ENVIRON

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April 23, 1997

Mr. Gary W. Norton
Serrano & Cone Inc.
2092 Omega Road, Suite F
San Ramon, CA 94583

Re: Work Plan for Soil Stockpile Characterization
Pacific Electric Motor Co., 1009 - 66th Avenue, Oakland, California

Dear Mr. Norton:

This work plan describes the scope of work for characterization of a several soil stockpiles located at the Pacific Electric Motor Co. (PEM) facility at 1009 - 66th Avenue in Oakland, California (the Site). The purpose of this stockpile characterization effort is to determine the concentrations of gasoline constituents in the soil in order to provide the basis for determining an appropriate recycling, treatment or disposal method. This work plan provides background information concerning the soil stockpile, and our proposed sampling plan, sampling and analytical methods, quality assurance/quality control (QA/QC) procedures, and reporting procedures. This work is being conducted as part of the closure of a former underground gasoline storage tank at the Site, under the jurisdiction of the Alameda County Health Care Service's Environmental Health Department.

Background

Four soil stockpiles are presently located on-site, which have been identified as Stockpiles 1, 2, 3, and 4 for reference purposes (Figure 1). Based on reports provided by PEM, it is ENVIRON's understanding that approximately 1,300 cubic yards of gasoline-impacted soil were previously excavated in 1995 during the removal of a 2,000 gallon gasoline underground storage tank (UST) at the Site and stockpiled near the northwest corner of the property (Stockpile 1). In addition, non-impacted soils and asphalt overlying the former UST were stockpiled separately (Stockpile 2) and two other soil stockpiles are located on-site, including one stockpile that consists of excess clean material that was used to backfill the excavated area (Stockpile 3) and another stockpile that may also have been used as backfill material (Stockpile 4). The objective of this work plan is to characterize soil concentrations within Stockpiles 1, 2, and 4. As shown on Figure 1, the shapes of these stockpiles are irregular, and Stockpile 1 has a maximum width and length, respectively, of approximately 80 ft and 110 ft. The height of Stockpile 1 ranges from zero at the edges of the stockpile to about 15 to 20 feet near the north-central area of the stockpile. The volumes of Stockpiles 2 and 4, respectively, are estimated to be approximately 90 cubic yards and 20 cubic yards. This work plan is designed

to characterize gasoline constituents in the three stockpiles, including total volatile hydrocarbons as gasoline (TVH-G), benzene, ethyl benzene, toluene, and total xylenes (BTEX), and lead.

Sampling Plan

Stockpile 1

In order to characterize Stockpile 1 soils to determine potential reuse, treatment, or disposal alternatives, ENVIRON proposes to collect approximately one 4-point composite sample per 100 cubic yards of soil, or a total of 13 composite samples. In order to select unbiased, representative sample locations, a grid, consisting of 59 10-ft by 10-ft numbered squares, was superimposed on a plan of the stockpile (Figure 2). Thirteen sample locations were randomly selected by repeatedly generating random integers between X and X using the "RANDBETWEEN()" function included in the computer program Microsoft Excel 5.0. Each random number corresponds to a sample location. The sampling grid and selected sample locations are shown on Figure 2 and listed in Table 1.

Residual concentrations of gasoline constituents may vary with depth due to volatilization, biological degradation, methods of soil placement, and other factors. In order to collect samples representative of all depths within the stockpile, four sub-samples will be collected from each location at depths corresponding to 15%, 35%, 65%, and 85% of the approximate total stockpile depth at each randomly-selected location. At the laboratory, portions of each of the four sub-samples will then be combined into one composite sample for chemical analysis.

Stockpiles 2 and 4

ENVIRON proposes to collect one 4-point composite sample each from Stockpiles 2 and 4. Sample locations and depths will be selected in the field to provide a representative sample of each soil stockpile.

The proposed sampling plan is consistent with USEPA guidance for sampling plans for characterizing solid waste (*Test Methods of Evaluating Solid Waste, SW-846, Third Edition,* Chapter 9, USEPA, 1986, November.)

Sampling and Analytical Methods

The randomly-selected soil sample locations for Stockpile 1 will be located in the field by measuring the stockpile from fixed coordinates (e.g. corners of warehouse building, boundary fences, etc.) with a measuring tape and staking the sample location. The approximate depth of the stockpile will be measured at each sample location. Soil samples will be collected from depths corresponding to 15%, 35%, 65%, and 85% of the total stockpile depth using a hand

auger and a stainless steel trowel. Composite soil samples from Stockpiles 2 and 4 will also be collected using the same equipment. The hand auger and stainless steel trowel will be decontaminated by washing in a solution of tri-sodium phosphate and tap water, and rinsing in tap water prior to sampling at each location. The soil samples will be transferred immediately into pre-cleaned glass jars with Teflon lid liners. Each sample jar will be identified by a unique sample identification code to identify the sample location and depth (e.g., PEM-1-A, PEM-1-B), and the date, time, and name of the sampler. Sample information will be recorded at the time of sampling on a sample log form. Soil samples will be placed immediately into an ice chest with ice to cool the samples. Soil samples will be handled and transported to the laboratory under standard chain-of-custody procedures.

To verify proper equipment decontamination, one equipment blank, consisting of distilled/deionized water poured over the hand auger and hand trowel after decontamination, will be collected in glass bottles containing the appropriate preservative. The glass soil jars and water bottles, and distilled/deionized water will be supplied by the laboratory.

The samples will be delivered to and analyzed by Chromalab Environmental Services, of Pleasanton, California. At the laboratory, equal portions of each of the four sub-samples will be combined into one composite sample. The composite samples and equipment blank samples will be analyzed for total volatile hydrocarbons as gasoline (TVH-G) by USEPA Method 8015 Modified; benzene, toluene, ethyl benzene, and total xylenes (BTEX) by USEPA Method 8020; and lead by USEPA Method 6010. Samples will be analyzed on a normal (five working day) turn-around basis. The remaining portions of the soil samples will be stored under refrigeration at the laboratory for up to six weeks before disposal.

Quality Assurance and Quality Control Procedures

The laboratory analytical report will include a standard batch quality control data package for each analytical method. For TVH-G and BTEX analyses, this will include results of surrogate compound recoveries for each sample, and a method blank sample, a laboratory control sample, and a matrix spike/matrix spike duplicate sample for each sample media and analytical method. For lead analysis, this will include a lab blank, laboratory control sample, and blank spike/blank spike duplicate results. A copy of the signed original chain of custody form will be included in the laboratory report.

ENVIRON will review the field sample log form, and the laboratory analytical and quality control results for quality assurance and quality control (QA/QC) purposes. Any identified QA/QC issues will be discussed and resolved with the laboratory.

Reporting

A letter report describing sample collection methods, analytical methods, and results will be prepared and submitted to both you and PEM in a format suitable for submittal to the Alameda County Health Care Service's Environmental Health Department. The report will include a table summarizing analytical results and a figure identifying the soil sampling locations. If soil constituent concentrations appear to approach acceptance limits for disposal or recycling, ENVIRON will also calculate the 90% upper confidence limit of the mean concentration of each analyzed constituent, according to USEPA SW-846 methodology.

We are pleased to provide environmental consulting services to you and Pacific Electric Motor Co. Please call us at (510) 655-7400 if you have any questions regarding this work plan.

Sincerely,

John H. Schroeter, P.E., R.E.A.
Manager

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Enclosures:

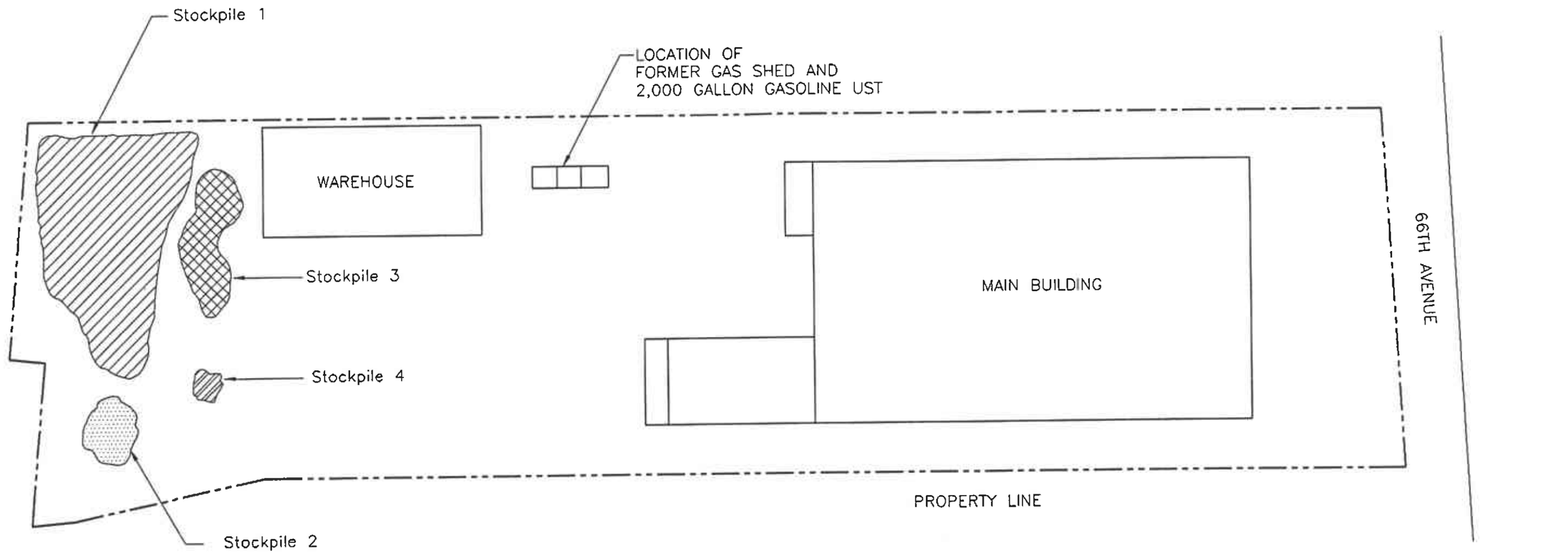
Table 1 - Soil Stockpile Characterization Sampling Locations - Stockpile 1
Figure 1 - Site Plan
Figure 2 - Soil Stockpile Sample Locations

TABLE 1
SOIL STOCKPILE CHARACTERIZATION SAMPLING LOCATIONS - STOCKPILE 1
Pacific Electric Motor Company, Oakland, California

Composite Sample Number	Random Grid Number	Stockpile Depth* (ft)	Depth 1 (85%, ft bgs)	Depth 2 (65%, ft bgs)	Depth 3 (35%, ft bgs)	Depth 4 (15%, ft bgs)
1	1	5	0.8	1.8	3.3	4.3
2	8	5	0.8	1.8	3.3	4.3
3	13	20	3.0	7.0	13.0	17.0
4	19	20	3.0	7.0	13.0	17.0
5	22	10	1.5	3.5	6.5	8.5
6	24	20	3.0	7.0	13.0	17.0
7	30	15	2.3	5.3	9.8	12.8
8	34	10	1.5	3.5	6.5	8.5
9	37	15	2.3	5.3	9.8	12.8
10	38	15	2.3	5.3	9.8	12.8
11	45	10	1.5	3.5	6.5	8.5
12	49	5	0.8	1.8	3.3	4.3
13	55	5	0.8	1.8	3.3	4.3

NOTES:

Random Grid Numbers between 1 and 58 generated by Excel 5.0 "RANDBETWEEN()" function.
bgs = Below Ground Surface (referenced to top of stockpile surface).
* Stockpile depths at randomly-selected sampling locations are rough estimates based on visual observations in the field. These estimated stockpile depths will be confirmed during the field sampling effort.



Note: Boundaries of existing soil stockpiles shown on this drawing are approximate and based on recent field observations.

EXPLANATION

- Approximate Extent of Stockpiled Soil from Previous UST Excavation Activities
- Approximate Extent of Clean Backfill Stockpile
- Approximate Extent of Excavated Soil Overlying Former UST
- Approximate Extent of Other Soil Stockpile

N

0 50 100

SCALE IN FEET

Source: Pacific Electric Motor Co. Drawing No. A-5029-D January 8, 1986

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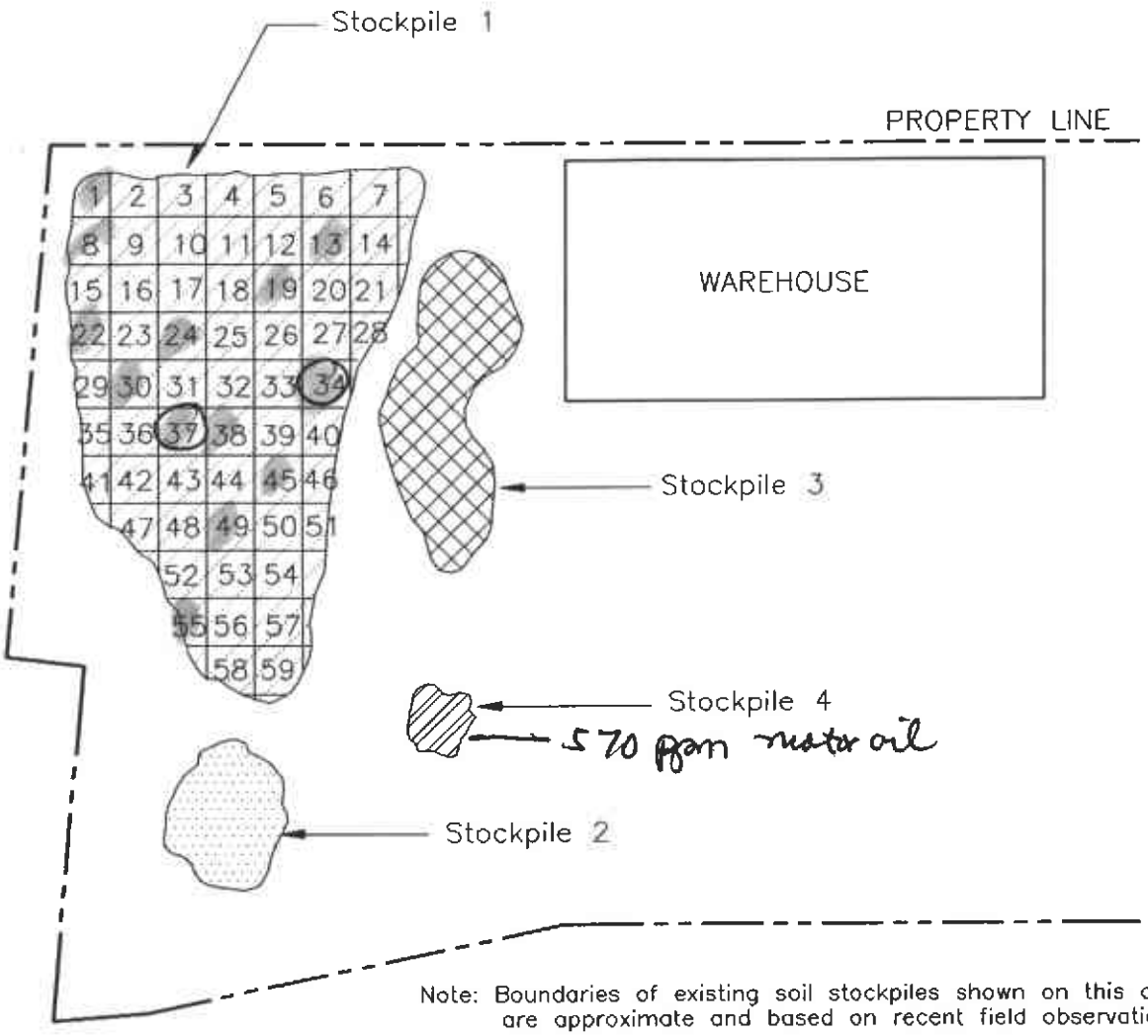
5820 Shellmound Street, Suite 700, Emeryville, California 94608

Site Plan
Pacific Electric Motor Co.
1009-66th Avenue
Oakland, California

DATE:	CONTRACT NUMBER:		FIGURE
4/23/97	03-5991A		1
DRAFTER: WJN	APPROVED: JHS	REVISED:	

C:\03591A\SITE



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- [1] Randomly – Selected Soil Sampling Grid Locations

N

0 40 80

SCALE IN FEET

Source: Pacific Electric Motor Co. Drawing No. A-5029-D January 8, 1986

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5820 Shellmound St., Suite 700, Emeryville, CA 94608

Soil Stockpile Sampling Grid & Sample Locations
Pacific Electric Motor Co.
1009-66th Avenue
Oakland, California

Figure 2

Drafter: WJN Date: 4/23/97 Contract Number: 03-5991A Approved: JHS Revised: