H2OGEOL
A GROUNDWATER CONSULTANCY

Shd 3730

Ms. Eva Chu
Hazardous Materials Specialist
Alameda County Health Care Services
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94821

June 25, 1992

RE: 6085 Scarlett Court, Dublin, California.
Work plan to install one monitoring well in the confirmed downgradient direction.

Dear Ms. Chu;

H_2OGEOL has been retained by Mr. Charles Lemoine to prepare a work plan, and conduct the ensuing investigation, to install one soil sampling borehole and install one groundwater monitoring well in the confirmed downgradient direction within ten feet of a tank removal excavation at 6085 Scarlett Court in Dublin, California. This letter serves as that work plan.

The work plan provides information following the format of "Appendix A - Work plan for Initial Subsurface Investigation" of the "TRI-REGIONAL BOARD STAFF RECOMMENDATIONS FOR PRELIMINARY EVALUATION AND INVESTIGATION OF UNDERGROUND TANK SITES." This format is frequently requested by your coworkers at Alameda County Environmental Health, Hazardous Materials Division. Much of the information requested in "Appendix A" however, is not available.

I. Introduction

A. Statement of Scope of Work

The scope of work for the investigation to be conducted through implementation of this work plan is to ascertain the presence of Total Purgeable Petroleum Hydrocarbons (commonly referred to as gasoline) (TPH-G) and the aromatic hydrocarbons benzene (B), toluene (T), ethylbenzene (E), and total xylene isomers (X), which are collectively referred to as BTEX, in soil and groundwater as encountered in the indicated soil sampling borehole and monitoring well to be installed within about 10 feet of the tank removal excavation in the confirmed downgradient direction.

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B. Site Location

The tank removal excavation site is situated behind (to the north of) the building at 6085 Scarlett Court in Dublin, California. The site location is shown on Figure 1.

C. Background

Background information concerning the tank and adjacent soil removal is unavailable to H_2OGEOL. See report by Clayton Environmental dated July 11, 1990

D. Site History

The site history is unavailable to H_2OGEOL.

II. Site Description

A. Vicinity description and hydrogeologic setting

Dublin, California lies in the northwest corner of the Livermore Valley Groundwater Basin. This Basin is managed by ZONE 7 of the Alameda County Flood Control and Water Conservation District. Groundwater flow in the southeast Dublin portion of the Basin is generally toward the south-southeast, based on ZONE 7's observation wells. Local conditions are not accounted for in ZONE 7's basin-wide mapping.

The property at 6085 Scarlett Court in Dublin is located some 1,000 feet north of Scarlett Court and is immediately east of Chabot Canal. The water table configuration beneath the site is most likely controlled by groundwater discharging to Chabot Canal. Groundwater monitoring at the Scotsman Corporation Property, which is contiguous to 6085 Scarlett Court to the south, has established a persistent southwesterly groundwater flow direction, oriented toward Chabot Canal. Eight groundwater flow direction and gradient determinations between September 1989 and November 1991 were approximately South 55° +/- 5 to 10° West. The pertinent portions of the Scotsman Corporation groundwater monitoring reports are provided in Attachment A.

B. Vicinity map (including wells located on-site or on adjoining lots, as well as any nearby streams).

See attached Figure 1. A well inventory has not been prepared of the area surrounding 6085 Scarlett Court. The approximate location of an existing on-site water supply well is shown on Figure 2.

C. Site map to include; ...

A surveyed site map is not available. Figure 2 is a site sketch.

D. Existing soil contamination and excavation results.

Previously provided by Mr. Lemoine.

III. Plan for determining extent of soil contamination on site.

Sub-items A-D address excavations. This information is not available to H_2OGEOL.

IV. Plan for determining groundwater contamination.

A. Placement and rational for location of monitoring wells, including a map to scale.

Groundwater flow is to the southwest as indicated through monitoring at a contiguous property. A monitoring well is therefore located within about 10 feet of the southwest corner of the excavation. This location is shown on Attached Figure 2.

B. Drilling method for construction of monitoring wells, including decontamination procedures.

1. Expected depth and diameter of monitoring wells,

The monitoring well will be about 25 feet deep and will be constructed of 2-inch inside diameter material. Depth will be 10 feet over the depth at which groundwater is first encountered. 5' above 10' below for screen

2. Date of expected drilling.

Uncertain, July or August, 1992.

3. Method and location of soil sampling boreholes.

The monitoring well borehole will be used for soil sampling and will be drilled by hollow stem auger with drive samples. The location is shown on attached Figure 2. Cross contamination prevention will be by steam cleaning.

4. Casing type, diameter, screen interval, and pack and slot sizing technique.

   Casing and screen will be made of flush threaded PVC, 2-inch inside diameter. Screen will be set from 10 to 25 feet below ground surface. Depths will be adjusted depending on the depth at which groundwater is first encountered. Sand pack will be No. 3 Monterey Sand to about one foot above screen. Slot size will be 0.020-inch. Sizing technique will be by experience of the C.E.G. conducting borehole logging. Borehole will encounter clay and would be 0.005-inch by DOHS method, however, sizes less than 0.020-inch tend to clog readily and to swell shut through adsorption of hydrocarbons, if present.

5. Depth and type of seal.

   Depth of seal will be from one foot above screen to ground surface. The lowermost foot of the seal will be comprised of bentonite pellets. The remainder of the seal will be a bentonite-cement grout.

6. Construction diagram for wells.

   A well construction diagram will be provided for the well.

7. Development method and criteria for determination of adequacy of development.

   Well development will be by the surge and bail and surge and pump technique. A vented surge block will be used in the screened interval and the well will be bailed to remove groundwater and entrained fines. Well development will continue until the turbidity has lowered to a point where there will be no suspended sediment interference with the laboratory analytical procedure for TPH-G and BTEX.

8. Plans for disposal of cuttings and development water.

   Drilling cuttings will be placed on plastic sheeting. Well development water will be placed in 55 Gallon drums. Disposal and/or other handling will be the responsibility of Mr. Lemoine.

9. Surveying plans for wells (requirements include surveying to established benchmark to 0.01 foot).

   Since only one well is being constructed, surveying will not be performed.

C. Groundwater sampling plans (include plans for sampling any on-site domestic wells)

1. Water level measurement procedure.

Depth to water below the surveyed casing reference mark will be measured with an electric sounding line to an accuracy of 0.01 feet.

It may not be possible to measure the depth to water in the existing water supply well.

2. Methods for free product measurement, observation of sheen and odor.

Depth to top of fluid will be measured with a sounding bell. Product thickness is the difference between depth to water and depth to fluid. Product will also be checked with a clear acrylic bailer. The sample retrieved will be used to check to sheen and odor.

3. Well purging procedure.

The monitoring well will be purged of no less than one casing volume by bailing or by pumping

The existing water supply well will be purged by operating the installed pump.

4. Well purge water disposal plans.

Well purge water will be added to well development water. - and after well develop?

The purge water from the on-site water supply well will be discharged to the sanitary sewer. w/ wl approval from Public

5. Sample collection procedures.

A groundwater sample will be pulled from the monitoring well within a teflon™ bailer. The sample will be transferred to a 40-mL VOA vial with a teflon™ septum lid through a bottom emptying device affixed to the bailer. pH, conductivity, temp

The sample from the on-site water supply well will be drawn from the faucet nearest to the wellhead.

6. Sample analyses to be used

U.S. EPA Method 5030/8015 for TPH-G and method 8020 for BTEX.

7. Quality assurance plan.

Field sampling will be performed by an experienced groundwater sampler. Samples will be stored and transported in an ice chest maintained at 4° C. Samples will be delivered to the laboratory under chain-of-custody documentation. While at the laboratory the sample tracking and analysis will follow the laboratory's approved quality assurance protocol.

8. Chain of Custody Procedures.

Sample numbers, container types, etc., and analytical request information will be entered on the chain-of-custody form. The sample collector will sign the form when transferring the sample to the laboratory personnel. The laboratory personnel will sign the form upon receipt of the sample.

V. Include a site safety plan.

A site safety plan is included as Attachment B.

This concludes the work plan for soils and groundwater investigation at 6085 Scarlett Court in Dublin, California.

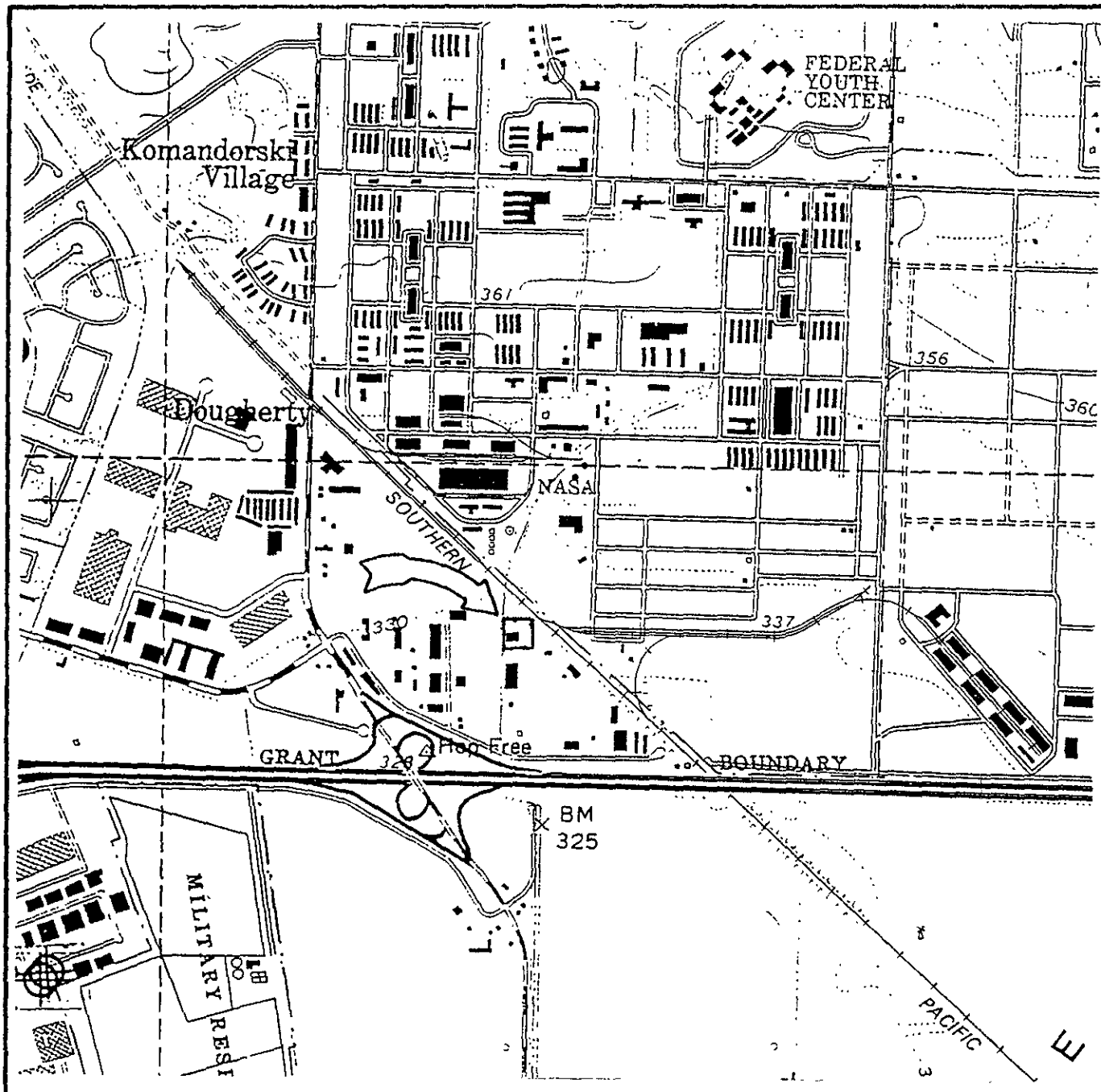
Please do not hesitate to call me at (510) 373-9211 should you have any questions.

Sincerely,

Gary D. Lowe,R.G.,C.E.G.
Principal, Hydrogeologist

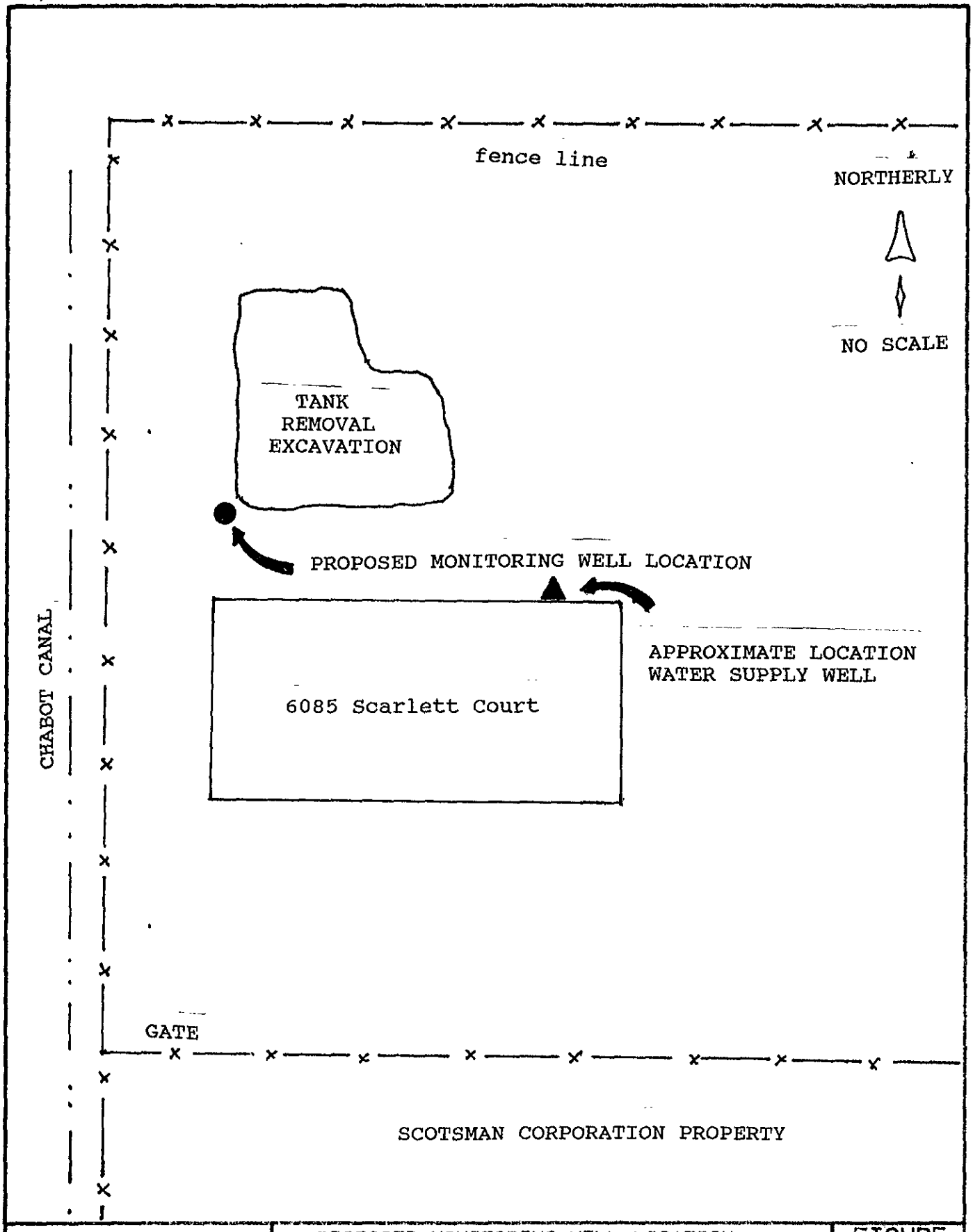
REGISTERED GEOLOGIST
GARY D. LOWE
No. 1558
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

xc: Mr. Charles Lemoine



Base from U.S. Geological Survey Dublin 7.5 Minute Series Topographic Map

H2OGEO A GROUNDWATER CONSULTANCY	SITE LOCATION MAP 6085 Scarlett Court Dublin, California	FIGURE 1



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PROPOSED MONITORING WELL LOCATION

6085 Scarlett Court
Dublin, California

FIGURE
2

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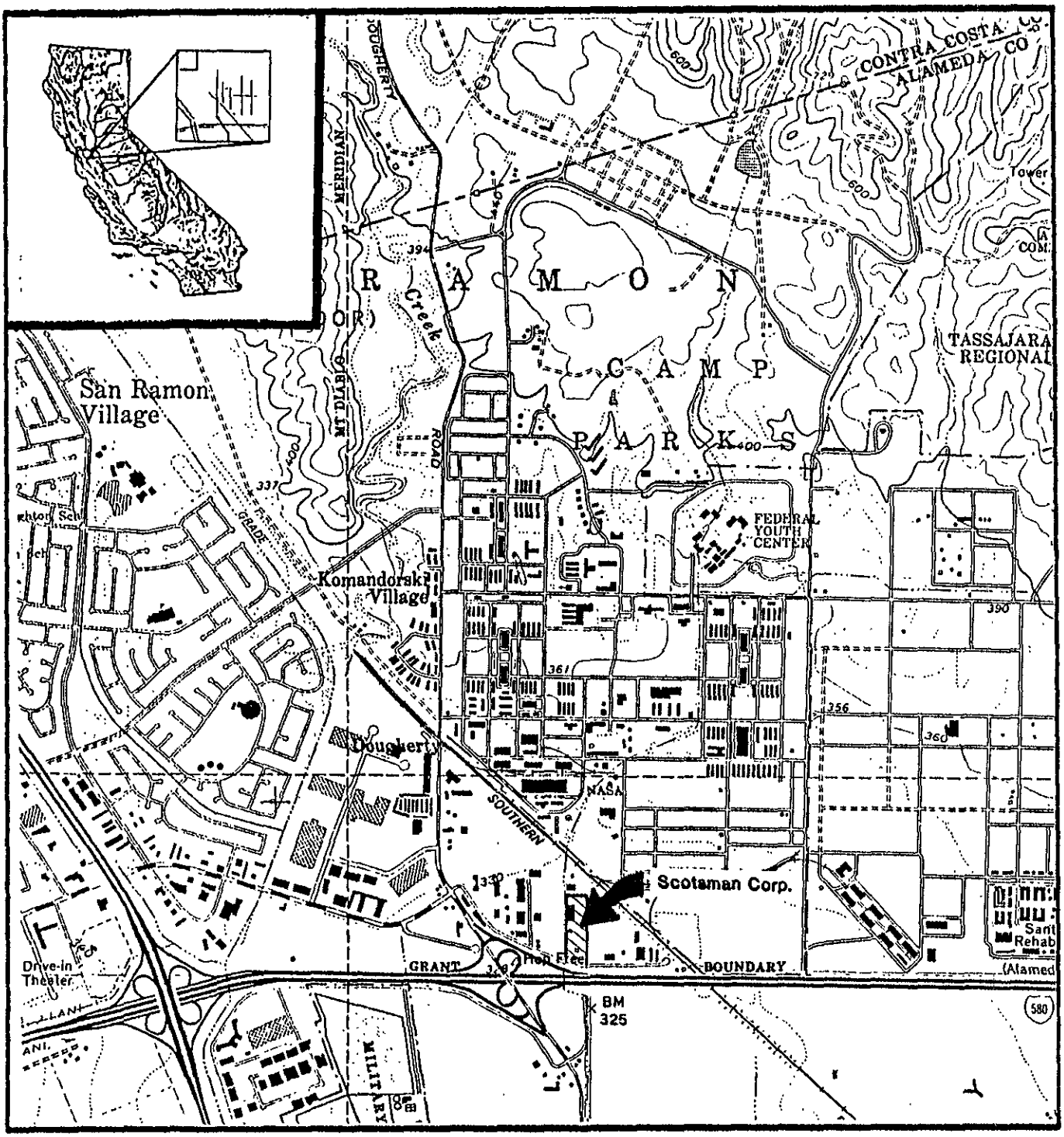
ATTACHMENT A

Excerpts From Consultants Reports
Concerning
Scotsman Corporation
6055 Scarlett Court
Dublin, California



groundwater resources inc.

environmental/geotechnical services

Project Number: 55018

SCOTSMAN CORPORATION

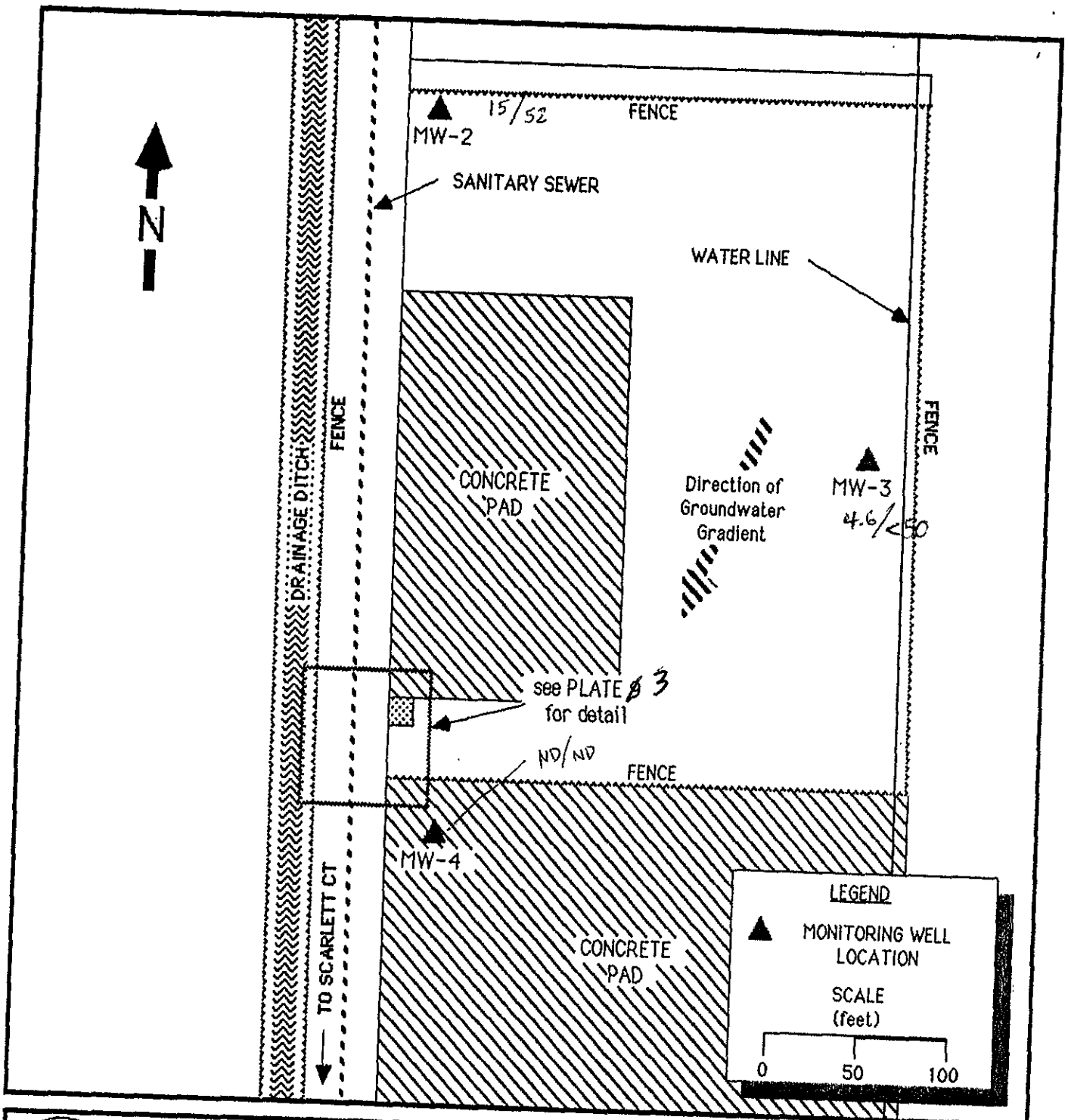
6055 SCARLETT COURT
DUBLIN, CA

LOCATION MAP

PLATE

1

ppb: benzene / TPH



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Project Number: 55018

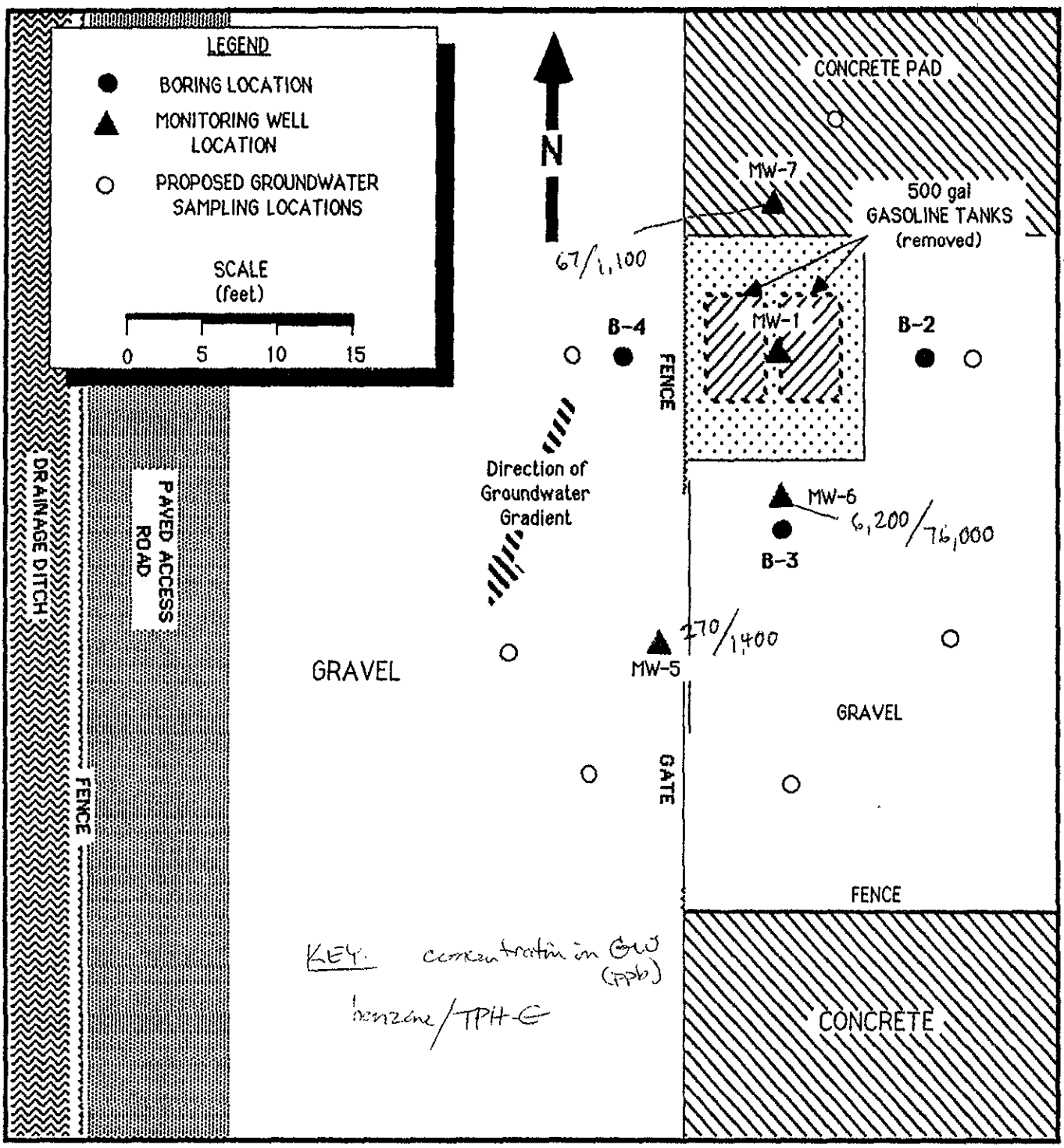
SCOTSMAN CORPORATION

6055 SCARLETT COURT
DUBLIN, CA

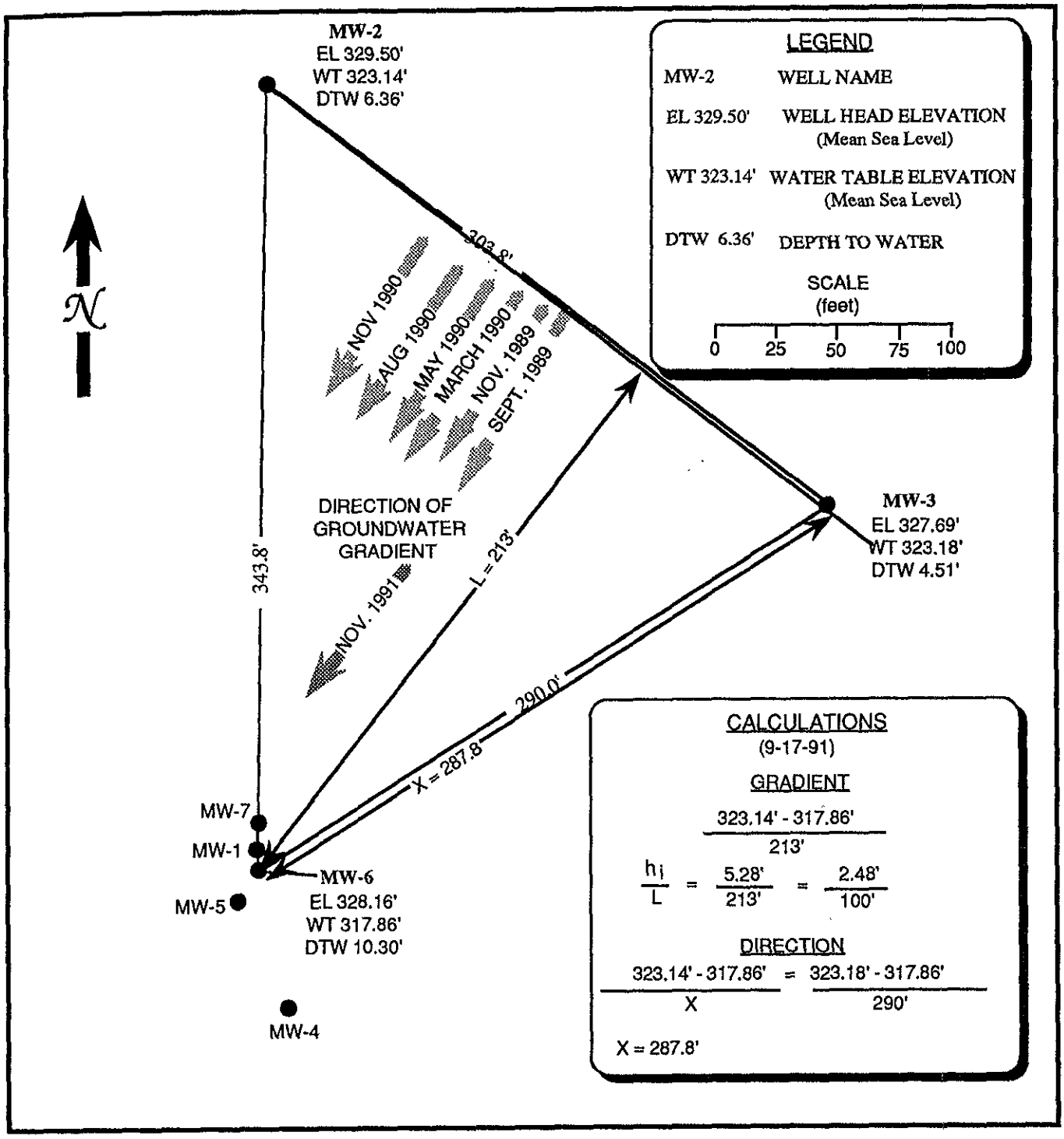
PLOT PLAN

PLATE

2



groundwater resources inc. environmental/geotechnical services **Project Number: 55018** 6-27-89	**SCOTSMAN CORP.** **DUBLIN, CA.** **DETAIL OF TANK LOCATION**	PLATE 3



groundwater resources, inc.
environmental/geotechnical services

Project Number: 55018

10-10-91

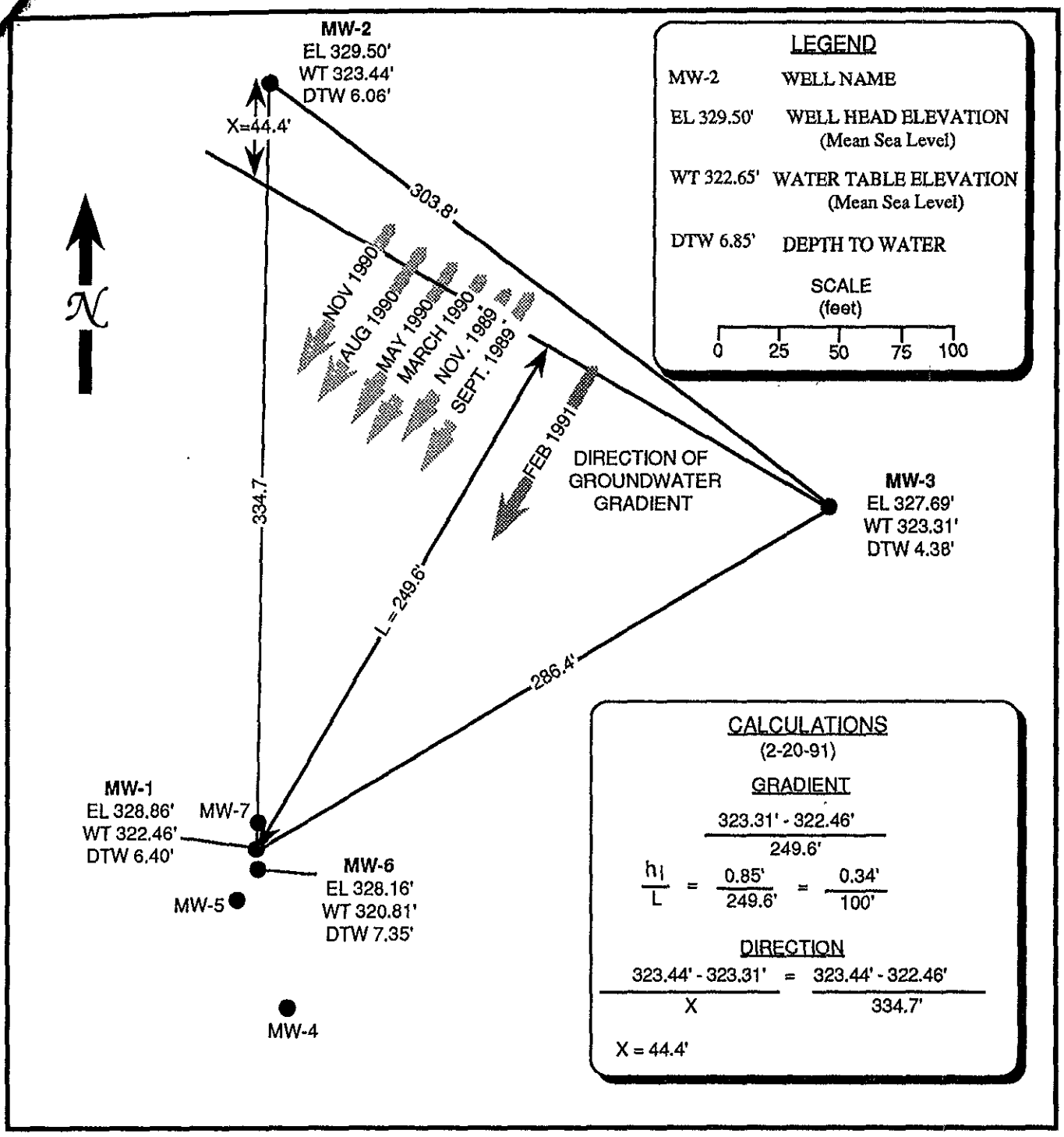
SCOTSMAN CORPORATION

DUBLIN, CALIFORNIA

SHALLOW GROUNDWATER GRADIENT MAP
November 17, 1991

PLATE

1



groundwater resources, inc.
environmental/geotechnical services

Project Number: 55018

4-4-91

SCOTSMAN CORPORATION

DUBLIN, CALIFORNIA

SHALLOW GROUNDWATER GRADIENT MAP
February 20, 1991

PLATE 1

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ATTACHMENT B

Health and Safety Plan

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SITE SAFETY PLAN
FOR
CHARLES LEMOINE PROPERTY
6085 SCARLETT COURT
DUBLIN, CALIFORNIA

1.0 PURPOSE AND SCOPE

This site safety plan (SSP) establishes the basic safety guidelines and requirements for the installation of one monitoring well at the Charles Lemoine Property at 6085 Scarlett Court in Dublin, California. The SSP addresses hazards that may be encountered during this project. Field activities are anticipated to occur in July, 1992.

The provisions set forth in this SSP shall apply to any parties contracted to Charles Lemoine, including, but not limited to H_2OGEOL and an yet to be selected drilling contractor. All personnel working for Mr. Lemoine at the job site must read this SSP and sign the attached Compliance Agreement before entering the work area. All persons, or firms, working on site are responsible for their own accident reporting.

All persons performing monitoring well installation services will be properly trained and will be in compliance with 29 CFR 1910.120 for 40 hour basic training and will have had a current 8-hour refresher course.

Because they are properly trained field personnel may deviate from the safety provisions set forth in this SSP, but only to increase safety.

2.0 SAFETY PERSONNEL

All persons working for Mr. Lemoine are responsible for job safety. The geologist at the site, Mr. Gary D. Lowe, R.G.,C.E.G. will serve as Site Safety Officer. As such, he is responsible for the informing all personnel working on site of the contents of the SSP. His responsibilities include making sure everyone has adequate safety supplies and equipment. Mr. Lowe is responsible for insuring proper decontamination/contamination reduction procedures are observed.

3.0 SITE HAZARD ANALYSIS/CHARACTERIZATION

The expected potential hazards to personnel in the work area and at the site are:

Physical injury from equipment operated at the job site
heat stress
fire or explosion
exposure to chemical hazards

Preventing heat stress is particularly important, because a person who suffers from heat stress or stroke may be subject to additional heat injuries.

The proposed work does not appear to present any potential health risk to workers, the surrounding community, or the environment if the provisions of this SSP are properly implemented.

3.1 Physical Hazards

The potential for physical injury exists from the operation of any machinery, including the drilling rig. Use of steel-toed boots, hard hats or caps, and safety glasses will be required when in the work area.

The potential for noise hazards exist whenever the noise exceeds the CAL-OSHA permissible exposure level of 90 dB. Noise level protection shall be available to all personnel within the job site in the event noise levels exceed individual comfort levels.

The risk of physical injury can be increase due to decreased visibility, hearing, and dexterity whenever protective equipment is used.

3.2 Heat Stress

Project implementation is expected to occur in July. The potential for heat stress exists. Signs and symptoms of heat stress are:

Heat rash from continuous exposure to heat and/or humid air.

Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms are muscle spasms, heavy sweating, dizziness, nausea, and fainting.

Heat exhaustion occurs from increased stress on various body organs including inadequate blood circulation due to cardiovascular capability or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness, nausea, and fainting.

Heat stroke is the most serious because body temperature regulation fails, and body temperature rises to critical levels. The victims body must be cooled immediately to lessen the risk of serious injury or death. Competent medical help must be obtained. Sign and symptoms include red, hot, usually dry skin; lack of or reduced perspiration; nausea; dizziness and confusion; strong rapid pulse; and coma.

3.3 Fire Hazards

The potential for fire or explosion exists whenever flammable liquids or vapors are present above the lower explosion limit (LEL) concentration and sufficient oxygen is present to support combustion. These condition include vehicular fuel. General drilling operations in materials suspected of containing flammable substances may pose a fire hazard. A fire extinguisher will be located in the drill rig and the site safety officer's vehicle.

3.4 Chemical Hazards

The hazardous chemicals that <u>may</u> be encountered at the site are petroleum hydrocarbons, including the volatile aromatic hydrocarbons benzene, toluene, ethylbenzene,and xylene isomers. A summary of the relevant chemical, physical, and toxicological properties for each potentially encountered hazardous chemical is listed below.

Trace to minor concentrations of these chemicals may be present adsorbed on soil particles or dissolved in groundwater. If a free petroleum phase is present these chemicals could be present as a part of that organic phase.

Ingestion of contaminants will be controlled by prohibiting eating, drinking, smoking, and chewing in the work area. In addition, workers will be instructed to wash their hands and face before engaging in any of the above activities after they leave the work area.

Adsorption of contaminants will be controlled by requiring workers to weir long-sleeved shirts or coveralls, rubber and/or cotton work gloves, and safety glasses.

BENZENE

Benzene may occur as a trace constituent is soils and groundwater. In its pure form benzene is a colorless liquid with an aromatic odor. It is a relatively volatile chemical with a vapor pressure of 75 mm Hg @ 68° F. The flash point of benzene is only 12 °F, thus classifying benzene as a flammable liquid. Benzene is recognized by the National Institute of Occupational Safety and Health (NIOSH) as a potential human carcinogen.

Benzene can enter the body through four routes of exposure: inhalation, adsorption, ingestion and injection. Target organs are the blood, central nervous system, skin, bone marrow, eyes, and respiratory system. Acute exposure effects include irritation of the eyes, nose, and respiratory system as well as headache, nausea, staggered gait, depression, and abdominal pain. The chronic effect of overexposure is the potential for cancer. The permissible exposure level (PEL) for benzene is 10.0 ppm.

TOLUENE

Toluene may occur as a trace constituent is soils and groundwater. In its pure form toluene is a colorless liquid with an aromatic odor. It is less volatile than benzene, with a vapor pressure of 22 mm Hg @ 68°F. Toluene is a flammable liquid with a flash point of 40°F.

Toluene can enter the body through all four routs of exposure. Target organs include the central nervous system, liver, kidneys, and skin. Acute exposure effects include fatigue, dizziness, headache, euphoria, dilated pupils, and paralysis. The PEL in 200 ppm.

ETHYLBENZENE

Ethylbenzene may occur as a trace constituent is soils and groundwater. In its pure form ethylbenzene is a colorless liquid with an aromatic odor. It has a low volatility with a vapor pressure of 7.1 mm Hg @ 68°F. It is a flammable liquid with a flash point of 59°F.

Ethylbenzene can enter the body through all four routs of exposure. Target organs include the central nervous system, eyes, upper respiratory system, and skin. Acute exposure effects include irritation of the eyes and mucous membranes, nose, and respiratory system, headache, nausea, staggered gait, dermatitis, narcosis, and coma. The PEL in 100 ppm.

XYLENE ISOMERS

Xylene isomers may occur as a trace constituent is soils and groundwater. In pure form xylene isomers are a colorless liquid with an aromatic odor. It has a low volatility with a vapor pressure of 8 mm Hg @ 68°F (average). It is a flammable liquid with a flash point of 81°F.

Xylene isomers can enter the body through all four routs of exposure. Target organs include the central nervous system, eyes, gastrointestinal tract, blood, liver, kidneys, and skin. Acute exposure effects include

dizziness, excitement, drowsiness, incoordination, abdominal pain, vomiting, and irritation of the eyes nose, and throat. The PEL in 100 ppm.

4.0 EXPOSURE MONITORING PLAN

The monitoring well will be constructed in an open area with free air circulation. Visual and odoriferous concentrations would have to be present before an ambient air concentration exceeding 100 ppm for 15 minutes could be approached. Air monitoring is not necessary.

All persons working for Mr. Lemoine will be wearing standard cotton and/or synthetic work clothes. Monitoring for heat stress will consist of personnel constantly observing each other for any of the heat stress symptoms discussed in Section 3.2.

No dust monitoring will be performed because none of the tasks in this project are expected to generate large quantities of dust.

No noise monitoring will be performed, because none of the tasks in this project are expected to generate over 90 dB permissible exposure limit or the 85 dB action level. Ear noise protection shall be available to all personnel.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Level "D" personal protection is expected to be the highest level required to complete the monitoring well installation, development, and sampling. Modified level "C" equipment and supplies will be made available if needed.

6.0 SITE CONTROL

The site is in the back parking lot of a vacant building. Understood work zones will be used and physical demarcation will be provided. There is no public access.

7.0 DECONTAMINATION MEASURES

Field personnel shall wash their hands and face at the buildings faucets or restroom before leaving the site.

8.0 EMERGENCY RESPONSE PLAN

In the event of an accident resulting in physical injury, first aid will be administered and the injured worker will be transported to Valley Care Medical Center at 5555 West Las Positas Boulevard, Pleasanton. Transport will be by calling 911, as recommended by local police and emergency personnel. In no event shall a seriously injured

person be transported to a hospital in a private automobile.

For minor injuries the hospital can be reached by leaving the site and turning right (west) onto Scarlett Court. Following Scarlett Court to its intersection with Hopyard Road. Turn left (south) on Hopyard. Cross over Freeway 580 and enter freeway from right hand lane, headed east. Follow freeway east to Santa Rita Road. Exit at Santa Rita Road. Proceed south on Santa Rita Road to West Las Positas Boulevard. Turn right (west) onto West Las Positas and then right into Valley Care Medical Center, following signs to emergency admittance.

In the event of a fire the local fire department will be notified by dialing 911.

COMPLIANCE AGREEMENT

EACH OF THE UNDERSIGNED HAS READ THE SITE SAFETY PLAN AND FULLY UNDERSTAND THE POTENTIAL HAZARDS ASSOCIATED WITH MONITORING WELL INSTALLATION AND DEVELOPMENT AT 6085 SCARLETT COURT, DUBLIN, CALIFORNIA.

NAME	SIGNATURE	EMPLOYER/COMPANY	DATE