EXXON COMPANY, U.S.A.

EXXONMOBIL REFINING AND SUPPLY
Safety, Health, and Environment
Environmental Engineering

P.O. Box 4032
Concord, CA 94524-4032

Darin L. Rouse
Senior Engineer
(925) 246-8768
(925) 246-8798 fax
darin.l.rouse@exxon.com

May 17, 2000

Mr. Scott Seery
Alameda County Environmental Health Department
1131 Harbor Bay Parkway
Alameda, CA 94501-6577

RE: Exxon RAS #7-3399/2991 Hopyard Road, Pleasanton, California

Dear Mr. Seery:

Attached for your review and comment is a copy of the ***Work Plan for Well Installation*** dated May 2000 for the above-referenced Exxon site. The report was prepared by ETIC Engineering, Inc. of Walnut Creek, California, and proposes the installation of three monitoring wells in the vicinity of the site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached report is true and correct.

If you have any questions or comments, please contact me at (925) 246-8768.

Sincerely,

Darin L. Rouse
Senior Engineer

Attachment: ETIC Work Plan dated May 2000

cc: w/attachment:
Mr. Chuck Headlee – Regional Water Quality Control Board, San Francisco Bay Region
Mr. Matthew Katen – Alameda Co. Flood Control and Water Conservation District (Zone 7)
Mr. Stephen Cusenza – City of Pleasanton Public Works Department
Mr. Thomas Elson – Luhdorff and Scalmanini Consulting Engineers

w/o attachment:
Ms. Christa Marting – ETIC Engineering, Inc.

ETIC
Engineering, Inc.

Work Plan for Well Installation

Exxon Retail Site 7-3399
2991 Hopyard Road
Pleasanton, California

Prepared for

ExxonMobil Refining and Supply Company
P.O. Box 4032
2300 Clayton Road, Suite 1250
Concord, California 94524-4032

Prepared by

ETIC Engineering, Inc.
144 Mayhew Way
Walnut Creek, California 94596
(925) 977-7914

5/17/00

Joseph T. Muehleck
Project Manager

Date

5-16-00

Mark C. Peterson, C.E.G. #2085
Senior Geologist

Date

REGISTERED GEOLOGIST
MARK C. PETERSON
No. 2085
CERTIFIED
ENGINEERING
GEOLOGIST
Exp. 3/31/02
STATE OF CALIFORNIA

May 2000

SITE CONTACTS

Site Name:	Exxon Retail Site 7-3399
Site Address:	2991 Hopyard Road Pleasanton, California
ExxonMobil Project Manager:	Darin L. Rouse ExxonMobil Refining and Supply Company P.O. Box 4032 2300 Clayton Road, Suite 1250 Concord, California 94524-4032 (925) 246-8768
Consultant to Exxon:	ETIC Engineering, Inc. 144 Mayhew Way Walnut Creek, California 94596 (925) 977-7914
ETIC Project Manager:	Joseph T. Muehleck
Regulatory Oversight:	Scott Seery Alameda County Environmental Health Department 1131 Harbor Bay Parkway Alameda, CA 94501-6577 (510) 567-6783
	Chuck Headlee California Regional Water Quality Control Board San Francisco Bay Region 1515 Clay Street, Suite 1400 Oakland, California 94612 (510) 622-2300
	Mr. Matthew Katen Alameda County Flood Control and Water Conservation District (Zone 7) 5997 Parkside Drive Pleasanton, California 94566 (925) 484-2600
	Mr. Stephen Cusenza City of Pleasanton Public Works Department P.O. Box 520 Pleasanton, California 94566 (925) 931-5507

INTRODUCTION

At the request of ExxonMobil Refining and Supply Company, formerly Exxon Company, U.S.A. (Exxon), ETIC Engineering, Inc. (ETIC) has prepared this work plan for the installation of three monitoring wells in the vicinity of Exxon Retail Site (RS) 7-3399, located at 2991 Hopyard Road, Pleasanton, California (Figure 1). This work plan has been prepared in response to a request from the Alameda County Department of Environmental Health (ACDEH) at a meeting held on 2 May 2000, attended by representatives from ACDEH, the City of Pleasanton, Alameda County Flood Control and Water Conservation District (Zone 7), the California Regional Water Quality Control Board San Francisco Bay Region, ETIC, and Exxon. The well installations are requested to monitor groundwater between the site and two water supply wells, belonging to the City of Pleasanton (Pleasanton 7) and Zone 7 (Hop 4), which exist within 1,000 feet of the site as shown on Figure 2.

Site Background

Exxon RS 7-3399 is an active retail service station located at 2991 Hopyard Road, on the southeast corner of the intersection with Valley Avenue in Pleasanton, California. The site has six pump islands and two 10,000-gallon and one 12,000-gallon double-walled fiberglass underground storage tanks (USTs) for dispensing three grades of gasoline. Auto repair is conducted in the onsite station building. The site is relatively flat and at an elevation of approximately 321 feet.

Former fuel USTs, originally installed in 1971, were removed in 1988. The current fuel USTs have been in place since that time. The station underwent upgrades in 1997, at which time a 1,000-gallon used-oil tank was removed (Delta 1997). Former and current station features are shown in Figure 1.

Environmental assessment and remedial actions have been conducted at the site since 1988 and have included: soil and groundwater monitoring (1988-present), excavation to 31 feet below ground surface (bgs) (39 feet bgs in one 8-by-8-foot area) in the area of the former fuel USTs (1988), liquid-phase hydrocarbon (LPH) removal (1988-1990), groundwater extraction 1988-1990, soil vapor extraction (1989-1993 and 1997-1998), and air sparging/bioventing (1997-2000). Investigations and remedial actions from 1988 to 1996 are summarized in a Problem Assessment Report/Remedial Action Plan (PAR/RAP) prepared by Delta Environmental Consultants, Inc. (Delta 1996). Remedial actions since that time are summarized in the second/third quarter 1999 monitoring report (Delta 1999). Remedial actions to date have focused on the saturated clayey sand to gravel zone encountered from approximately 35 to 55 feet bgs, where water had been first encountered (referred to as Zone 1 in this work plan) and the silty clays overlying this zone. Groundwater and soil vapor extraction influent concentrations had approached asymptotic levels before shutdown of the respective systems. With the exception of MW9, hydrocarbon concentrations in groundwater samples collected from wells screened in this zone have generally shown a stable or decreasing trend. Methyl tertiary butyl ether (MTBE) has been detected in several wells in Zone 1 since quarterly MTBE analysis began in 1995. MTBE has been detected at higher concentrations in groundwater samples recently collected from a perched water table located at approximately 10 feet beneath portions of the site.

Geology and Hydrogeology in Site Vicinity

Regional and site geology and hydrogeology are also described in the 1996 PAR/RAP. Figure 2 shows the locations of geologic cross-sections A-A' and B-B' (Figures 3 and 4) representing subsurface conditions in the vicinity. The PAR/RAP describes three water bearing zones, named Zones 1, 2, and 3 for the purposes of this work plan:

- Zone 1 - A clayey sand to gravel zone from approximately 35 to 55 feet bgs. A silty clay from approximately 55 to 67 feet bgs underlying this zone is indicated in the area explored by Exxon.

- Zone 2 - A silty sand to gravelly sand is present beneath the silty clay from approximately 67 to 82 feet bgs. This depth has been explored in only three Exxon borings. Similar water levels in MW5s, screened in Zone 1, and MW5d, screened in Zone 2, indicate that these two zones may be hydraulically connected. The separation between Zone 1 and Zone 2 was not observed in logs for Zone 7 wells Hop 4 and 9, represented in Figure 4 (cross-section B-B'). Beneath Zone 2 in the vicinity of MW8, a clay layer is present from approximately 82 feet bgs to 120 feet bgs.

- Zone 3 - Beneath the clay layer another saturated zone is observed which grades from silty sand to gravel to the total depth explored beneath the site (140 feet bgs). Similar lithology is observed in Pleasanton 7. The uppermost screen in Pleasanton 7 is located in this zone.

A perched water table has recently been discovered at an approximate depth of 10 feet bgs beneath portions of the site. In December 1999, six monitoring wells were installed in this perched zone (PMW1-PMW6). VR1 and UST backfill wells OW1 and OW2 are also considered to be part of this zone (Delta 2000).

Groundwater flow direction in the perched zone has been estimated to be to the southeast during the two gauging events to date in December 1999 and April 2000. Groundwater flow direction in Zone 1 has ranged from northwest to southeast, with predominant flow to the northeast. Depth to water has ranged from approximately 28 to 55 feet bgs in this zone, and was most recently measured at approximately 38 feet bgs in April 2000. Groundwater flow direction could not be estimated in deeper zones beneath the site vicinity.

Pump tests conducted in 1988 did not indicate any hydraulic communication between Pleasanton 7 and Zone 1 beneath the site (Delta 1996). Recent pumping and injection tests at Zone 7 wells (Hop 4, 6, and 9) (Figures 2, 3, and 4) indicate that there may be some communication with MW8. The top of the shallowest screen in the Hopyard wells is approximately 280 feet bgs. Exxon MW8 is screened in Zone 3 from 118 to 133 feet bgs.

PROPOSED SCOPE OF WORK

Three proposed monitoring wells will be installed at the approximate locations shown in Figure 1. Locations may be moved slightly based on site conditions (access issues, subsurface obstructions [utilities], etc.). If well locations change significantly, an addendum to this work plan will be submitted. Well construction may be modified based on conditions encountered in the field.

One monitoring well is proposed to monitor groundwater in Zone 2 between the site and the Hopyard 4 and 9 wells. The proposed well construction is presented in Figure 4 (cross-section B-B') and Figure 5. Assuming the separating layer is encountered between Zones 1 and 2, screen will be placed from the top of Zone 2 to 10 feet below the top of the zone. The intention is to monitor groundwater at a similar depth to Exxon MW5d (Figure 3). If the separating clay layer between Zone 1 and Zone 2 is not encountered, 20 feet of screen will be placed beginning at the top of Zone 1.

One monitoring well is proposed to monitor groundwater in Zone 3 between the site and the Hopyard 4 and 9 wells. The proposed well construction is presented in Figure 4 (cross-section B-B') and Figure 6. The screened interval will be placed from the top of Zone 3 to 15 feet below the top of the zone.

One monitoring well is proposed to monitor groundwater in Zone 3 between the site and the Pleasanton 7 well. Pleasanton 7 has not operated in approximately 10 years, but may operate in the near future. The proposed well construction is presented in Figure 3 (cross-section A-A') and Figure 6. The screened interval will be placed from the top of Zone 3, expected to be encountered at approximately 120 feet bgs, to approximately 135 feet bgs to coincide with the portion of the Pleasanton 7 screen within Zone 3.

The proposed wells will be drilled using a truck-mounted air casing hammer (air rotary) rig equipped with a drill bit and 7-5/8 inch diameter steel conductor casing. Wells will be installed and constructed in accordance with local regulations and generally as specified in Figures 5 and 6. Field methods and procedures are described in Appendix A.

Due to the nature of air rotary drilling and anticipated depth to water of 40 feet (most drilling will be below the water table), no undisturbed soil samples will be collected, and no soil samples will be collected for chemical analysis. Soil cuttings emerging from the outlet of the air rotary drilling system will be examined for soil characteristics.

Each well will be developed and sampled as outlined in Appendix A.

The groundwater samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g) by modified EPA Method 8015, for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020, and for MTBE by EPA Method 8260.

REPORTING

The investigation results will be presented in a technical report. The technical report will include a summary of investigation results, boring logs, analytical results, and site maps. The cross-sections presented in this work plan will be updated.

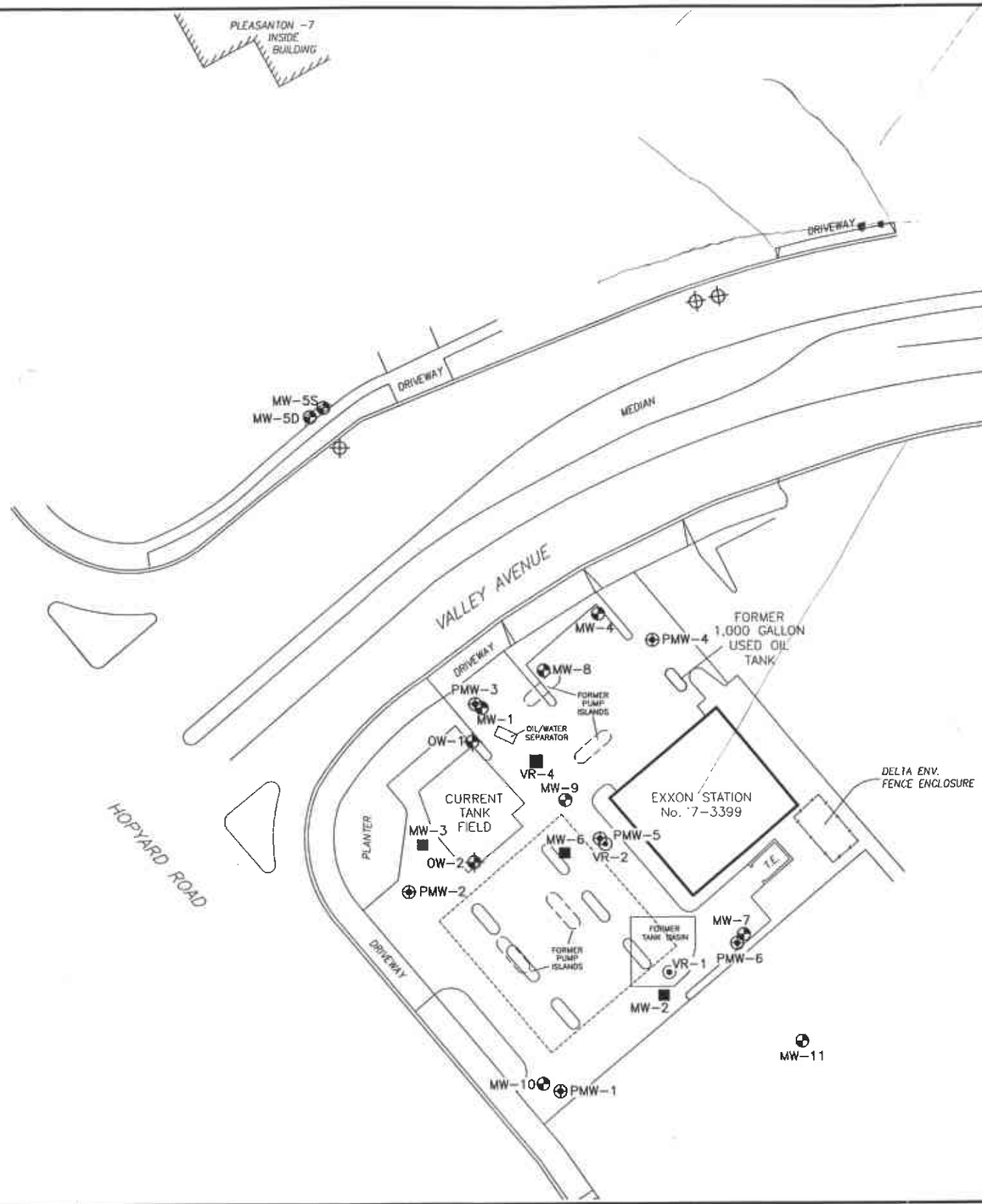
REFERENCES

Delta (Delta Environmental Consultants, Inc.). 1996. Problem Assessment Report/Remedial Action Plan, Exxon Service Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Delta, Rancho Cordova, California. 30 May.

Delta (Delta Environmental Consultants, Inc.). 1997. Soil Sampling Results from Used Oil Tank Removal and Product Distribution Upgrade, Exxon Service Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Letter to Exxon Company, U.S.A., Concord, California. Delta, Rancho Cordova, California. 17 June.

Delta (Delta Environmental Consultants, Inc.). 1999. Second Quarter 1999 Ground Water Monitoring and Remediation System Status Report and Supplemental Third Quarter 1999 Sampling Report, Exxon Service Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Delta, Rancho Cordova, California. 13 September.

Delta (Delta Environmental Consultants, Inc.). 2000. Ground Water Monitoring Well Installation Report, Exxon Service Station No. 7-3399, 2991 Hopyard Road, Pleasanton, California. Delta, Rancho Cordova, California. 21 March.



LEGEND:

OW-1	OBSERVATION WELL LOCATION
MW-1	MONITORING WELL LOCATION
VR-1	VAPOR EXTRACTION WELL LOCATION
MW-2	DESTROYED MONITORING WELL
PMW-1	PERCHED MONITORING WELL LOCATION
	PROPOSED GROUNDWATER MONITORING WELL LOCATION

NOTE:
VAPOR RECOVERY WELLS VR-3 & VR-4 WERE DESTROYED ON 11/5/99. PERCHED GROUND WATER MONITORING WELL PMW-5 WAS INSTALLED IN DESTROYED VAPOR WELL VR-3 BORING ON 12/16/99.

N

0 25 50

Scale (feet)

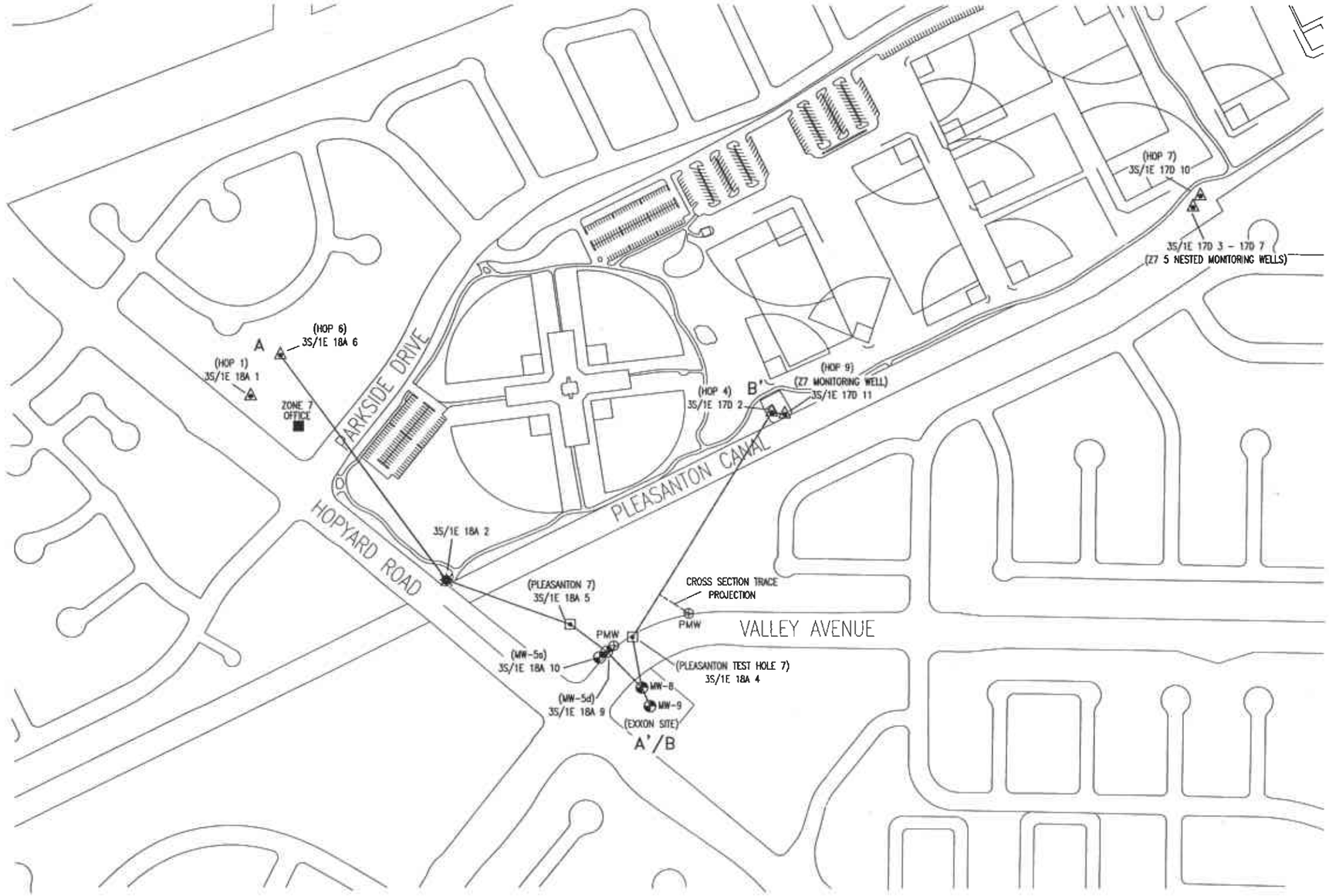
Adapted from Delta Environmental Consultants, Inc. drawings.

FILENAME: FIG1.DWG 05/16/00

ETIC Engineering, Inc.

SITE PLAN SHOWING PROPOSED GROUNDWATER MONITORING WELL LOCATIONS
EXXON RS 7-3399
2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: **1**



Adapted from Delta Environmental Consultants, Inc. drawings.

FILENAME: FIG2.DWG 05/10/02

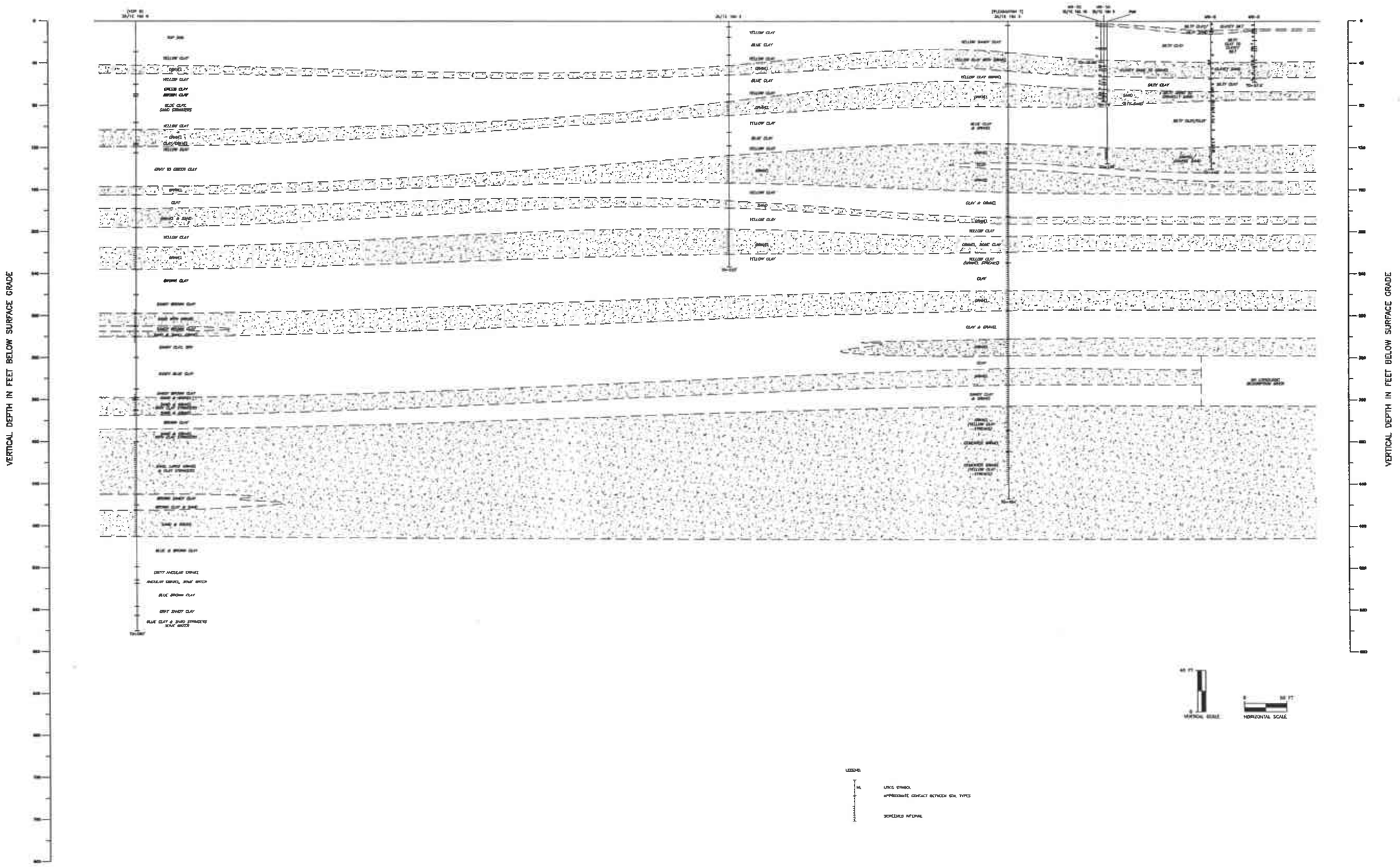
ETIC Engineering, Inc.

GEOLOGIC CROSS-SECTION TRACE LOCATION MAP
EXXON RS 7-3399
2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: 2

A
NORTHWEST

A'
SOUTHEAST



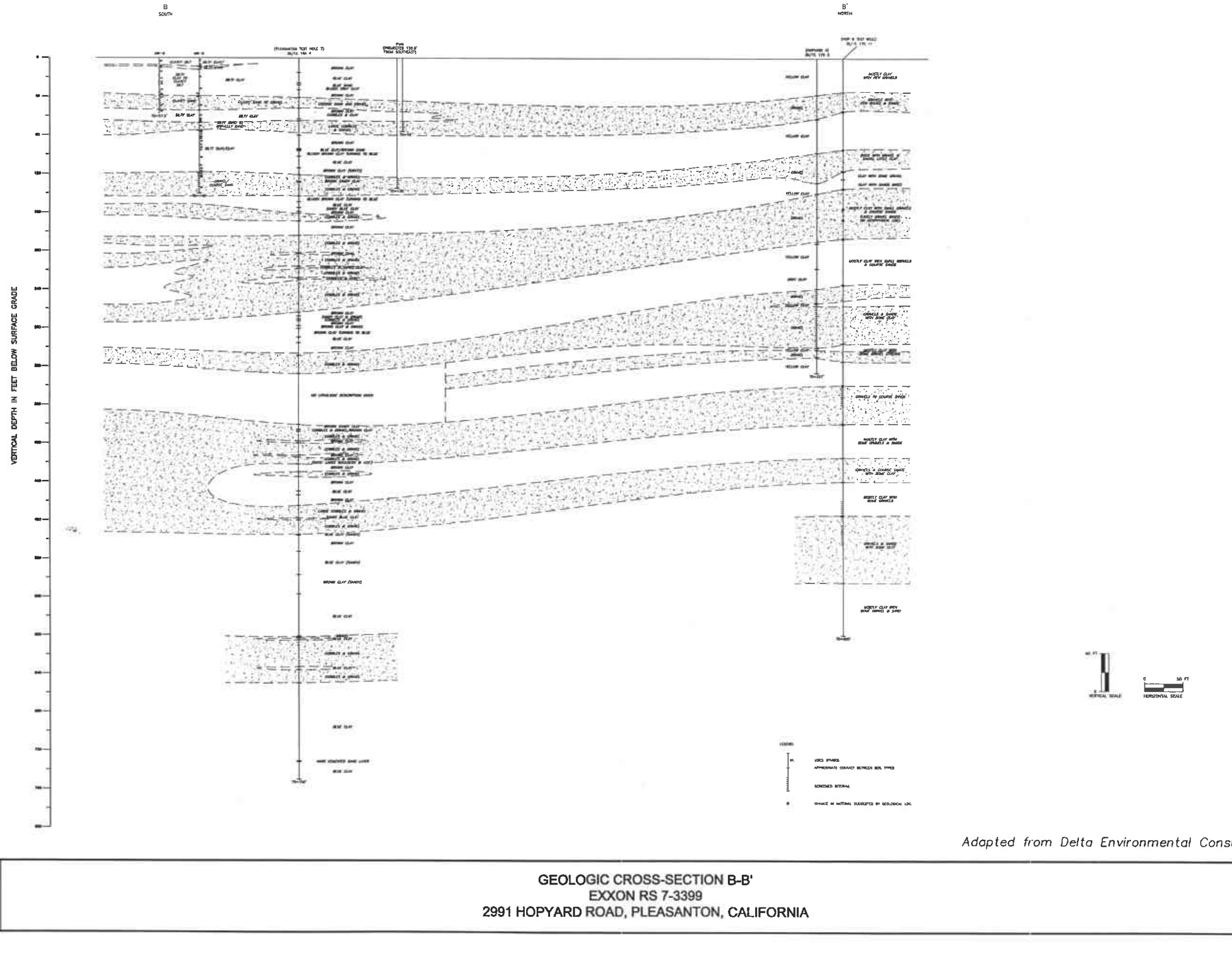
Adapted from Delta Environmental Consultants, Inc. drawings.

FILENAME: FIG3.DWG 05/10/00

ETIC Engineering, Inc.

GEOLOGIC CROSS-SECTION A-A'
EXXON RS 7-3399
2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: **3**



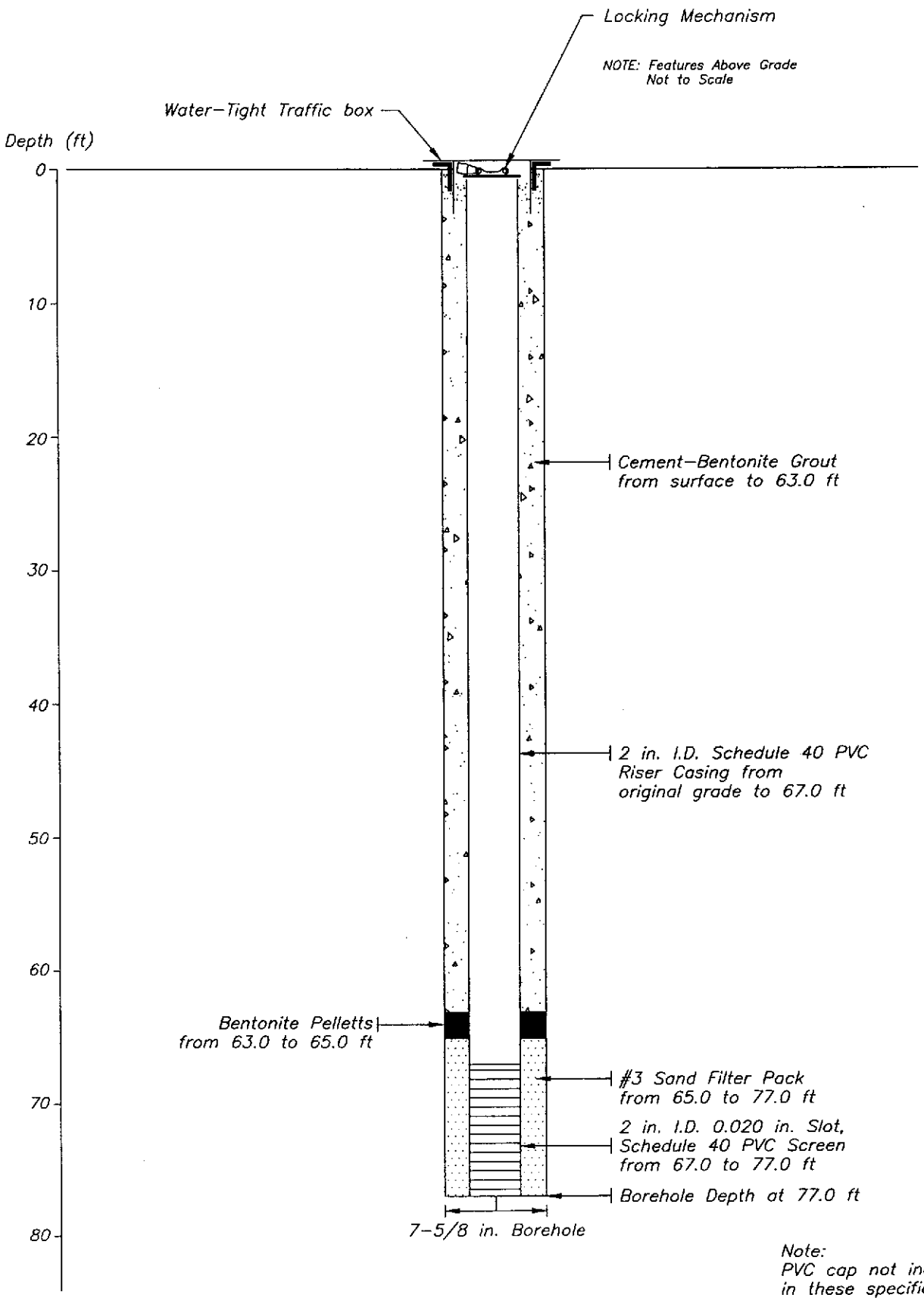
Adapted from Delta Environmental Consultants, Inc. drawings.

FILENAME: FIG4.DWG 05/10/00

ETIC Engineering, Inc.

GEOLOGIC CROSS-SECTION B-B'
EXXON RS 7-3399
2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: 4

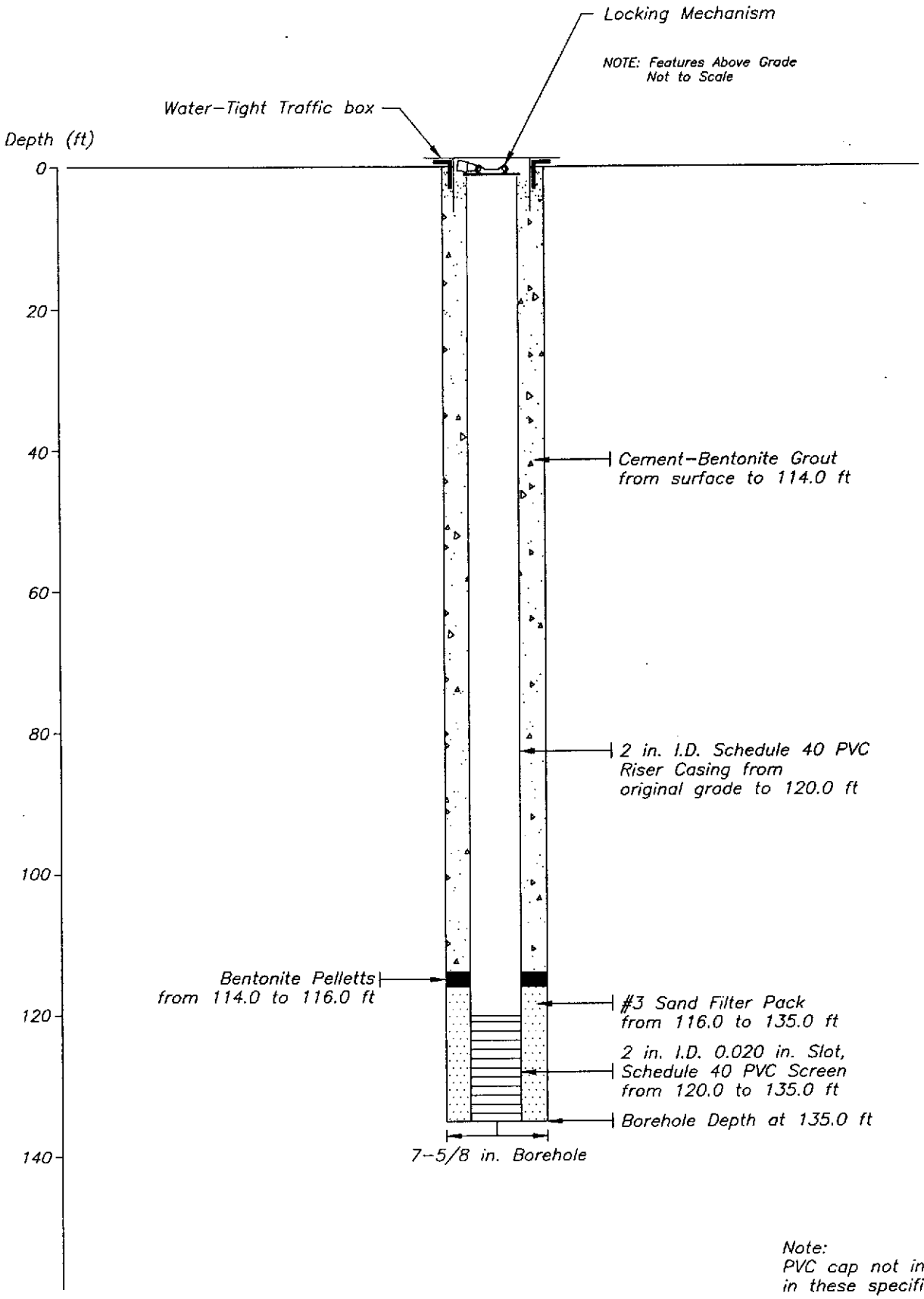


Note:
PVC cap not included in these specifications.

ETIC Engineering, Inc.

PROPOSED WELL COMPLETION DIAGRAM FOR ZONE 2 MONITORING WELLS VICINITY OF EXXON RS 7-3399 2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: 5



Note:
PVC cap not included in these specifications.

ETIC Engineering, Inc.

PROPOSED WELL COMPLETION DIAGRAM FOR
ZONE 3 MONITORING WELLS
VICINITY OF EXXON RS 7-3399
2991 HOPYARD ROAD, PLEASANTON, CALIFORNIA

FIGURE: 6

Appendix A

Field Protocols

PROTOCOLS FOR BOREHOLE AND WELL DRILLING, COMPLETION, DEVELOPMENT, AND SAMPLING

AIR ROTARY DRILLING

Prior to drilling, all boreholes are cleared of underground utilities using an independent utility locating contractor and USAlert. A 24-inch circle or a 2-foot by 2-foot square is cut in the surface cover at each well location. An area larger than the bit diameter will be hand augered to 4 feet to ensure that there are no obstructions near the potential path of the drill bit and casing.

Boreholes are drilled with a truck-mounted air rotary drill equipped with a drill bit and 7 and 5/8-inch-diameter steel conductor casing. The diameter of the casing is selected to provide an annular space between the boring wall and the well casing of no less than 2 inches.

All down-hole equipment is steam-cleaned before drilling begins and before each new borehole is drilled. All drill cuttings are either placed on and covered with plastic sheeting or contained in sealed 55-gallon drums or steel roll-off bins. All fluids generated during drilling activities are contained in sealed 55-gallon drums. All waste generated during drilling activities is stored onsite until appropriate transport to an Exxon–approved disposal or treatment facility is arranged. The drums are labeled with the borehole numbers, site description (including owner's name), and date. The drill cuttings are disposed of at a proper facility based on results of soil sample analysis.

During drilling, an ETIC geologist generates a soil boring log for each borehole. The boring logs contain detailed geological information, including descriptions of the soils classified according to the Unified Soil Classification System (USCS), blow counts, organic vapor analyzer (OVA) readings (if applicable), moisture content of the soils, and initial and static water levels.

SOIL SAMPLING

Due to the nature of air rotary drilling, no undisturbed soil samples are collected. Soil cuttings emerging from the outlet of the air rotary drilling system are examined for soil characteristics and logging purposes and classified according to the Unified Soil Classification System.

BOREHOLE GROUTING

Should boreholes be terminated, they will be abandoned with a cement grout containing less than 5 percent pure sodium bentonite. The grout will be pumped through a grouting tube positioned at the bottom of the boreholes.

WELL INSTALLATION

The boreholes are completed as groundwater monitoring wells, vapor extraction wells, groundwater extraction wells, or air sparging wells. The wells are constructed by installing Schedule 40 PVC flush-threaded casing through the inner opening of the auger. The screened interval consists of slotted casing of the appropriate slot size and length placed at depths depending on soil conditions encountered during drilling. A threaded end plug or a slip cap secured with a stainless steel screw is placed on the bottom of the well.

A filter pack of clean sand of appropriate size is placed in the annular space around the well screen to approximately 2 to 4 feet above the top of the screen. The sand is placed through the inner opening of the augers as they are slowly removed. The sand is sealed by adding 1–2 feet of bentonite pellets and hydrating them with deionized water. A surface seal is then created by placing neat cement grout containing less than 5 percent bentonite from the top of the bentonite seal to just below the ground surface.

The well is finished at the surface with a slightly raised, traffic-rated, watertight steel traffic box set in concrete. The traffic box is secured with bolts and the casing is further secured with a locking well cap.

WELL DEVELOPMENT

The wells are developed after completion. Development consists of surging the screened interval of the well with a flapper valve surge block that is the same diameter of the well for approximately 15 minutes. The well is then purged, with a vacuum truck and dedicated PVC stinger or disposable tubing, an inertial pump, a submersible electric pump, a centrifugal pump, an air-lift pump, or a PVC bailer until at least 3 casing volumes are removed and the water is free of silt.

A record of the purging methods and volumes of water purged is maintained. All purge water is contained on the site in properly labeled 55-gallon drums. Purged water is transported to an Exxon approved treatment facility.

GROUNDWATER SAMPLING

All samples are collected with a factory cleaned disposable bailer. The bailer is operated by hand on a new rope or on Teflon-coated stainless steel wire. Sampling personnel wear clean Nitrile gloves during sampling operations and while handling sample bottles.

The groundwater samples are emptied from the bailer directly into the sample bottles with a bottom-emptying device. The samples are collected in either 40-ml glass VOA vials or 1-liter amber bottles with Teflon-lined septum caps. The sample bottles contain appropriate preservatives, typically hydrochloric acid. The samples are filled to the top of the bottle so that there are no air bubbles.

The sample bottles are labeled with the well number, date, location, sampler's initials, and preservative. The sample vials are placed in an iced cooler for delivery to the laboratory for analysis. Standard chain-of-custody procedures are followed.

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e-mail request addendum from ETIC, to include final well locations