

CALIF CONTRACTOR # 513857 A CORPORATION
REGISTERED GEOLOGISTS

ENVIRONMENTAL
PROTECTION

November 30, 1995

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**WORKPLAN TO FURTHER EVALUATE EXTENT OF SOIL AND GROUND WATER
CONTAMINATION ASSOCIATED WITH FORMER DESERT PETROLEUM STATION
#793.**

INTRODUCTION

Desert Petroleum Inc., has been directed by Alameda County Health to further define and if necessary remediate the soil and ground water that may have been affected by the release from 4035 Park Blvd., Oakland, California. This release is suspected to have left the site at 4035 Park Blvd. and traveled via the sewer lateral to the sewer line on Brighton Avenue where gasoline taint fluids were observed entering the sewer manway, see Levine-Fricke Report dated November 16, 1993 "REPORT OF THE SOIL AND GROUND WATER INVESTIGATION AT 4003 PARK BOULEVARD/4006 BRIGHTON AVENUE, OAKLAND, CALIFORNIA. ✓

Western Geo-Engineers (WEGE) performed the soil screening and documentation sampling of the over-excavation of gasoline tainted soils at 4035 Park Boulevard on September 18, through October 4, 1995, see DESERT PETROLEUM Station #793, OVER-EXCAVATION AND QUARTERLY GROUND WATER SAMPLE REPORT. LOCATED AT 4035 Park Boulevard, OAKLAND, CALIFORNIA NOVEMBER 24, 1995. ✓

Figure 3 represents the estimated extent of soil and ground water tainted with gasoline range hydrocarbons as interpreted from the results of samples obtained from the over-excavation of 4035 Park Boulevard and from the above mentioned Levine-Fricke report.

OVERVIEW OF WEGE'S PROPOSAL FOR INVESTIGATION OF VERTICAL AND LATERAL EXTENT OF SOIL AND GROUND WATER CONTAMINATION ALONG THE SEWER LATERAL FROM DESERT PETROLEUM SITE #793, 4035 PARK BLVD., TO THE MANHOLE ON BRIGHTON AVENUE, OAKLAND CALIFORNIA.

WEGE's proposed soil and ground water investigation has been divided into three successive tasks that will provide information or prepare the site for the remaining tasks. WEGE's Soil Probe

Survey (SPS) will first be conducted within the backyards of private residences that are served by the sewer lateral shown on Figure 3. This will provide information necessary for determining the degree of and what association the contamination discovered at the Brighton Avenue manhole has with 4035 Park Blvd. The SPS will also help in the evaluation as to the most cost effective method(s) for remediating the soil/ground water contamination, if found to be necessary. Once the SPS has established a zero line of soil contamination, hand augered soil borings will be drilled at various locations along the sewer lateral to obtain soil and ground water samples to be submitted to a State of California Accredited Laboratory for analysis for Total Petroleum Hydrocarbons as gasoline (TPHg) with Benzene, Toluene, Ethylbenzene and Xylenes determination utilizing EPA methods 5030/8020. All information produced from the above tasks will be summarized in a Investigation and Evaluation Report for presentation to Alameda County Health and the Bay Area Regional Water Quality Control Board (BARWQCB).

TASK I: SOIL PROBE SURVEY

WEGE's Soil Probe Survey (SPS) is a cost effective method for determining the lateral and vertical extent of soil contamination resulting from the discharge of gasoline or diesel fuels. The general location of the proposed SPS test holes is shown in Figure 3. *not cert. lab* Actual test hole placement will be guided by the results of the on-site laboratory analysis and will be determined by the laboratory director as the SPS progresses. Prior to any site activity, permission will be obtained from the individual land owners and their tenants, to gain entry to the backyard areas adjacent to the sewer lateral. Also, all permits and permissions will be obtained from the City of Oakland, Alameda County Zone 7 and County Health.

At least 48 hours prior to the placement of the Soil Probe Survey test holes, Underground Service Alert will be contacted so that the location of underground utilities at and near the areas to be probed can be delineated.

PROPOSED SOIL PROBE SURVEY

Sampling Procedure

During the Soil Probe Survey (SPS) test holes will be drilled at selected locations within the areas that permits and permission have been granted.

Discrete soil and/or water samples will be collected from selected depths ranging from 5 feet below ground surface (bgs) to the top of ground water, formation refusal, or a maximum of 20 feet bgs. The number of test holes drilled, their location, and the depth intervals to be sampled will be determined by field conditions and the results generated by the on-site laboratory as

the SPS progresses. The SPS will begin near the property lines of 4035 Park Blvd and its neighbors to the north and west and progress along the route of the sewer lateral to Brighton Avenue, see Figure 3.

The test holes are drilled by driving a 5/8" steel rod into the ground using an electric jack hammer. After the rod has been driven to the desired sample depth, the rod is removed using a hydraulic puller and soil samples are then collected. A steel sampler with an inner plunger (to prevent premature filling) and a 3/8" by 2" brass sleeve fitted to the end is used to gather a small (1 to 4 grams) soil plug of the relatively undisturbed soil from the base of the hole. The sample is placed into a 40 ml VOA Vial and transported to the on-site mobile laboratory.

On-site Laboratory Analysis

*soil plug
2-4 gram*

The soil sample is first examined under an Ultraviolet (U.V.) scope in order to determine if any petroleum fluorescence is visible in the sample. The sample is then weighed, placed into a hot water bath and allowed to come to equilibrium. After the sample has reached equilibrium, a headspace sample is obtained and injected into the FID analyzer where a Total Volatile Organics (TVO) value is obtained. Selected samples are also injected into the calibrated FID (flame ionizing detector) chromatograph which produces a chromatogram of the sample. The resulting chromatogram is compared with standard calibration chromatograms to determine the levels of the volatile organics present.

If water is encountered, it is sampled by lowering 1/4" tubing into the hole and pulling the sample to the surface using a vacuum. The sample is collected in a 40 ml VOA Vial. The water is then examined under the U.V. scope in order to determine if any petroleum fluorescence is visible in the sample. The sample is then placed into a hot water bath and allowed to come to equilibrium. After the sample has reached equilibrium, a sample of the headspace is taken and injected into a calibrated FID chromatograph; the resulting chromatograms are examined for volatile organics. A second set of ground water samples will be obtained from selected SPS holes. These samples will be preserved and chain of custody delivered to a State of California Accredited Laboratory for analysis for Total Petroleum Hydrocarbons as gasoline (TPHg) with Benzene, Toluene, Ethylbenzene and Xylenes determination utilizing EPA methods 5030/8020.

Test Hole Destruction

→ auger holes

After collecting samples from the test holes, each test hole will be backfilled on the same day it is drilled using powdered bentonite topped with cement grout.

TASK II

Hand Auger Soil Sampling

Based on the SPS results, soil samples will be obtained by using a hand auger/sampler to obtain representative soil samples that will be submitted to a State of California Accredited Laboratory for analysis for Total Petroleum Hydrocarbons as gasoline (TPHg) with Benzene, Toluene, Ethylbenzene and Xylenes determination utilizing EPA methods 5030/8020.

These samples will verify the SPS findings and help establish the degree of contamination that is present along and adjacent to the sewer lateral.

Preservation of Soil Samples

After field screening, the sample sleeve ends will be sealed with aluminum foil and further protected with plastic caps. The caps will be secured to the metal sleeves with duct tape. The samples will be labeled with ID#, location, depth, date, time, sampler's initials, and analyses to be performed. The samples will be placed in an ice chest at 4°C and delivered with accompanying chain of custody documentation to a California State certified analytical laboratory.

Selection and Certified Laboratory Analyses of Soil Samples

Selected soil samples will be analyzed by a certified laboratory for concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G) using EPA method 5030 and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) using EPA method 8020.

Destruction of Confirmation Soil Borings

The hand augered soil borings will be destroyed on the same day they are drilled. The borings will be backfilled from total depth to within two feet of the surface with neat cement with <5% bentonite. The surface portion of the hole will be plugged with clean native soil and leveled to grade.

TASK III

Report of Soil Probe Survey Results

The SPS and the laboratory results of the hand augered soil samples will be documented by a report that includes a description of sample collection and laboratory analysis, a table of the sample results, and maps of the sample locations and the extent of the soil and ground water contamination. This report will be the basis for the generation of a Corrective Action Plan (CAP).

TIME FRAME

Within two weeks after approval of workplan, land owners and tenants permission process will commence.

Within two weeks after tenant/landlord approvals are granted the Encroachment and permit application process will be started and USA notification.

Within two weeks of permit approval - Soil Probe Survey (SPS).

At time of SPS - Confirmation soil sample borings.

One month after completion of SPS - Investigation and Evaluation Report including certified results from hand augered sample holes.

One month after Investigation and Evaluation Report - Corrective Action Plan.

HEALTH AND SAFETY

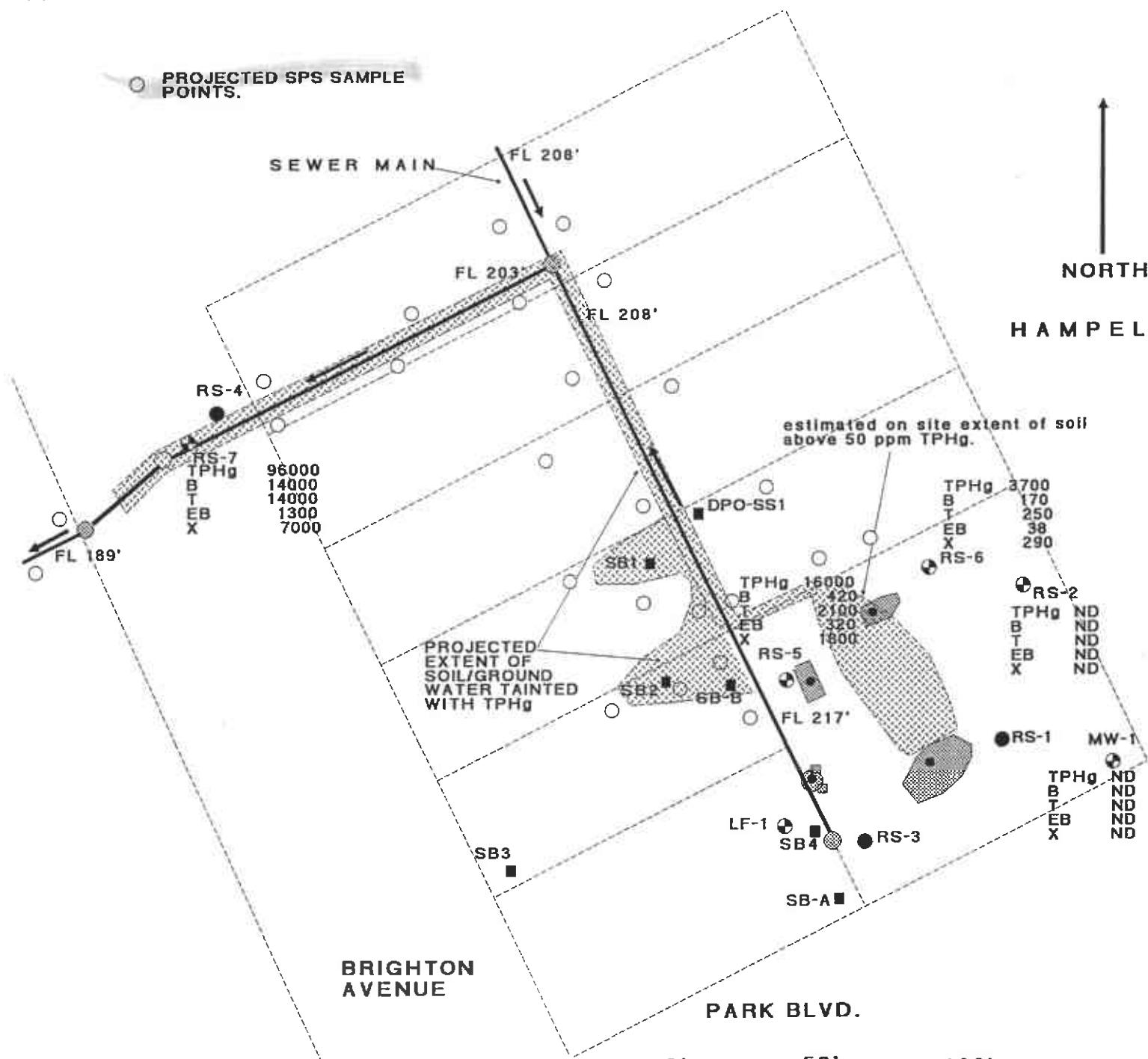
A site safety plan covering the potential job hazards, special precautions, and emergency medical contingencies related to the site investigation is included as Appendix A of this workplan.

LIMITATIONS

The services performed by Western Geo-Engineers will be 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 and Alameda County. Our work and/or supervision of remediation and/or abatement operations, active or preliminary at this site is no way meant to imply that we are owners or operators of this site. Please note that the known contamination of soil and/or ground water must be reported to the appropriate agencies in a timely manner. No other warranty expressed or implied, is made. If you have any questions concerning this workplan if we can be of further assistance, please do not hesitate to contact us at (916) 668-5300.



George L. Converse
Project Geologist

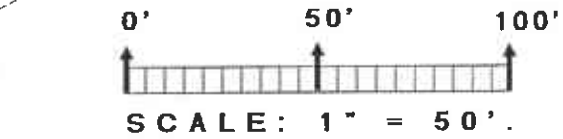


PROJECTED SPS SAMPLE POINTS.

NORTH
HAMPEL

estimated on site extent of soil above 50 ppm TPHg.

PROJECTED EXTENT OF SOIL/GROUND WATER TAINTED WITH TPHg



DESERT PETROLEUM STATION #793
4035 PARK BLVD..
OAKLAND, CALIFORNIA 94602

- INJECTION/RECOVERY TRENCHES.
- FL 217' FLOW LEVEL OF SEWER
- SEWER MANHOLE
- RS-4 DESTROYED WELLS.
- GRAB SOIL/WATER SAMPLE LOCATIONS. - 1990, Resna
- MW-1 MONITOR WELL LOCATION WITH ID# AND GROUND WATER ANALYTICAL RESULTS:

TPHg = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
 B = BENZENE
 T = TOLUENE
 EB = ETHYLBENZENE
 X = XYLENES

CONCENTRATIONS ARE IN UG/L, PPB DISSOLVED IN WATER.

FIGURE 3
GROUND WATER
ANALYTICAL RESULTS
OCTOBER 4, 1995