

May 28, 2003

Mr. Kelly Engineer  
All Star Inc.  
1791 Pine Street  
Concord, California 94620

Alameda County

JUN 10 2003

Environmental Health

RE: Work Plan - Limited Subsurface Investigation  
1220 West Tennyson Road, Hayward, California 94544  
ACC Project Number 6651-001.01

Dear Mr. Engineer:

ACC Environmental Consultants, Inc., (ACC) presents this Work Plan (WP) to perform a limited subsurface soil boring investigation downgradient of the subject property. The work described here is designed to address the request of the Hayward Fire Department (HFD) for additional subsurface investigation at 1220 West Tennyson Road, Hayward, California (Site). A copy of this Work Plan will be forwarded to the HFD for review and approval.

## INTRODUCTION

The goals of this investigation will be to: 1) characterize groundwater downgradient of the Site and attempt to determine the horizontal extent of petroleum hydrocarbon-impacted groundwater; 2) log soils and prepare geologic cross sections to evaluate the migration potential in the first encountered water-bearing zone; 3) prepare a report of findings for submission to the HFD and/or other agencies as appropriate.

## BACKGROUND

The Site is located on the southwest corner of West Tennyson Road and Pompano Street, Hayward, California (Figure 1). An operating gasoline and automobile repair facility currently occupy the Site. The following information was obtained during file review at the HFD.

Environmental Geotechnical Consultants, Inc. removed one 6,000-gallon and three 4,000-gallon USTs from the site in October 1990. Four new USTs were subsequently installed at the site. One groundwater and eight soil samples were collected from the tank pit during removal of the USTs. Analysis of the soil samples revealed the presence of total petroleum hydrocarbons as gasoline (TPHg) at 4,300 parts per million (ppm), benzene at 29,000 parts per billion (ppb), toluene at 160,000 ppb, ethylbenzene at 68,000 ppb and total xylenes at 280,000 ppb. Analysis of the groundwater sample revealed the presence of TPHg at 26 ppm, benzene at 2,400 ppb, toluene at 1,800 ppb and total xylenes at 5,200 ppb.

Artesian Environmental Consultants (Artesian) performed a subsurface investigation at the Site in March 1992. Three soil borings were drilled at the Site and converted into groundwater monitoring wells (MW-1, MW-2 and MW-3). Analysis of seven soil samples collected from the borings revealed the presence of TPHg at 680 ppm, benzene at 8,100 ppb, toluene at 15,000 ppb, ethylbenzene at 11,000 ppm and total xylenes at 73,000 ppb. Analyses of soil samples collected from the tank pit revealed the presence of TPHg at 2,900 ppm, benzene at 12,000 ppb, toluene at 160,000 ppb, ethylbenzene at 35,000 ppb and total xylenes at 420,000 ppb. Analyses of groundwater samples collected from the groundwater monitoring wells revealed the presence of TPHg at 59,000 ppb, benzene at 13,000 ppb, toluene at 12,000 ppb, ethylbenzene at 1,600 ppb and total xylenes at 13,000 ppb.

ACC understands that the City of Hayward has requested additional site investigation at the Site.

ACC performed periodic groundwater sampling at the Site in April 2001, July 2001, November 2002, February 2003, and on May 27, 2003. The results of the May 2003 well monitoring will be summarized in a report submitted under separate cover. Analytical results from the groundwater samples are summarized below in Table 1.

**TABLE 1 - GROUNDWATER SAMPLE ANALYTICAL RESULTS**

Well No	Date Sampled	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE* (µg/L)	TBA* (µg/L)
MW-1	04/07/92	< 50	2.1	0.56	<0.5	1.4	NA	NA
	04/11/01	< 50	<0.5	<0.5	<0.5	<0.5	<5.0	NA
	07/16/01	< 50	<0.5	<0.5	<0.5	<0.5	<5.0	NA
	11/25/02	16,000*	< 100	< 100	< 100	< 100	20,000	NA
	02/24/03	<25,000	<250	<250	<250	<500	59,000	NA
MW-2	04/07/92	2,100	450	200	45	360	NA	NA
	04/11/01	<5,000	<50	<50	<50	150	5,200	NA
	07/16/01	6,300	<50	<50	<50	<50	6,500	NA
	11/25/02	13,000*	<50	<50	<50	<50	20,000	NA
	02/24/03	<5,000	<50	<50	<50	<100	17,000	NA
MW-3	04/07/92	59,000	13,000	12,000	1,600	13,000	NA	NA
	04/11/01	4,800	<5.0	5.1	320	<5	760	1,500
	07/16/01	4,300	<10	<10	100	60	2,400	NA
	11/25/02	2,900*	<10	<10	<10	<10	4,000	NA
	02/24/03	<5,000	<50	<50	<50	<100	4,900	NA

Notes: µg/L = micrograms per liter (approximately equivalent to ppb)

< = concentrations were below reporting limits

NA = Not analyzed

\* = Hydrocarbon reported in the gasoline range does not match the gasoline standard

Based on groundwater elevation calculations, groundwater flow direction is toward the south as shown on Figure 2. The average gradient is 0.018 foot per foot. Groundwater monitoring results indicate a general decreasing trend in gasoline constituents in groundwater and a general increasing trend in MTBE in groundwater.

### **SCOPE OF WORK**

In order to further characterize soil and groundwater conditions at the Site, ACC proposes the following scope of work:

- Advance eight (8) exploratory soil borings downgradient of the Site to first encountered groundwater and collect representative soil and grab groundwater samples;
- Continuously core the downgradient soil borings to observe and log each foot of soil encountered and prepare cross sections in order to help evaluate subsurface conditions and migration potential in soil and groundwater;
- Collect representative grab groundwater samples in each soil boring in the top five (5) feet of first encountered groundwater and analyze the water samples for all gasoline and MTBE by EPA Method 8260B;
- Submit soil sample collected in the capillary fringe from four select soil borings to a state certified analytical laboratory for analysis of TPHg, BTEX, and MTBE by EPA Method 8260B;
- Collect a water sample from the one known domestic well located on a residential property downgradient from the Site;
- Submit the water samples to a state certified analytical laboratory for analysis of TPHg, BTEX, and MTBE by EPA Method 8260B;
- Prepare a letter report of findings for submission to the HFD within fifteen (15) working-days of receipt of the analytical results.

## **RATIONALE FOR PROPOSED SCOPE OF WORK**

The general goals of this investigation are to further characterize soil and groundwater in the confirmed downgradient direction of the Site and further characterize hydrogeological conditions for purposes of evaluating the migration potential in groundwater. This scope of work is also intended to determine whether additional groundwater monitoring wells are necessary to characterize and monitor groundwater conditions. Previously performed groundwater monitoring has documented elevated concentrations of TPHg, BTEX, and MTBE in monitoring wells MW-1 and MW-2. While concentrations of gasoline constituents attenuate dramatically onsite (as evidenced by lower concentrations reported in downgradient monitoring well MW-3), no evidence is available regarding suspect offsite groundwater impacts.

This scope of work is based on ACC's experience with sites with similar hydrogeology and is designed to characterize subsurface site conditions in a cost-effective fashion. ACC proposes to advance eight Geoprobe® soil borings to approximately 15 feet bgs (approximately 5 feet below the regional groundwater level of 10 feet bgs) at locations illustrated on Figure 2. Groundwater flow direction is to the south. Soil borings will be advanced so that grab groundwater samples can be collected to further define the plume of impacted groundwater downgradient in the calculated groundwater flow direction and in appropriate crossgradient locations. The soil borings proposed in this Work Plan can be advanced in one day.

Soil borings B1 through B4 and B8 will be continuously cored in order to prepare a cross section in the groundwater flow direction. One soil sample will be collected in the capillary fringe above first-encountered groundwater in soil borings B1 through B4 and analyzed for gasoline constituents. All cored soil will be screened for field indications of petroleum hydrocarbon impact and selected representative soil samples will be prepared for analysis. Soil screening will be done with a calibrated ppbRAE PID. This PID measures volatile constituents in air in the ppb range and is highly effective at prioritizing potential soil samples for analysis. Soil samples collected at the capillary fringe or soil samples exhibiting the highest PID readings, or soil samples collected immediately above significant changes in lithology, will be prepared for analysis. Soil samples will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B. Grab groundwater samples will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B. If elevated MTBE is reported greater than 4,900 ppb (the level of MTBE reported in well MW-3 in February 2003) then all fuel oxygenates will be analyzed for in the grab groundwater samples. The other fuel oxygenates include: tert-Butyl alcohol (TBA); Di-isopropyl Ether (DIPE); Ethyl tert-butyl ether (ETBE); Tert-Amyl methyl ether (TAME); and the two scavengers ethylene dibromide (EDB) and the 1,2-dichloroethane (EDC).

The proposed soil boring locations have been chosen to maximize the subsurface data obtained while protecting existing equipment and structures. ACC believes this scope of work will further characterize current groundwater conditions immediately downgradient of the Site, provide

sufficient data to evaluate the human health risk, and provide data regarding the necessity for additional groundwater monitoring points. Soil boring sample analyses are summarized in Table 2.

**TABLE 2 - PROPOSED ANALYSES**

Soil Boring	Depth (feet bgs)	Matrix	Constituent Analyses
B1	8.0-9.5	Soil	TPHg, BTEX, MTBE
	10-15	Water	TPHg, BTEX, MTBE
B2	8.0-9.5	Soil	TPHg, BTEX, MTBE
	10-15	Water	TPHg, BTEX, MTBE
B3	8.0-9.5	Soil	TPHg, BTEX, MTBE
	10-15	Water	TPHg, BTEX, MTBE
B4	8.0-9.5	Soil	TPHg, BTEX, MTBE
	10-15	Water	TPHg, BTEX, MTBE
B5	10-15	Water	TPHg, BTEX, MTBE
B6	10-15	Water	TPHg, BTEX, MTBE
B7	10-15	Water	TPHg, BTEX, MTBE
B8	10-15	Water	TPHg, BTEX, MTBE

### DRILLING PROGRAM

A drilling permit will be obtained from the HFD and it will be notified at least 72 hours prior to commencing field activities. The proposed soil boring locations are illustrated on Figure 2.

The soil boring will be advanced using a hydraulically driven Geoprobe<sup>®</sup> sampling tool equipped with 2.0-inch inside diameter clear acetate liners. Drilling will be performed under the direction of a Registered Geologist, and the subsurface materials in the borings will be identified and logged according to the Unified Soil Classification System. The sampling probe and rods will be pre-cleaned prior to use and between sample drives by washing them with a trisodium phosphate and potable water solution, a potable water rinse, and distilled water rinse. The work will be conducted in one day and soil cuttings will not be generated.

Select soil borings will be advanced by continuously coring from the surface to a depth of fifteen (15) feet bgs or five (5) feet into saturated soil. Soil at two to four-foot increments will be screened with a ppbRAE PID prior to preparing soil samples for submission to the laboratory. ACC proposes to collect a minimum of one soil sample each in soil borings B1 through B4. The soil samples collected at approximately 8.0 to 9.5 feet bgs, in the encountered capillary fringe. The borings will then be advanced approximately five (5) feet into first encountered groundwater and a grab groundwater sample will be collected. Grab groundwater samples will be collected through the use of a stainless steel hydropunch sampling probe and retrieved from the probe with either a new, disposable 0.5-inch-diameter bailer or new polyethylene tubing equipped with a check-ball.

The soil and grab groundwater samples will be submitted to STL San Francisco (STL-SF), a state-certified analytical laboratory, following standard chain of custody procedures for analysis of constituents of concern. Standard turnaround time for analytical results is five (5) working days. Following drilling and sample collection, each soil boring will be abandoned with neat cement to just below the surface (3 to 6 inches). The soil boring will then be completed with concrete to grade to match the surrounding material.

### **DOMESTIC WELL SAMPLING**

ACC understands that a water extraction well is located on a residential property downgradient of the Site. ACC will coordinate with the HFD and the well owner and collect a water sample from the domestic well. ACC will submit the water samples to STL-SF for analysis of TPHg, BTEX, and MTBE by EPA Method 8260B.

### **REPORT PREPARATION**

A technical report discussing field work, observations and findings, analytical results, conclusions, and recommendations will be prepared for submission to the HFD within fifteen (15) days of receipt of analytical results.

### **HEALTH AND SAFETY PLAN**

A site-specific health and safety plan which encompasses the proposed work at the Site and complies with the requirements of 29 CFR Part 1910.120 will be prepared and present during field activities.

### **LIMITED SUBSURFACE INVESTIGATION SCHEDULE**

Upon Work Plan approval and receipt of the required retainer fee, the estimated schedule to complete the limited subsurface investigation is as follows:

<u>Day</u>	<u>Activity</u>
0-15	1) Work Plan approved by HFD; 2) retainer fee received by ACC; 3) City of Hayward drilling permit issued
15-20	1) Soil borings advanced; 2) ACC granted access to the downgradient domestic well; 3) select soil and water sample collected are submitted to STL-SF
20-25	1) Analytical results received; 2) ACC begins preparing technical report
35-40	ACC submits technical report of findings to HFD and/or other agencies

ACC anticipates that the HFD will assist in obtaining access to the downgradient domestic well located on private property. The timeframe for the technical report will only be affected by delays in access to the domestic well.

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If you have any questions concerning this work plan, please call me at (510) 638-8400, ext. 109.

Sincerely,



David R. DeMent, RG, REA II  
Environmental Division Manager

/trb:drd

Attachments

cc: Mr. Hugh Murphy, HFD  
Mr. Paul Rosenstein, Esq.

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Source: Thomas Guide Digital Edition 2002

Title: **Location Map**  
**1220 West Tennyson Road**  
**Road, California**

Figure Number: 1

Scale: None

Project No: 6551-004.00

Drawn By: EJJ

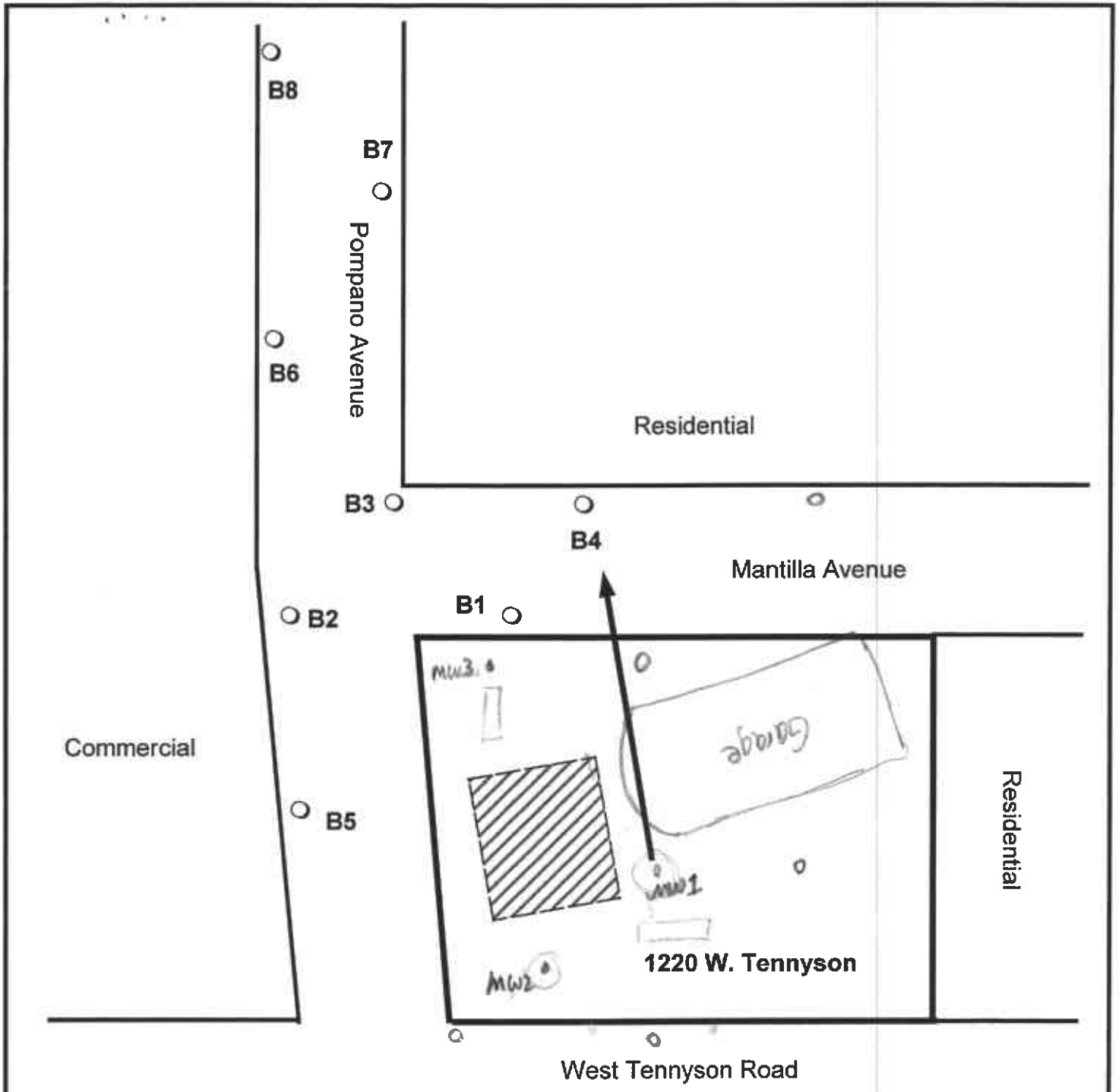
**A • C • C**  
**ENVIRONMENTAL**  
**CONSULTANTS**

Date: 4/18/03




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**LEGEND**

-  Proposed Soil Boring Location
-  Groundwater Gradient Direction (approximated from 2001-2003 data)
-  Former Tank Location (approximated)

Title: Site Map 1220 West Tennyson Road Hayward, California	
Figure Number: 2	Scale: 1" = 40'
Project Number: 6551-004.00	Drawn By: TRB
<b>A·C·C</b> ENVIRONMENTAL CONSULTANTS	Date: 05/22/03
	
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