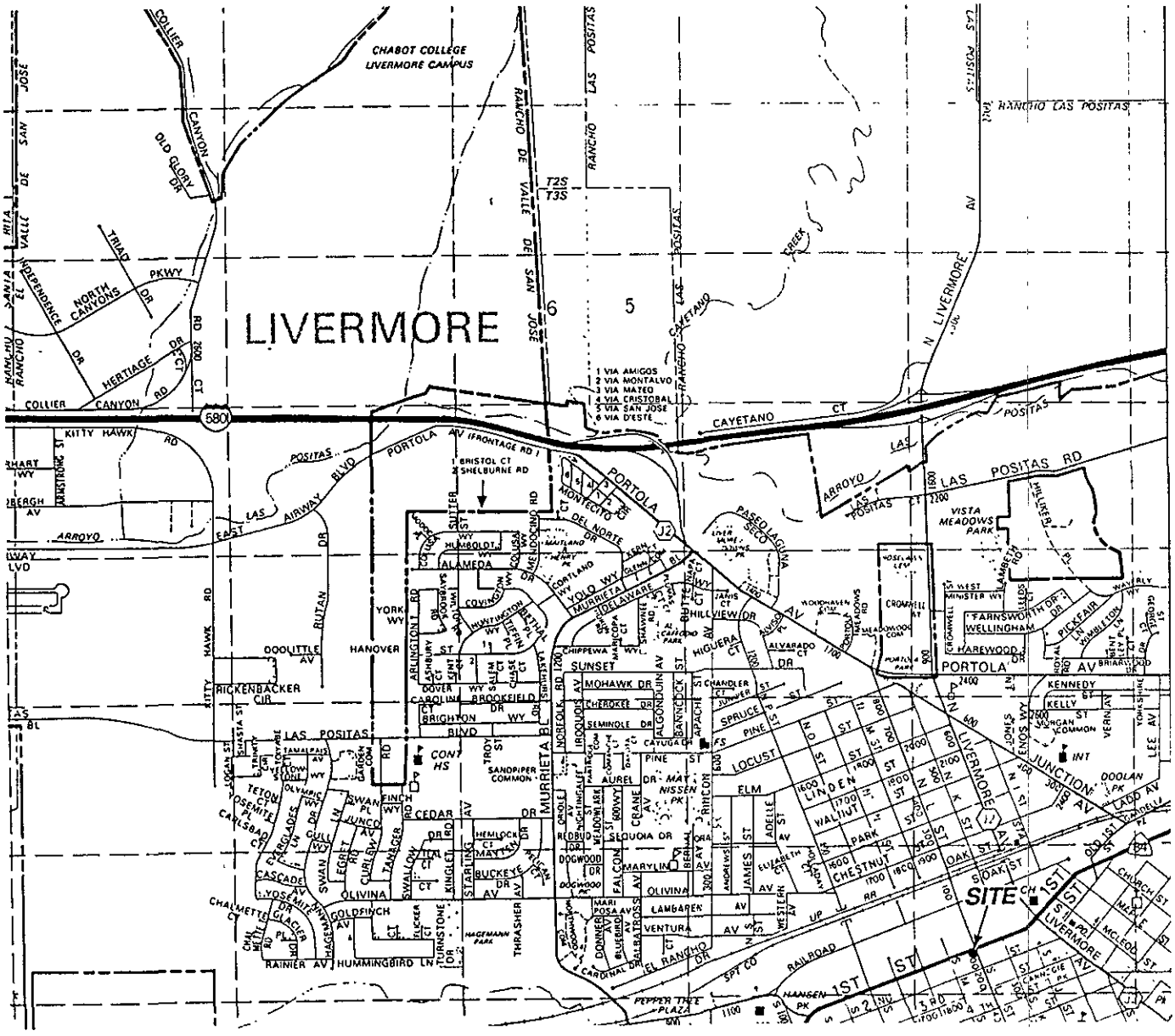
Wendy J. Wittl
Senior Project Geologist

Robert Michael
Registered Geologist #3849

REGISTERED GEOLOGIST
ROBERT C. MICHAEL
No. 3849
STATE OF CALIFORNIA

RSI/795.Aug90

FIGURES



VICINITY MAP

DESERT PETROLEUM STATION NO. 795

2008 First Street

Livermore, California

Prepared for

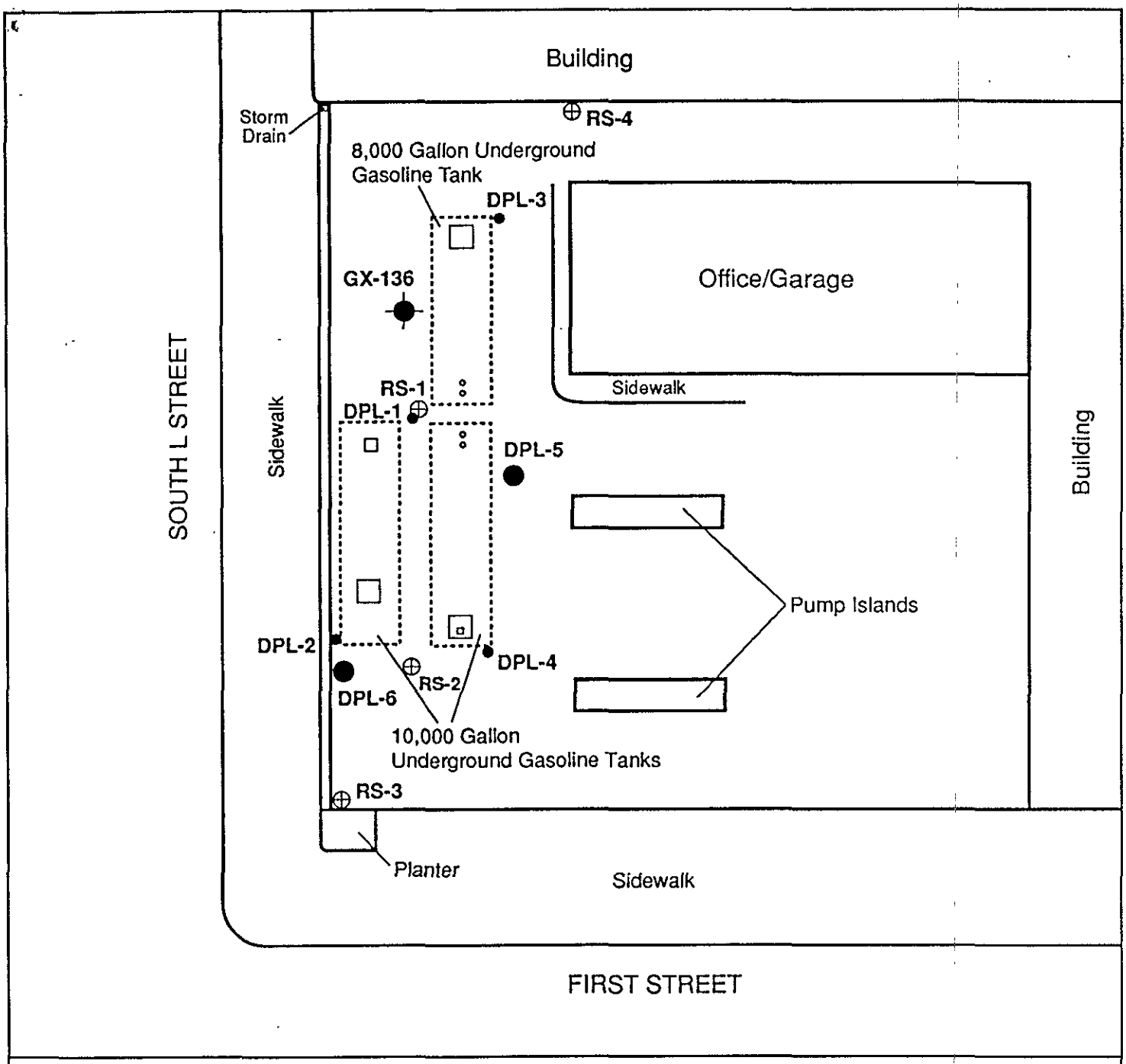
DESERT PETROLEUM

VENTURA, CALIFORNIA

N

0 1/2 1 MILE

SCALE



SITE MAP

DESERT PETROLEUM STATION NO. 795

2008 First Street

Livermore, California

Prepared for

DESERT PETROLEUM

VENTURA, CALIFORNIA

LEGEND

- **DPL-4** ● Soil Samples
- **DPL-6** ● Soil Borings
- **GX-136** ⊕ Water Well
- **RS-4** ⊕ Groundwater Monitoring/ Recovery Wells

0 25 50

SCALE IN FEET

APPENDIX A

APPENDIX B

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 52337
CLIENT: REMEDIATION SERVICE, INT'L
CLIENT JOB NO.: DP-795

DATE RECEIVED: 08/03/90
DATE REPORTED: 08/09/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/l) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	1300	1300	400	2700

ug/L - parts per billion (ppb)

Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:
Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 84% : Duplicate RPD = <15%

Richard Srna, Ph.D.
Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 52337
CLIENT: REMEDIATION SERVICE, INT'L
CLIENT JOB NO.: DP-795

DATE RECEIVED: 08/03/90
DATE REPORTED: 08/09/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (ug/l) Gasoline Range
1	MW-1	24000

ug/L - parts per billion (ppb)
Minimum Detection Limit for Gasoline in Water: 50ug/L

QAQC Summary:
Daily Standard run at 2mg/L: RPD Gasoline = <15%
MS/MSD Average Recovery = 84%: Duplicate RPD = 1%

Richard Srna, Ph.D.
Laboratory Director

RSI 52337 9H

Chain of Custody Record

Project No. DP 795
Project Name
Samplers B. Mossman
P.O. No.

Superior Analytical Laboratory
1555 Burke St. Unit 1
San Francisco, CA 94124
(415) 647-2081

Sample Number	Date	Time	Location	Matrix	Number of Containers	Sample Preservation	TPH as Gasoline	BTXE	TPH as Diesel	Oil & Grease	8010	8240			
MW-1	8/2/90	16:30	MW-1	WATER	2	HCl	X	X							

Relinquished By (Signature)	Date/Time	Received By (Signature)	Date/Time	REMARKS:
1. Bill Mossman	8/3/90 16:17	1.		
2.		2.		
3.		3.		
4.		4.	8/3/90	16:53

APPENDIX C

DESCRIPTION OF BORING TECHNIQUES AND SAMPLING PROCEDURES

Under the supervision of a Remediation Service Int'l - (RSI) geologist, the soil borings are advanced using a truck mounted hollow-stem auger. Each auger flight is 5 feet in length with an inner diameter of 3.5 inches and an outer diameter of 8 inches. A pilot assembly, in conjunction with the auger head which is fitted with cutting blades, helps advance the auger through the soil and prevents solids from entering the hollow-stem portion of the auger. The hollow auger acts as a "temporary casing" preventing collapse of the borehole wall. Soil cuttings are carried up to the surface via the auger flights.

When the desired sample depth is reached, the drill bit and center plug are removed from the auger stem and replaced with a Modified California Split Spoon sampler. Usually, sampling is done at the end of each 5 foot auger flight. The sampler consists of an outer 12 to 18 inch long "split barrel" sampler in which a thin-walled set of rings is inserted. These rings are brass or stainless steel cylinders, each 2.0 to 3.25 inches in diameter and 3 to 6 inches long.

A 140 pound hammer is used to drive the sampler into the formation below the bottom of the auger flight, thereby filling all of the sampling rings with soil. This method allows for collection of an undisturbed soil sample, preventing introduction of overburden soil by the drilling process. The number of hammer blows (blows per foot, BPF) to advance the sampler a given distance is recorded on the boring log. This gives an indication of the amount of force required to recover the sample.

After retrieving and dismantling the sampler, all the thin tube rings are removed. The bottom ring is immediately sealed for laboratory analysis by covering both ends with teflon sheeting, plastic caps and securing the caps with tape. If some of the soil in the bottom ring has fallen out or appears to have been disturbed during the recovery operation, the second to last ring is used. This ring is labeled and placed in an ice chest for cold storage pending transportation to the laboratory. This packaging protocol is designed to prevent loss of volatiles from the soil sample, and to prevent any cross contamination. Standard chain of custody procedures are followed for all samples.

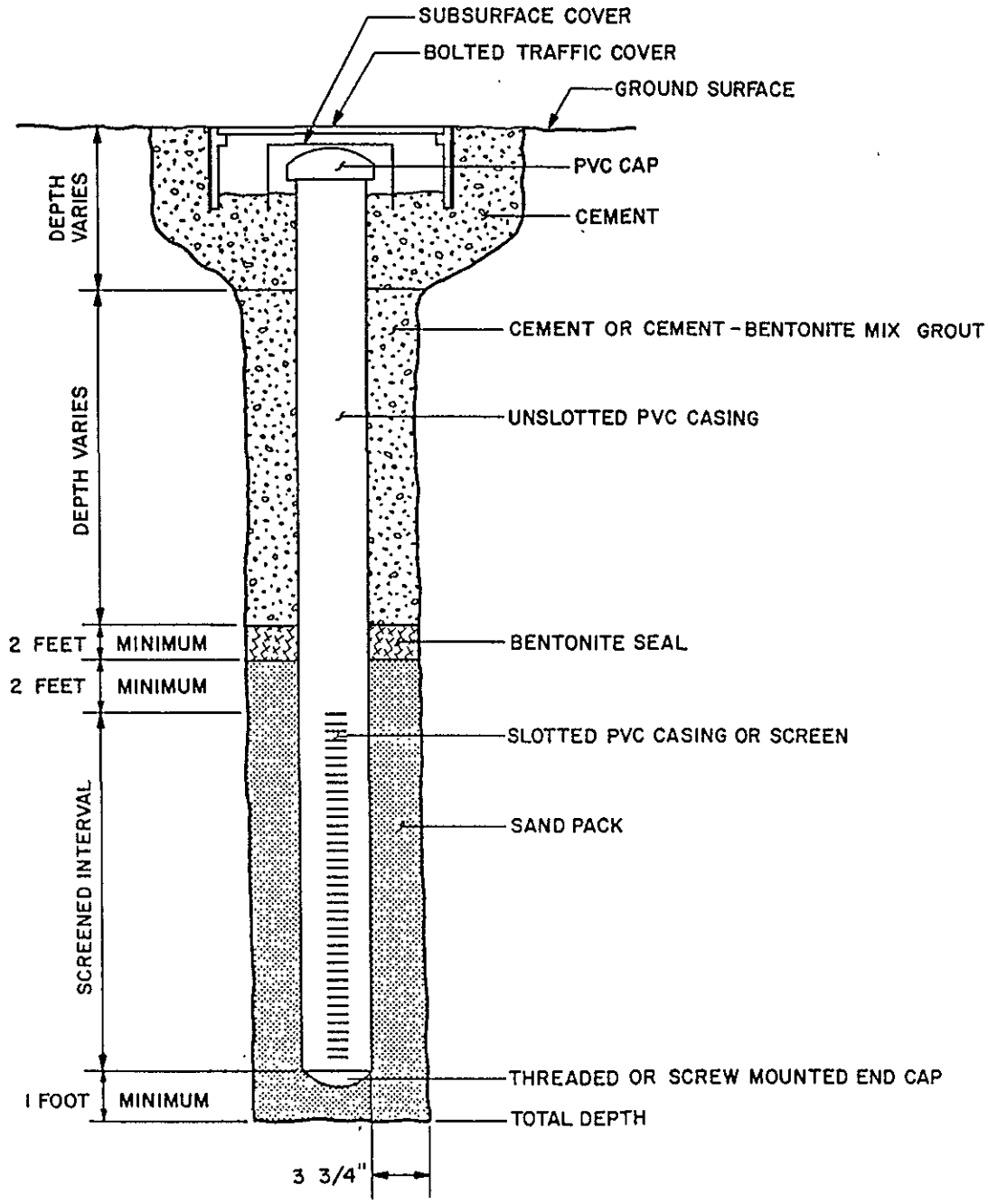
Soil from the second ring is used for field analysis of possible hydrocarbon contamination. The sample is placed in a Ziploc bag, sealed and allowed to volatilize for a HNU Photoionization Analyzer (PID) measurement. A head-space measurement is taken by breaking the seal just enough to insert the probe. The highest reading is recorded. However, if the reading stabilizes at a significantly different level, this also is noted. The PID has a detection range from 0.1 ppm to 2000 ppm for hydrocarbon vapors, when calibrated with a benzene standard.

Soils in the remaining rings are used for the field descriptions. The field data includes a written soils description, the Unified Soil Classification code, and any notable odors, staining or contamination. Also recorded are unusual drilling conditions, equipment malfunctions or other observations of field conditions for future reference. All data are included on the boring logs.

An alternative method to the use of brass rings is glass jars for sample collection. This method still utilizes the split spoon sampler, but no brass rings are inserted. Instead, soil from the base of the sampler is encapsulated in a glass jar. The jar is then treated in the same manner as soil samples in brass rings. The remaining soil in the sampler is used for field analysis and description.

To prevent any cross - contamination, the augers are steam cleaned prior to drilling each boring. The split spoon sampler is cleaned using a three step process commonly referred to as a "three bucket wash". This consist of first a trisodium phosphate wash, followed by a tap water rinse and finally a deionized water rinse. This process is completed between each sample run.

All cuttings and excess sample material recovered during the drilling operations are placed in 55 gallon DOT hazardous waste drums pending laboratory analysis results. Proper disposal is the client's responsibility.



NO SCALE
TYPICAL ONLY

TYPICAL MONITORING WELL CONSTRUCTION

APPENDIX D

SAMPLING PROCEDURES FOR GROUNDWATER MONITORING WELLS

1. Top of casing or wellhead is surveyed and referenced to datum point.

2. Equipment is decontaminated using a three bucket wash. This consists of: (1) washing the equipment in water with trisodiumphosphate detergent; (2) rinsing with tap water; and, (3) rinsing with deionized water.

3. Depth to water, depth to free product (if present) and total depth of well is measured.

4. The well is bailed or pumped either until dry, or until 4 to 5 casing volumes of water have been removed. The water is discharged into a DOT hazardous waste drum which is labeled and left on site pending laboratory analysis of water sample.

5. After the well has recovered, a sample is taken using a teflon bailer and placed in a VOA vial such that no headspace is present. The vial is sealed, labeled, and cooled.

6. The field data sheet is completed with all pertinent information.

7. All the equipment is decontaminated using the 3-bucket wash.

8. The samples are transported to the laboratory as soon as possible following chain of custody procedures.

9. Wells are sampled from the cleanest to the most contaminated.

10. Site conditions are noted which may potentially contaminate the sample . . . any smoke, vapors from running engines, etc.

GROUNDWATER SAMPLE
FIELD LOG

PROJECT NAME DP-795
LOCATION LIVERMORE
WELL NUMBER MW-1

SAMPLER BJM

SAMPLE:
WELL X
SURFACE WATER
SEEP
OTHER (DESCRIBE)

DATE OF SAMPLING 8/2/00
WEATHER CONDITIONS SUNNY + WARM
DEPTH TO FREE PRODUCT —
DEPTH TO WATER 43.10
DATUM ELEVATION(msl)
GROUNDWATER ELEVATION(msl)
TOTAL WELL DEPTH 77

WATER LEVEL MEASURING EQUIPMENT INTERFACE PROBE
FREE PRODUCT LEVEL MEASURING EQUIPMENT "
EVACUATION EQUIPMENT PVC BAILER
GALLONS TO BE EVACUATED (4 casing vols.) 20
TIME OF EVACUATION START 14:05 FINISH 15:10
TOTAL GALLONS EVACUATED >20

SAMPLING EQUIPMENT DISPOSABLE BAILER
SAMPLING TIME START FINISH 16:30
SAMPLING RATE (ml/min.)
APPEARANCE OF SAMPLE CLEAR

FIELD OBSERVATIONS AND/OR PROBLEMS ENCOUNTERED DTW = 43.12
DRUM TO SAMPLE

EQUIPMENT DECONTAMINATION 3 BUCKET WASH

SAMPLES HAND CARRIED/SHIPPED ON 8/3/00 (date) AT 11:30 (time)

VIA (carrier and shipper's number)
TO SEQUOIA ANALYTICAL laboratory

FOR ANALYSIS OF TPH (GAS) BTEX