desert petroleum inc.

John Rutherford
Director
Environmental Affairs

10/13/89

October 10, 1989

Mr. Larry Seto
Hazardous Materials Specialist
Alameda County
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621

RE: Mountain Blvd. Arco
2844 Mountain Blvd. Oakland

Dear Mr. Seto:

Please find enclosed our consultants work plan for further site investigation and continued remediation on the subject location. We have reviewed the report and agree with the further work proposed to be done.

As previously explained, we solicit your approval to continue with the installation of new piping and equipment improvements as soon as possible in order to reopen the business. In addition to the financial hardship caused by the closure, there is also a potential safety factor involved with the open excavations which we would like to close.

It is our intent to move forward with the work plan submitted while also completing the construction in the shortest time possible. Along with the consultants plan we are sending a check in the amount of $450.00 which is required. We would appreciate approval to begin the work.

Very truly yours,

John D. Rutherford

JDR:jc

Enclosures

cc: G.W. Carson
Brian Mossman

REMEDIATION SERVICE, INT'L.

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

Site Assessment Work Plan
for
Desert Petroleum Station #796 (Arco)
2844 Mountain Boulevard
Oakland, 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
(805) 644-5892

October 1989

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the site assessment proposal for Desert Petroleum's station #796. This station operates under the Arco tradename and is located at 2844 Mountain Boulevard, Oakland, Alameda County, California (Figure 1). Soil containing elevated levels of hydrocarbons was discovered during the replacement of supply lines between the underground storage tanks and the pumps. Remediation Service, Int'l (RSI) has been retained to delineate the extent of the gasoline migration.

1.1 Site Description

This station operates as a retail gasoline outlet supplying regular, regular unleaded and super unleaded gasoline. The underground storage tanks holding the gasoline have capacities of 3,000 gallons (super unleaded), 4,000 gallons (regular) and 10,000 gallons (regular unleaded). Surface improvements include a cashiers building and two pump islands (Figure 2).

1.2 Background Summary

Soil contamination was initially identified during replacement of the supply lines. Four soil samples were collected from beneath the previous supply lines in the vicinity of the fuel pumps under the direction of Alameda County personnel. Laboratory analysis of the samples showed total petroleum hydrocarbon (TPH) concentrations ranging from 8 to 87 parts per million (ppm). An additional sample taken near the edge of the super unleaded tank

had a TPH concentration of [redacted] ppm.

The next phase of characterization was conducted by On-Site Technologies. Their excavation and sampling work plan was submitted to and approved by the Alameda County Health Department, Hazardous Materials Division. Field work started on July 7, 1989, and continued through August 18. Soil was removed from the south end of the super unleaded tank, creating a hole approximately 9 feet in radius and 12 feet deep (see Figure 3). All excavated dirt was stockpiled onsite in three separate locations.

Soils uncovered by the excavation consisted of clays and gravelly clays. Groundwater flowed into the excavation and stabilized at 8.5 to 8.7 feet below grade. The groundwater gradient could not be determined but the local topography indicates that the downgradient direction is probably towards Mountain Boulevard to the southwest.

Laboratory analyses of soil and water samples indicate a fairly confined plume of hydrocarbon contamination in the soil at the southern end of the 3,000 gallon tank. TPH concentrations for soil samples from the excavation ranged from 2 to 3,300 ppm. A groundwater sample obtained from the excavation contained a TPH concentration of 160 ppm.

2.0 SITE ASSESSMENT

2.1 Work Plan

In order to determine the extent of hydrocarbon contamination, **RSI proposes to drill and sample four borings at this site.** As shown in Figure 2, one boring will be in the suspected upgradient direction to the northeast of the super unleaded and regular tanks. Another boring will be in the suspected downgradient direction to the southwest of the tanks. One boring will be drilled to the northwest of the super unleaded tank and the final boring will be drilled southeast of the tanks on the far side of the pump island. **At least three of these borings will be completed as groundwater monitoring wells.**

2.2 Drilling, Sampling and Completion Procedures

Under the supervision of a RSI geologist, soil borings will be advanced using a truck mounted hollow-stem auger drilling rig. Soil samples will be collected following the procedures discussed in Appendix A. Soil samples collected from approximately 4 and 8 feet beneath ground surface will be submitted for laboratory analysis. The samples will be analyzed by a state certified laboratory for total petroleum hydrocarbons (TPH) as well as benzene, toluene, ethylbenzene and xylenes (BTEX) using DOHS methodology and/or modified EPA methods 8015/8020/8240.

Each soil boring that is completed as a groundwater monitoring well will have a diameter of approximately 12 inches. The wells will be completed with 4 inch diameter PVC casing. Each well will extend approximately 20 feet past the first encountered groundwater and will be constructed in the manner depicted in Appendix A. It will only be possible to provide a five foot surface seal on these wells due to the shallow depth of groundwater and the necessity of screening above the water in order to detect the possible presence of free product.

After the wells have been completed, the elevations of the wellheads will be surveyed and the wells will be developed and sampled following the procedures outlined in Appendix B. The water samples will be analyzed by a state certified laboratory for TPH and BTEX using DOHS methodology and/or EPA methods 602 or 8240.

2.3 Work Schedule

Upon approval of this proposal by the Alameda County Health Care Service, Hazardous Materials Division, the replacement of the supply lines will be completed. The excavated soil at the site will be removed under the direction of Pat McShane of Diablo Tanks. Work is currently underway to obtain clearances to remove soil stockpiles number 1 and 3 to the Durham Road Landfill, 710 Durham Road in Fremont, California. Additional samples have been collected from these two stockpiles for analysis of total lead and extractable lead as per the sampling requirements for

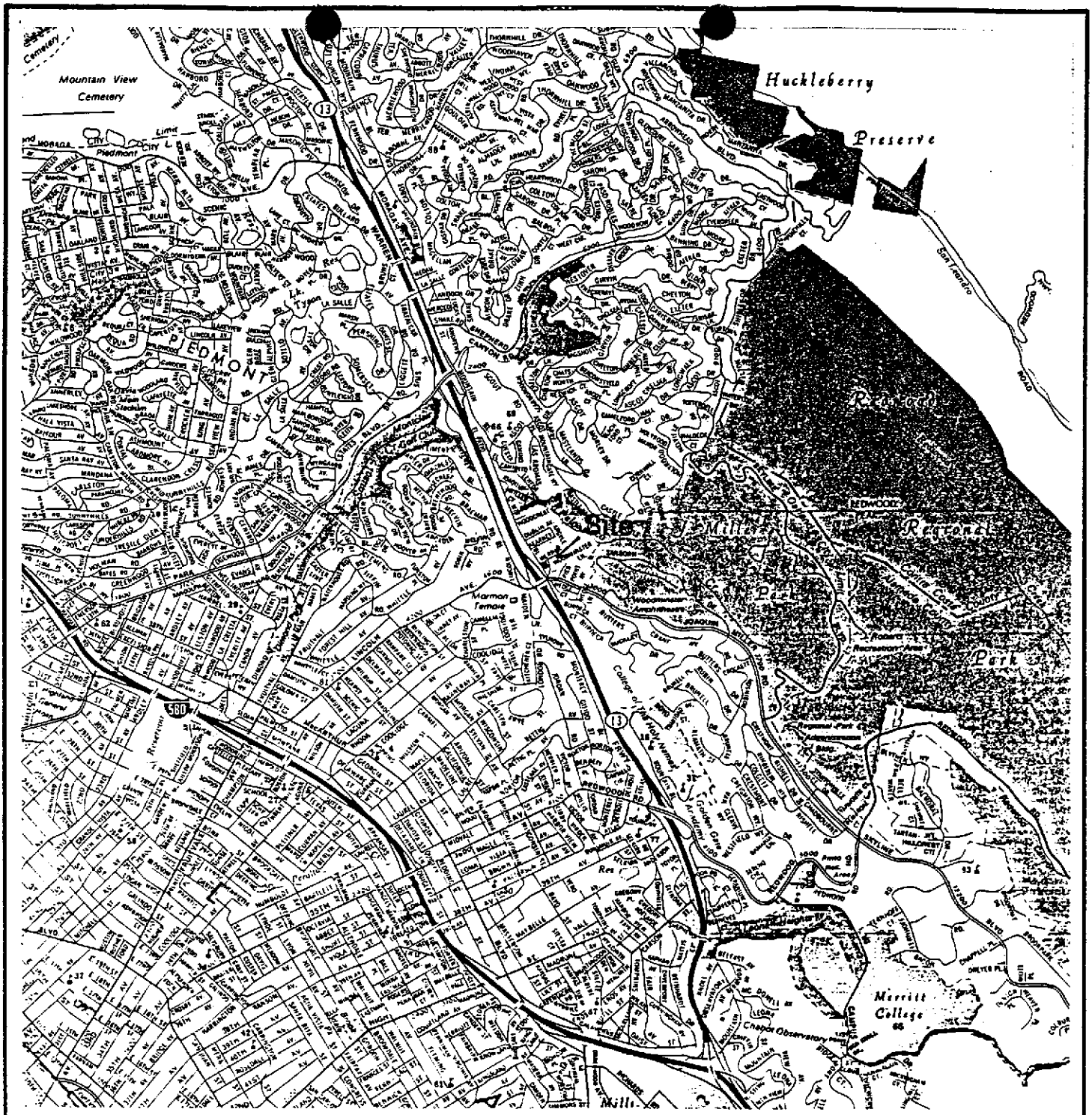
the Durham Road Landfill as provided by Clara Cornett of that facility. Soil from stockpile number 2 will be sent to the Class I facility in Kern County following proper manifest procedures. The name of the hazardous waste hauler will be provided to the county before any of the soil is transported. **Site assessment work will begin within 60 days of the approval of this proposal.**

Brian Mossman

Brian Mossman
Staff Geologist

Robert C. Michael

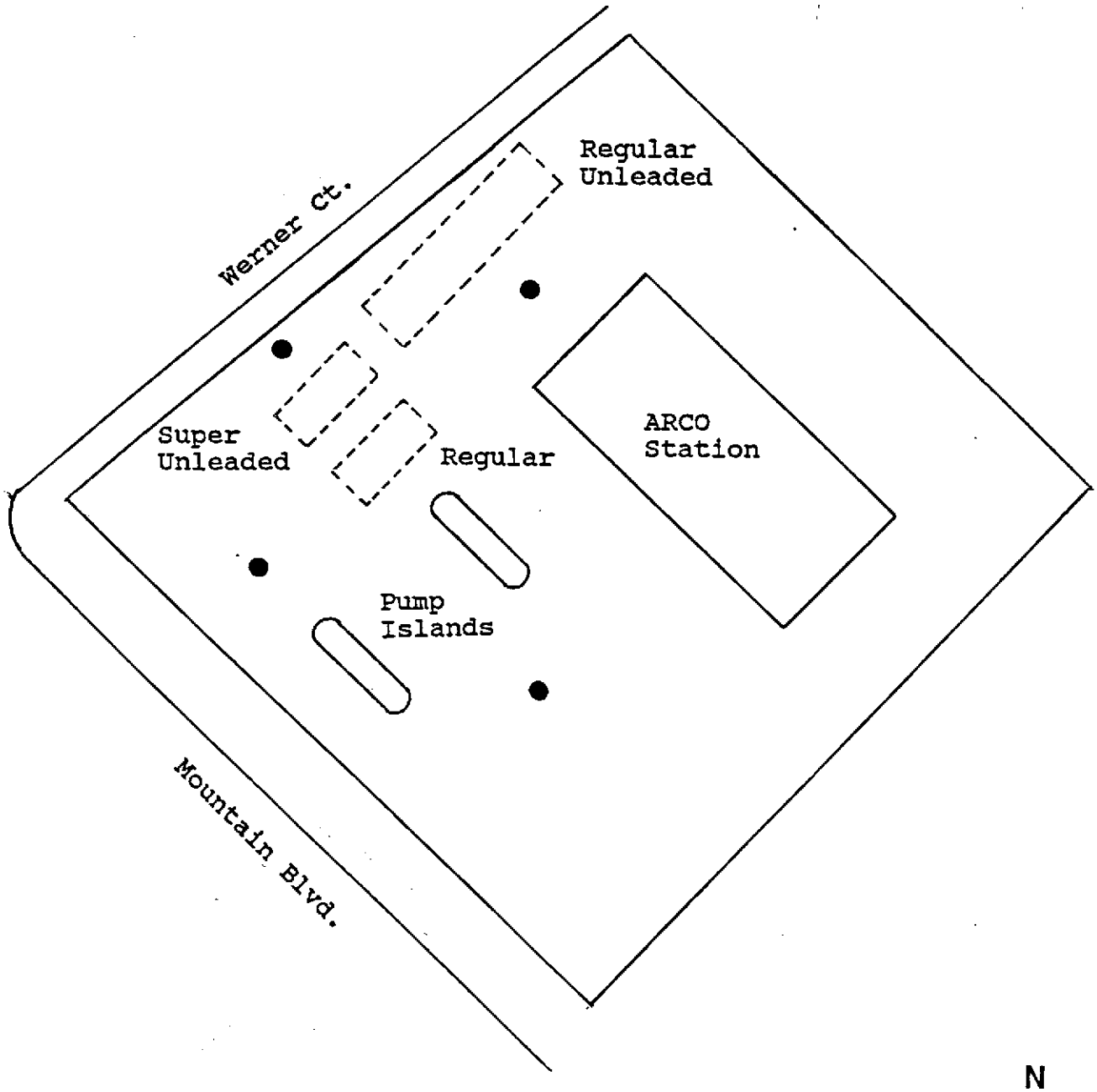
Robert C. Michael
Registered Geologist No. 3849



N

Location Map
Desert Petroleum
Station #796
2844 Mountain Blvd.
Oakland, CA

FIGURE 1



N

Site Plan
Desert Petroleum
Station #796
2844 Mountain Blvd.
Oakland, CA

● Proposed Boring Location

Approximate Scale: 1" = 25'

FIGURE 2

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.

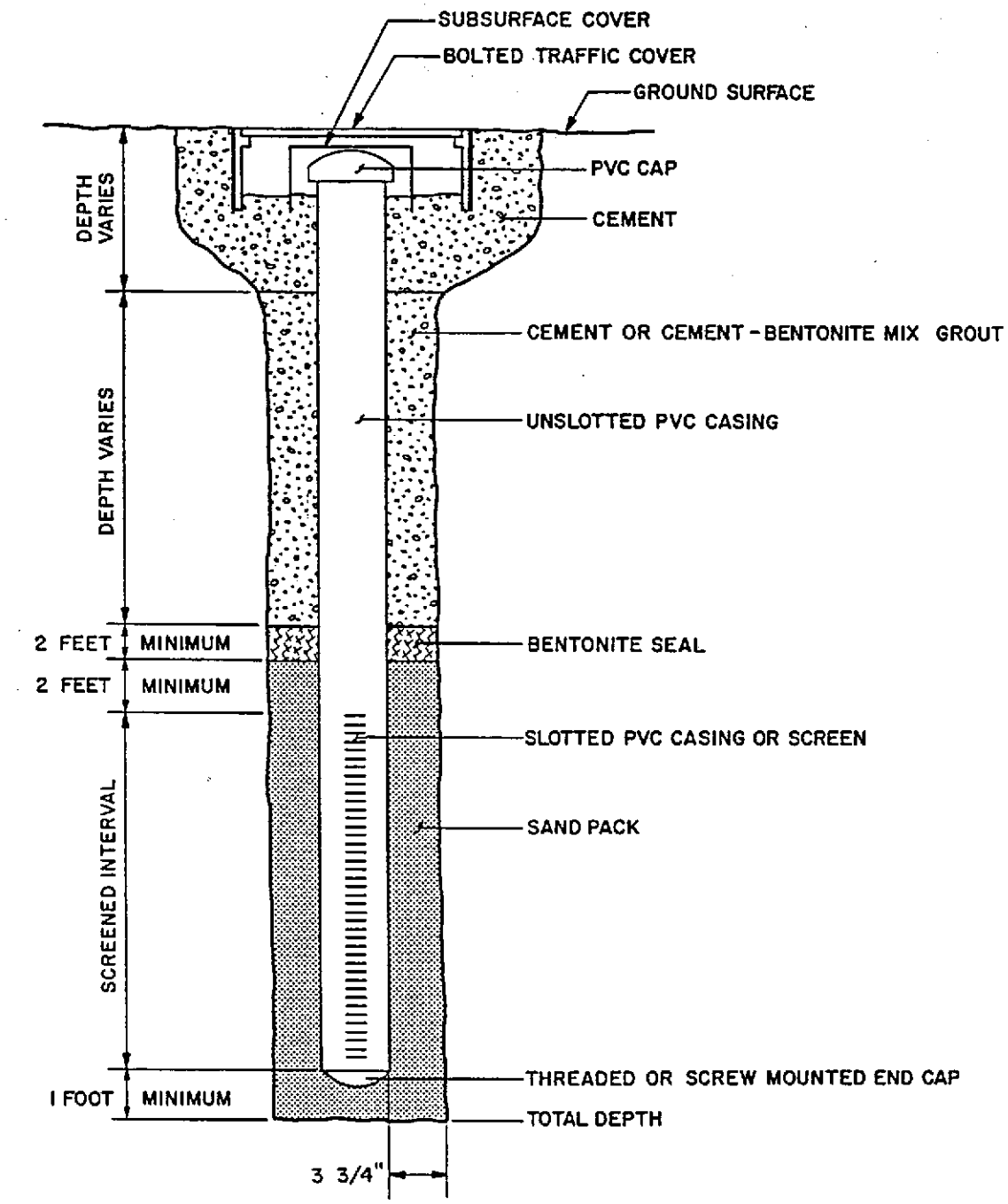
Soil from the second ring is used for field analysis of possible hydrocarbon contamination. The sample is placed in a Ziploc bag, sealed and allowed to volatilize for a HNU Photoionization Analyzer (PID) measurement. A head-space measurement is taken by breaking the seal just enough to insert the probe. 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

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.

Development of Groundwater Monitoring Wells in Unconfined Perched Aquifers Consisting Predominantly of Silt and Clay Size Particles

Groundwater monitoring wells are installed so that representative samples of formation water can be obtained. The development of these wells is a key factor in obtaining representative samples which are free of sediment. For a typical monitoring well in an aquifer composed mainly of sand size particles, development procedures have the following benefits:

1. They reduce the compaction and intermixing of grain sizes produced during drilling by removing fine material from the pore space.

2. They increase the natural porosity and permeability of the previously undisturbed formation near the well bore by selectively removing the finer fraction of aquifer material.

This allows for the undisturbed flow of formation water into the well without the addition of large amounts of clay and silt size particles which could affect sample quality. However, for wells in aquifers which consist mainly of silt and clay size particles, there is no method of construction or development which will eliminate the flow of these particles into the well, and still produce representative samples of formation water.

For the situation where the aquifer is composed mainly of silt and clay size particles, it is best to keep well development to a minimum. To obtain fairly representative samples of formation water it is recommended that at least four casing volumes of water be removed from the well, or the well should be bailed or pumped dry. Before a sample is collected, the well should be allowed to recover to at least eighty percent of its initial volume. This method of development and sampling will produce a fairly representative sample of formation water, although it will not produce a sample free of fine grained sediment.

GROUNDWATER SAMPLE FIELD LOG

PROJECT NAME_____
LOCATION_____
WELL NUMBER_____

SAMPLER_____

DATE OF SAMPLING_____
WEATHER CONDITIONS_____
DEPTH TO FREE PRODUCT_____
DEPTH TO WATER_____
DATUM ELEVATION(msl)_____
GROUNDWATER ELEVATION(msl)_____
TOTAL WELL DEPTH_____

SAMPLE:
WELL_____
SURFACE WATER_____
SEEP_____
OTHER (DESCRIBE)_____
_____

WATER LEVEL MEASURING EQUIPMENT_____
FREE PRODUCT LEVEL MEASURING EQUIPMENT_____
EVACUATION EQUIPMENT_____
GALLONS TO BE EVACUATED (4 casing vols.)_____
TIME OF EVACUATION START_____ FINISH_____
TOTAL GALLONS EVACUATED _____

SAMPLING EQUIPMENT_____
SAMPLING TIME START_____ FINISH_____
SAMPLING RATE (ml/min.)_____
APPEARANCE OF SAMPLE_____
_____
FIELD OBSERVATIONS AND/OR PROBLEMS ENCOUNTERED_____
_____
_____
EQUIPMENT DECONTAMINATION _____
_____

SAMPLES HAND CARRIED/SHIPPED ON_____(date) AT_____(time)

VIA_____ TO_____
(carrier and shipper's number) laboratory

FOR ANALYSIS OF_____