RESNA
Working To Restore Nature

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October 21, 1992
1015MWHE
69034.11

Mr. Mike Whelan
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Work Plan to Perform an Offsite Subsurface Investigation along Lewelling Boulevard near ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California.

Mr. Whelan:

At the request of ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) has prepared this letter to serve as a Work Plan to perform an offsite subsurface investigation near the above referenced site. The location of the site is shown on the Site Vicinity Map, Plate 1. **The tasks in this Work Plan include: submitting a traffic control plan; obtaining an encroachment permit from the City of San Leandro; drilling soil borings along Lewelling Boulevard immediately northwest of the site at intervals of 30 feet progressing northeastward to the eastern edge of Washington Avenue or until lateral soil delineation is achieved; sampling the borings; analyzing the samples on site in a State-Certified mobile laboratory; back filling all of the borings to grade with grout as work is completed; and preparing a report to include field procedures used, findings, interpretations and conclusions.**

The purpose of the offsite soil borings along Lewelling Boulevard is to evaluate the lateral extent of hydrocarbon impacted soil to the north and northeast of the site. **These borings are being drilled in response to hydrocarbon impacted soil recently encountered by PG & E during a trenching project along Lewelling Boulevard.** The approximate location of PG & E's proposed trench and our borings is shown on Plate 2, Proposed Boring/Monitoring Well Locations.

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WORK PLAN
FOR
OFFSITE SUBSURFACE INVESTIGATION
at
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

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WORK PLAN
FOR
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712 Lewelling Boulevard
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PROPOSED WORK

RESNA recommends the following work at the site:

Step 1 Submit and gain approval of this Work Plan, and a traffic control plan and obtain an encroachment permit from the City of San Leandro to drill in the public right-of-way.

Step 2 **Drill approximately 10 soil borings along Lewelling Boulevard in the location of PG & E's proposed trench.** The first boring will be drilled at the northwestern corner of ARCO's property along Lewelling Boulevard. Subsequent borings will be drilled at intervals of 30 feet along Lewelling Boulevard and into the intersection of Lewelling Boulevard and Washington Avenue until we reach the eastern edge of Washington Avenue or lateral soil delineation is achieved in the borings. Soil samples will be collected from each boring and analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by an onsite State-Certified mobile laboratory. After completion of each boring it will be back filled to grade with grout. All field work will be conducted according to RESNA's Field Protocol, included in Appendix A.

Step 3 Prepare a report summarizing field procedures, findings, interpretation, and conclusions.

DISTRIBUTION

It is recommended that copies of this Work Plan be forwarded to:

Mr. Mike Bakaldin
San Leandro Fire Department
835 East 14th Street
San Leandro, California 94577

Mr. John Nelson
City of San Leandro
Engineering and Transportation Department
835 East 14th Street
San Leandro, California 94577

Mr. Scott Seery
Alameda County Health Care Services Agency
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Mr. John Jang
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94621

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TRANSMITTAL

TO: Mr. Scott Seery
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, California 94621

DATE: October 21, 1992
PROJECT NUMBER: 69034.11
SUBJECT: Final Work Plan for ARCO Station 601, 712 Lewelling Boulevard, San Leandro, California.

FROM: Erin McLucas
TITLE: Staff Geologist

WE ARE SENDING YOU:

COPIES	DATED	NO.	DESCRIPTION
1	10/21/92	69034.11	FINAL - WORK PLAN AT THE ABOVE SUBJECT SITE.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment [ ] Approved as submitted [ ] Resubmit ___ copies for approval

[X] As requested [ ] Approved as noted [ ] Submit___ copies for distribution

[ ] For approval [ ] Return for corrections [ ] Return ___ corrected prints

[ ] For your files

REMARKS: cc: Mr. Mikael Whelan, ARCO Products Company
Mr. John Jang, CRWQCB, San Francisco Bay Region
Mr. John Nelson, City of San Leandro
Mr. Joel Coffman, RESNA Industries Inc.

Copies: 1 to RESNA project file no. 69034.11

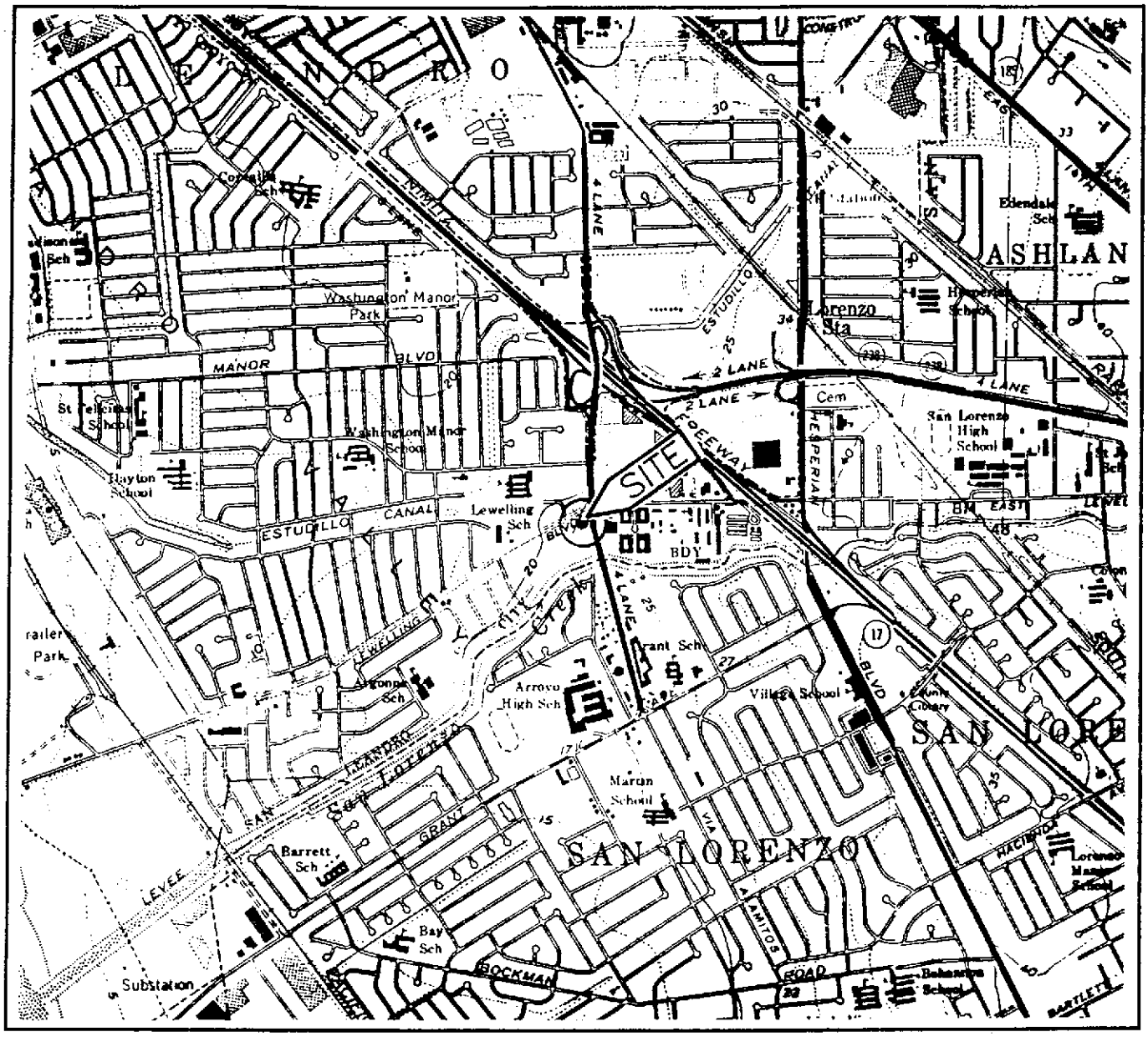
If you should have any questions or comments about this Work Plan, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Erin McLucas
Staff Geologist

Joel Coffman
Project Geologist

Enclosures: Plate 1, Site Vicinity Map
Plate 2, Proposed Boring/Monitoring Well Locations
Appendix A, Field Protocol



Base: U.S. Geological Survey
7.5–Minute Quadrangles
Hayward/San Leandro, California.
Photorevised 1984

N

LEGEND

⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

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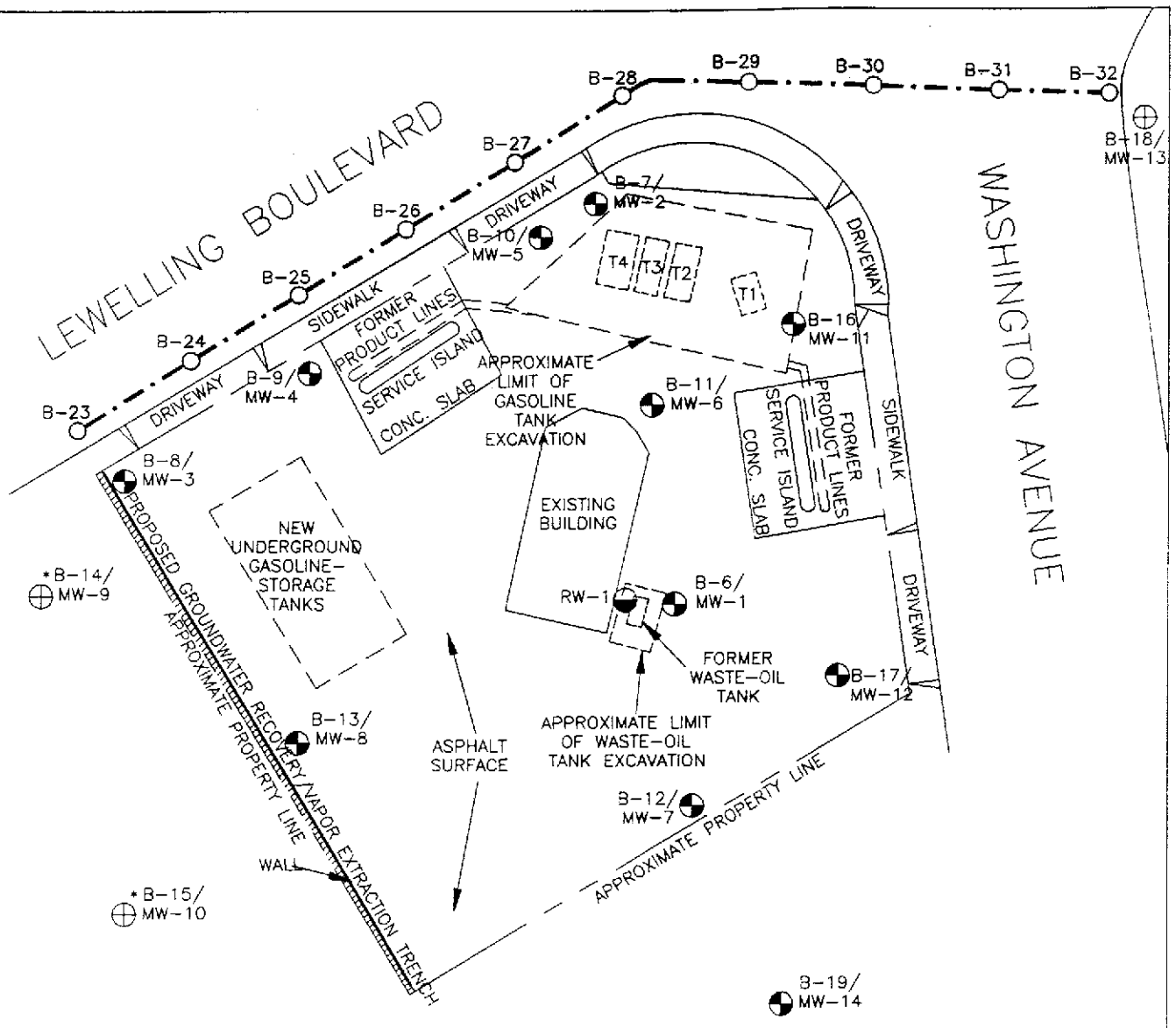
PROJECT 69034.11

SITE VICINITY MAP
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE
1



EXPLANATION

- = PG&E proposed trench
- B-32 = Proposed boring
- B-18/ MW-13 = Proposed boring/groundwater monitoring well
- B-19/ MW-14 = Groundwater monitoring well (RESNA, 1990, 1991, and 1992)
- RW-1 = Product recovery well (GeoStrategies, January 1990)
- T4 = Former underground gasoline storage tank
- * = Wells not yet installed due to difficulty obtaining access

N

Approximate Scale

40 20 0 40 80

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

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PROJECT 69034.11

PROPOSED BORING/ MONITORING WELL LOCATIONS
ARCO Station 601
712 Lewelling Boulevard
San Leandro, California

PLATE 2

APPENDIX A

FIELD PROTOCOL

FIELD PROTOCOL

The following presents RESNA's protocol for a typical site investigation involving gasoline hydrocarbon-impacted soil and/or groundwater.

Site Safety Plan

The Site Safety Plan describes the safety requirements for the evaluation of gasoline hydrocarbons in soil, groundwater, and the vadose-zone at the site. The Site Safety Plan is applicable to personnel of RESNA and its subcontractors. RESNA personnel and subcontractors of RESNA scheduled to perform the work at the site are to be briefed on the contents of the Site Safety Plan before work begins. A copy of the Site Safety Plan is available for reference by appropriate parties during the work. A site Safety Officer is assigned to the project.

Sampling of Stockpiled Soil

One composite soil sample is collected for each 50 cubic yards of stockpiled soil, and for each individual stockpile composed of less than 50 cubic yards. Composite soil samples are obtained by first evaluating relatively high, average, and low areas of hydrocarbon concentration by digging approximately one to two feet into the stockpile and placing the intake probe of a field calibrated OVM against the surface of the soil; and then collecting one sample from the "high" reading area, and three samples from the "average" areas. Samples are collected by removing the top one to two feet of soil, then driving laboratory-cleaned brass sleeves into the soil. The samples are sealed in the sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage for transport to the laboratory, where compositing will be performed.

Soil Borings

Prior to the drilling of borings and construction of monitoring wells, permits are acquired from the appropriate regulatory agency. In addition to the above-mentioned permits, encroachment permits from the City or State are acquired if drilling of borings offsite in the City or State streets is necessary. Copies of the permits are included in the appendix of the project report. Prior to drilling, Underground Services Alert is notified of our intent to drill, and known underground utility lines and structures are approximately marked.

The borings are drilled by a truck-mounted drill rig equipped with 8- or 12-inch-diameter, hollow-stem augers. The augers are steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. After drilling the borings, monitoring wells are constructed in the borings, or neat-cement grout with bentonite is used to backfill the borings to the ground surface.

Borings for groundwater monitoring wells are drilled to a depth of no more than 20 feet below the depth at which a saturated zone is first encountered, or a short distance into a stratum beneath the saturated zone which is of sufficient moisture and consistency to be judged as a perching layer by the field geologist, whichever is shallower. Drilling into a deeper aquifer below the shallowest aquifer can begin only after a conductor casing is properly installed and allowed to set, to seal the shallow aquifer.

Drill Cuttings

Drill cuttings subjectively evaluated as having hydrocarbon contamination at levels greater than 100 parts per million (ppm) are separated from those subjectively evaluated as having hydrocarbon contamination levels less than 100 ppm. Evaluation is based either on subjective evidence of soil discoloration, or on measurements made using a field calibrated OVM. Readings are taken by placing a soil sample into a ziplock type plastic bag and allowing volatilization to occur. The intake probe of the OVM is then inserted into the headspace created in the plastic bag immediately after opening it. The drill cuttings from the borings are placed in labeled 55-gallon drums approved by the Department of Transportation; or on plastic at the site, and covered with plastic. The cuttings remain the responsibility of the client.

Soil Sampling in Borings

Soil samples are collected at no greater than 5-foot intervals from the ground surface to the total depth of the borings. The soil samples are collected by advancing the boring to a point immediately above the sampling depth, and then driving a California-modified, split-spoon sampler containing brass sleeves through the hollow center of the auger into the soil. The sampler and brass sleeves are laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water, prior to each use. The sampler is driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches are counted and recorded to evaluate the relative consistency of the soil.

The samples selected for laboratory analyses are removed from the sampler and quickly sealed in their brass sleeves with aluminum foil, plastic caps, and aluminized duct tape. The samples are then be labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analyses at each sampling interval is tested in the field using an OVM that is field calibrated at the beginning of each day it is used. This testing is performed by inserting the intake probe of the OVM into the headspace created in the plastic bag containing the soil sample as described in the Drill Cuttings section above. The OVM readings are presented in Logs of Borings included in the project report.

Logging of Borings

A geologist is present to log the soil cuttings and samples using the Unified Soil Classification System. Samples not selected for chemical analyses, and the soil in the sampler shoe, are extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious product odor, and OVM readings.

Sample Labeling and Handling

Sample containers are labeled in the field with the job number, sample location and depth, and date, and promptly placed in iced storage for transport to the laboratory. A Chain of Custody Record is initiated by the field geologist and updated throughout handling of the samples, and accompanies the samples to a laboratory certified by the State of California for the analyses requested. Samples are transported to the laboratory promptly to help ensure that recommended sample holding times are not exceeded. Samples are properly disposed of after their useful life has expired.