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HAZMAT
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Chevron

Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

Marketing Department
Phone 510 842 9500

May 6, 1994

Ms. Eva Chu
Alameda County Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

Re: Chevron Station # 9-5542, 7007 San Ramon Valley Blvd., Dublin, CA
Attached work plan for additional environmental investigation (Sierra, 5/5/94)

Dear Ms. Chu:

Please find attached a work plan dated May 5, 1994, which was prepared by Chevron's consultant, Sierra Environmental Services (Sierra), to describe additional soil and groundwater assessment to be performed at and downgradient from the subject site.

Chevron is prepared to schedule this field work as soon as the work plan approval is received from your agency. If you have any questions or comments, I can be reached at (510) 842-8695.

Sincerely,

Brett L. Hunter

Brett L. Hunter
Environmental Engineer
Site Assessment and Remediation

① Approve WP to delineate extent of soil contam. east of MW-1 and to delineate GW plume east of MW-4.
② Information should be used to develop CAP.

Attachment

cc: Richard Hiett, San Francisco Bay RWQCB, Oakland, CA
Mary Diamond, See's Candy, 3423 S. La Cienega Blvd., Los Angeles, CA 90016-4401
See's Real Estate, 210 El Camino Real, S. San Francisco, CA 94080 (w/o attachment)

SIERRA
Environmental Services

May 5, 1994

Brett Hunter
Chevron USA Products Company
P.O. Box 5004
San Ramon, CA 94583

Re: Monitoring Well Installation
Chevron SS#9-5542
7007 San Ramon Valley Boulevard
Dublin, California
SES Project #1-214-01

Dear Mr. Hunter:

Sierra Environmental Services (SES) presents the following work plan for conducting subsurface work at the above-referenced location (Figure 1, Appendix A).

SUMMARY

SES will drill three soil borings and install one monitoring well in one of the soil borings in order to further evaluate the extent of hydrocarbons in soil and ground water at the site and to verify the ground water flow direction and gradient in the site vicinity. The locations of the proposed monitoring well and soil borings are shown on Figure 2 (Appendix A).

BACKGROUND

The following site history information was obtained from Mr. Clint Rogers, formerly of Chevron USA.[1]

Four steel tanks were installed at the site in 1965 (two 10,000-gallon underground fuel tanks, one 4,000-gallon underground fuel tank and one 500-gallon waste oil tank). In 1983, a hole was discovered in the regular leaded gasoline tank and the tank was lined with fiberglass.

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[1] Rogers, Clint, 1991, Memorandum from Clint Rogers, Chevron Engineer to Sharon Halper, SES Senior Project Geologist, May 28, 1991, 1 page.

In December 1983, five monitoring wells were installed at the site. All five wells were drilled to a depth of approximately 20 feet below grade. Ground water was not encountered in any of the wells. In January 1984, well MW-3 was deepened to a depth of 25 feet below grade. Free-phase motor oil was observed and bailed from the well. No further free-phase hydrocarbons were observed in bi-weekly monitoring through October 1984.

In September 1984 a corroded section of piping was replaced and cathodic protection was installed. In November 1984, the regular leaded product line failed a leak test.

In February 1990, the station was rebuilt and the fuel tanks and product lines were replaced. Three 12,000-gallon fiberglass tanks were installed. The waste oil tank was removed, but was not replaced. Hydrocarbons were detected in soil samples collected from beneath all of the tanks.[2]

Soil was removed to a depth of 22 feet below grade at the southern end of the tank excavation. Soil samples collected from 22 feet below grade in the southern portion of the tank excavation contained over 1,000 ppm total purgeable petroleum hydrocarbons as gasoline [TPPH(G)].

In March 1990, the five existing monitoring wells were abandoned and four new wells were installed at the site. Hydrocarbons were detected in soil samples collected from three of the monitoring wells. (MW-1, MW-3 and MW-4). The highest concentration of TPPH(G) was detected in the soil sample collected from MW-1 at 25 feet below grade.

In June 1991, SES installed three off-site monitoring wells (MW-5, MW-6 and MW-7) to further define the extent of hydrocarbons in ground water in the site vicinity.[3] Hydrocarbons as

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[2] Blaine Tech, 1990, Consultant's Tank Removal Report, Chevron SS#9-5542, prepared for Chevron February 13, 1990.

[3] Sierra Environmental Services, 1991, Subsurface Investigation Report prepared for Chevron, July 22, 1991, 10 pages and 5 appendices.

gasoline were detected in one soil sample from well MW-6, located downgradient of the former underground fuel tank area. Hydrocarbons were not detected in soil samples collected from the other two borings/wells drilled during this investigation.

In September 1991, SES began conducting quarterly ground water monitoring at the site. Historic ground water flow direction in the site vicinity is easterly and depth to water ranges from 20 to 26 feet below ground surface. Hydrocarbons as gasoline are typically present in ground water samples collected from four of the eight wells at concentrations ranging from 68 to 94,000 ppb.[4]

In 1991, GeoStrategies, Inc. installed an additional off-site monitoring well (MW-8) in the downgradient direction. Soil and ground water samples collected from MW-8 did not contain detectable levels of TPPH(G) or BTEX.[5]

In November 1992, Geraghty and Miller, Inc. installed one ground water/vapor extraction well by deepening an existing well (MW-1) and installed two vacuum monitoring wells (VW-1 and VW-2). Hydrocarbons as gasoline were detected in soil samples collected from both vacuum monitoring wells at concentrations ranging from 1 to 990 ppm. Information regarding the operation of a ground water extraction/treatment system was not available for inclusion in this work plan.

TOPOGRAPHIC AND GEOLOGIC SETTING

The site is located in Dublin, in the San Ramon Valley region of California. The topography of the site is relatively flat. The site is mapped as Quaternary alluvium which is composed of clay,

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[4] Sierra Environmental Services, Quarterly Ground Water Monitoring Report, Chevron SS#9-5542, April 15, 1994, 1 page and 4 attachments.

[5] Rogers, Clint, correspondence with Ravi Arulananthum, Alameda County Environmental Health Department, February 13, 1992, 1 page.

silt, sand and gravel.[6] The closest surface water is Dublin Creek, located approximately 2,000 feet south of the site.

Previous work at the site indicates that it is underlain by relatively low-permeability sandy clay.[7] Depth to ground water in March 1994 was between 20 and 26 feet below grade.[8]

The ground water flow direction at the site is consistently to the east, based on water level measurements collected by SES during routine monitoring events.

SCOPE OF WORK

The objective of the subsurface investigation is to further evaluate the extent of petroleum hydrocarbons in soil and ground water at the site and to verify the ground water flow direction and gradient in the site vicinity. The following outlines the scope of work for this investigation.

1. Prepare a site specific safety plan to this investigation based on past and present site use and conditions.

2. Drill three soil borings to approximately 35 feet below grade and install a ground water monitoring well in one of the soil borings. At a minimum, collect one soil sample from each of the borings. Analyze the selected soil samples for total purgeable petroleum hydrocarbons as gasoline [TPPH(G)] and benzene, toluene, ethylbenzene and xylenes (BTEX).

3. Install one two-inch monitoring well in the off-site soil boring.

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6 Dibblee, Thomas, 1980, Preliminary Geologic Map of the Dublin Quadrangle, Alameda and Contra Costa Counties, United States Geologic Survey Open File Report 80-537.

7 Sierra Environmental Services, 1991, Consultant's Subsurface Investigation Report prepared for Chevron, July 22, 1991, 10 pages and 5 appendices.

8 Sierra Environmental Services, Quarterly Ground Water Monitoring Report, Chevron SS#9-5542, April 15, 1994, 1 page and 4 attachments.

4. Develop and sample the newly installed monitoring well. Analyze the ground water sample for TPPH(G) and BTEX.

5. Survey the top of casing elevation and measure depth to water in the new well and in existing site wells. Use the survey and water level data to verify ground water flow direction and gradient in the site vicinity.

6. Arrange for disposal of the drill cuttings from the borings and steam-cleaning rinseate.

7. Report the results of the investigation.

Each of these tasks is described below.

Task 1 - Site Safety Plan

Using the known site history SES will prepare a site-specific safety plan. The site safety plan identifies potential site hazards and specifies procedures to protect site workers and the community. The site safety plan will be on-site during all field operations. The site safety plan is included in Appendix B.

Tasks 2 and 3 - Drilling, Soil Sampling and Monitoring Well Installation

Three soil borings will be drilled at locations shown on Figure 2 (Appendix A). One two-inch monitoring well (MW-9) will be installed in the off-site soil boring. The borings will be drilled with hollow-stem augers by a licensed drilling contractor. Prior to drilling, utilities will be located by USA and Chevron Maintenance personnel.

The borings will be logged in accordance with SES Standard Operating Procedure - Logging Method (Appendix C) under the supervision of Chris J. Bramer, California PE #C48846.

Soil samples will be collected from the borings at intervals no greater than 5 feet in steam-cleaned or new brass or stainless steel tubes in accordance with SES Standard Operating

Procedure - Soil Sampling (Appendix C). SES will attempt to collect a soil sample immediately above the soil/ground water interface.

The soil samples will be field screened for analysis with an organic vapor meter (OVM) in accordance with SES Standard Operating Procedure - OVM Readings (Appendix C).

Drill cuttings will be stored on-site on polyethylene sheeting (visqueen). The soil cuttings will be covered with additional polyethylene sheeting pending disposal by Integrated Waste Stream Management of Milpitas, California.

At a minimum, one soil sample from each boring will be analyzed for TPPH(G) by EPA Method 8015/5030 and BTEX by EPA Method 8020. The soil samples will be analyzed by Superior Precision Analytical, Inc. of Martinez, California.

The off-site soil boring will be completed as a ground water monitoring well in accordance with SES Standard Operating Procedure - Monitoring Well Design and Construction (Appendix C). A typical well construction diagram is included in Appendix C.

The borings will be grouted to the surface with a mixture of Portland Cement and 3% to 5% bentonite powder.

Task 4 - Monitoring Well Development and Sampling

The monitoring well will be developed no sooner than 48 hours after drilling with a vented surge block and PVC bailer in accordance with SES Standard Operating Procedure - Well Development (Appendix C). Ground water removed during development will be transported to and disposed of at the Chevron Refinery in Richmond, California.

Ground water samples will be collected from the new well no sooner than 24 hours after development using disposable bailers in accordance with SES Standard Operating Procedure -

Water Sampling (Appendix C). Monitoring well purge water will be transported to and disposed of at the Chevron Refinery in Richmond, California.

Ground water samples from the well will be analyzed for TPPH(G) and BTEX by EPA Methods 8015/5030 and 8020, respectively. QA/QC data from the laboratory will be included in the final report.

Task 5 - Surveying and Ground Water Gradient

The top of casing elevations of the new well will be surveyed by Ron Miller, Professional Engineer #15816. The casing elevation will be surveyed relative to mean sea level using a USGS benchmark. Water levels will be measured in all wells using an MMC flexi-dip interface probe. Water levels will be reported to the nearest 1/100th of a foot. A ground water elevation contour map will be prepared using survey and water level data.

Task 6 - Drill Cuttings and Rinseate Disposal

Soil cuttings placed on and covered by visqueen pending disposal by Integrated Waste Stream Management. Steam-cleaning rinseate will be disposed of at the Chevron Refinery in Richmond, California by SES personnel.

Task 7 - Report

A report presenting the results of the investigation will be prepared. The report will include:

Text:

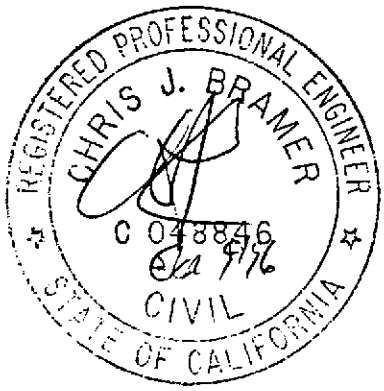
- A summary of the results
- Site background and history
- Topographic and geologic setting
- Description of soil sampling and subsurface sediments
- Summary of analytic results for soil and ground water
- Conclusions

Figures:
- Site location map
- Soil boring location map
- Monitoring well locations and ground water elevation contour map

Tables:
- Tabulated soil and ground water analytic results

Appendices:
- Appendix A: Figures
- Appendix B: Tables
- Appendix C: SES Standard Operating Procedures
- Appendix D: Soil Classification System and Boring Logs
- Appendix E: Chain of Custody Documents and Laboratory Analytic Results

Thank you for the opportunity to provide environmental consulting services to Chevron USA. Please call if you have any questions.



Sincerely,
Sierra Environmental Services

Argy Mena
Staff Geologist

Chris J. Bramer
Professional Engineer #C48846

AJM/CJB/wmc
21401WP.MY4

Attachments: Appendix A - Figures
Appendix B - Site Safety Plan
Appendix C - Standard Operating Procedures

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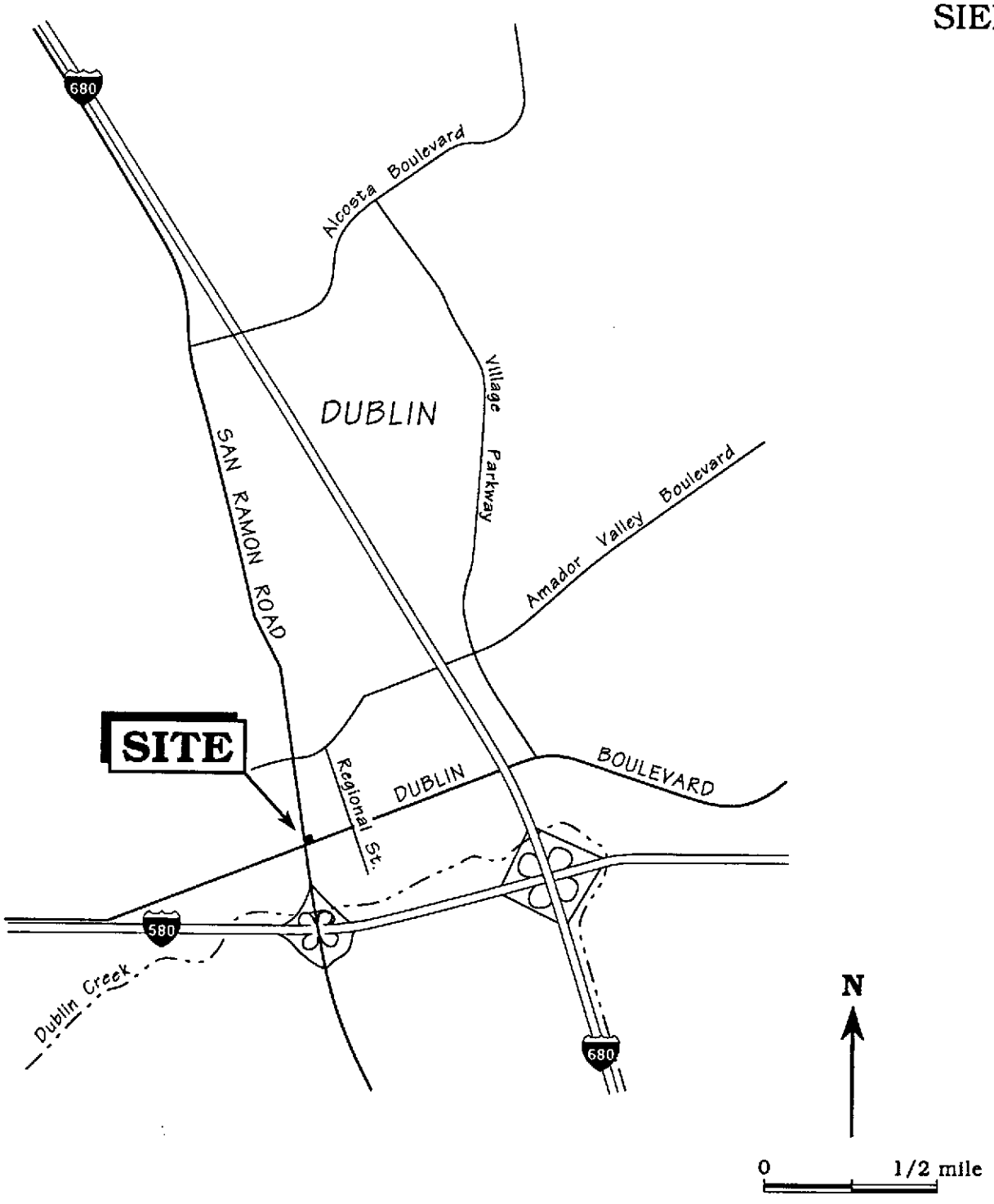

Base map ref: California State Automobile Association (AAA)

Figure 1. Site Location Map - Chevron Service Station #9-5542 - 7007 San Ramon Road, Dublin, California

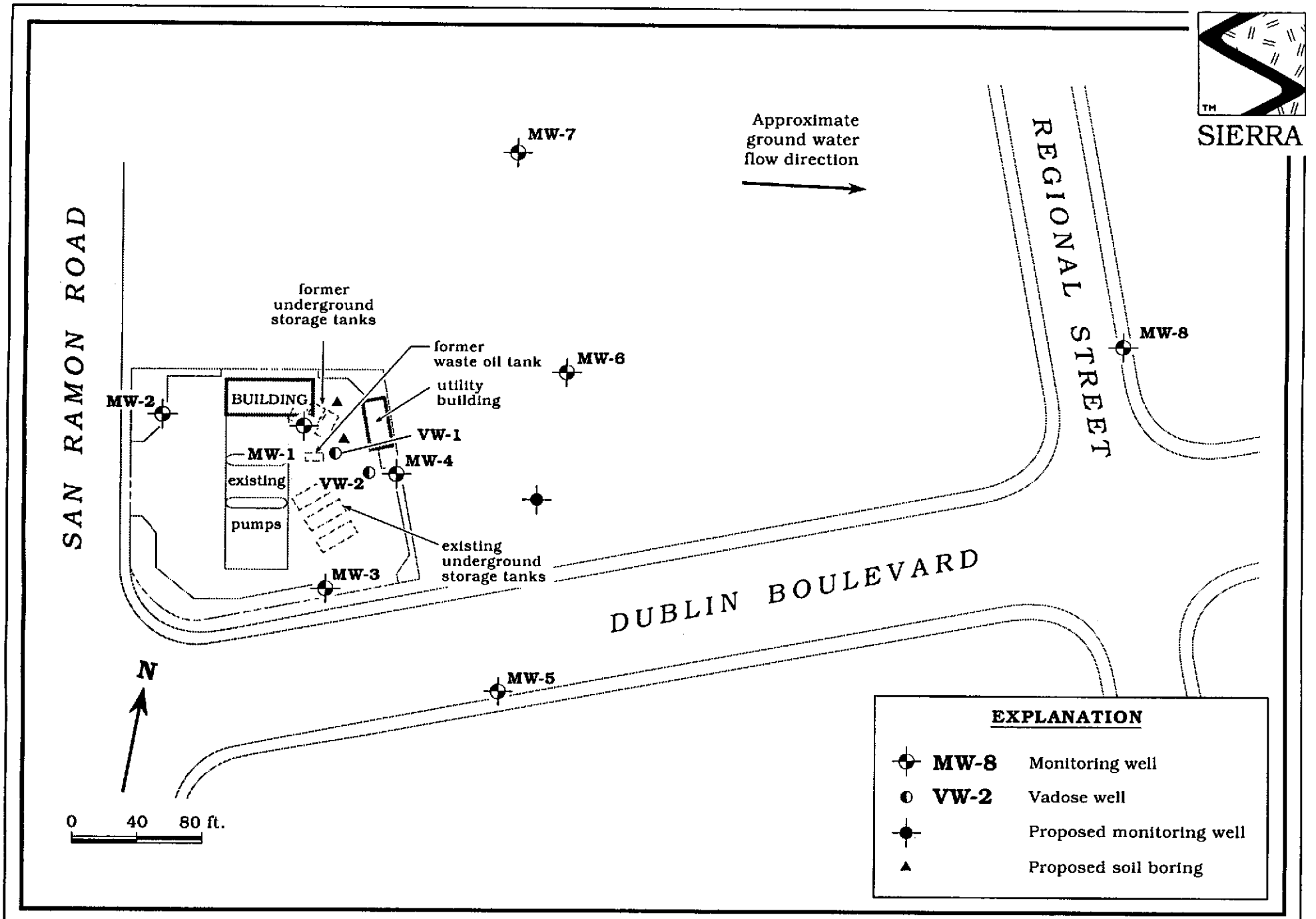

Figure 2. Existing Monitoring Well and Soil Boring Locations and Proposed Soil Boring Location Map - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

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APPENDIX B
SITE SAFETY PLAN

SIERRA

SIERRA ENVIRONMENTAL SERVICES
SITE SAFETY PLAN

A. GENERAL INFORMATION

CLIENT: Chevron USA PROJECT NO: 1-214-01

PROJECT MANAGER: Chris Bramer DATE PREPARED: April 19, 1994

SITE LOCATION: 7007 San Ramon Road, Dublin, California

SCOPE/OBJECTIVE OF WORK: Monitoring well installation, development and sampling

PROPOSED DATE OF FIELD ACTIVITIES: May/June 1994

BACKGROUND INFORMATION: [X] Complete [ ] Preliminary (no analytical data available)

DOCUMENTATION/SUMMARY:

Overall Chemical Hazard:	[ ] Serious [X] Low	[ ] Moderate [ ] Unknown	Criteria for Determination: Previous subsurface investigation
Overall Physical Hazard:	[ ] Serious [X] Low	[ ] Moderate [ ] Unknown	Criteria for Determination: Site conditions

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S):	[X] Liquid	[X] Solid	[ ] Sludge	[X] Gas/Vapor
CHARACTERISTIC(S):	[ ] Flammable/Ignitable [ ] Explosive	[X] Volatile [ ] Reactive	[ ] Corrosive [X] Carcinogen	[ ] Acutely Toxic [ ] Toxic
PHYSICAL HAZARDS:	[X] Overhead [ ] Puncture	[ ] Confined Space [ ] Burn	[ ] Below Grade [ ] Cut	[X] Trip/Fall [X] Splash

[ ] Other _____

SITE HISTORY/DESCRIPTION AND UNUSUAL FEATURES: Site is a busy operating station

LOCATION OF CHEMICAL/WASTES: All liquid waste will be disposed of at the Chevron Refinery, and solid waste will be placed on/covered by visqueen.

ESTIMATED VOLUME OF CHEMICAL/WASTES: 1-2 cubic yards of soil and approximately 100 gallons of steam-cleaning/purge water.

SITE CURRENTLY IN OPERATION: [X] Yes [ ] No

SITE UTILITIES HAVE/WILL BE LOCATED PRIOR TO DRILLING ACTIVITIES BY:

[X] USA [ ] Private Locator [X] Client [ ] N/A

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C. HAZARD EVALUATION

LISTS HAZARDS BY TASK. (Cross-reference task numbers in Section D).

Task 1: Monitoring well installation

Task 2: Well development

Task 3: Water sampling

CHEMICAL HAZARD EVALUATION:

Compound	Action Level* STEL/TWA (ppm)	Route of Exposure	Acute Symptoms	Odor Description
Benzene	1/0.1	Inhalation/Dermal	Confusion, euphoria, vomiting, dizziness	Aromatic
Toluene	200/100	Inhalation/Dermal	Confusion, euphoria, vomiting, dizziness	Aromatic
Ethylbenzene	100	Inhalation/Dermal	Confusion, euphoria, vomiting, dizziness	Aromatic
Xylenes	100/100	Inhalation/Dermal	Confusion, euphoria, vomiting, dizziness	Aromatic

* Action level is defined as 50% of both the Short Term Exposure Limit and the Time Weighted Average Exposure Limit. Units are parts per million in air. STEL = Short Term Exposure Limit. TWA = Time Weighted Average Exposure Limit (8-hour period).

D. SITE SAFETY WORK PLAN

SITE CONTROL: ATTACH MAP OF SITE SHOWING HOT ZONE, CONTAMINATION REDUCTION ZONE, ETC.

[X] Perimeter Identified? [X] Site Secured? [X] Work Area Designated? [X] Zone(s) of Contamination Identified?

ANTICIPATED LEVEL OF PROTECTION (cross-reference task numbers in Section C):

	A	B	C	D
Task 1				X
Task 2				X
Task 3				X

MODIFICATIONS: In the event personal air monitoring levels exceed STEL/TWA action levels for organic vapors and/or benzene, site personnel will upgrade to Level C protection.

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Excavation Safety: All excavation activities will be performed in accordance with Title 8, Section 1540 of the California Code of Regulations. This includes the following:

- Locations of underground utilities
- Notification of Regional Centers two working days prior to excavation start
- Surface obstacles that pose a hazard will be removed or made safe before excavation begins
- Spoils placement will be at least 2 feet from excavation edges
- Personnel entering excavations that are 5 feet or greater in depth will be protected by shoring, sloping, or benching of the sidewalls
- The site safety officer will check excavated area prior to entry
- Work in the excavation will proceed under immediate supervision of the site safety officer
- A safe means of entry and exit will be provided
- Trenches will be crossed only where safe crossings have been provided
- No excavation work will take place below the base level of immediately adjacent foundation or retaining wall until a California Registered Civil Engineer determines that no hazard has been created
- Barriers will be provided to prevent mobile equipment from inadvertently entering the excavation
- Personnel working near excavating equipment will work in a safe position to prevent coming into contact with equipment's moving parts
- Surface water entry into the excavation will be provided by diversion ditches or dikes

Personnel Safety: All site personnel are trained in accordance with 29 CFR 1910.120 and/or Title 8, Section 5192 of the California Code of Regulations.

AIR MONITORING EQUIPMENT:
The following air monitoring equipment is used on-site.

- Sensidyne air pump and detector tube system for measuring benzene concentrations

- OVM/Data logger (Model 580B) manufactured by Thermo Environmental Instrument Inc. to detect volatile compounds in soil, and to perform ambient air surveys.

The calibration procedures for air monitoring equipment are stated below, calibration will be conducted daily prior to any field surveys.

Sensidyne Air Pump:

Since the detector tube system is sensitive to the amount of air pulled through the reaction tube, the pump will be periodically checked for air volume and flow rate (every 4 hours). The pump will be leak tested each time it is used. An intact tube will be placed in the pump and negative pressure will be applied to the system. If the pump is working properly it will hold the negative pressure for about one minute.

OVM (580B):

A factory-prepared standard of 100 ppm isobutylene is used as the calibration standard for the OVM. The OVM is connected to the standard gas with polyethylene tubing and draws the standard gas at its operating rate. The standard gas may also be used to inflate a Tedlar air sampling bag, which is then used as a source for OVM calibration. The OVM instrument is factory programmed to calibrate to the known concentration of isobutylene. The zero point is calibrated to the ambient air.

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AIR MONITORING:

Contaminant	Type of Sample Area (A), Personal (P)	Monitoring Equipment	Frequency of Sampling†
Benzene*	A,P	Sensidyne pump with Draeger tubes	Every hour
Organic Chemicals	A,P	Organic vapor meter	Every hour or when odor is present

* Air monitoring for benzene will be instituted if OVM readings indicate an excess of 100 ppm.
† Frequency of air monitoring will be increased to once every one-half hour when STEL/TWA action levels are exceeded. Frequency of air monitoring may be reduced to once every hour after two sampling periods indicate that both organic vapors and benzene concentrations are below the STEL/TWA action levels.

RECORD OF AIR MONITORING:

Date	Time	Type of Sample Area (A), Personal (P)	Contaminant/Equipment	Measurement Recorded & Units

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PERSONAL ATMOSPHERIC HAZARD GUIDELINES:

For Community Safety Concerns refer to Section G (see pages 7 and 8)

Instrument	Frequency	Exposure/Level† (ppm)	Action for Site Workers
EPA Sensidyne with benzene tubes	Every hour*	Short-term/ <0.5 Long-term/ <0.5	Continue investigation
		Short-term/ ≥0.5 Long-term/≥0.5	Upgrade personal protection equipment (PPE) to Level C with organic vapor cartridges
		>2 ppm for more than 15 minutes	Withdraw from area, and reassess conditions. Urinary phenol test on employees.
OVM (580B)	Every hour and when strong odors are present	<100 ppm	Continue investigation
		100 - 150 ppm	Continue investigation with caution*
		Short-term/≥250 Long-term/≥150	Continue investigation upgrade site workers PPE to Level C
		>500 ppm for more than 15 minutes	Discontinue site investigation pending a reassessment of the conditions

* Air monitoring for benzene will be instituted if OVM readings indicate an excess of 100 ppm.
† Short-term is for exposures of 15 minutes or less. Long-term is for exposures of greater than 15 minutes.

DECONTAMINATION SOLUTIONS AND PROCEDURES FOR EQUIPMENT, SAMPLING GEAR, ETC.: All drilling and sampling equipment is steam cleaned; water is contained and transported to the Chevron Refinery for disposal. All other equipment is rinsed or cleaned with damp towel or rag (left on-site for disposal).

PERSONNEL/DECONTAMINATION PROTOCOL: Remove and leave tyvek and gloves on-site; wash with soap and water.

SPECIAL SITE EQUIPMENT, FACILITIES, OR PROCEDURES (sanitary facilities and lighting): N/A

GENERAL SPILL CONTROL, IF APPLICABLE: All liquid spills will be contained with absorbent materials and placed in a steel drum for future disposal.

INVESTIGATION-DERIVED MATERIAL DISPOSAL: Place tyvek, gloves and disposable sampling equipment in a plastic liner and place in a steel DOT-approved 17-H 55-gallon drum.

SIERRA

FIELD TEAM MEMBERS	RESPONSIBILITY
Argy Mena	Staff Geologist

E. EMERGENCY INFORMATION

AMBULANCE: 911

HOSPITAL: (510) 275-9200

POISON CONTROL CENTER: 911

POLICE: 911 or (510) 829-0566

FIRE DEPARTMENT: 911 or 881-8181

AGENCY CONTACT: (510) 271-4320 Alameda County Public Health Department

LABORATORY: (510) 229-1512 Superior Precision Analytical

EMERGENCY CONTACTS: Project Manager: (Name) Chris Bramer

(Office) (510) 370-1280

Client: (Name) Brett Hunter

(Office) (510) 842-8695

EMERGENCY ROUTES:

Directions to hospital (include map) Travel northwest on Dublin Boulevard to Interstate 680. Travel north on 680 about 6 miles until you reach Norris Canyon Road. Turn right on Norris Canyon Road and then right onto Alcosta Boulevard. Hospital is approximately 1/4 mile south on Alcosta Boulevard.

SIERRA

F. EQUIPMENT

Instrumentation		First Aid Equipment	
OVA	✓	First Aid Kit	✓
Draeger Pump, Tubes	✓	Portable Eyewash	✓
LEL Meter		Fire Extinguisher	✓
Temp/pH/EC Meter	✓		

Decon Equipment				
Wash Tub		Detergent	✓	Type Liquinox
Buckets	✓	Distilled Water	✓	
Scrub Brushes	✓	55-gallon DOT Drums	✓	
Steam-cleaner	✓			

Sampling Equipment		Miscellaneous Equipment	
Brass Tubes	✓	Tool Kit	✓
Teflon Tape	✓	Traffic Safety Vests	
Plastic Caps	✓	Traffic Cones	✓
40-ml VOAs	✓	Traffic Road Signs	
1 L Bottles		Caution Tape	✓
		Mobile Telephone	✓
		Plastic Sheeting	✓

G. COMMUNITY SAFETY CONCERNS

Community Safety Hazards:

✓	Noise	✓	Tripping	✓	Splash		Fire
✓	Vapors/Fumes	✓	Traffic				

Mitigation of Community Safety Concerns:

	Fence		Foam		Fans		Signs
	Traffic Control (describe) _____			✓	Other (describe) caution tape and cones		

Potential exposure to petroleum hydrocarbons during field activities is limited to site workers, and the population in the surrounding areas. An air monitoring program in conjunction with limiting access to areas near the work zones greatly diminishes the possibility of exposure to volatile hydrocarbons (see Figure 2). During the working hours, the site perimeter will be established outside the fence or caution tape along the sidewalks using barricades with caution tape. During non-work hours, the site perimeter will be a minimum six-foot wire fencing or caution tape. All gates will be secured with a chain and lock.

If airborne concentrations exceed specific action levels (page 5) contingency response actions will be taken immediately to reduce potential exposure to the public. Ambient levels of hydrocarbons are established prior to site construction activity. Air monitoring equipment (page 3) is used to screen the ambient upwind and downwind work areas for benzene and organic vapors. The same chemical screening may be applied to various areas of the contamination reduction zone. Total volatile hydrocarbons along with benzene will be measured via direct reading instrument from grab samples (Page 3). Atmospheric hazard guidelines and proposed actions are summarized in the table on Page 5.

In the event emission levels exceed levels of 500 ppm for volatile organic vapors and/or 2 ppm for benzene in a period of 15 minutes or more, the following additional actions will be implemented:

- Inform individuals and businesses in the immediate area (within 1 block) of the elevated hydrocarbon levels.
- San Ramon Fire Department will be notified and requested to assist in rerouting pedestrians.

Instrument	Frequency	Type of Sample	Ambient Level	Action for Community
Sensidyne with benzene tubes	Every hour*	A	≥2 ppm for 15 minutes	Inform businesses in immediate area, call 911 for assistance
OVM (580 B)	Every hour and when strong odor is present	A	≥500 ppm for 15 minutes	Inform businesses in immediate area, call 911 for assistance

* Air monitoring for benzene will be instituted if OVM readings indicate an excess of 100 ppm.

The public will be prevented from entering the work area by caution tape and cones. If vapors during construction exceed PELs or TWAs work will cease immediately. All work will be conducted between 7:30 a.m. and 6:30 p.m. to minimize noise impact to public.

SIERRA

HAZARDOUS & TOXIC MATERIALS
SITE SAFETY REVIEW

GENERAL INFORMATION

DATE _____ TIME _____ PROJECT NUMBER 1-214-01

SITE: _____

LOCATION: 7007 San Ramon Road, Dublin

OBJECTIVES: Monitoring well installation

TYPES OF CHEMICALS ANTICIPATED: Gas/BTEX

TOPICS DISCUSSED

PHYSICAL HAZARDS: Overhead, trip/fall, splashes

CHEMICAL HAZARDS: Gas/BTEX

PERSONAL PROTECTION: Level D

DECONTAMINATION: Wash with soap and water

SPECIAL SITE CONSIDERATIONS: High public visibility

CHECKLIST

1. EMERGENCY INFORMATION REVIEWED? _____ / AND FAMILIAR TO ALL TEAM MEMBERS? _____
2. LOCATION OF AND ROUTE TO NEAREST HOSPITAL KNOWN TO ALL MEMBERS? _____ / MAP POSTED? _____
3. SITE SAFETY PLAN READILY AVAILABLE AND ITS LOCATION KNOWN TO ALL TEAM MEMBERS? _____
4. MONITORING EQUIPMENT CALIBRATED ON THIS DATE? _____

ATTENDEES

NAME	SIGNATURE

MEETING CONDUCTED BY: _____

SITE SAFETY OFFICER: _____

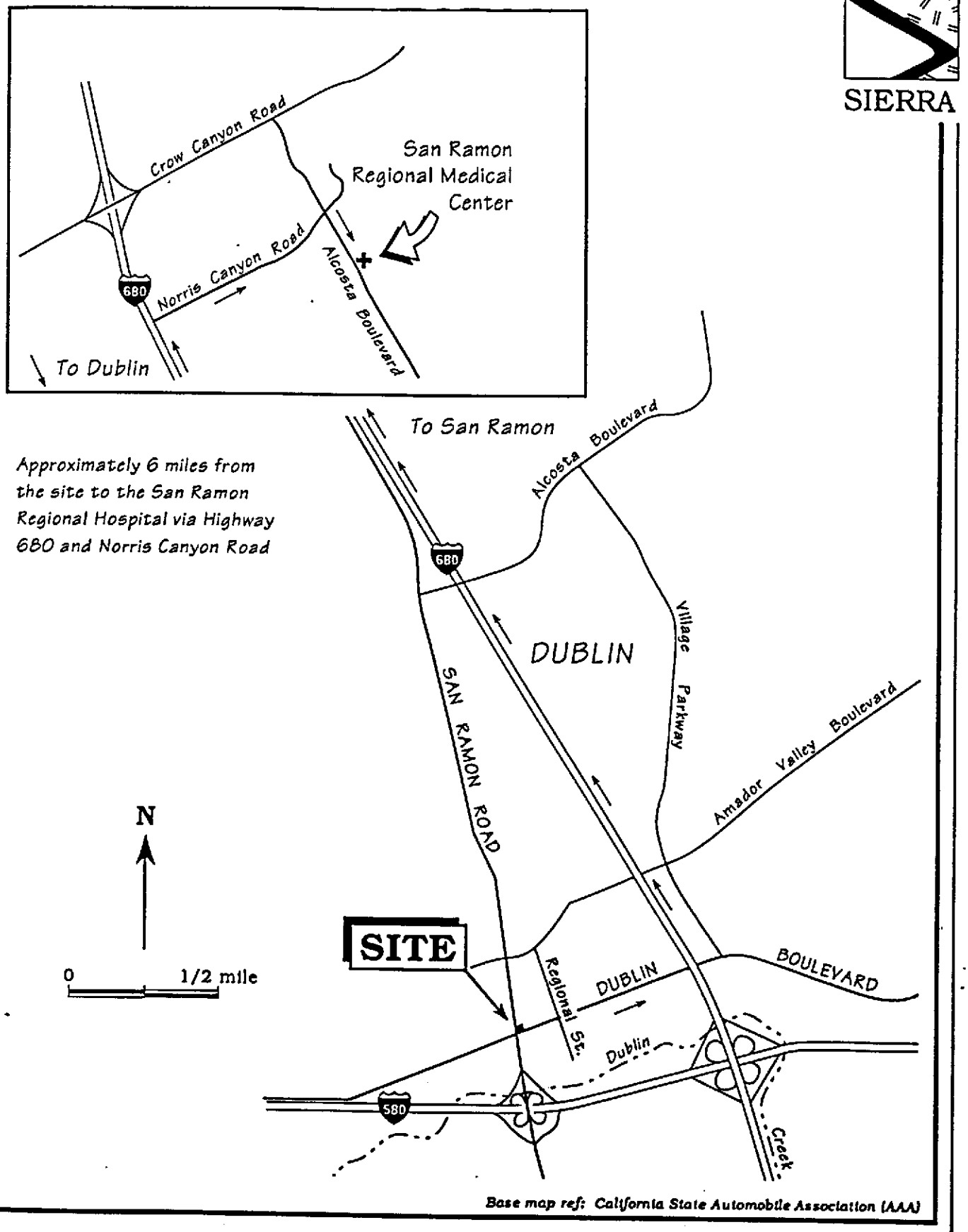

Figure 1. Hospital Route Map – San Ramon Regional Medical Center – 6001 Norris Canyon Road, Dublin, California

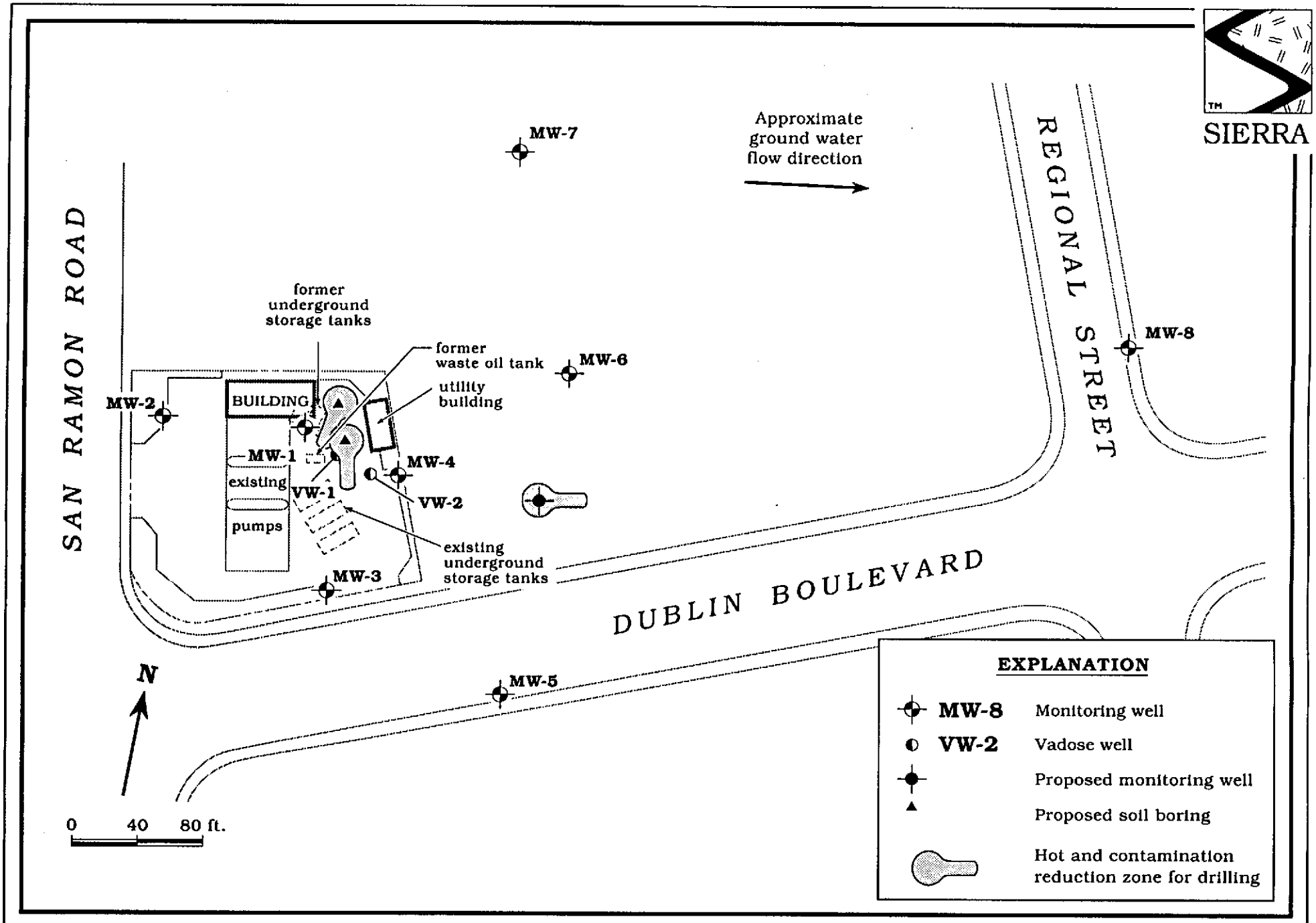

Figure 2. Hot and Contamination Reduction Zones - Chevron Service Station #9-5542, 7007 San Ramon Road, Dublin, California

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APPENDIX C
SIERRA ENVIRONMENTAL SERVICES
STANDARD OPERATING PROCEDURES

SIERRA

SES STANDARD OPERATING PROCEDURE

SOIL SAMPLING

The following describes sampling procedures used by SES field personnel to collect, handle, and transport soil samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis.

All drilling and sampling equipment is steam-cleaned between boreholes to prevent cross-contamination. The sampler is washed with an EPA approved detergent (such as liquinox or trisodium phosphate) between sample collection. Collection methods specific to soil sampling are presented below.

Soil samples are collected at pre-specified depth intervals or at a sediment/lithologic change for hydrogeologic description and possible chemical analysis. Samples are collected using a modified California split-spoon sampler lined with 2- or 2.5-inch I.D. x 4- or 6-inch long steam-cleaned or new stainless steel or brass tubes. The sampler is lowered into the borehole and driven 18 inches, using a 140-pound hammer. The drilling contractor provides the SES field personnel with the number of blows required to drive the sampler for each 6 inches of penetration.

The sampler is then extracted from the borehole and the middle or bottom brass tube is carefully removed for possible analysis. The soil material is immediately trimmed flush with the tube ends, and sealed with Teflon tape beneath polyethylene end caps. The caps are hermetically sealed to the brass tube with duct tape. The sample is then labeled to include the date, boring number, depth of sample, project number, SES, and the SES field personnel's initials. The samples are put into a plastic "zip-lock" type bag and placed into an ice chest maintained below 4°C with blue ice or dry ice, for transport under chain of custody to the laboratory. The chain-of-custody form includes the project number, analysis requested, sample ID, date analysis and the SES field personnel's name. The form is signed, dated and timed by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

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SES STANDARD OPERATING PROCEDURE

LOGGING METHOD

Unconsolidated soil is classified and described by trained SES field personnel. All available information is used, including the following: soil recovered in the sampler, including the soil visible on both ends of the sample retained for possible analysis; soil cuttings generated during drilling; and the drilling contractor's observations of the drill rig's behavior.

Classification and description of unconsolidated soil is accomplished using the American Society of Testing and Materials (ASTM) Methods D2487-85 (Unified Soil Classification System (USCS)) and/or D2488-69 (Description and Identification of Soils (Visual-Manual Procedure)).

The soil classification and description is recorded on the field log sheet by SES field personnel and includes the following information:

1) Soil type;
2) Soil classification;
3) Soil color, including mottling;
4) Moisture content;
5) Plasticity and consistency (fine-grained material) or density (coarse-grained material);
6) Percentages of clay, silt, sand and gravel;
7) Grain size range of sands and gravels;
8) Angularity and largest diameter of gravel component;
9) Estimated permeability;
10) Odor; and
11) Any other observations which would assist in the interpretation of the depositional environment and/or differentiation between the various geologic units expected to be encountered.

In addition to the above, the ground water levels encountered during drilling and measured after the water stabilized is also recorded on the field log.

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SES STANDARD OPERATING PROCEDURE

OVM READINGS

SES uses an organic vapor meter (OVM) to determine the presence or absence of volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and xylenes in soil samples chosen for field screening. The OVM uses a photoionization detector (PID) and is calibrated daily to 100 parts per million of 1-liter of isobutylene. The OVM, which measures in parts per million by volume (ppmv), is used for qualitative, not quantitative, assessment because the correlation between the volume measurements of the OVM and the weight measurements of the laboratory instruments is not well defined.

A field screen sample is obtained from the brass tube immediately above or below the brass tube containing the sample selected for possible analysis. The soil to be screened is removed from the brass tube, and is placed in a pre-cleaned brass tube with aluminum foil and a polyethylene cap on one end. The brass tube is loosely filled to approximately 1/2 full. Another square of aluminum foil is placed on the open end and a polyethylene cap with crossed slits is placed over it.

The field screen sample is allowed to temperature equilibrate for approximately 15 to 30 minutes in the sun, allowing any VOCs which might be present in the soil to volatilize out into the brass tube's headspace. The OVM nozzle is then placed inside the sealed brass tube, through the slits in the cap, in order to measure the VOCs present, if any, in the headspace. The nozzle should remain inside the brass tube for approximately 15 to 30 seconds or until the maximum reading has been recorded on the OVM readout panel.

The depth from which the sample came and the corresponding OVM reading is recorded on the original field log sheet. Field observations, OVM and (odor and staining) readings are used in determining which soil samples are to be analyzed in the laboratory.

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SES STANDARD OPERATING PROCEDURE
MONITORING WELL DESIGN AND CONSTRUCTION

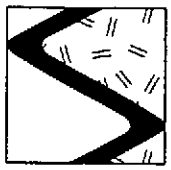
Where possible, information from published and unpublished reports is reviewed prior to installation of monitoring wells. Relevant data includes highest and lowest anticipated ground water elevations, aquifer materials, aquifer yield and contaminants expected. This information is used to aid the field geologist rather than to predetermine how the wells will be constructed. Well construction is based on *site specific conditions* and is determined in the field after discussion with the senior geologist.

The wells are screened to monitor the first water-bearing zone encountered. If high ground water conditions exist the top of the well screen may be set at static water level or below static water level.

Twenty feet of well screen will be used in the wells (five feet above static ground water and fifteen feet below static water) unless a five-foot clay layer is encountered. If a clay layer is encountered, it will be confirmed by sampling. The sampling hole into the underlying confining layer will be sealed with bentonite pellets and the well screen will terminate 0 to 1 foot into the clay layer. When field observations indicate that low permeability materials are acting as an aquitard to prevent movement of contaminants less screen may be used.

Monitoring wells are constructed with flush-threaded, 2-inch or 4-inch diameter, slotted PVC, stainless steel or teflon well screen and PVC, stainless steel or teflon blank casing. The sand pack is sized to retain 90% of the aquifer material based on the observations of the field geologist. The sand is placed into the annular space around the well screen to approximately 2 feet above the top of the well screen. If high ground water conditions exist, the sand may be placed 0 to 1 foot above the top of the well screen. Two feet of bentonite pellets are used to separate the sand from the sanitary surface seal (grout). If high ground water conditions exist 1/2 foot of bentonite may be used to separate the sand from the sanitary surface seal.

The grout (Portland cement with approximately 3-5% bentonite powder) is poured into the annular space above the bentonite pellets. If the surface seal is greater than 5 feet thick, grout consisting of cement mixed with 3-5% bentonite powder will be tremied or pumped into the annular space above the bentonite pellets to prevent the infiltration of surface water into the well.



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If the surface seal is less than 5 feet thick, the grout will be poured from the surface. The resulting seal will be checked for shrinkage within 24 hours and additional grout will be added, if necessary. The surface seal is used to prevent infiltration of surface water into the well.

The monitoring well(s) is locked with a stovepipe or cap and covered with a traffic-rated vault if it is located in a developed area. The well I.D. is clearly marked on the cap or casing.

EXPLANATION
TYPICAL WELL CONSTRUCTION

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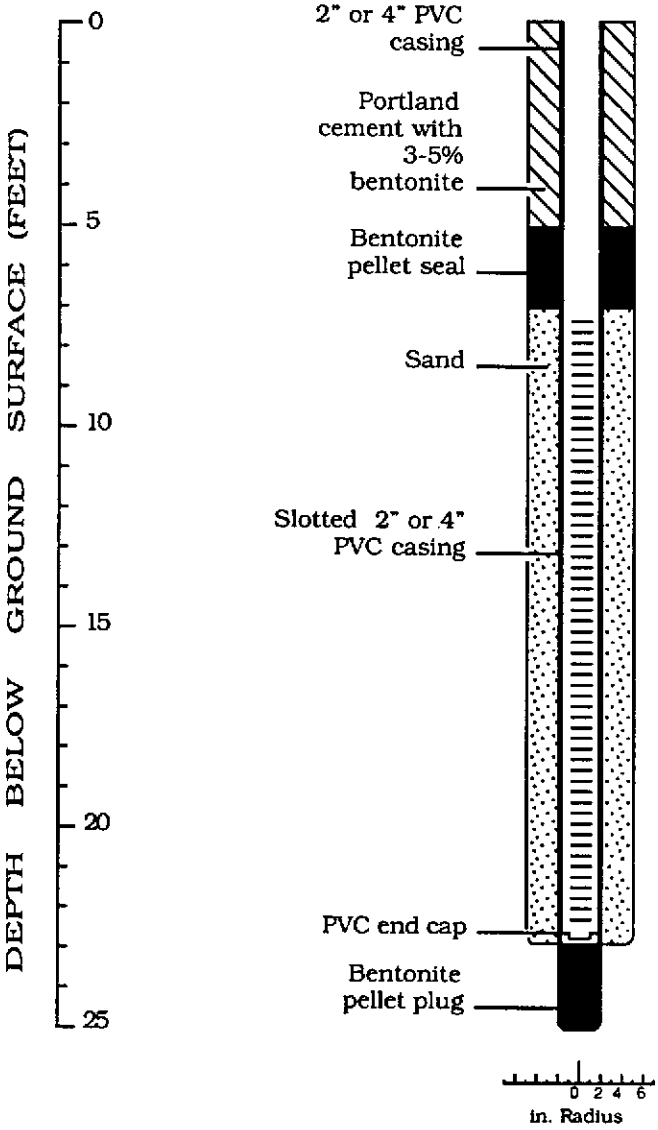
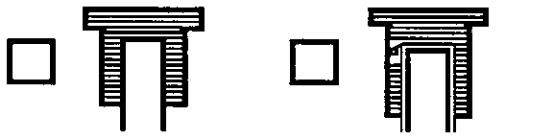


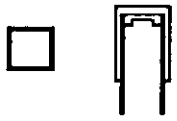
Well Head Completion Schematic
Not to scale



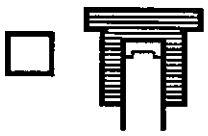
Christy Box

Locking stovepipe & Christy Box

Locking cap & stovepipe



Locking cap & Christy Box



NOTE: SES attempts to screen from 5 feet above static water to 10 feet below static water.

Water level depth and date:

▽ Initial water level

▼ Static water level

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SES STANDARD OPERATING PROCEDURE

WELL DEVELOPMENT

SES develops ground water monitoring wells not less than 48 hours after placement of the surface seal (grouting) to allow sufficient time for the cement grout to set. The wells are developed to restore the natural hydraulic conductivity of the formation(s) to be monitored, and to remove all sand and as much fine-grained material as possible. Well development consists of several cycles of surging (using a vented surge block) and over pumping of the well.

Prior to development, SES field personnel measure the depth to water and the total depth of the well. The total depth measurement is compared to the well completion diagram shown on the field log and any discrepancies are noted.

SES begins development by carefully lowering a pre-cleaned stainless steel vented surge block into the well casing to a position approximately three feet below the top of the well screen or the air/water interface, whichever is deepest. Surging begins with a slow upward stroke motion of the surge block at a stroke length not exceeding three feet. The stroke rate and length is progressively increased as surging continues for 10 to 15 minutes to loosen sand and fine-grained material from the screened interval. The surge block is then removed and placed in a clean 5-gallon bucket for future use.

During over pumping, the pump is run at the maximum flow rate to evacuate approximately two well casing volumes of ground water from the well. Over pumping will remove any sediment accumulated in the bottom of the well and any fine-grained material suspended in the water.

After a cycle of surging and over pumping has been completed SES field personnel record the time spent on each task, approximate discharge flow rate, and approximate volume of water evacuated. SES field personnel measure the depth to water, immediately after pumping and at various intervals, to approximate the recovery rate of the well.

Development shall continue until the turbidity of the water is less than 5 NTUs, or when ten well volumes have been removed, whichever occurs first.

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After development is completed, the total depth of the well is remeasured and compared to the total depth noted on the field log. The two depths should be approximately the same. All data measured during the procedures described herein are recorded on the SES Well Development Form, which is part of the project file.

The water is taken to Chevron's Richmond Refinery for disposal.

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SES STANDARD OPERATING PROCEDURE

GROUND WATER SAMPLING

The following describes sampling procedures used by SES field personnel to collect and handle ground water samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis. Wells will be sampled no less than 24 hours after well development. Collection methods specific to ground water sampling are presented below.

Prior to sampling, each well is checked for the presence of free-phase hydrocarbons using an MMC flexi-dip interface probe. Product thickness (measured to the nearest 0.01 foot) is noted on the sampling form. Water level measurements are also made using either a water level meter or the interface probe. The water level measurements are also noted on the sampling form.

Prior to sampling, each well is purged of a minimum of four well casing volumes of water using a steam-cleaned PVC bailer, or a pre-cleaned pump. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until these parameters have stabilized (i.e., changes in temperature, pH or conductivity do not exceed ±0.5°F, 0.1 or 5%, respectively).

The purge water is taken to Chevron's Richmond Refinery for disposal.

Ground water samples are collected from the wells with steam-cleaned Teflon bailers. The water samples are decanted into the appropriate container for the analysis to be performed. Pre-preserved sample containers may be used or the analytic laboratory may add preservative to the sample upon arrival. Duplicate samples are collected from each well as a back-up sample and/or to provide quality control. The samples are labeled to include the project number, sample ID, date, preservative, and the field person's initials. The samples are placed in polyethylene bags and in an ice chest (maintained at 4°C with blue ice or ice) for transport under chain of custody to the laboratory.

The chain of custody form includes the project number, analysis requested, sample ID, date analysis and the SES field person's name. The form is signed and dated (with the transfer time) by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

A trip blank and bailer blank accompanies each sampling set, or 5% trip blanks and 5% bailer blanks are included for sets of greater than 20 samples. The bailer blank is prepared by pouring previously boiled water into a steam-cleaned Teflon bailer prior to sampling a well. The trip and bailer blanks are analyzed for some or all of the same compounds as the ground water samples.