Applied GeoSystems, Inc
A RESNA Company

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

TRANSMITTAL

TO: MS. SUSAN HUGO
ACHCSA-DEH
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 3/4/92
PROJECT NUMBER: 69028.06
SUBJECT: ARCO STATION 6113, 785 EAST STANLEY BOULEVARD, LIVERMORE, CALIFORNIA.

FROM: JOEL COFFMAN
TITLE: PROJECT GEOLOGIST

WE ARE SENDING YOU [ ] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [ ] Reports [ ] Specifications

[X] Letters [ ] Change Orders [ ] _____

COPIES	DATED	NO.	DESCRIPTION
1	3/3/92		FINAL-ADDENDUM TO 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: _____

Copies: 1 to project file no. 69028.06

*Revision Date: 11/21/91
*File Name: TRANSMT.PRJ

A RESNA Company

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

ADDENDUM TO WORK PLAN
at
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

69028.06

Prepared for
ARCO Products Company
P.O. Box 6411
San Mateo, California 94402

by
RESNA Industries, Inc.

March 3, 1992

A RESNA Company

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

ADDENDUM TO WORK PLAN
at
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

Prepared for
ARCO Products Company

INTRODUCTION

RESNA Industries, Inc. (RESNA) has prepared this letter to serve as an addendum to the Work Plan for Additional Subsurface Investigation and Vapor Extraction Test (RESNA, October 17, 1991) for the subject site. This addendum has been prepared in response to the letter from Ms. Susan Hugo of the Alameda County Health Care Services Agency (ACHCSA) dated January 10, 1992 requesting additional soil borings and monitoring well(s) in the vicinity of the former waste-oil tank to delineate the lateral extent of waste-oil hydrocarbons in soil and groundwater. Ms. Hugo requested in a telephone conversation with Mr. Joel Coffman of RESNA on January 27, 1992 that this addendum to work plan be submitted. The location of the subject site is shown on the Site Vicinity Map, Plate 1.

RESNA recommends the following project tasks to evaluate the presence and extent of hydrocarbons in the soil and groundwater in the area of the former waste oil tank. These tasks will be performed in conjunction with the installation of four vapor extraction wells (VW-5 through VW-8) and performing a vapor extraction test as proposed in the Work Plan (RESNA, October 17, 1991). As stated in the Work Plan, the previously proposed vapor extraction wells (VW-5 through VW-8) will be completed as groundwater monitoring wells (MW-5 through MW-8) if groundwater is encountered.

The proposed additional work includes the following: drilling and sampling two onsite soil borings (B-9 and B-10) in the vicinity of the former waste-oil tank; drilling boring B-11 downgradient of the waste-oil tank and installing one 4-inch diameter vadose (or groundwater, if encountered) monitoring well (VW-9) in the boring; surveying the new wells; performing laboratory analyses of soil samples; and preparing a report. If the proposed vapor-extraction wells VW-5 through VW-9 are completed as groundwater monitoring wells, the new wells will be developed, and the new and existing groundwater monitoring wells will be measured monthly for water levels and scheduled for sampling and laboratory analyses (or sampled and laboratory analyzed).

The purpose of this additional work is to evaluate the presence and extent of waste-oil related hydrocarbons in the soil and (possibly) groundwater, and to provide information regarding the existence of groundwater and evaluation of the gradient in the first-encountered groundwater-bearing zone beneath the site. In addition, information gained from boring 11/monitoring well 9 will aid in evaluating the extent of gasoline hydrocarbons detected in well MW-4.

PROPOSED ADDITIONAL WORK

RESNA recommends the following additional work at the site to be performed in conjunction with that previously proposed in our October 17, 1991 Work Plan:

Step 1 Obtain permits for borings and monitoring well from Alameda County Flood Control and Water Conservation District at the subject site. Submit Site Safety Plan to the ACHCSA.

Step 2 Drill and obtain soil samples for soil classification and laboratory analyses from three onsite soil borings (B-9, B-10, and B-11) as shown on Plate 2, Proposed Boring/Monitoring Well Locations. Drill borings B-9 and B-10 to the depth of first groundwater encountered previously beneath the site. Drill and install monitoring well VW-9 (or MW-9) in boring B-11. Boring B-11 will be advanced to no more than 5 feet into a possible perching or confining layer beneath the first previously encountered water-bearing zone, or no more than 20 feet into this water-bearing zone.

Step 3 Submit selected soil samples from borings B-9, B-10, and B-11 to a State-certified laboratory for analyses for total oil and grease (TOG) using standard method 5520

E&F; total petroleum hydrocarbons as gasoline (TPHg), and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using Environmental Protection Agency (EPA) Methods 5030/8015/8020; total petroleum hydrocarbons as diesel (TPHd) using EPA Method 3550/8015; the metals cadmium (Cd), chromium (Cr), nickel (Ni), and zinc (Zn) by EPA Method 6010, and for lead (Pb) by EPA Method 7421. Up to two soil samples each from borings B-9 through B-11 will be analyzed for volatile organic compounds [redacted] by EPA method 8240. Required reporting laboratory detection reporting limits will be observed and chain-of-custody protocol will be followed.

Step 4 Survey monitoring well VW-9 to a National Geodetic Vertical Datum.

Step 5 If elevated levels of gasoline hydrocarbons are present in the soil, perform a vapor extraction test (VET) using vapor extraction wells VW-5 through VW-9 (as appropriate), as described in the previous Work Plan.

Step 6 Prepare a report to include results of the investigation and our interpretations and conclusions.

Field work proposed in this Addendum to Work Plan will be performed according to the Field Methods included in Appendix A (Field Protocol) of our October 17, 1991 Work Plan for the subject site. A revised preliminary time schedule to perform Steps 1 through 6 in conjunction with the work proposed in that Work Plan is shown on Plate 3. Subsequent work plans will be prepared and submitted to ARCO and proper regulatory agencies as necessary to describe future work proposed at the site.

Copies of this Addendum should be forwarded to:

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Mr. Eddy So
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Ms. Danielle Stefani
City of Livermore Fire Department
4550 East Avenue
Livermore, California 94550

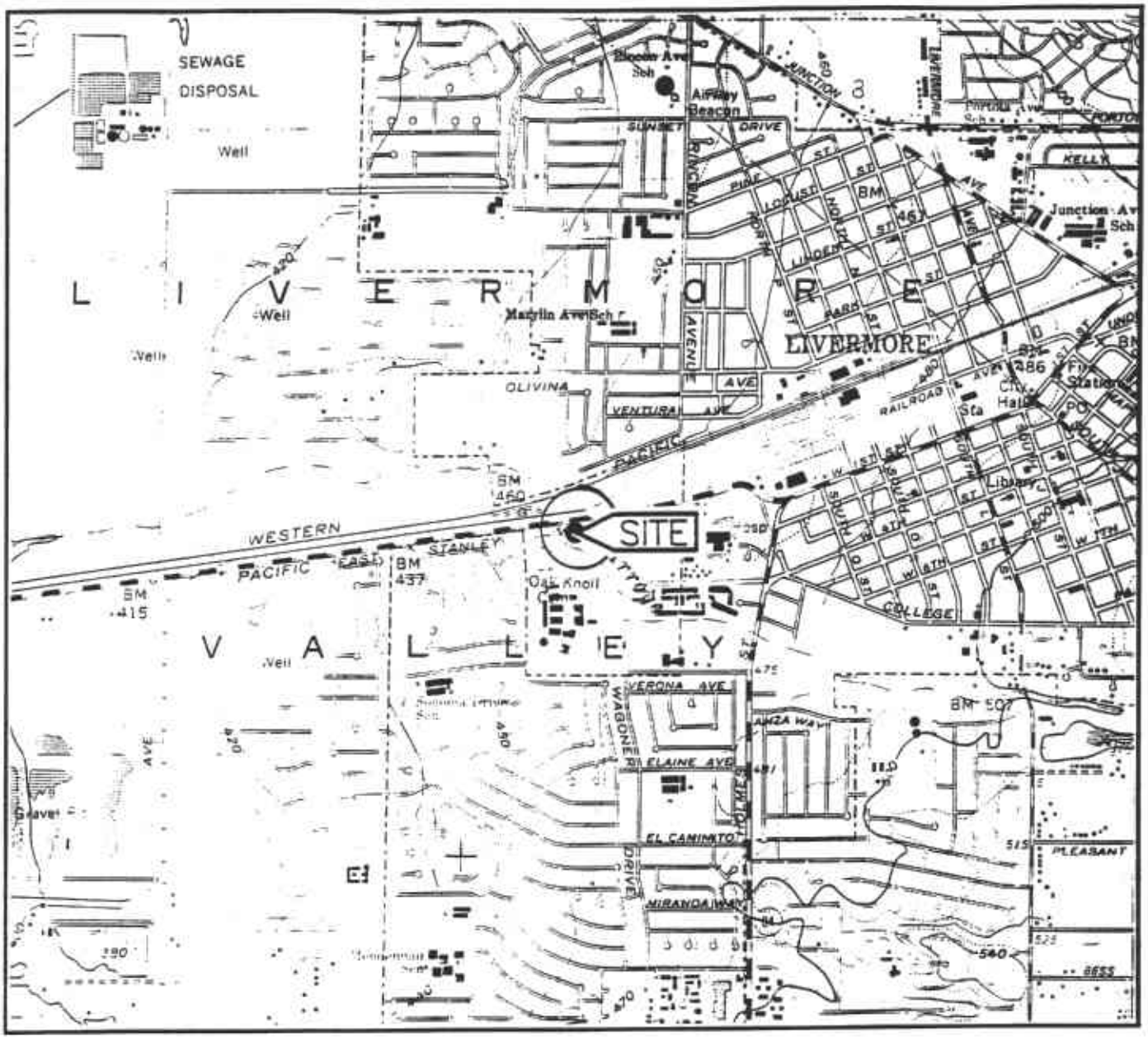
If you have any questions or comments about this Addendum to Work Plan, please call us at (408) 264-7723.

Sincerely,
RESNA

Joel Coffman
Project Geologist

Enclosures: Plate 1, Site Vicinity Map
Plate 2, Proposed Boring/Monitoring Well Locations
Plate 3, Preliminary Time Schedule

cc: H.C. Winsor, ARCO Products Company



Base: U.S. Geological Survey
7.5–Minute Quadrangle
Livermore, California
Photorevised 1980

LEGEND

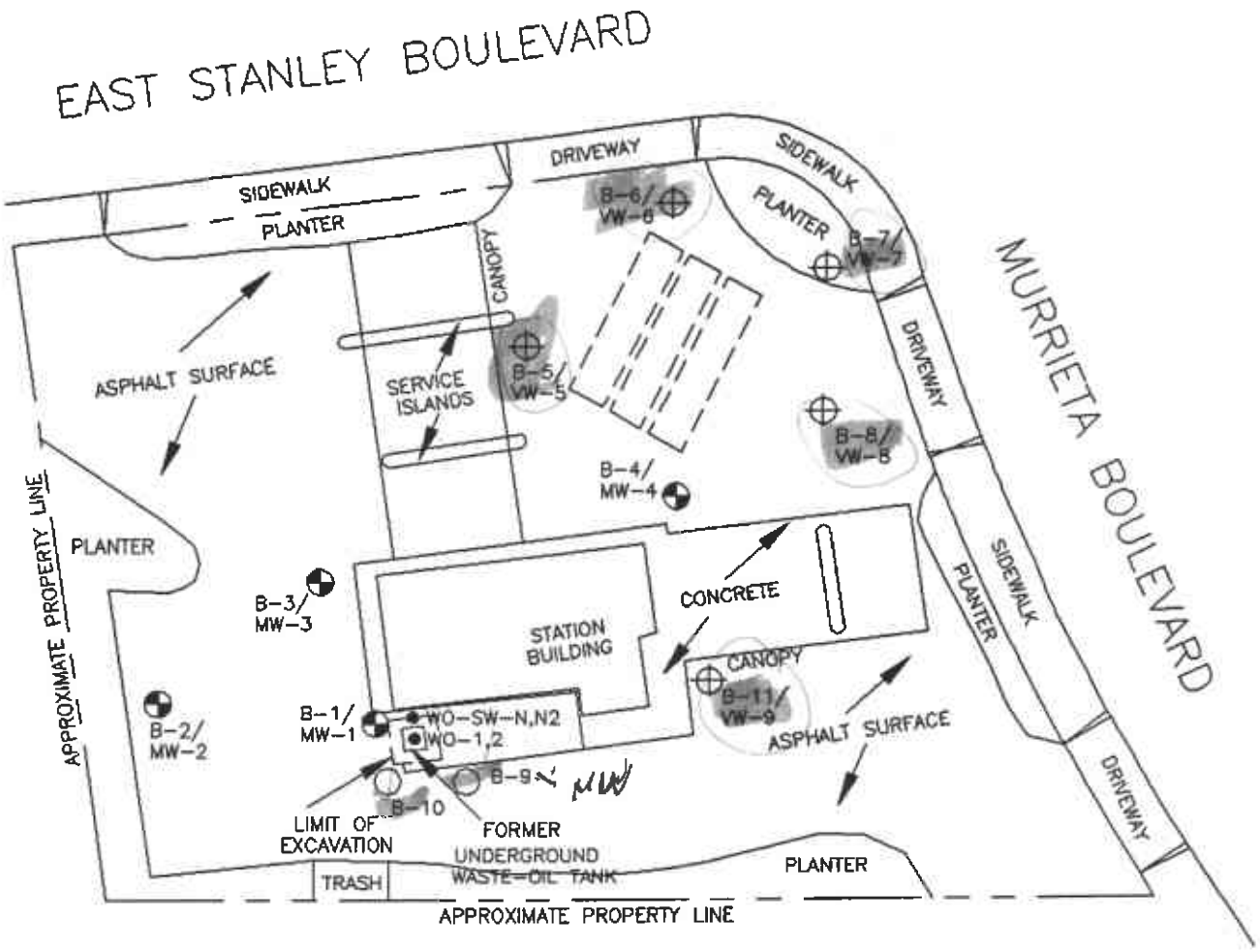
◉ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

RESNA	**SITE VICINITY MAP** **ARCO Service Station 6113** **785 East Stanley Boulevard** **Livermore, California**	**PLATE** **1**
PROJECT 69028.06		



EXPLANATION

B-11/VW-9 = Proposed boring/monitoring well

B-10 = Proposed boring

WO-SW-N,N2 = Soil sample collected by Pacific (1989)

B-4/MW-4 = Boring/monitoring well (Applied GeoSystems, September 1989 and February 1991)

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., October 1988.

RESNA	**PROPOSED BORING/ MONITORING WELL LOCATIONS ARCO Service Station 6113 785 East Stanley Boulevard Livermore, California**	**PLATE 2**
PROJECT: 69028.06		

STEP 1:
Permitting; submit Site Safety Plan

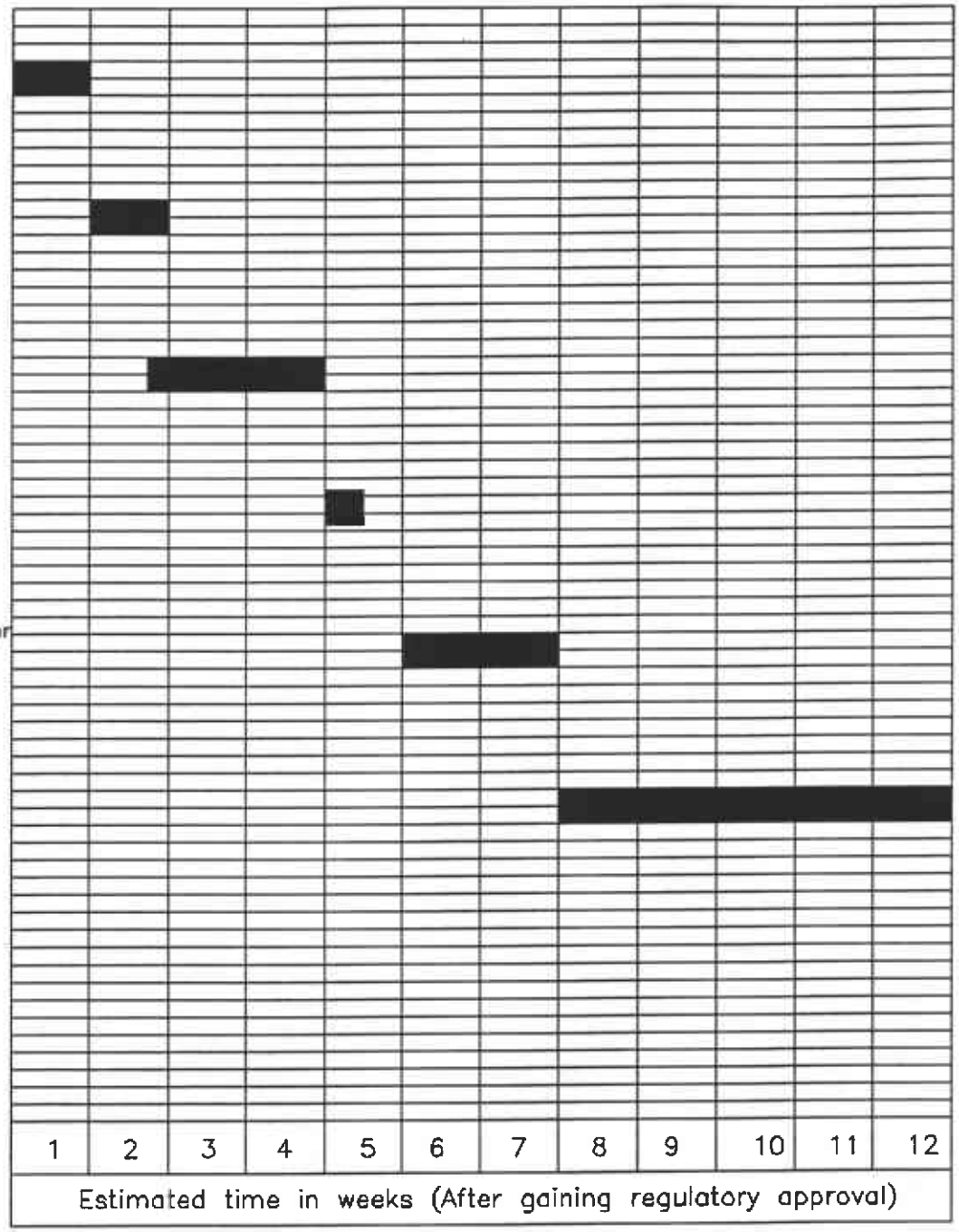
STEP 2:
Drill and install vapor monitoring wells VW-5 through VW-9

STEP 3:
Submit soil samples for laboratory analysis and receive results

STEP 4:
Survey wells

STEP 5:
Schedule and perform vapor extraction test (as necessary)

STEP 6:
Prepare Draft Report



Note: If wells are constructed as groundwater monitoring wells, development, sampling, and analysis may take up to 3 weeks longer.

RESNA	**PRELIMINARY TIME SCHEDULE** **ARCO Station 6113** **785 East Stanley Boulevard** **Livermore, California**	**PLATE** **3**
PROJECT 69028.06		