



ALCO
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94 FEB 14 PM 2:30
(916) 782 2110 Fax (916) 786 7830

February 8, 1994

Mr. Roger L. Woodward
R.L. Woodward Industries, Inc
Post Office Box, 2688
Dublin, California

Subject: **Workplan For Subsurface Investigation**
Corwood Car Wash
6973 Village Parkway, Dublin, California

Dear Mr. Woodward:

Aegis Environmental Inc. (Aegis), is pleased to provide R. L. Woodward Industries, Inc. (Woodward), this workplan to conduct a subsurface investigation at the subject site (Figure 1).

The proposed work is based on the following:

- * Letter to Mr. Woodward from the Alameda County Health Care Services Agency, Hazardous Materials Division, dated June 29, 1993.
- * Soil and groundwater sampling performed by Aegis on June 8, 1993 (Figure 2).
- * Information provided to Aegis by R. L. Woodward Industries, Inc..

This workplan is subject to modification as newly acquired information may warrant.

PURPOSE

The purpose of the investigation is to further evaluate the vertical and horizontal extent of petroleum hydrocarbons within the shallow subsurface beneath the site.

SCOPE OF WORK

The following scope of work is proposed, to be conducted according to the Aegis Standard Operating Procedures (SOP), included as Attachment 1.

- * ~~Soil sampling will be conducted~~ to a depth of 10 feet below surface (bs).

SITE HEALTH AND SAFETY PLAN

A site health and safety plan (SHSP) has been prepared (Attachment 2). The information in the SHSP is equivalent to that contained in Material Safety Data Sheets. A copy of the SHSP will be on site during all field activities.

PROPOSED WORKPLAN

SOIL BORINGS:

Six soil borings will be drilled at the locations shown on Figure 3. The soil borings will extend approximately 5 to 10 feet below surface (bs) or just above groundwater. Soil samples will be collected at 5-foot intervals, logged, and screened for evidence of hydrocarbons with a photoionization detector (PID). Samples with a PID reading above 2.5 ppm will be sent to a laboratory for analyses.

Soil cuttings generated during soil boring will be stockpiled on site under and on plastic sheeting. The soil will be remediated on site by bioremediation.

LABORATORY ANALYSES

Selected soil samples (at least one per boring) will be analyzed for the following:

- * Total Petroleum Hydrocarbons (TPH), as gasoline and diesel, by EPA Method 8015, and
- * Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) by EPA Method 8020.

PROJECT CONTACTS AND REPRESENTATIVES

Mr. Roger L. Woodward
R. L. Woodward Industries, Inc.
Post Office Box 2688
Dublin, California 94568
(510)828-5151

Mr. Owen Kittredge/Mr. Jeffrey Ung
Aegis Environmental, Inc.
1050 Melody Lane, Suite 160
Roseville, California 95678
(916)782-2110

REMARKS/SIGNATURES

The information in this workplan represents our professional opinions, and was developed in accordance with available information and currently accepted geologic, hydrogeologic and engineering practices. This workplan was prepared for the sole use of R. L. Woodward Industries, Inc..

The proposed work will be conducted under the review and supervision of the professional geologist, registered with the State of California, whose signature appears below.

If you have any questions or concerns, please contact our office at (916)782-2110.

Sincerely,


AEGIS ENVIRONMENTAL, INC.



Jeffrey C. Ung
Staff Geologist



Owen Kittredge
Contract Manager



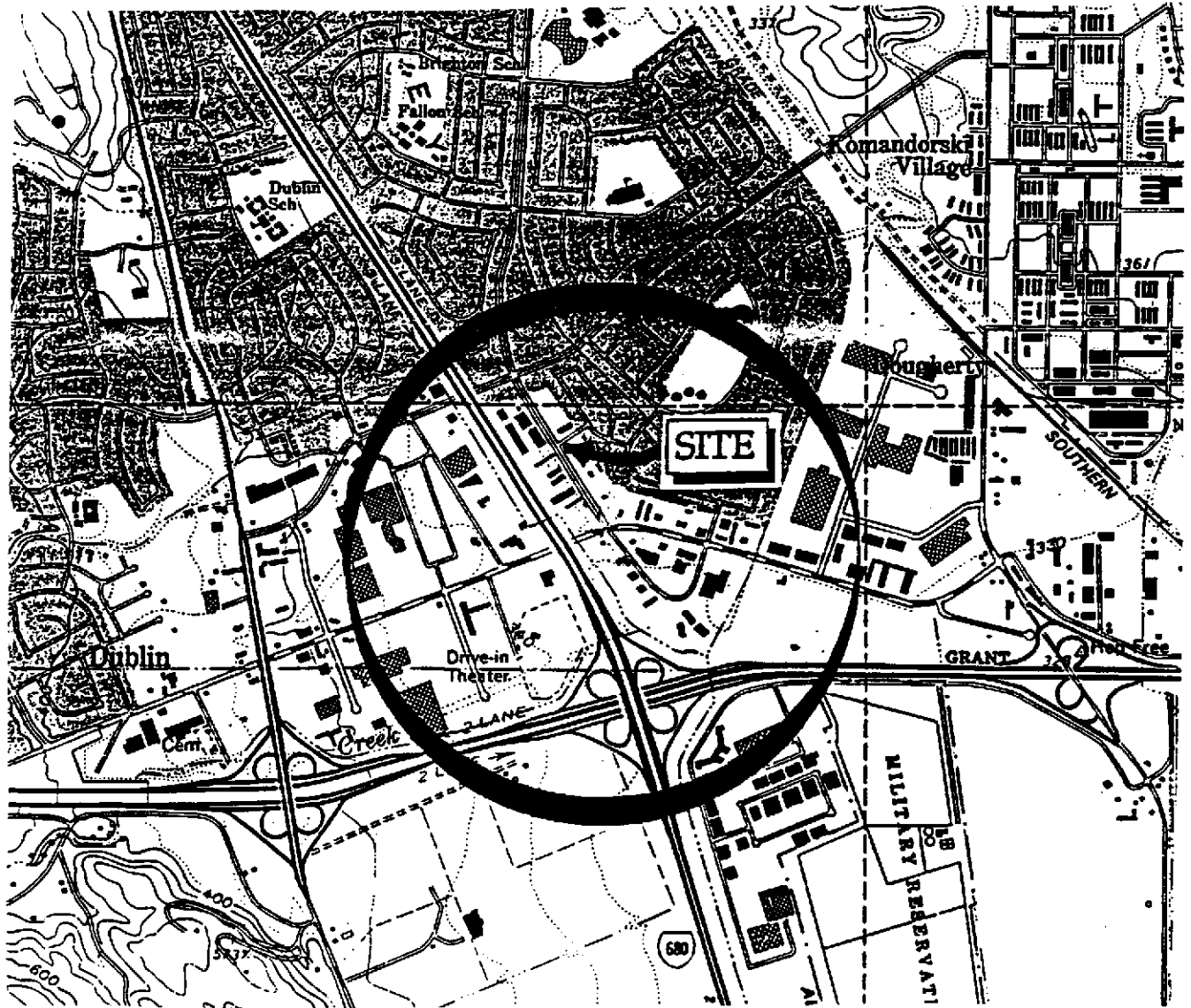
Paul Graff
Senior Geologist
CRG No. 5600



JCU/OMK/PKG/sdh

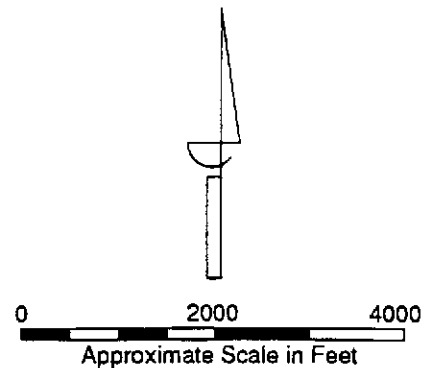
Attachments

cc: Eva Chu, Alameda County Health Care Services Agency
Eddy So, San Francisco Bay Area Regional Water Quality
Control Board
Christine K. Noma, Esq.



GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
DUBLIN, CA



SITE LOCATION MAP

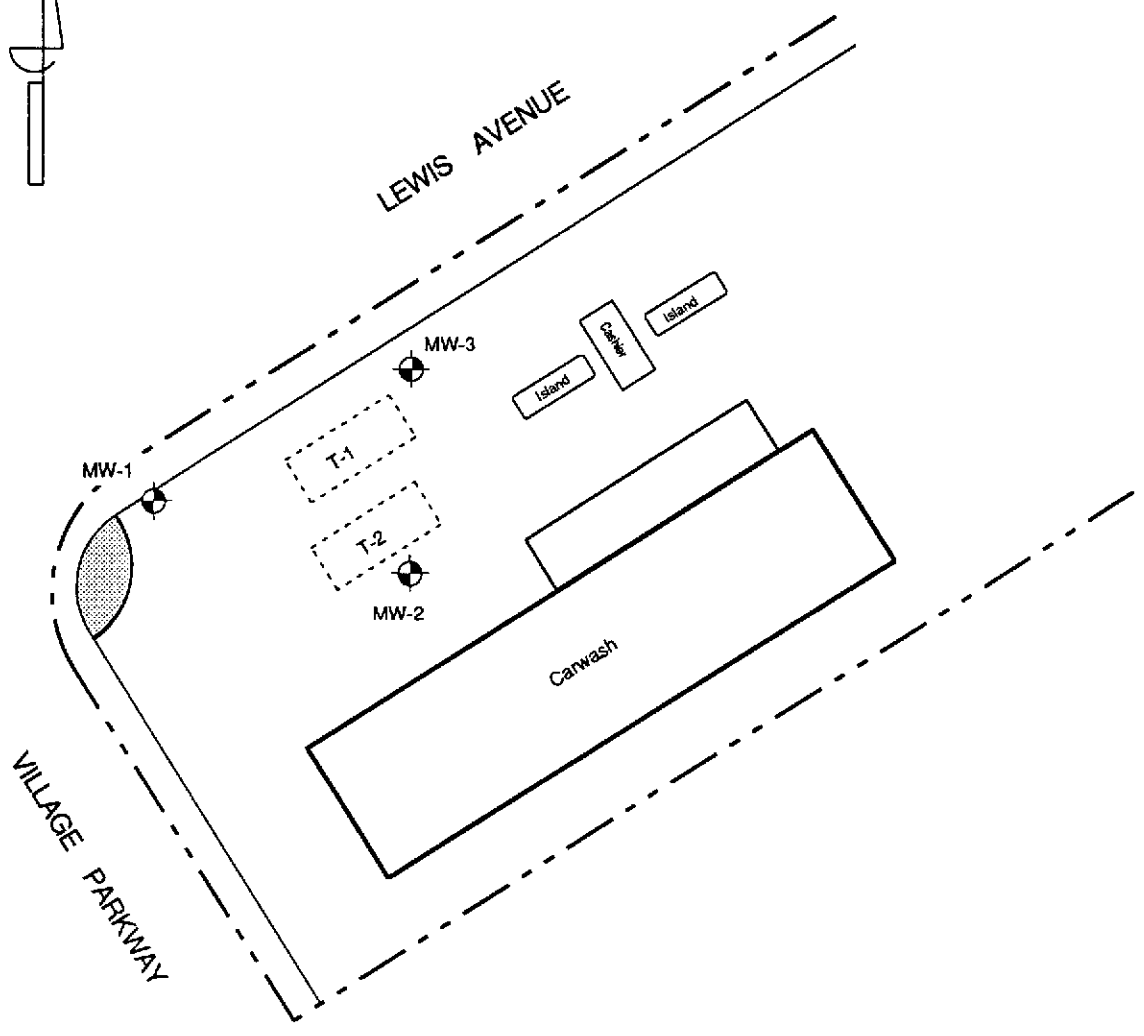
FIGURE

1

DRAWN BY: Ed Bernard	DATE: October 27, 1992
REVISED BY:	DATE:
REVIEWED BY:	DATE:

Corwood Carwash
6973 Village Parkway
Dublin, CA

PROJECT NUMBER:
10-92078



LEGEND



Monitoring Well

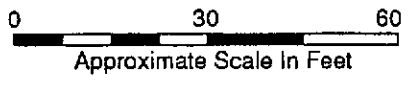


Underground Storage Tank

NOTES

Site Sketch After Site Map
By Gold Coast Technologies, Inc.
May 1991

All Locations Are Approximate



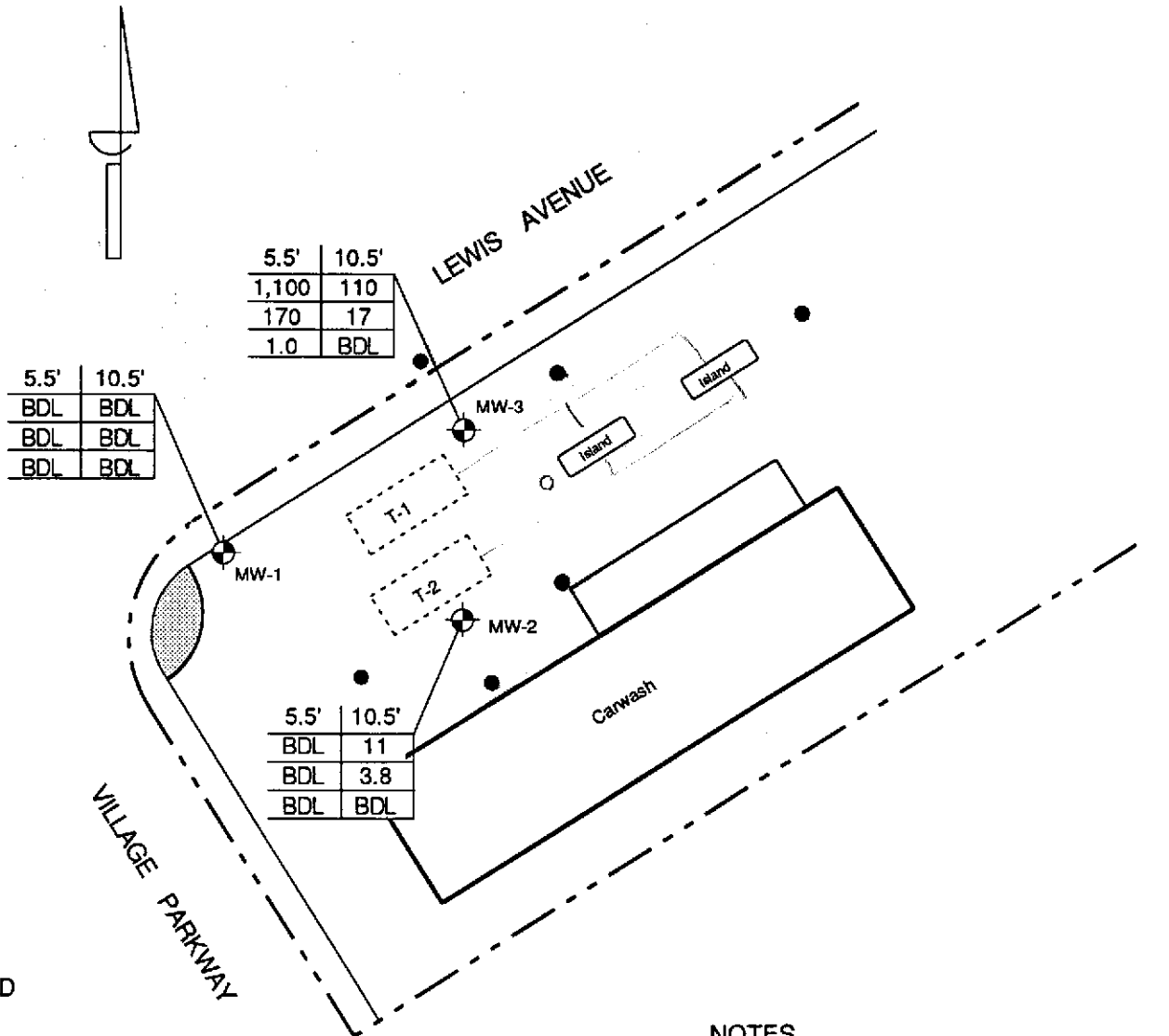
SITE MAP

Corwood Carwash
6973 Village Parkway
Dublin, CA

**FIGURE
2**

DRAWN BY: J. Paradis	DATE: October 6, 1993
REVISED BY:	DATE:
REVIEWED BY:	DATE:

PROJECT NUMBER:
10-92078



LEGEND



Monitoring Well



Proposed Sampling Locations



Underground Storage Tank

5.5'
1,100
170
1.0

Depth of Sample
 Total Petroleum Hydrocarbons as Diesel
 Total Petroleum Hydrocarbons as Gasoline
 Benzene

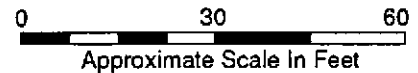
BDL Below Detection Limits

NOTES

Site Sketch After Site Map
 By Gold Coast Technologies, Inc.
 May 1991

All Locations Are Approximate

All concentrations are in parts-per-million



DISTRIBUTION MAP OF TPH, AS DIESEL, GASOLINE, AND BENZENE IN SOIL AND PROPOSED SAMPLING LOCATIONS June 8, 1993

FIGURE 3

DRAWN BY: D. Hada	DATE: October 24, 1993
REVISED BY:	DATE:
REVIEWED BY:	DATE:

Corwood Carwash
 6973 Village Parkway
 Dublin, CA

PROJECT NUMBER:
 10-92078

ATTACHMENT 1
STANDARD OPERATING PROCEDURES

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES
RE: SOIL BORING SAMPLING
SOP-1

During drilling, soil samples for chemical analysis are collected in thin-walled brass tubes, of varying diameters and lengths (e.g., 4 or 6 inches long by 2 inches outside diameter). Three or four of the selected tubes, plus a spacer tube, are set in an 18-inch long split-barrel sampler of the appropriate inside-diameter.

Where possible, the split-barrel sampler is driven its entire length either hydraulically or using a 140-pound drop hammer. The sampler is extracted from the borehole and the brass tubes, containing the soil samples, are removed. Upon removal from the sampler, the selected brass tubes are either immediately trimmed and capped with aluminum foil or "Teflon" sheets and plastic caps or the samples are extruded from the tubes and sealed within other appropriate cleaned sample containers (e.g., glass jar). The samples are then hermetically sealed, labeled, and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds (VOC) prior to chemical analysis.

One soil sample collected at each sampling interval is analyzed in the field using either a portable photoionization detector (PID), flame ionization detector, organic vapor analyzer, catalytic gas detector, or an explosimeter. The purpose of this field analysis is to qualitatively determine the presence or absence of hydrocarbons, and the samples to be analyzed at the laboratory. The soil sample is sealed in either a brass tube, glass jar, or plastic bag to allow for some volatilization of VOC. The PID is then used to measure the concentrations of hydrocarbons within the container headspace. The data is recorded on both field notes and the boring logs at the depth corresponding to the sampling point.

Other soil samples are collected to document the soil and/or stratigraphic profile beneath the project site, and estimate the relative permeability of the subsurface materials. All drilling and sampling equipment are either steam cleaned or washed in solution and doubly rinsed in deionized water prior to use at each site and between boreholes to minimize the potential for cross-contamination.

In the event the soil samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator at Aegis' office.

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES
RE: SOIL CLASSIFICATION
SOP-3

Soil samples are classified according to the Unified Soil Classification System. Representative portions of the samples may be submitted under strict chain-of-custody to an analytical laboratory for further examination and verification of the in-field classification, and analysis of soil mechanical and/or petrophysical properties. The soil types are indicated on logs of either excavations or borings together with depths corresponding to the sampling points, and other pertinent information.

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES
RE: SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES
SOP-4

Sample identification and chain-of-custody procedures ensure sample integrity, and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any in-field measurements made, sampling methodology, name(s) of on-site personnel and any other pertinent field observations also recorded on the field excavation or boring log.

Chain-of-custody forms are used to record possession of the sample from time of collection to its arrival at the laboratory. During shipment, the person with custody of the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time. The sample-control officer at the laboratory will verify sample integrity, correct preservation, confirm collection in the proper container(s), and ensure adequate volume for analysis.

If these conditions are met, the samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the chain-of-custody forms and in the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

ATTACHMENT 2
SITE HEALTH AND SAFETY PLAN

FIELD INVESTIGATION TEAM
SITE HEALTH AND SAFETY PLAN

A. GENERAL INFORMATION

Client: R.L. Woodward Industries, Inc. Aegis Project Number: 92-078

Site Name: Corwood Car Wash

Street Address: 6973 Village Parkway, Dublin, California

Plan Prepared by: Jeffrey Ung Date: 01/21/94

Approved by: Paul Graff Date: 01/21/94

Revised by: Date:

Revision Approved by: Date:

Objectives:

Phase I - Limited subsurface investigation - installation of
three groundwater monitoring wells.

Phase II -

Phase III -

Proposed Date of Investigation: March 1993 or as soon as possible
thereafter.

Hazard Summary/Level of Protection

A: _____ B: _____ C: _____ D: X (with modifications)

B. SITE/WASTE CHARACTERISTICS

Waste/Contaminant Type(s): Liquid Soil Solid Sludge Gas

Characteristic(s): Corrosive Ignitable Radioactive
 Volatile Toxic Reactive
 Unknown Other (Name):

Contaminant Source (type and location):

Surface discharge

Surrounding Features (residences, power lines, terrain, surface water bodies, etc.):

Special concern is Wolf Creek approximately 100 feet behind site.

Status (active, inactive, unknown): active.

History (worker or non-worker injury; complaints from public; previous agency action):

Soil sampling by Delta Environmental Consultants, Inc., on January 18, 1991.

C. HAZARD EVALUATION

Have all contaminants been identified that may be present on site?
Yes X No _____

List all chemicals below that have been identified or are suspected on site and their maximum concentrations in soil/water. Information on hazardous properties are listed in the appendix. For chemicals not shown in the appendix, enter the hazardous property information in the spaces provided.

<u>Chemical Name</u>	<u>Maximum Concentration: (ppm)</u>	
	<u>In Soil</u>	<u>In Water</u>
TPH, as gasoline	410	NA
TPH, as oil & grease	45,000	NA
TPH, as diesel	39,000	NA
Benzene	10	NA
Toluene	1.1	NA
Ethylbenzene	16	NA
Total xylenes	65	NA
Lead	260	NA
Zinc	1,000	NA

(ppm) = parts-per-million
(ppb) = parts-per-billion
NA = Not applicable

Free product present? P Yes P No

Type of product present: X Leaded X Unleaded X Diesel

P = Results pending

D. SITE SAFETY WORKPLAN

PERSONNEL

<u>Team Member</u>	<u>Title</u>	<u>Responsibility</u>
Dave Poulsen	Project Geologist	Site Coordinator
Owen Kittredge	Staff Geologist	Geologist/site
or John Giorgi	Staff Geologist	safety officer

PERIMETER ESTABLISHED

Map/Sketch Attached?	Yes <u>X</u>	No <u> </u>
Site Secured?	Yes <u> </u>	No <u>X</u>
Perimeter Identified?	Yes <u>X</u>	No <u> </u>
Contamination zones identified? line defined?	Yes <u> </u>	No <u>X</u>
Free Product?	Yes <u>P</u>	No <u>P</u>
Dissolved Product?	Yes <u>X</u>	No <u> </u>

P = Results pending.

INVESTIGATION-DERIVED MATERIAL DISPOSAL:

Soil and water from investigative activities will be stockpiled and stored on site until analyses are available to describe the levels of petroleum hydrocarbon and lead constituents contained in them. Soil stockpiled on site will be underlain by and covered with plastic sheeting or contained in drums if required by local regulatory agencies. Water from development of wells will be stored on site in Department of Transportation-approved barrels. Any material disposed off site will be disposed of in accordance with existing regulations and guidelines.

D1. PERSONAL SAFETY

SITE ENTRY PROCEDURES:

PERSONNEL PROTECTION:

Level of protection: A _____ B _____ C _____ D X

Modifications:

1. All personnel must wear hard hat, safety shoes, safety glasses and/or face shield.
2. Neoprene gloves and tyvek/saranax suit should be worn if contact with contaminated water or soil is likely.
3. Hearing protection must be worn if noise levels prevent normal conversation at a distance of three feet. No smoking, eating, or drinking is allowed on site.
4. Respiratory protection is dependent on conditions listed in next section.
5. No personnel are to enter or approach any excavation area where there is a danger of wall collapse or confined space entry.

Surveillance Equipment and Materials:

<u>Instrumentation</u>	<u>Action Level</u>	<u>Action</u>
photoionization detector (hNu)	5 units or 5 times background (breathing zone)	use halfmask respirator with organic cartridges
	1,000 ppm	eliminate all ignition sources, leave site until levels are reduced
oxygen meter	<19.5% oxygen	do not enter area or confined space until levels are reduced.
explosimeter	>10% LEL	eliminate all ignition sources
	>20% LEL	reduce levels immediately or leave site.

First Aid Equipment: Standard first aid kit, portable eye wash.

First Aid Procedures:

Ingestion: DO NOT induce vomiting, summon medical help.

Inhalation: Move victim to fresh air, seek medical attention if needed.

Dermal Exposure: Remove contaminated clothing, flush with water.

DECONTAMINATION PROCEDURE:

Personnel: Flush exposed skin with soap and water.

WORK LIMITATIONS:(time of day, weather, heat/cold stress):

In high ambient temperatures, follow heat-stress precautions: Provide plenty of cool water and electrolytes (e.g., Gatorade), remove protective clothing during breaks; check resting pulse and increase number of breaks if pulse does not return to normal during work break.

In cold ambient temperatures (<0°F.), follow hypothermia precautions. Work may only progress during daylight hours or under conditions of adequate lighting.

ELECTRICAL HAZARDS:

Will be located by U.S.A. before drilling.

Maintain at least 10 feet clearance from overhead power lines. If unavoidably close to overhead or buried power lines, turn power off and lockout circuit breaker. Avoid standing in water when operating electrical equipment.

CONFINED SPACES:

Monitor organic vapors and oxygen before entering. If the following values are exceeded, do not enter.

1. Oxygen < 20.0%.
2. Total hydrocarbons > 5 ppm above background, if all air contaminants have not been identified.
3. Concentrations of specific air contaminants exceeding action levels in Section D, if all air contaminants have been identified.

If entering a confined space, monitor oxygen and organic vapors continuously.

AGENCIES CONTACTED IN UNDERGROUND UTILITY SEARCH:

Underground Service Alert

E. EMERGENCY INFORMATION

LOCAL TELEPHONE NUMBERS (provide area codes):

Ambulance	911
Hospital Emergency Room (Sierra Nevada Memorial Hospital)	911
Poison Control Center	911
Fire Department	911
Explosives Unit	911

SITE RESOURCES:

Water supply available on site:	Yes <u>X</u>	No <u> </u>
Telephone available on site:	Yes <u>X</u>	No <u> </u>
Bathrooms available on site:	Yes <u>X</u>	No <u> </u>
Other resources available on site:	Yes <u>X</u>	No <u> </u>

If yes, identify:

Electricity.

If you answered "no" to any of the above questions, identify the closest available facility, and provide directions.

EMERGENCY CONTACTS

PHONE NO.

1. Project Manager: Dave Poulsen	(916) 782-2110
2. Health and Safety Officer: Owen Kittredge or John Giorgi	(916) 782-2110
4. Site Contact: Jim Ferrell	(916) 346-2264
5. Regulatory Contact: Caran Gozzi	(916) 265.7072

F. EMERGENCY ROUTES

(Give name address, telephone number, directions, distance and time estimate, and map.)

HOSPITAL: Sierra Nevada Memorial Hospital
155 Glasson Way
Grass Valley, California
(916) 274-6000

DIRECTIONS: From Railroad Avenue, travel northeast to Idaho-Maryland Road (about 1/4 mile). Turn left onto Idaho-Maryland Road. Go west on Idaho-Maryland Road to Main Street (about 1/4 mile). Turn right (north) onto Main Street. Travel on Main Street to Presley Way about 1-1/4 miles. Turn right (southeast) onto Presley. Go to Catherine Lane (about 1/8 mile or 1 block). Turn left (northeast) on Catherine Lane. Go to Glasson Way (about 1/4 mile). Turn right (southeast). Go down Glasson Way about 1/8 mile. Hospital on right.

Distance: approximately 2.5 miles.

Time: approximately 10 minutes.

G. HAZARD EVALUATION

<u>PARAMETER</u>	<u>TLV (ppm)</u>	<u>OT (ppm)</u>	<u>IDLH (ppm)</u>	<u>VOLA- TILITY</u>	<u>SKIN HAZARD</u>	<u>EXPLO- SIVITY</u>
Benzene	0.1	4	2,000	H	L	H
Ethylbenzene	100	NS	2,000	M	L	H
Toluene	100	2	2,000	M	L	H
Xylene	100	<1	10,000	H	M	H
Gasoline	300	NS	NS	H	L	H

KEY: TLV = Threshold Limit Value (Worker - 8 Hours)
OT = Odor Threshold
DLH = Immediately Dangerous to Life and Health
NS = None Specified
NR = Not Reported
H = High
M = Medium
L = Low
U = Unknown

APPENDIX A: HAZARDOUS PROPERTY INFORMATION

Explanations and Footnotes

Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline for example, is insoluble in the gross sense, and will be found as a discreet layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene will also be found in solution in the ground water at the part per million or part per billion level.

- A. Water solubility expressed as 0.2g means 0.2 grams per 100 grams water at 20°C.
- B. Solubility of metals depends on the compound in which they are present.
- C. Several chlorinated hydrocarbons exhibit no flash point in conventional sense, but will burn in presence of high energy ignition source or will form explosive mixtures at temperatures above 200°F.
- D. Practically non-flammable under standard conditions.
- E. Expressed as mm Hg under standard conditions
- F. Explosive concentrations of airborne dust can occur in confined areas.
- G. Values for Threshold Limit Value - Time Weighted Average (TLV-TWA) are OSHA Permissible Exposure Limits (PEL) except where noted in H. and I.
- H. TLV - TWA adopted by the American Conference of Government Industrial Hygienists (ACGIH) which is lower than the OSHA PEL.
- I. TLV - TWA recommended by the National Institute for Occupational Safety and Health (NIOSH). A TLV or PEL has not been adopted by the ACGIH or OSHA.
- J.
 - A. - Corrosive
 - B. - Flammable
 - C. - Toxic
 - D. - Volatile
 - E. - Reactive
 - F. - Radioactive
 - G. - Carcinogen
 - H. - Infectious
 - K. - Dermal Toxicity data is summarized in the following three categories:

Skin penetration

- A - negligible penetration (solid-polar)
- B - slight penetration (solid-nonpolar)
- C - moderate penetration (liquid-nonpolar)
- D - high penetration (gas/liquid-nonpolar)

Systemic Potency

- E - slight hazard - $LD_{50} = 500-15,000$ mg/kg
lethal dose for 70 kg man = 1 pint-1 quart
- F - moderate hazard - $LD_{50} = 50-500$ mg/kg
lethal dose for 70 kg man = 1 ounce-1 pint
- G - extreme hazard - $LD_{50} = 10-50$ mg/kg
lethal dose for 70 kg man = drops to 20 ml

Local Potency

- H - slight - reddening of skin
- I - moderate - irritation/inflammation of skin
- J - extreme - tissue destruction/necrosis

1. Acute Exposure Symptoms

- A - abdominal pain
- B - central nervous system depression
- C - comatose
- D - convulsions
- E - confusion
- F - dizziness
- G - diarrhea
- H - drowsiness
- I - eye irritation
- J - fever
- K - headache
- L - nausea
- M - respiratory system irritation
- N - skin irritation
- O - tremors
- P - unconsciousness
- Q - vomiting
- R - weakness

HAZARDOUS PROPERTY INFORMATION - FUELS

Material	Water ^A Solubility	Specific Gravity	Vapo: Density	Flash Point F	Vapor ^E Pressure	LEL UEL	LD ₅₀ mg/kg	TLV-TWA	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^D Property Toxicity	Dermal ^K Symptoms	Accute Exposure
Diesel fuel	insoluble	0.81-0.90	---	130	---	0.6-1.3 6.0-7.5		none established	NE	0.006 ppm	BCD	CI	BCEFHIKL MNP
Gasoline	insoluble	0.72-0.76	3-4	-45	variable	1.4% 7.6%		300 ppm	NE	< 1 ppm	BCDG	CI	BCEFHIKL MNP
Kerosene	insoluble	0.83-1.0	---	100-165	5	0.7% 5.0%		none established	NE	0.008 ppm	BCD	CI	BCEFHIKL MNP

HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS

Material	Water ^A Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor ^B Pressure	LEL UEL	Wt% mg/g	TLV-TWA ^C	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^D Property	Dermal ^E Toxicity	Acute Exposure Symptoms
Acrolein	22%	0.8410	1.9	-15	214 mm	2.8% 31.0%	40	0.1 ppm	5 ppm	0.1-16.6 (0.21-0.5)	BCED	BJ	ABDFGHJK LMNOPQR
Acrylonitrile	7.1%	0.8060	1.8	30	83 mm	3.0% 17.0%	82	2.0 ppm	4,000 ppm	19-100	BCEGD	DIG	FGIKLMNQ R
Benzene	820 ppm	0.8765	2.8	12	75 mm	0.339% 7.1%	3800	10.0 ppm	2,000 ppm	4.68	BCGD	CIG	BCDFHIKL MNOQR
Bromomethane	0.1 g	1.732	3.3	none	1.88 atm	13.5% 14.5%		5.0 ppm	2,000 ppm	no odor	CD		BCDEIJKL MNOQR
Bromodichloromethane	insoluble	1.980	--	none	n/a	non- flam.	916	none established	none specified		CGD		BIMN
Bromoform	0.01 g	2.897	--	none	5 mm	non- flam.	1140	0.5 ppm	n/a	530	CED		BCDKMN
Carbon Tetrachloride	0.08%	1.5967	5.3	none	91 mm	non- flam.	2800	5.0 ppm	300 ppm	21.4-200	CD	JGH	ABCEGHKN Q
Chlorobenzene	0.03 g	1.1058	3.9	84	8.8 mm	1.3% 3.6%	2910	75.0 ppm	2,400 ppm	0.21-60	BCD	CIF	BCFIKLMN OPQR
Chloroethane	0.6 g	0.8978	2.2	-58	1.36 atm	3.8% 15.4%		1000.0 ppm	20,000 ppm		BCD		BFHIKMNP
2-Chloroethylvinyl Ether	insoluble	1.0475	3.7	80	30 mm	--	250	none established	none specified		BCD		HIM
Chloroform	0.6 g	1.4832	4.12	none	160 mm	non- flam.	600	10.0 ppm	1,000 ppm	50-307 fatigue (>4096)	CD		BCEGIKLM N
Chloromethane	0.74%	0.9159	1.8	32	50 atm	7.6% 19.0%		50.0 ppm	10,000 ppm	10-100 no odor (500-1000)	BCD	DHF	ABCDEFGI JKLQOR
Dibromochloromethane	insoluble	2.451	--	--	--	--	848	none established	none specified		BCD		BFHIMNPQ

HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS (CONTINUED)

Material	Water ^A Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor ^B Pressure	LEL %LEL	LD ₅₀ mg/kg	TLV-TWA ^D	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^E Property	Dermal ^F Toxicity	Acute Exposure Symptoms
1,1-Dichloroethane (DCA)	0.1 g	1.1757	3.4	22	162 mm	3.0% 16.0%	725	100.0 ppm	4,000 ppm	5 ppm	BCD		ABHIMNO
1,2-Dichloroethane	0.8%	1.2554	3.4	55	87 mm	2.2% 18.0%	670	10.0 ppm	^H 1,000 ppm	6 ppm	BCDG		BCFGLMNO
1,1-Dichloroethylene (DCE)	2250 mg/l @ 77°F	--	3.4	3	591 mm	7.3% 16.0%	200	5.0 ppm	^H none specified		BCD		BIMN
Trans-1,2-Dichloroethylene	slightly soluble	1.2565	--	36	400 mm	9.7% 12.8%		none established	none specified	.0043 mg/l	BCD		ABFILOQ
1,2-Dichloropropane	0.26%	1.1583	3.9	60	40 mm	3.4% 14.5%	1900	75.0 ppm	2,000 ppm	50	BCD		ABGHKMN Q
Cis-1,3-Dichloropropane	insoluble	1.2	3.8	83	28 mm	5.0% 14.5%	250	1.0 ppm	^H none specified		BCD		ABGHIKLM NP
Trans-1,3-Dichloropropane	insoluble	1.2	3.8	83	28 mm	5.0% 14.5%		1.0 ppm	^H none specified		BCD		ABGHIKLM NP
Ethylbenzene	0.015 g	0.867	3.7	59	7.1 mm	1.0% 6.7%	3500	100.0 ppm	2,000 ppm	0.25-200 (200)	BCD	CIF	ABFHIKLM NPQR
Methylene Chloride	slightly soluble	1.335	2.9	none	350 mm	12.0% unavailable	167	100.0 ppm	^H 5,000 ppm	25-320 (5000)	CED	CIF	BCIKLMNP R
1,1,2,2-Tetrachloroethane	0.19%	1.5953	5.8	none	5 mm	non- flam.		1.0 ppm	^H 150 ppm	3-5	CD		ABCFHIKL MNOQ
Tetrachloroethylene	0.15 g/ml	1.6227	5.8	none	15.8 mm	non- flam.	8850	50.0 ppm	^H 500 ppm	4.68-50 (160-690)	CD		ACFHIKLM NP
1,1,1-Trichloroethane (TCA)	0.07 g	1.3390	4.6	none	100 mm	8.0% 10.5%	10300	350.0 ppm	1,000 ppm	20-400 (500-1000)	BCED		ABEFHIKL NOP
1,1,2-Trichloroethane	0.45	1.4397	4.6	none	18 mm	6.0% 15.5%	1140	10.0 ppm	500 ppm	0	C		BEFGHIKL MNOQ

HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS (CONTINUED)

Material	Water ^A Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor ^B Pressure	LEL UEL	LD ₅₀ mg/kg	TLV-TWA ^C	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^D Property	Dermal ^E Toxicity	Acute Exposure Symptoms ^F
Trichloroethylene (TCE)	0.1%	1.4642	4.5	98	5.5 mm	12.5% 90.0%	4920	50.0 ppm	* 1,000 ppm	21.4-400	BC		BFKLNO PQ
Trichlorofluoromethane	0.11 g	1.494	--	none	0.91 atm	non- flam.		1000.0 ppm	10,000 ppm	135-209	CD		BFHKLQ
Toluene	0.05 g	0.866	3.2	40	22 mm	1.3% 7.1%	5000	100.0 ppm	2,000 ppm	0.17-40 fatigue (300-400)	BC	BHE	BEFHKL MNO PQ
Vinyl Chloride	negligible	0.9100	2.24	-108	3.31 atm	3.6% 33.0%	500	1.0 ppm	none specified	260	BCEG	DJG	ABFHKL NR

HAZARDOUS PROPERTY INFORMATION - HEAVY METALS

Material	Water ^A Solubility	Specific Gravity	Vapor Density	Flash Point F	Vapor ^E Pressure	LEL UEL	LD ₅₀ mg/kg	TLV-TWA ^G	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^J Property	Dermal ^K Toxicity	Accute Exposure Symptoms ^L
Arsenic	S	5.727	n/a	none	n/a	F		10.0 ug/m ³	none specified		CEG	CJG QR	ACDGIJLMO
Beryllium	B	1.81	n/a	none	n/a	F		2.0 ug/m ³	none specified		C		IJMNR
Cadmium	B	8.642	n/a	none	n/a	F	225	0.5 mg/m ³	40/mg ³		C	QR	ABGIKLMN
Chromium	B	7.20	n/a	none	n/a	F F		0.5 mg/m ³	500/mg ³				FMNQ
Copper	B	8.92	n/a	none	n/a	F		0.1 mg/m ³	none specified		C	R	FGIJLMOQ
Lead	B	11.3437	n/a	none	n/a	F		50.0 ug/m ³	none specified		C		ACDFGOQR
Mercury	B	13.5939	7.0	none	0.0012 mm	F		50.0 ug/m ³	28 mg/m ³		C		AGILMNQ
Nickel	B	8.9	n/a	none	n/a	F		1.0 mg/m ³	none specified		C		DGJLMNQ
Silver	B	10.5	n/a	none	n/a	F		0.01 mg/m ³	none specified		C		IN
Thallium	B	11.85	n/a	none	n/a	F		0.1 mg/m ³	20 mg/m ³		C	BG	ADGLNOQ
Zinc	B	7.14	n/a	none	n/a	F		none established	none specified		C		DF

HAZARDOUS PROPERTY INFORMATION - MISCELLANEOUS

Material	Water ^A Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor ^E Pressure	LEL UEL	LD ₅₀ mg/kg	TLV-TWA ^G	IDLH Level	Odor Threshold or Warning Concentration	Hazard ^J Property	Dermal ^K Toxicity	Acute Exposure Symptoms ^L
Acetone	soluble	0.8	2.0	-4	400 mm	2.5% 12.8%	9700	750 ppm	10,000 ppm	100	BCD	DI	N
Asbestos	insoluble	2.5	n/a	none	n/a	non- flam.		0.2-2 fibers/cc	none specified		CG		MN
Chromic Acid	soluble	1.67-2.82	n/a	none	n/a	non- flam.		none established	none specified		ACEG		GIN
Cyanides	58-72%		n/a	none	n/a	non- flam.		5 mg/m ³	50 mg/m ³		CE		FKLN PQ
PCB (Generic)	slightly soluble	--	n/a	none	n/a	non- flam.		1.0 ug/m ³	none specified		CG		CHLPQ
Phenol	8.4%	1.0576	3.2	175	0.36 mm	1.8% 8.6%	414	5 ppm	100 ppm	0.047-5 (48)	C		ABCDGIKM NOQ
Xylene	0.00003%	0.8642	3.7	84	9.0 mm	1.1% 7.0%	5000	100 ppm	10,000 ppm	0.5-200 (200)	BCD		ABFHIKLM NPQ