AEGIS ENVIRONMENTAL, INC.

LETTER OF TRANSMITTAL

Check Return Address Block:

☒ 1050 Melody Lane, Suite 160 Roseville, Ca. 95678

☐ 8196 S W Hall Blvd, Suite 300 Beaverton, Oregon 97005

☐ 1175 Fair View, Suite H Carson City, Nevada 89701

Date: 10-28-92 Project # 92-078

Subject/Title: Workplan for Installation of Groundwater Monitoring wells - Corwood Car Wash

TO: R.L. Woodward Industries, Inc.

ATTENTION: Mr Roger L. Woodward

Corwood Car Wash

6973 Village Parkway, Dublin, CA

We Are Sending: ☒ Enclosed ☐ Under Separate Cover Via _____

The Following:

- ☐ Draft Report / Letter
- ☐ Final Report / Letter
- ☐ Cost Estimate
- ☐ Regulatory Correspondance
- ☐ Laboratory Analytical Results
- ☐ Contract
- ☐ Figures/Maps/Tables
- ☐ Statement of Qualifications
- ☒ Workplan

These Are Transmitted As Checked Below:

- ☐ For Approval
- ☐ As Requested
- ☒ For Your Use
- ☐ For Review And Comment
- ☐ Per Our Telephone Conversation
- ☐ Approved As Submitted
- ☒ For Your Information
- ☐ As Executed
- ☐ _____

Copies Were Sent To: ☐ None ☒ The Following:

1) Ms. Eva Chu, Alameda Co. Health Care Services Agency
2) Mr. Eddy So, San Francisco Bay Area RWQCB
3) Ms. Christine K. Noma, Esq.
4) _____
5) _____

This Document Was Sent Via:

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- ☐ Certified/Return Receipt
- ☐ Registered Mail
- ☐ Priority Mail

Comments: _____

Signed: John Giorgi

{1} Original, {2} Central File (Correspondence), {3} Project Manager

AEGIS ENVIRONMENTAL, INC.

1050 Melody Lane, Suite 160, Roseville, CA 95678 ✦ 916 • 782-2110 / 916 • 969-2110 / FAX 916 • 786-7830

November 2, 1992

Mr. Roger L. Woodward
R. L. Woodward Industries, Inc.
Post Office Box 2688
Dublin, California 94568

Subject: **Workplan For Installation of Groundwater Monitoring Wells**
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 for the installation of groundwater monitoring wells at the subject site (Figure 1). This workplan is provided in response to a letter to Woodward from the Alameda County Health Care Services Agency, Hazardous Materials Division, dated June 29, 1992. This workplan is based, in part, on information provided to Aegis by Woodward, and is subject to modification as newly acquired information may warrant.

PURPOSE

The purpose of the investigation is to assess the extent of petroleum hydrocarbons, if any, in shallow soils and groundwater along the perimeter of the site.

SCOPE

The proposed scope of work will be conducted according to the Aegis standard operating procedures included in Attachment 1, and will include the following:

- Drill, log, and sample three soil borings on site at the proposed locations indicated on Figure 2.
- Complete the three borings as 4-inch-diameter monitoring wells with perforated casing set between approximately 10 to 25 feet below surface. Typical well construction details are indicated on Figure 3.
- Based on field observations, submit selected soil samples to a state-certified laboratory for analysis of petroleum hydrocarbons.
- The top-of-casing elevation of each well to be surveyed by a state-licensed surveyor.
- Develop, purge, and collect a groundwater sample from each well for submittal to a state-certified laboratory for analysis of petroleum hydrocarbons.
- Drill cuttings will be temporarily stockpiled on site, on and covered with plastic sheeting, pending disposal at an appropriate facility.
- A soil stockpile composite sample will be collected from the drill cuttings and submitted for analysis of petroleum hydrocarbons to determine disposal.
- Monitoring well development and purge water will be temporarily stored on site in 55-gallon, Department of Transportation-approved drums. Following receipt of the analytical results, the development and purge water will be disposed of at an appropriate facility.
- Analyze the data and prepare and submit a report of the investigation.

SITE SAFETY PLAN

A site health and safety plan (SHSP) has been prepared and will be on site during all field activities (Attachment 2). All work will be conducted in accordance with the SHSP. The SHSP contains information on the properties of the hazardous materials expected to be on site. The information is equivalent to that contained within material safety data sheets.

ANALYTICAL LABORATORY AND DETECTION LIMITS

The laboratory to be used is tentatively identified as NET Pacific, Inc., of Santa Rosa, California, a state-certified analytical laboratory.

As recommended by the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites," dated August 10, 1990, the practical quantitation reporting limits (PQL) for both soil and water analyses are as follows:

Soil

a) for total petroleum hydrocarbons (TPH), as gasoline, the PQL is 1.0 parts-per-million (ppm); and,

b) for BTEX, the PQL is 0.005 ppm.

Water

a) for TPH, as gasoline, the detection limit is 0.050 ppm; and,

b) for BTEX, the PQL is 0.0005 ppm.

In addition, a spike peak, surrogate sample and standards will be run to ensure quality assurance/quality control of the analyses (Attachment 1).

PROJECT CONTACTS/REPRESENTATIVES

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

Aegis Environmental, Inc.
Mr. Douglas I. Sheeks
Senior Geologist
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 direct 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.

John Giorgi
Staff Geologist

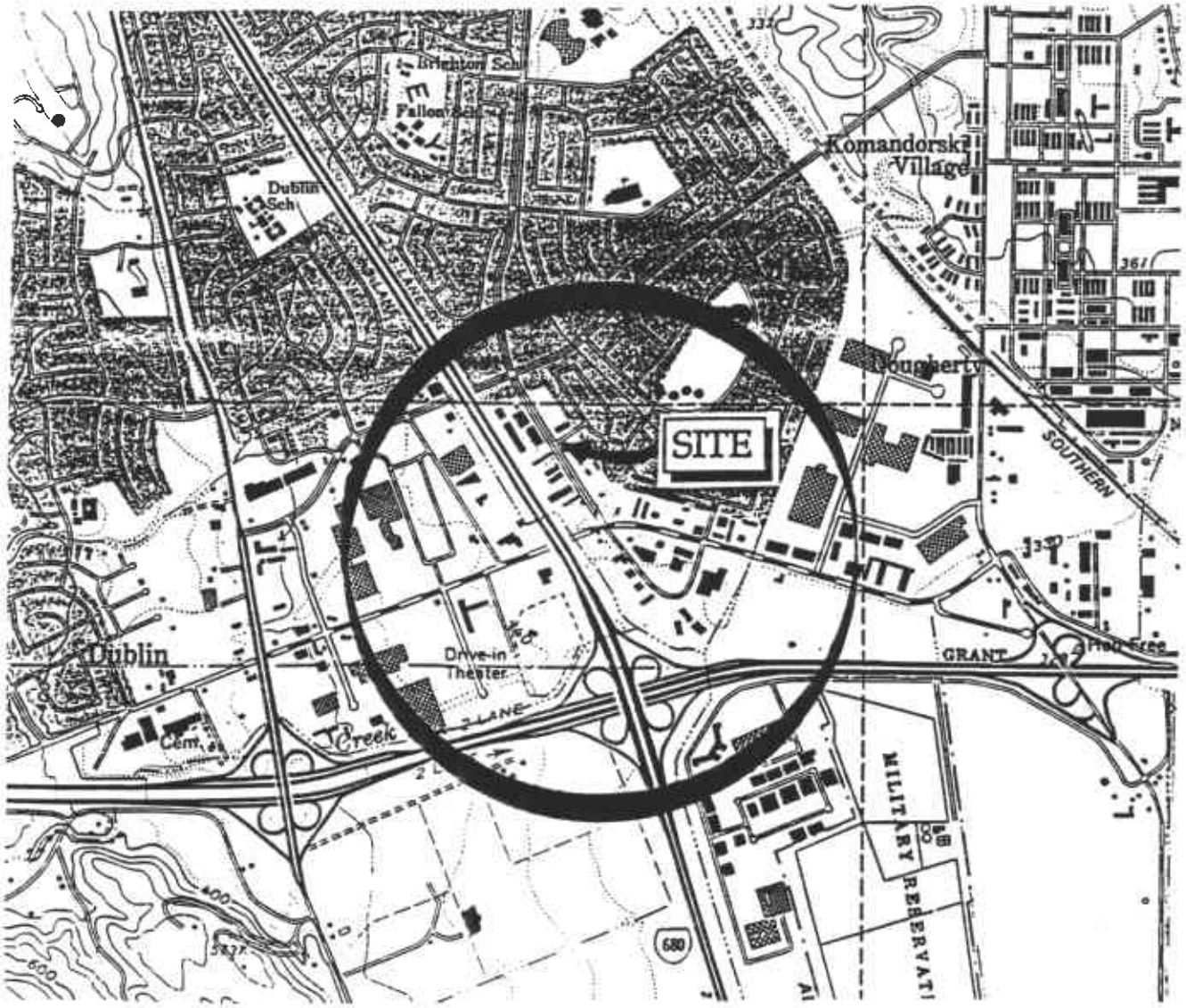
Douglas I. Sheeks
Senior Geologist
CRG No. 5211

11-2-92
Date

JG/DIS/law

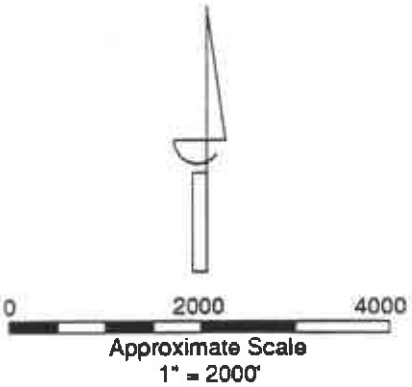
Attachments

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

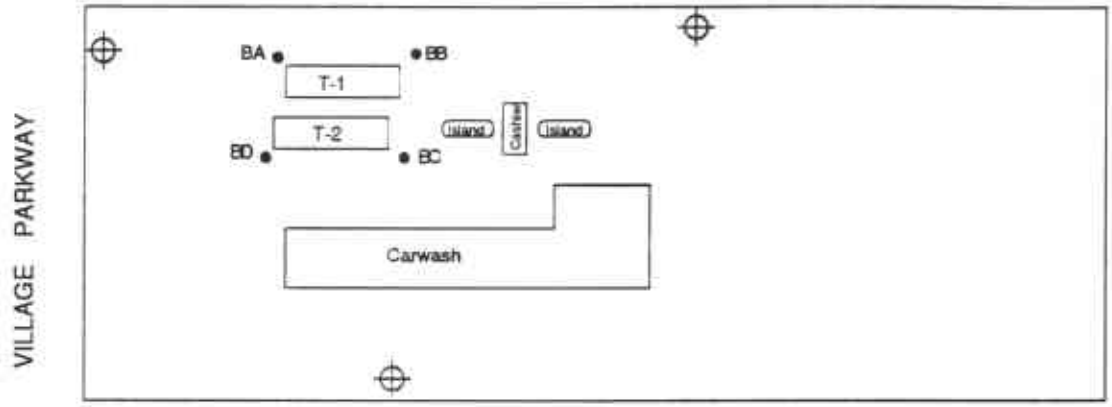


GENERAL NOTES:

BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
DUBLIN , CA



AEGIS ENVIRONMENTAL, INC.		SITE LOCATION MAP	FIGURE 1
DRAWN BY: Ed Bernard	DATE: October 27, 1992	Corwood Carwash 6973 Village Parkway Dublin, CA	
REVISED BY:	DATE:		PROJECT NUMBER: 10-92078
REVIEWED BY:	DATE:		



LEGEND

⊕ Proposed Monitoring Well

• BC Soil Borings Were Drilled By Gold Coast Technologies, Inc. Of Ventura, CA In April, 1991

NOTES

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

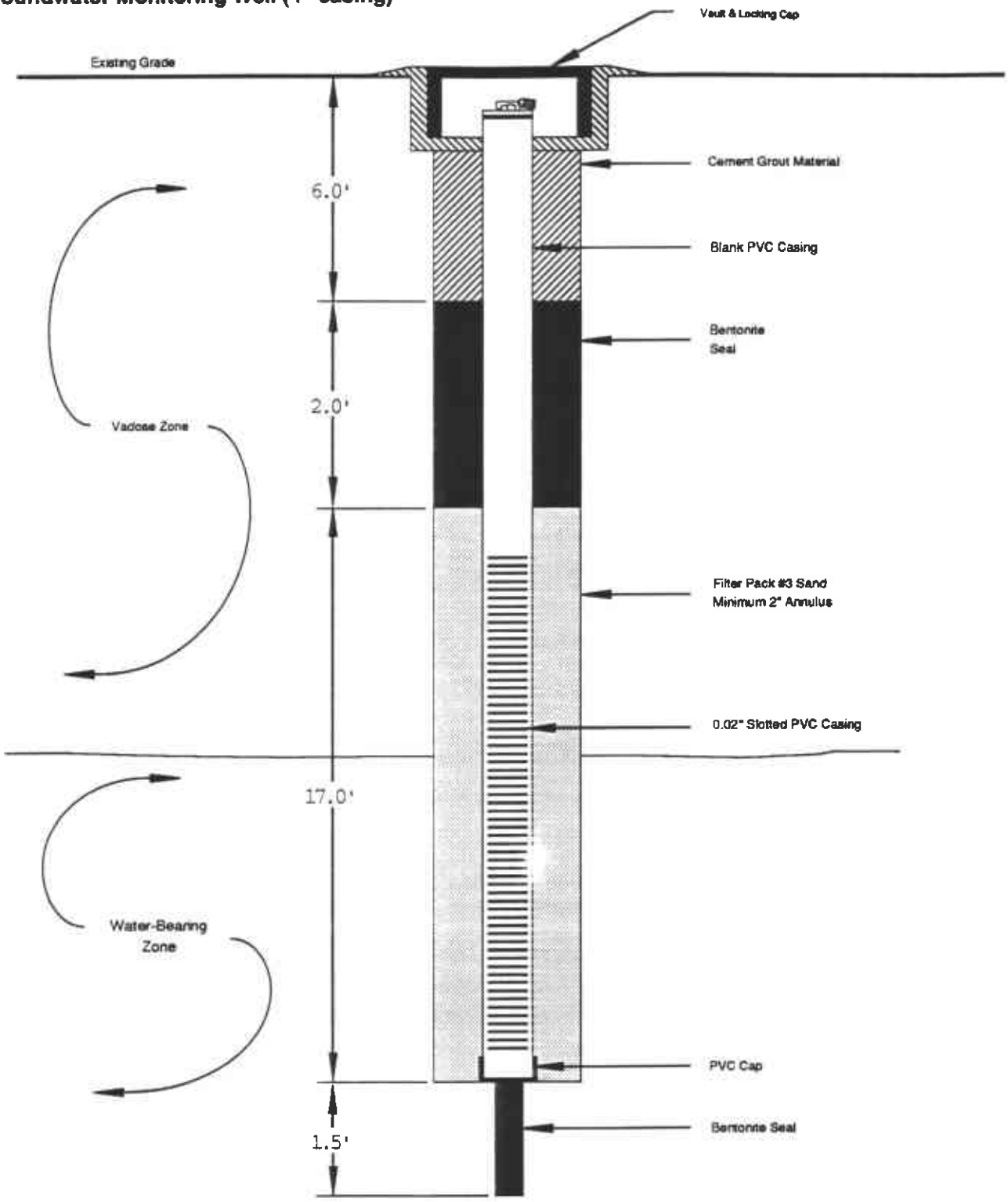
All locations Are Approximate

0 30 60

Approximate Scale 1" = 30'

AEGIS ENVIRONMENTAL, INC.		SITE MAP	FIGURE 2
DRAWN BY: Ed Bernard	DATE: October 27, 1992	Corwood Carwash 6973 Village Parkway Dublin, CA	
REVISED BY:	DATE:		PROJECT NUMBER: 10-92078
REVIEWED BY:	DATE:		

Groundwater Monitoring Well (4" casing)



(NOT TO SCALE)

AEGIS ENVIRONMENTAL, INC.	Typical Groundwater Monitoring Well Construction Details (4" Casing) Corwood Carwash 6973 Village Parkway Dublin, CA	JOB NUMBER 10-92078 FIGURE 3

ATTACHMENT 1

STANDARD OPERATING PROCEDURES

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.

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURES
RE: LABORATORY ANALYTICAL QUALITY ASSURANCE AND CONTROL
SOP-5

In addition to routine instrument calibration, replicates, spikes, blanks, spiked blanks, and certified reference materials are routinely analyzed at method-specific frequencies to monitor precision and bias. Additional components of the laboratory Quality Assurance/Quality Control program include:

1. Participation in state and federal laboratory accreditation/certification programs;

2. Participation in both U.S. EPA Performance Evaluation studies (WS and WP studies) and inter-laboratory performance evaluation programs;

3. Standard operating procedures describing routine and periodic instrument maintenance;

4. "Out-of-Control"/Corrective Action documentation procedures; and,

5. Multi-level review of raw data and client reports.

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURE
RE: HOLLOW-STEM AUGER MONITORING WELL INSTALLATION AND DEVELOPMENT
SOP-6

Boreholes for monitoring wells are drilled using a truck-mounted, hollow-stem auger drill rig. The borehole diameter will be a minimum of 4 inches larger than the outside diameter of the casing when installing well screen. The hollow-stem auger provides minimal interruption of drilling while permitting soil sampling at desired intervals. Soil samples are collected by either hammering or hydraulically pushing a conventional split-barrel sampler containing pre-cleaned 2-inch-diameter brass tubes. A geologist or engineer from Aegis Environmental, Inc., continuously logs each borehole during drilling and constantly checks drill cuttings for indications of both the first recognizable occurrence of groundwater and volatile hydrocarbons using either a portable photoionization detector, flame ionization detector, or an explosimeter. The sampler is rinsed between samples and either steam cleaned or washed with all other drilling equipment between borings to minimize the potential for cross-contamination.

Monitoring wells are cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.020-inch wide by 1.5-inch long slots, with 42 slots per foot. A PVC cap may be secured to the bottom of the casing with stainless steel screws; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to installation.

After setting the casing inside the hollow-stem auger, sand or gravel filter material is poured into the annular space to fill from boring bottom to generally 1 foot above the perforated interval. A 1- to 2-foot thick bentonite plug is set above this filter material to prevent grout from infiltrating into the filter pack. Either neat cement, containing about 5 percent bentonite, or sand-cement grout is then tremmied into the annular space from the top of the bentonite plug to near surface. A traffic-rated vault is installed around each wellhead for wells located in parking lots or driveways, while steel "stovepipes" are usually set over wellheads in landscaped areas.

After installation, the wells are thoroughly developed to remove residual drilling materials from the wellbore, and to improve well performance by removing fine material from the filter pack that may pass into the well. Well development techniques used may include pumping, surging, bailing, swabbing, jetting, flushing, and air-lifting. All development water is collected either in drums or tanks for temporary storage, and properly disposed of depending on laboratory analytical results. To minimize the potential for cross-contamination between wells, all development equipment are either steam cleaned or properly washed prior to use.

AEGIS ENVIRONMENTAL, INC.
STANDARD OPERATING PROCEDURE
RE: GROUNDWATER PURGING AND SAMPLING
SOP-7

Prior to water sampling, each well is purged by evacuating a minimum of three wetted well-casing volumes of groundwater. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize, a maximum of ten well-bore volumes of groundwater have been recovered, or the well is bailed dry. When practical, the groundwater sample should be collected when the water level in the well recovers to at least 80 percent of its static level.

The sampling equipment consists of either a "Teflon" bailer, PVC bailer, or stainless steel bladder pump with a "Teflon" bladder. If the sampling system is dedicated to the well, then the bailer is usually "Teflon," but the bladder pump is PVC with a polypropylene bladder. In general and depending on the intended laboratory analysis, 40-milliliter glass, volatile organic analysis (VOA) vials, with "Teflon" septa, are used as sample containers.

The groundwater sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. Label information should include a unique sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

For quality control purposes, a duplicate water sample is collected from each well. This sample is put on hold at the laboratory. When required, a trip blank is prepared at the laboratory and placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the groundwater samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of the in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use. As a second precautionary measure, wells are sampled in order of least to highest concentrations as established by available previous analytical data.

In the event the water 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 PROCEDURE
RE: MEASURING LIQUID LEVELS USING WATER LEVEL OR INTERFACE PROBE
SOP-12

Field equipment used for liquid-level gauging typically includes the measuring probe (water-level or interface), light filter(s), and product bailer(s). The field kit also includes cleaning supplies (buckets, TSP, spray bottles, and deionized water) to be used in cleaning the equipment between wells.

Prior to measurement, the probe tip is lowered into the well until it touches bottom. Using the previously established top-of-casing or top-of-box (i.e., wellhead vault) point, the probe cord (or halyard) is marked and a measuring tape (graduated in hundredths of a foot) is used to determine the distance between the probe end and the marking on the cord. This measurement is then recorded on the liquid-level data sheet as the "depth to water" (DTW).

When necessary in using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case. After grounding the probe, the top of the well casing is fitted with a light filter to insure that sunlight does not interfere with the operation of the probe's optical mechanism.

The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the depth-to-water indicator and the DTW measurement is made accordingly. The steady tone indicates floating hydrocarbons. In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indicator and the DTP measurement is made accordingly.

The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the liquid-level data sheet. When floating product is indicated by the probe's response, a product bailer is lowered partially through the product-water interface to confirm the product on the water surface, and as further indication of product thickness, particularly in cases where the product layer is quite thin. This measurement is recorded on the data sheet as "product thickness."

In order to avoid cross-contamination of wells during the liquid-level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, all measurement equipment is cleaned with TSP solution and thoroughly rinsed with deionized water before use, between measurements in respective wells, and at the completion of the day's use.

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: John Giorgi Date: 10/21/92

Approved by: Douglas Sheeks Date: 10/21/92

Revised by: Date:

Revision Approved by: Date:

Objectives:

Phase I - Determine presence and extent of petroleum constituents in soil/groundwater.

Phase II -

Phase III -

Proposed Date of Investigation: November 1992 or ASAP thereafter.

Hazard Summary/Level of Protection

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

B. SITE/WASTE CHARACTERISTICS

Waste/Contaminant Type(s): ___Liquid __X_Soil __X_Solid ___Sludge ___Gas

Characteristic(s): ___ Corrosive __X_Ignitable ____Radioactive
__X_ Volatile __X_Toxic ____Reactive
____ Unknown ____Other (Name):

Contaminant Source (type and location):

Retail gasoline station and car wash with two 10,000-gallon underground storage tanks (UST).

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

Commercial/residential.

Status (active, inactive, unknown): __active.____

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

In April 1991, Gold Coast Technologies, Inc., was retained to provide linings and cathodic protection for two 10,000-gallon UST. Additionally, at this time, a subsurface investigation was accomplished by advancing four boreholes around the tank basin.

Due to the detection of petroleum hydrocarbons in soil and groundwater, further investigation was requested by Alameda County Health Care Services Agency, Hazardous Materials Division.

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.

Chemical Name	Maximum Concentration: (ppm/ppb) In Soil	In Water
Gasoline constituents		
TPH, as gasoline	530 ppm	3,000 ppb
TPH, as diesel	860 ppm	---
Benzene	---	1,200 ppb

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

Free product present? _____ Yes __X__ No

Type of product present: _____ Leaded __X__ Unleaded __X__ Diesel

P = Results pending

D. SITE SAFETY WORKPLAN

PERSONNEL

Team Member	Title	Responsibility
Douglas Sheeks	Project Manager	Site Coordinator
John Giorgi	Staff Geologist	Site Safety Officer

PERIMETER ESTABLISHED

Map/Sketch Attached?	Yes X	No___
Site Secured?	Yes___	No X
Perimeter Identified?	Yes X	No___
Contamination zones identified? line defined?	Yes___	No x
Free Product?	Yes___	No X
Dissolved Product?	Yes X	No___

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: Notify car wash manager.

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:

Instrumentation	Action Level	Action
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	(510) 275-8280
Poison Control Center	911
Fire Department	911
Explosives Unit	911

SITE RESOURCES:

Water supply available on site:	Yes X	No ____
Telephone available on site:	Yes X	No ____
Bathrooms available on site:	Yes X	No ____
Other resources available on site:	Yes X	No ____

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: Douglas Sheeks	(916) 782-2110
2. Health and Safety Officer: John Giorgi	(916) 782-2110
4. Site Contact: Roger Woodward	(510) 828-5151
5. Regulatory Contact: Eva Chu	(510) 271-4320

F. EMERGENCY ROUTES

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

HOSPITAL:

San Ramon Regional Medical Center
6001 Norris Canyon Road
San Ramon, California 94583
(911) or (510) 275-8280

DIRECTIONS:

The medical center is located at the east end of Norris Canyon Road at Alcosta Boulevard. Take Village Parkway north to Alcosta Boulevard, turn left (west) on Alcosta and go to Freeway 680. Take 680 north to Crow Canyon Road. Go east on Crow Canyon Road to Alcosta (about 1 mile). Turn right (south) on Alcosta. Go to Norris Canyon Road. Hospital is on the southeast corner of Norris Canyon Road and Alcosta Boulevard.

Distance: Approximately 9 miles.
Travel time: Approximately 15 minutes.

G. HAZARD EVALUATION

PARAMETER	TLV (ppm)	OT (ppm)	IDLH (ppm)	VOLA-TILITY	SKIN HAZARD	EXPLO-SIVITY
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 millon 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 millon 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	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[C]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Diesel Fuel	insoluble	0.81-0.90	---	130	---	0.6-1.3 6.0-7.5		none established	NE	0.008 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[L] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Acrolein	22%	0.8410	1.9	-15	214 mm	2.8% 31.0%	46	0.1 ppm	5 ppm	0.1-16.6 (0.21-0.5)	BCED	BJ	ABDFGHIK 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	2.887	--	none	5 mm	non-flam.	1147	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	ABCFGHKN Q
Chlorobenzene	0.01 g	1.1058	3.9	84	8.8 mm	1.3% 9.6%	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	0.8 g	1.4832	4.12	none	160 mm	non-flam.	800	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 JKLOQR
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[L] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
1,1-Dichloroethane (DCA)	0.1 g	1.1757	8.4	22	182 mm	6.0% 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	6.2% 16.0%	670	10.0 ppm[H]	1,000 ppm	6 ppm	BCDG		BCFGLMNQ
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		ABGHIKMN 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%[C] 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%[C] 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	19 mm	6.0%[C] 15.5%	1140	10.0 ppm	500 ppm	0	C		BEFGHIKL MNOPQ

HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS (CONTINUED)

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[L] Exposure Symptoms
Trichloroethylene (TCE)	0.1%	1.4642	4.5	90	58 mm	12.5% 90.0%	4920	50.0 ppm[H]	1,000 ppm	21.4-400	BC		BFKLNOPQ
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	BEFHIKLM NOPQ
Vinyl Chloride	negligible	0.9100	2.24	-108	3.31 atm	3.6% 33.0%	500	1.0 ppm	none specified	260	BCEG	DJG	ABFHIKLN R

HAZARDOUS PROPERTY INFORMATION - HEAVY METALS

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[C] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Arsenic	B	5.727	n/a	none	n/a	F		10.0 ug/m^3	none specified		CEG	CJG	ACDGJLMO QR
Beryllium	B	1.85	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		ABGIKLMN QR
Chromium	B	7.20	n/a	none	n/a	F F		0.5 mg/m^{3H}	500/mg^3				FMNQ
Copper	B	8.92	n/a	none	n/a	F		0.1 mg/m^3	none specified		C		FGIJLMOQ R
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^{3H}	28 mg/m^3		C		AGLMNQ
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[I] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Acetone	soluble	0.8	2.0	-4	400 mm	2.5% 12.8%	9750	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		FKLNPQ
PCB (Generic)	slightly soluble	--	n/a	none	n/a	non-flam.		1.0 ug/m^3[H]	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