RO-304

Pangea
ENVIRONMENTAL SERVICES, INC.

February 20, 2005

Mr. Robert Schultz
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Soil and Water Investigation Work Plan**
Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California
Fuel Leak Case No. RO0000304

Dear Mr. Schultz:

On behalf of Mr. Hooshang Hadjian, Pangea Environmental Services, Inc. (Pangea) has prepared this *Soil and Water Investigation Work Plan* for the subject site. This work plan was requested by your letter dated November 2, 2004.

If you have any questions or comments, please call me at (510) 435-8664.

Sincerely,
Pangea Environmental Services, Inc.

Bob Clark-Riddell, P. E.
Principal Engineer

Attachment: Soil and Water Investigation Work Plan

cc: Mr. Hooshang Hadjian, 2108 San Ramon Valley Blvd, San Ramon, CA 94583

SOIL AND WATER INVESTIGATION WORK PLAN

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

FEBRUARY 20, 2005

Prepared for:

Mr. Hooshang Hadjian
2108 San Ramon Valley Blvd
San Ramon, CA 94583

Prepared by:

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FEBRUARY 20, 2005

1.0 INTRODUCTION

On behalf of Mr. Hooshang Hadjian, Pangea Environmental Services, Inc. (Pangea) has prepared this *Soil Investigation Work Plan* for the above-referenced site (the Site). The purpose of the proposed work is to further define the extent of contamination and to facilitate Site remediation. Our work plan responds to specific concerns expressed in the November 2, 2004 letter from the Alameda County Environmental Health (ACEH). As required, Pangea provides information about the Site background, regional geology and hydrogeology, nearby conduits and sensitive receptors, contaminant plume definition, interim remedial action, migration control, and site characterization. Our proposed scope of work for site investigation and interim remediation is detailed herein.

2.0 SITE BACKGROUND

Background information pertaining to Site is summarized below. The Site location is shown on Figure 1. Historical soil and groundwater investigation locations are shown on Figure 2. Historical soil and groundwater analytical results are summarized on Tables 1 and 2, respectively.

2.1 Site Description

The Chevron-branded service station and Dublin Auto Wash is located at the southwest corner of Dublin Boulevard and Village Parkway in Dublin, California (Figure 1). The Site elevation is approximately 321 feet above mean sea level (msl), with the topography sloping gently to the south from the central and western portions of the Site, toward a flood control channel (identified by SOMA as the San Ramon Creek). The natural topography slopes gently to the southeast on the eastern portion of the Site. Onsite facilities consist of two dispenser islands (four dispensers), three 10,000-gallon underground storage tanks (USTs), and a station building with a car wash (Figure 2). Land use immediately surrounding the Site is commercial, with residential land use further from the Site.

2.2 Prior Environmental Work

The first environmental investigation at the Site began in early 1988 when Chevron Product Company (Chevron) hired EA Engineering, Science, and Technology, Inc. (EA), to conduct a soil vapor investigation at the Site. The results of the soil gas survey indicated elevated levels of hydrocarbons beneath the Site, especially around the southern pump island.

In October 1988, HEW Drilling Company installed three groundwater monitoring wells, EA-1 through EA-3. During the installation of the groundwater monitoring wells, groundwater was encountered at depths ranging between 15 to 23 feet below ground surface (bgs). The depths of the groundwater monitoring wells were 35 to 40 feet bgs. Following the installation of the groundwater monitoring wells, quarterly groundwater monitoring began.

In February 1989, one 5,000-gallon and two 10,000-gallon underground storage tanks (USTs) were excavated and removed from the Site and replaced with three new USTs. During this activity, soil and groundwater samples were collected and analyzed for petroleum hydrocarbons. Following the USTs' removal and upgrade, a total of 180 cubic yards of soil was removed from the Site and sent to Class I and Class II landfill facilities. During the UST replacement project three horizontal 'wells' consisting of slotted PVC piping were installed between 3 to 4 feet bgs in piping trenches and around the USTs. Well #1 was installed at the northwest end of the pump islands, well #2 along the east side of the pump islands, and well #3 on the north, east and south perimeter of the UST field.

In March 1989, Western Geologic Resources, Inc. (WGR), drilled and sampled five soil boreholes in the area of the former pump island. In addition, nine soil samples were collected from the vicinity of the former product-line trenches at depths ranging from 2.5 feet to 10.5 feet bgs. Laboratory analyses results indicated total petroleum hydrocarbon (TPH) concentrations from non-detectable to 750 milligram per kilograms (mg/Kg). In May 1990, three vapor extraction wells were apparently installed to monitor radius of influence during extraction from the horizontal wells. Soil vapor samples contained a maximum of 29,000 parts per million (ppm) benzene at the beginning of the test and 5,300 parts per billion (ppb) after 2,049 minutes into the test. A soil vapor extraction (SVE) system was operated between March 1992 and April 1996 by Geraghty & Miller. Reportedly, during this period a total of over 15,000 pounds of hydrocarbons were removed from the subsurface (although the removal calculations were based on the oxidizer's chart recorder paper rather than measured vapor concentrations and extraction flow rates).

In September 1994, Groundwater Technology, Inc. (GTI), installed three groundwater monitoring wells, MW-1 through MW-3. The depths of these wells ranged between 21.5 to 26.5 feet bgs. In March 1995, elevated levels (up to 64,000 microgram per liter (ug/L)) of MtBE were reported for the first time in MW-3.

In February 1996, Bay Area Exploration Services, Inc., installed two groundwater monitoring wells, MW-4 and MW-5, each with a depth of 21.5 feet bgs. During the well installation, soil and groundwater samples were collected and analyzed for petroleum hydrocarbons. No petroleum hydrocarbons were detected in the soil or groundwater samples collected from these wells. Apparently, these wells are upgradient wells and have not been impacted by the petroleum hydrocarbons.

In December 1996, Weiss Associates conducted a Risk Based Corrective Action (RBCA) and concluded that the Site is a "Low Risk" soil and groundwater petroleum release site and recommended the SVE system be shut down. Based on Weiss Associates' recommendation, the SVE system was shut down, although the ACEH required quarterly groundwater monitoring and free product removal reports.

In February 1997, a leak in a stainless steel flex hose was discovered and reported to the ACEH. The leak location was immediately south of the northwestern most dispenser (dispenser No. 2). During June 1997 testing the secondary piping failed a pressure test. Subsequently, a new product delivery system was installed to replace the existing lines. During the system modifications in July, Parker Environmental Services collected soil samples via hand augering at locations B-1 through B-4. About 31 cubic yards of soil was removed from the release area to a depth of 8 feet bgs. The results of subsequent groundwater monitoring events in December 1998 and March 1999 showed free product in well MW-3. The detection of free product in MW-3 (up to 0.1 feet thick) corresponds to the historically lowest groundwater elevation, when the depth to groundwater in well MW-3 was 12.92 feet in December 1998.

Due to the occurrence of a new release at the Site, the Chevron Product Company believed that they should no longer be the responsible party for further site characterization, removal and monitoring of contaminants at the Site. Later on, Chevron negotiated with Mr. Hooshang Hadjian, and he subsequently assumed the responsibility for the new release at the Site.

Gettler-Ryan, Inc. (GRI), a subcontractor of Chevron, monitored the eight existing groundwater monitoring wells at the Site until the first quarter of 2003. In 2003, SOMA performed groundwater monitoring at the Site. Groundwater apparently flowed from offsite wells MW-4 and MW-5 toward the Site in the approximate southeast direction, while groundwater at the eastern portion of the Site apparently flowed in the northeast direction. The groundwater elevation was lowest in well MW-2 located in the southwestern corner of the Site. The inferred groundwater flow direction is fairly consistent with surface topography, which slopes toward the south-southwest at the central and western portions of the Site (Figure 3). The groundwater flow direction may be affected by the 18" diameter vitrified clay pipe (VCP) sewer line running beneath the southern portion of Dublin Boulevard immediately north of the Site. In a letter dated October 30, 1995 to the County, Gettler Ryan Inc. stated that the top of the sanitary sewer line was approximately 16 feet below grade surface (bgs), while the depth to water in nearby wells MW-1 and MW-3 has ranged from approximately 11 to 13 feet bgs. The contaminant plume appeared to be concentrated in the vicinity of well MW-3.

In 2003, SOMA conducted further characterization and remediation activities at the Site. SOMA advanced seven shallow soil borings using hand augers (B-1 through B-8), nine soil borings using a Geoprobe™ direct push rig, and one soil boring using a drill rig equipped with hollow stem augers. Initially, the Geoprobe borings were intended to be used for cone penetrometer testing (CPT) to log the borings; however, due to subsurface conditions the borings were logged using electric conductivity sensors. The direct push borings included collection of discrete depth groundwater samples to assess the vertical extent of contamination.

SOMA's investigation confirmed that contaminant concentrations were highest near the northern central portion of the Site, and concluded that the sewer located immediately north of the Site is intercepting groundwater contamination. Fill material around the sewer line could be acting as a preferential pathway for the contamination conveyance to the east and then southeast, the sewer flow direction. SOMA also found contamination in deeper groundwater. SOMA concluded that there are three relatively higher permeability zones on the Site acting as water bearing zones – Shallow (10 – 15 to 19 – 23 feet bgs), Middle (19 – 23 to 32 – 36 feet bgs), and Deep (32 – 36 to 43 – 47 feet bgs) – with an Upper Shallow zone (at approximately 2 to 6 feet bgs) noted in a few of the borings. In several locations an insufficient amount of water was present in the potential water bearing zones so no groundwater samples were obtained by SOMA. Since wells EA-1, EA-2, EA-3, and MW-1 are screened across the various water bearing zones at the Site, SOMA recommended that these wells be destroyed to prevent them from acting as vertical conduits for the migration of the contaminants. SOMA also recommended that wells be installed in the Shallow, Middle, and Deep zones at the Site to determine the groundwater flow directions in the various zones.

On December 15, 2004, Pangea Environmental Services, Inc. (Pangea), of Oakland, California, performed groundwater monitoring and sampling at the Site. Pangea found that the inferred groundwater flow direction and dissolved contaminant concentrations were generally consistent with historical trends (Figure 3). During first quarter 2005 groundwater monitoring performed in February, 2005, free product was again observed in well MW-3 after bailing approximately one gallon of water for planned well sampling.

3.0 REGIONAL GEOLOGIC AND HYDROGEOLOGIC STUDY

As requested by technical comment number 1 of the ACEH letter, Pangea reviewed available technical literature for the area. Results of our review are summarized below and detailed further in Appendix A. During the evaluation of the geology and hydrogeology of the Site's vicinity, Pangea reviewed the following documents:

- *Note 36: California Geomorphic Provinces*, California Geological Survey (CGS), 2002
- *Preliminary geologic map emphasizing bedrock formations in Alameda County, California*, United States Geological Survey (USGS) Open-File Report 96-252, 1996
- *Quaternary Geology of Alameda County, and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California*, USGS Open-File Report 97-97, 1997
- *Bulletin 118: California's Groundwater*, California Department of Water Resources DWR), October 2003

The Site is situated within the Coastal Range geomorphic province in California. The Coast Ranges are northwest-trending mountain ranges (2,000 to 4,000, occasionally 6,000 feet elevation above sea level), and valleys. The ranges and valleys trend northwest, subparallel to the San Andreas Fault. Strata dip beneath alluvium of the Great Valley. The Pacific Ocean is to the west. The coastline is uplifted, terraced and wave-cut. The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. The northern and southern ranges are separated by a depression containing the San Francisco Bay. The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields. The Coast Ranges are subparallel to the active San Andreas Fault. The San Andreas Fault is more than 600 miles long, extending from Point Arena

to the Gulf of California. West of the San Andreas is the Salinian Block, a granitic core extending from the southern extremity of the Coast Ranges to the north of the Farallon Islands.

The Site is underlain by undivided Holocene and Pleistocene deposits. The basin deposits consist of very fine silty clay to clay deposits occupying flat-floored basins at the distal edge of alluvial fans. Inferred fault lines trending north-northwest to south-southeast were noted approximately 1 mile west and 1.5 miles east of the Site.

According to the map of groundwater basins and subbasins of California, the Site is located in the Livermore Valley Groundwater Basin. The entire floor of Livermore Valley and portions of the upland areas on all sides of the valley overly groundwater-bearing materials. The materials are continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation.

The valley-fill materials are a few tens of feet to nearly 400 feet thick. They are stream channel deposits, alluvium, alluvial fan deposits, and terrace deposits, and consist of unconsolidated sand, gravel, silt, and clay. In the central and southern portions of the valley, 50 to 80 percent of the valley-fill is comprised of aquifer material that yields significant quantities of water to wells. Clay deposits up to 40 feet thick cap the valley-fill in the western part of the Basin; where deep wells draw groundwater from underlying aquifer material. The Site is located in the western part of the basin. As shown in Table 3, the municipal and/or domestic supply wells in the Site's vicinity are installed to a total depth of approximately 500 or more feet bgs into the underlying water-bearing Livermore Formation.

The Livermore Formation is exposed in the south and southwest regions of the Livermore Valley but occurs elsewhere in the valley beneath the surface at depths up to 400 ft. This formation is up to 4,000 feet thick and consists of unconsolidated to semi-consolidated beds of gravel, sand, silt, and clay. Limey concretions are fairly common in its lower portion, and tuffaceous beds are present at its base. Deep wells in the eastern half of the basin produce from the Livermore Formation. Upland wells to the South have limited groundwater yields.

The Tassajara Formation is exposed in the uplands to the north of the Livermore Valley and is present beneath the central portion of the valley at depths ranging from 200 to 750 feet. Beds of the Tassajara are composed of sandstone, siltstone, shale, conglomerate, and limestone. Coarse-grained beds typically contain tuff and clay particles, reducing their overall permeability. There is little hydrologic continuity between the Tassajara and overlying water-bearing units.

Faults are the major structural features known to have marked affect on the movement of groundwater in the valley. Faults tend to act as barriers to the lateral movement of groundwater. The resulting groundwater levels stand higher on the upgradient side. The Livermore, Pleasanton and Parks faults act as such barriers, dividing the Quaternary Alluvium into 5 groundwater subbasins.

4.0 CONDUIT STUDY AND SENSITIVE RECEPTOR SURVEY

As requested, Pangea conducted a survey to identify any water-producing wells within 2,000 feet of the Site, to assess the potential for conduits to exist between the shallow and deeper water-bearing zones, and to identify surface water bodies in the Site vicinity. To assist in the preparation of the conduit study, Pangea used the 1986 Regional Water Quality Control Board staff memo *Identification, Location, and Evaluation of Public Supply Wells, Private Wells, Agricultural Wells, Abandoned Wells, and Potential Well Conduits* for general guidance.

Well Documentation Review

Pangea requested information on known wells located within 2,000 feet of the Site from the California Department of Water Resources (DWR) and the Alameda County Flood Control District – Zone 7 (Zone 7). Pangea reviewed the information provided by the DWR and Zone 7 for permitted wells in the vicinity of the Site. The well data provided by the DWR and Zone 7 are included in Appendix E. Table 3 summarizes the DWR data, and Figure 4 shows the approximate locations of wells identified by DWR and Zone 7 information.

The data provided by DWR indicate that forty existing well sites are located within approximately 8,000 feet of the Site, as summarized on Table 3. Twelve of the forty well sites identified by the DWR are located within 2,000 ft of the Site, and are shown on Figure 4. Three of the twelve wells are non-monitoring wells; one well is a municipal well owned by the Dublin-San Ramon Valley Community Services District, the second is a test well owned by the Alameda County Flood Control Agency, and the third is a cathode protection well owned by the Livermore –Amador Valley Management Agency; they are located approximately 500 feet east, 1,000 feet north-northeast, and 1,900 feet south-southwest, respectively, of the Site. These wells are installed to total depth of 500, 112, and 210 feet, respectively. These wells are identified as numbers 2, 3, and 9 on Figure 4. The groundwater flow direction at the Site has been determined to be southeast and northwest; therefore, the identified municipal well is not expected to be impacted by the Site.

Two monitoring wells are located approximately 500 east of the Site at 7051 Dublin Boulevard. Three are located approximately 700 feet north of the Site at 6973 Village Parkway. Three of the monitoring wells are located approximately 1,500 feet west of the Site at approximately 6700 Dublin Boulevard.

In addition to the existing wells, there are 27 destroyed wells in the vicinity of the Site based on reviewed data.

The map provided by Zone 7 shows several wells not identified in the DWR data. The majority of the wells shown are monitoring or cathodic well/unknown type wells. One unknown well or cathodic protection well was shown beneath I-680 approximately 100 feet and southwest of the Site. This well may be the nearby destroyed Caltrans well, and Pangea proposes additional research with Zone 7 regarding this well.

The DWR map did identify a water supply well located approximately 1,900 feet southeast of the Site. Based on its distance from the Site and the identified groundwater flow direction at the Site, the releases at the Site are not expected to impact the well. Figure 4 shows the locations of the wells identified on the Zone 7 map in addition to those identified using the DWR data.

Surface Water Bodies

Pangea reviewed the USGS topographic maps for the Site vicinity and conducted a Site reconnaissance visit to identify surface water bodies in the Site vicinity. A flood control channel, identified as the San Ramon Creek by SOMA, is located immediately west of the Site and flows to the southeast (Figure 2). Aerial photographs suggest that the flood control channel is lined by concrete, although soil is presently observed within much of the channel. The elevation of the channel is approximately 10 feet lower than the Site surface elevation. Another flood control channel is located approximately 700 feet east of the Site and flows to the southwest where it has a confluence with the stream adjacent to the Site. A channelized stream, Dublin Creek, is located approximately 1600 feet southwest of the Site and flows to the east where it has a confluence with the stream adjacent to the Site.

History of Site Usage

As requested, Pangea evaluated historical uses of the Site to determine the existence of unrecorded/unknown (abandoned) wells potentially acting as pathways for contaminant migration. For this evaluation, Pangea reviewed the available historical aerial photographs at the University of California at Berkeley Earth Science and Map Library (UCB) and Microsoft's Terraserver website from 1939, 1958, 1960, 1966, 1979, 1984, 1987, 1996, 1999, and 2004. Sanborn insurance maps were not available for the Site's vicinity. Our review is summarized below, with a more detailed description of the aerial photograph review provided with aerial photographs in Appendix B.

Based on the review of the aerial photographs, the Site and its adjacent properties was undeveloped land possibly used for agriculture from at least 1939 to approximately 1960. The flood control channel west of the Site was noted in the 1939 photograph, and appeared to be a dirt-lined channel with berms on either side. By 1966, it appears that the Site and its nearby properties were underdevelopment or being prepared for development; Interstate 680 had been constructed west of the Site, and the adjacent flood control channel had apparently been lined with concrete based on the color of the channel as compared with earlier photographs. The service station on the Site had been built by 1979. No significant changes in the usage of the Site and its adjacent properties from 1979 were apparent in the subsequent reviewed aerial photographs.

No wells or other possible conduits were noted on the Site or nearby properties in the reviewed aerial photographs, except for a possible well pump house located approximately a ¼ mile west southwest of the Site as observed in the 1958 aerial photographs. This structure was not observed in the 1966 and later photographs. Based on the distance to the Site, the releases at the Site are not expected to impact any possible abandoned wells at the possible former well pump house.

Conduit Study Conclusions

Pangea offers the following conclusions from our conduit study and review of historical information:

- There are no known domestic, municipal or irrigation wells likely to be impacted by subsurface contaminants. The nearest non-monitoring well is 500 feet east and upgradient from the Site, and is installed to a depth of 500 feet. Although contaminants could migrate along the Dublin sewer, the sewer heads east approximately 50 feet from the Site and then southeast beneath Village Parkway. No wells were identified south or southeast and within 2,000 feet of the Site, except for one cathodic protection well approximately 1,900 feet south of the Site.

- One unknown well or cathodic protection well was shown beneath I-680 at Dublin Boulevard approximately 100 feet and southwest of the Site, which Pangea proposes to further research with Zone 7. This well may be the well destroyed by Caltrans.

- No unrecorded/unknown (abandoned) wells were identified within 2,000 feet of the Site during our historical use and aerial photograph review. A possible well pump house was noted in the 1958 aerial photographs approximately a ¼ mile southwest of the Site. Based on the distance to the Site and the groundwater flow direction, Site contaminants are not expected to impact any possible abandoned wells at the potential former well pump house.

- The flood control channel immediately adjacent the Site appears to be lined with concrete.

5.0 CONTAMINANT PLUME DEFINITION

In this section Pangea discusses the contaminant distribution in soil and groundwater. To facilitate our evaluation, Pangea compiled available historical soil and groundwater data on Tables 1 and 2, respectively. As requested by the ACEH, Pangea reviewed available logs, soil conductivity data, and analytical data to evaluate the hydrogeologic conditions and contaminant distribution beneath the Site. Pangea has interpreted the Site data and compiled geologic cross sections illustrating estimated relative permeabilities of subsurface strata. The cross sections include well screen intervals, analytical results, potential conduits (Dublin sewer), and key UST features. To help evaluate the distribution of contaminants within vadose zone soil and different water bearing zones, Pangea included approximate contours of the contaminant extent in plan view and cross sectional view. Pangea used this data interpretation to develop our proposed scope of work for further Site assessment and interim remediation. As requested, photocopies of boring logs are presented in Appendix C.

Maximum Contamination Extent in Groundwater

To illustrate the maximum lateral extent of contaminants in groundwater, Pangea presents an isoconcentration map for MTBE as Figure 5. (In general, other Site contaminants, such as TPHg and benzene, are generally more limited in extent than MTBE, and their historical groundwater analytical results exhibit decreasing trends.) The isoconcentration contours are based on the maximum MTBE concentration observed in grab samples as well as the most recent MTBE concentration detected in Site groundwater monitoring wells. However, since well EA-1 was inaccessible during the last monitoring event, data from the prior monitoring event was used. As shown on Figure 5, MTBE

concentrations are highest near the northern central portion of the Site near well MW-3 and boring DPB-S. The MTBE plume appears to head southwest toward San Ramon Creek, where elevated (<1,000 ug/L) MTBE concentrations were also detected in wells MW-1 and MW-2. The MTBE plume has apparently intersects with the Dublin sewer located along the northern boundary of the Site. Our proposed investigation will help determine if the elevated concentrations are also present between the source area and wells MW-1 and MW-2, and along the Dublin sewer northeast of the Site. The plume does not appear to have impacted groundwater beneath the station building, or the easternmost portion of the Site.

Contaminant Distribution in Soil

To illustrate the extent of contaminants in soil, Pangea prepared two cross sections (A-A' and B-B') with soil analytical data (Figures 6 and 7). The two cross sections are in similar locations to the inferred lithological 'cross sections' provided by SOMA. Since the subsurface consists primarily of clayey materials, Pangea differentiated between low and very low estimated permeability units, relying primarily on conductivity information and water bearing zones information provided by SOMA. Pangea also relied on the occasional sand stringers and observed gravel within thin units or lenses, as referenced on boring logs. The contaminant distribution supports the assumption that these relatively higher permeability units are likely conveying contaminants. In boring DPB-7, for example, MTBE was detected at 300 ug/L within relatively higher permeability soil at an approximate depth of 20 to 24 feet bgs, while no MTBE was detected (<0.5 ug/L) in shallower water from 15 to 19 feet bgs, or in deeper water from 35 to 39 feet bgs. For cross section preparation Pangea assumed all boring/well elevations were equivalent, except for well MW-3 located in a sloped planter and MW-4 located across Dublin Boulevard at McDonalds. Therefore, the contact points between the different subsurface materials are approximate on the cross sections.

Figure 7 illustrates that soil contaminant concentrations are greatest in vadose zone soil (3.5 to 4 feet bgs) near the previously damaged flex hose at the northwestern-most dispenser, and also in capillary fringe and saturated soil beneath the known leak and near well MW-3. Since there is limited MTBE soil data for MW-3, Pangea inferred that MTBE concentrations are likely elevated in the shallow saturated zone, where elevated TPHg concentrations were detected (2,500 ug/L) and where free product was observed during historical low water table elevation. The maximum detected concentrations in shallow soil were 92,000 mg/kg TPHg, 12 mg/kg benzene, and 21 mg/kg MTBE.

Soil concentrations on Figure 6 suggest that further from the known flex hose release location contaminant concentrations are greater in the capillary fringe and/or shallow saturated zone than in upper vadose zone soil.

Contaminant Distribution in Groundwater

Figures 8 and 9 show the extent of contaminants in groundwater in cross sectional view. As shown on Figure 8, contaminant concentrations are highest beneath the known release area, and extends into deeper water bearing zones. Figure 9 indicates that the lateral extent of contaminants is undefined in the southwestern direction near the San Ramon Creek/flood control channel, and in the northern direction where groundwater is intercepted by the Dublin sewer. The vertical extent of contaminants in the source area has not been fully delineated.

The cross sections present the apparent water bearing zones beneath the Site. These zones are referred to as the upper shallow, shallow, middle and deep water bearing zones. In some cases an insufficient amount of water was present in the potential water bearing zones so no groundwater samples were collected from those locations. For discrete depth grab groundwater sampling, the greatest TPHg and BTEX concentrations in each water bearing zone were detected in DPB-3, while the greatest MTBE concentrations were detected in DPB-3 for the middle zone and in DPB-S for the shallow and deep zones. The maximum detected concentrations were as follows: 48,000 ug/L TPHg, 400 ug/L benzene, and 53,000 ug/L MTBE in the shallow zone; 62,000 ug/L TPHg, 700 ug/L benzene, and 4,200 ug/L MTBE in the middle zone, and 27,000 ug/L TPHg, 210 ug/L benzene, and 42,000 ug/L MTBE in the deep zone.

Available data suggests that Site groundwater may be under partially confined or confined conditions. The static water depth at the Site of approximately 9 to 13 feet bgs corresponds to clayey soil of estimated very low permeability. During drilling groundwater was generally first encountered much deeper than static water depth. Most importantly, our review of historical groundwater data and new information about potential water bearing zones indicates that free product is submerged, and likely trapped in or near the top of the shallow water bearing zone. Table 1 data indicate that the detected free product at the Site (up to 0.1 feet thick) corresponds to the two lowest observed groundwater elevations, when the depth to groundwater in well MW-3 was 12.92 feet in December 1998 and 12.56 in March 1999. During first quarter 2005 groundwater monitoring performed in February, 2005, free product was again observed in well MW-3 after bailing approximately one gallon of water for planned well sampling.

Contaminant Distribution Conclusions

Pangea offers the following conclusions about the distribution of contaminants at the Site:

- Contaminant concentrations in soil are greatest in vadose zone soil (3.5 to 4 feet bgs) near the previously damaged flex hose at the northwestern-most dispenser, and the southern extent of the vadose zone impact has not been delineated.

- Elevated contaminant concentrations in soil are also located in capillary fringe and saturated soil beneath the known leak and near well MW-3.

- The contaminant plume is present in the three water bearing zones identified beneath the Site, referred to as the shallow, middle and deep water bearing zones. Contaminants may be migrating laterally within these water bearing zones. The vertical extent of contaminants in the source area has not been fully delineated.

- Historical groundwater data and new information about potential water bearing zones suggests that free product is submerged and likely trapped in or near the top of the shallow water bearing zone (at approximately 13 feet bgs).

- The plume appears located primarily onsite, and migrating to the south-southwest toward the San Ramon Creek. Although impacted groundwater may intersect the San Ramon Creek/flood control channel, historical aerial photographs suggest the channel is lined with concrete.

- The contaminant plume apparently intersects with the Dublin sewer located along the northern boundary of the Site, and may be migrating along or within the conduit as it flows east and then southeast.

- Contaminants have apparently not migrated beneath the station building or the easternmost portion of the Site.

- Site contaminants are not likely to impact any nearby sensitive receptors or abandoned wells, which could act as conduits for vertical migration, although additional limited research is proposed below.

6.0 INTERIM REMEDIAL ACTION

The ACEH letter requested that need for interim remedial action be evaluated, and that the extent of vadose zone soil impacts be defined near samples B-2b and B-7 (located south of the former dispenser area leak). Pangea addresses these issues in our investigation and interim remedial action work plans presented below.

7.0 MIGRATION CONTROL AND ENVIRONMENTAL SCREENING LEVELS

The ACEH letter stated that prior to any aquifer testing at the Site, the existing wells need to be replaced with appropriately screened monitoring wells. The ACEH also stated that further site investigation would be necessary prior to performing fate and transport modeling, so a RBCA evaluation of the Site would be premature. The ACEH recommended performing a screening level assessment of potential onsite and offsite risks to human health using the Environmental Screening Levels (ESLs) established by the San Francisco Bay RWQCB.

To perform a screening level assessment, Pangea compared applicable Site historic soil and groundwater data to applicable ESLs. Pangea referenced the ESLs for commercial sites where groundwater is a current or potential drinking water resource. Historical soil and groundwater concentrations that exceed the final ESLs are shown in bold on Tables 1 and 2, respectively.

Regarding Site soil, Pangea reviewed the applicable ESLs for shallow soil. Since the Site is paved, the direct exposure and ceiling value ESLs do not seem applicable to ongoing Site activities. With no soil contamination suspected beneath the stationbuilding, the indoor air impact ESLs are not applicable. Therefore, the only applicable ESLs for soil are those protective of leaching to groundwater. For the Site contaminants these groundwater protection ESLs represent the final ESLs, and are shown in bold on Table 1.

Pangea reviewed applicable ESLs for groundwater. With no significant contamination known or suspected beneath the station building, the indoor air impact ESLs are not applicable. The ESLs for drinking water toxicity are applicable. Pangea is not certain if the ACEH considers the ceiling value ESLs applicable to the Site. For the Site contaminants the final ESLs represent protection of drinking water and ceiling values, and are shown in bold on Table 2.

Given the proximity to the San Ramon Creek, the ESL protective of the aquatic habitat goal will be applicable if our planned investigation determines that the flood channel is not lined with concrete. The ESL protective of aquatic habitat (chronic exposure) is 8,000 ug/L. MTBE concentrations in nearby wells MW-1 and MW-2 were 1,900 ug/L and 1,600 ug/L, respectively, during the fourth quarter 2004 monitoring event.

8.0 PROPOSED INVESTIGATION SCOPE OF WORK

Pangea's proposed investigation scope of work is designed to address agency concerns and is based on our evaluation of subsurface conditions. In technical comment number 6 of their November 2, 2004 letter, the ACEH requested that the following tasks be proposed: "i) replace the existing monitoring wells with appropriately screened wells, and thereby reduce the risk of vertical contaminant migration and improve the quality of monitoring data, ii) define the vertical and lateral extent of groundwater contamination, and iii) perform preferential pathway sampling to further evaluate offsite contaminant migration." Our proposed investigation scope of work involves the following:

- Destruction of select wells.
- Soil boring south of the source area to delineate the vadose zone extent.
- Soil boring along the Dublin sewer, with an optional step out boring if merited based on field conditions, for preferential pathway analysis.
- Installation of monitoring wells in the upper and deep water bearing zones.
- Monitoring of existing vapor wells during routine groundwater monitoring to evaluate conditions in the potential upper water bearing zone near the source area (During February 2005 monitoring, Pangea observed water in wells VW-2 and VW-3 at 4.15 and 6.33 ft bgs, respectively, which did not recover hours after dewatering.)
- Tile probing within the flood control channel to confirm the presence of a concrete liner.
- Surveying existing and new wells to comply with EDF requirements, and surveying the flood control channel elevation if no concrete liner is found.
- Further research for the unknown or cathodic protection well located beneath I-680 at Dublin Boulevard approximately 100 feet and southwest of the Site, according to preliminary Zone 7 information.
- Interim remediation of periodic vacuum extraction events followed by groundwater monitoring.

Our rationale for boring/well locations and proposed investigation scope of work are presented below.

Rationale for Proposed Well Destruction

The proposed well destruction locations are shown on Figure 10. Pangea proposes to destroy the select wells prior to conducting additional site assessment. The rationale and screen intervals for the proposed well destruction are presented in Table A and differ from SOMA's recommendations.

Table A – Well Destruction Plan

Well ID	Screen Depth (ft bgs)	Rationale
MW-3	5 – 25 (26.5 with sand pack)	This source area well is screened across both the potential upper shallow WBZ and the shallow WBZ, and its sand pack may extend into the middle WBZ, creating a potential conduit for downward migration of contamination. Vadose zone contaminant can partition into infiltrating/perched water and migrate deeper via this conduit. Pangea observed water in nearby VW-2 and VW-3 at approximately 4 and 6 ft bgs.
EA-1	10-40	These wells are screened across several WBZs, creating a significant potential conduit for downward contaminant migration. ACEH approved destruction of these wells.
EA-2	10-40	
EA-3	5-35	

Pangea has not proposed the destruction and replacement of wells MW-1, MW-2 or MW-5. These wells are not located in the source area. Well MW-1 is screened from 5 to 25 feet (to 26.5 ft bgs including the sand pack beneath the well screen). Results from nearby DPB-7 suggest that the primary depth of concern is 20 to 24 feet bgs; no MTBE was detected in shallower groundwater (15 to 19 feet bgs) or deeper groundwater (35 -39 ft bgs) in DPB-7. Well MW-2, located approximately 50 feet south of MW-1, is screened from 5 to 20 feet bgs (to 21.5 ft bgs with the sand pack), and is likely screened at least 5 feet above the middle water bearing zone in this area. Future assessment of shallow Site conditions closer to the source area will help evaluate if MW-2 poses a significant risk to downward migration. Pangea suggests retaining well MW-5 for groundwater monitoring and plume delineation closer to the well identified by Zone 7 near I-680 and Dublin Boulevard. Pangea proposes annual sampling of well MW-5, with quarterly gauging of groundwater elevation.

Rationale for Proposed Borings, Well Locations and Screen Intervals

The rationale and screen intervals for the proposed borings and wells are presented in Table B. Pangea proposes well installation in the shallow and deep water bearing zones where shown on Figure 10. The final well screen intervals will be based on field observations of lithology and relative soil permeability during drilling. Each of these wells can also assist with any future remediation.

Pangea does not propose well installation into the middle water bearing zone. This zone is relatively thin, and may be hydraulically connected to the deep water bearing zone. The contaminant concentrations in this zone are generally lower than in the upper and deep water bearing zones.

Pangea does not propose installation of wells into the potential upper shallow WBZ, since no water was observed in this potential water bearing zone (except for in DPB-5 at 7-11 ft bgs in the eastern and non-impacted portion of the Site). To further evaluate conditions in the potential upper shallow water bearing zone, Pangea proposes to gauge and sample existing vapor wells screened from 5-9 ft bgs. Again, Pangea measured water in wells VW-2 and VW-3 during the February 2005 groundwater monitoring event.

Table B – Boring/Well Location Plan

Well/ Boring ID	Anticipated Target Depth (ft bgs)	Rationale
SB-1	15-20	Preferential pathway evaluation. Soil and grab groundwater assessment down slope of the source area and the 8,100 ug/L MTBE detected along the sewer at 16 to 20 ft bgs in DPB-1.
SB-2	5-20	Soil and grab groundwater assessment south of source area of concern, as requested by ACEH. Targeting upper and shallow zones; well cluster MW-7 will target deeper zones in this vicinity.
SB-3 (optional)	15-20	Optional boring completed if indication of contamination at SB-1 located closer to source area. Dynamic site assessment technique.
MW-3A	13-20	Replacement for MW-3 targeting shallow WBZ. Targets depth where free product was encountered during historic low groundwater elevation of approximately 12.5 to 13 ft bgs in winter 1998, and during February 2005 well purging. Well to be screened below very low permeability clay into relatively higher permeability soil beginning near 15 ft bgs (log S-1 shows clayey sand/sandy clay starting at 15 ft bgs; ECB-3 shows relatively higher permeability soil starting at 15 ft bgs). Nearby vapor wells screened from 5-9 ft bgs can target any upper shallow water where well MW-3 is also currently screened.
MW-6	--	Well cluster MW-6 located near DPB-S where highest MTBE concentrations were detected in grab groundwater by SOMA.
MW-6A	13-20	Targets shallow WBZ and provides assessment near 53,000 ug/L MTBE detected at 14-18 ft bgs in DPB-S. Near former area and depth where free product detected in MW-3.
MW-6B	26-30, if	This optional well would target the thin middle WBZ, and assess MTBE (760 ug/L)

(Optional)	required	detected at 26-30 ft bgs in DPB-S. To control costs we propose relying on shallower and deeper wells, but will install a well here if required by ACEH.
MW-6C	35-45	Targets deep WBZ. Assessment near 42,000 ug/L MTBE detected at 35-39 ft bgs in DPB-S. Well will be screened shallower than 45 feet bgs if encounter thick clay below 39 ft bgs.
MW-7	--	Well cluster MW-7 to provide assessment south of source area, as requested by ACEH. Located between DPB-3 and DPB-6 where WBZ's were encountered at similar depths.
MW-7A	13-20	Targets shallow WBZ south of 8,900 ug/L MTBE detected at 16-20 ft bgs in DPB-3. South of former leak area and near depth where free product was historically detected in MW-3.
MW-7B (Optional)	26-30, if required	Similar to optional middle WBZ well MW-6B. Would southerly assessment of 4,200 ug/L MTBE detected at 27-30 ft bgs in DPB-3. To control costs we propose relying on shallower and deeper wells, but will install a well here if required by ACEH.
MW-7C	35-45	Targets deep WBZ. Assessment south of 7,700 ug/L MTBE detected at 39-43 ft bgs in DPB-3.
MW-8A	5-15	Located about 10 feet downgradient of the USTs. Also near WGR boring B5 where 0.9 mg/kg benzene was detected about 10 ft bgs. Targets shallow WBZ, if present at this portion of Site.
MW-9A	5-15	Located about 15 feet upgradient of the USTs. Replacement well for EA-2. Targets shallow WBZ, if present at this portion of Site.
MW-10A	13-20	Targets shallow WBZ and provides assessment at southern property boundary. MTBE detected at 5.9 ug/L in shallow WBZ at 15-19 in nearby DPB-6. Corresponds to low surface elevation at the Site, and between source area and San Ramon Creek.
MW-11C	35-45	Targets deep WBZ and assessment near 100 ug/L MTBE detected at 35-39 ft bgs in DPB-6. Located between source area and San Ramon Creek, and provides third wells in deep WBZ to estimate groundwater flow direction.

Task 1 - Pre-Field Activities

Prior to initiating field activities, Pangea will conduct the following tasks:

- Obtain drilling permits from Zone 7 Water Agency and an encroachment permit from the City of Dublin Public Works;
- Obtaining access and necessary permits to tile probe in the flood control channel;
- Pre-mark the boring locations with white paint and notify Underground Service Alert (USA) of the drilling and sampling activities at least 72 hours before work begins, and conduct private line locating as merited; and
- Prepare a site-specific health and safety plan to educate personnel and minimize their exposure to potential hazards related to site activities.

Task 2 – Soil Boring, Well Installation, Development, Sampling and Surveying

Soil boring and monitoring wells will be installed at locations shown on Figure 10. Soil and groundwater will be sampled at each location. The soil borings and monitoring will be installed and sampled in accordance with Pangea's standard field procedures presented in Appendix D. Soil samples will be classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). Pangea will collect soil from five foot intervals at each investigation location to 15 ft bgs, which corresponds to the unsaturated zone and capillary fringe. For borings SB-1 and SB-2 (and boring SB-3, if needed), grab groundwater samples will be collected from the shallow water bearing zone using temporary PVC casing.

The monitoring wells will be constructed of 2-inch Schedule 40 polyvinyl chloride (PVC) casing, 0.02-inch factory slotted PVC screen, #3 sand, with a bentonite seal and then grout to the surface. The depth and thickness of the screen interval may be adjusted based to avoid screening through clayey material into deeper sand/gravel material. Wells will be protected by traffic-rated well vaults.

The monitoring wells will be developed approximately 72 hours after installation is complete. The well will be intermittently surged with a surge block, and groundwater will be evacuated using a bailer, hand pump, peristaltic pump or submersible pump until the groundwater is visibly clear and/or has a low turbidity. During purging, measurements of temperature, pH, conductivity, and turbidity will be recorded on monitoring well purge and development forms. Groundwater water samples will be collected from the new wells during quarterly monitoring of other Site wells.

Upon completing the drilling activities, Pangea will retain the services of a licensed surveyor to survey the coordinates and elevations of the existing and new monitoring wells in accordance with EDF requirements.

All soil and groundwater samples collected during this investigation will be analyzed for TPHg by United States Environmental Protection Agency (EPA) modified Method 8015C, and for benzene, toluene, ethylene, xylenes (BTEX), and methyl tert butyl ethane (MTBE) by EPA Method 8021B. If detected, MTBE will be confirmed by EPA Method 8260B. To control project costs, Pangea does not propose sample analysis for other oxygenates. All samples will be analyzed by a laboratory certified by the California Department of Health Services.

Task 3 – Waste Management and Disposal

Soil cuttings, monitoring well purge water, and other investigation-derived waste will be stored onsite in Department of Transportation (DOT)-approved 55-gallon drums. The drums and their contents will be held on-site pending laboratory analytical results. Upon receipt of the analytical reports, the waste will be transported to an appropriate disposal/recycling facility.

Task 4 – Report Preparation

Upon completion of the proposed activities, Pangea will prepare a technical report. The report will discuss field activities, present tabulated analytical data, and offer conclusions and recommendations. If requested, the report will present revised geologic cross sections illustrating the contaminant distribution and additional lithological information. The report will also discuss procedures and results of interim remediation.

9.0 INTERIM REMEDIAL ACTION PLAN

Pangea proposes this interim remedial action to provide cost effective removal of source area material and provide additional information about subsurface conditions. Given the relatively limited extent of contaminants and the presence of submerged free product likely trapped within the shallow water bearing zone, Pangea proposes to conduct vacuum extraction with vacuum trucks from proposed well MW-3A. If elevated dissolved concentrations are present in proposed wells MW-6A and MW-7A, vacuum extraction will also be conducted in those wells. The vacuum extraction would be conducted after initial groundwater monitoring provides baseline monitoring data for the new Site wells.

A vacuum truck would extract as much impacted groundwater as possible over a total of 4 to 8 hours, and transport the water offsite for disposal. If the first extraction event successfully removes impacted groundwater and free product, Pangea will coordinate three additional extraction events (approximately once per week).

During the first vacuum truck removal event, Pangea will also measure groundwater drawdown and recovery in the extraction well and nearby wells. Groundwater yield and drawdown information will provide information to facilitate evaluation of other remedial alternatives. Groundwater monitoring after the extraction events will evaluate the effect of interim remediation on groundwater quality.

Pangea recommending delaying any additional remediation testing (e.g., dual phase extraction testing, aquifer testing, or ozone sparge testing) until completion of the proposed investigation and interim remediation. Procedures and results of the interim remediation will be included in the soil water and investigation report.

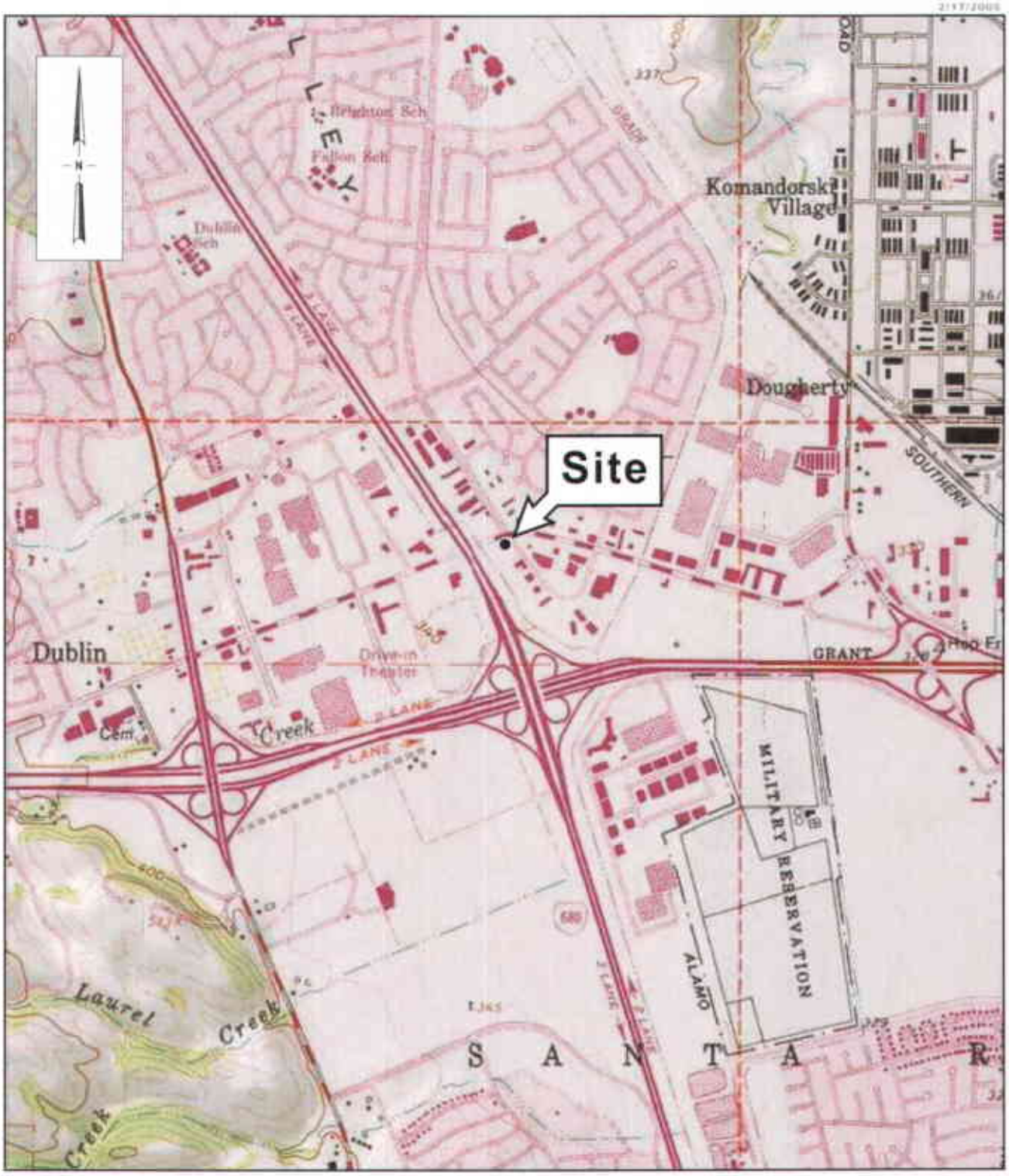


Figure
1

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

Pangea
ENVIRONMENTAL SERVICES, INC.

Site Location Map

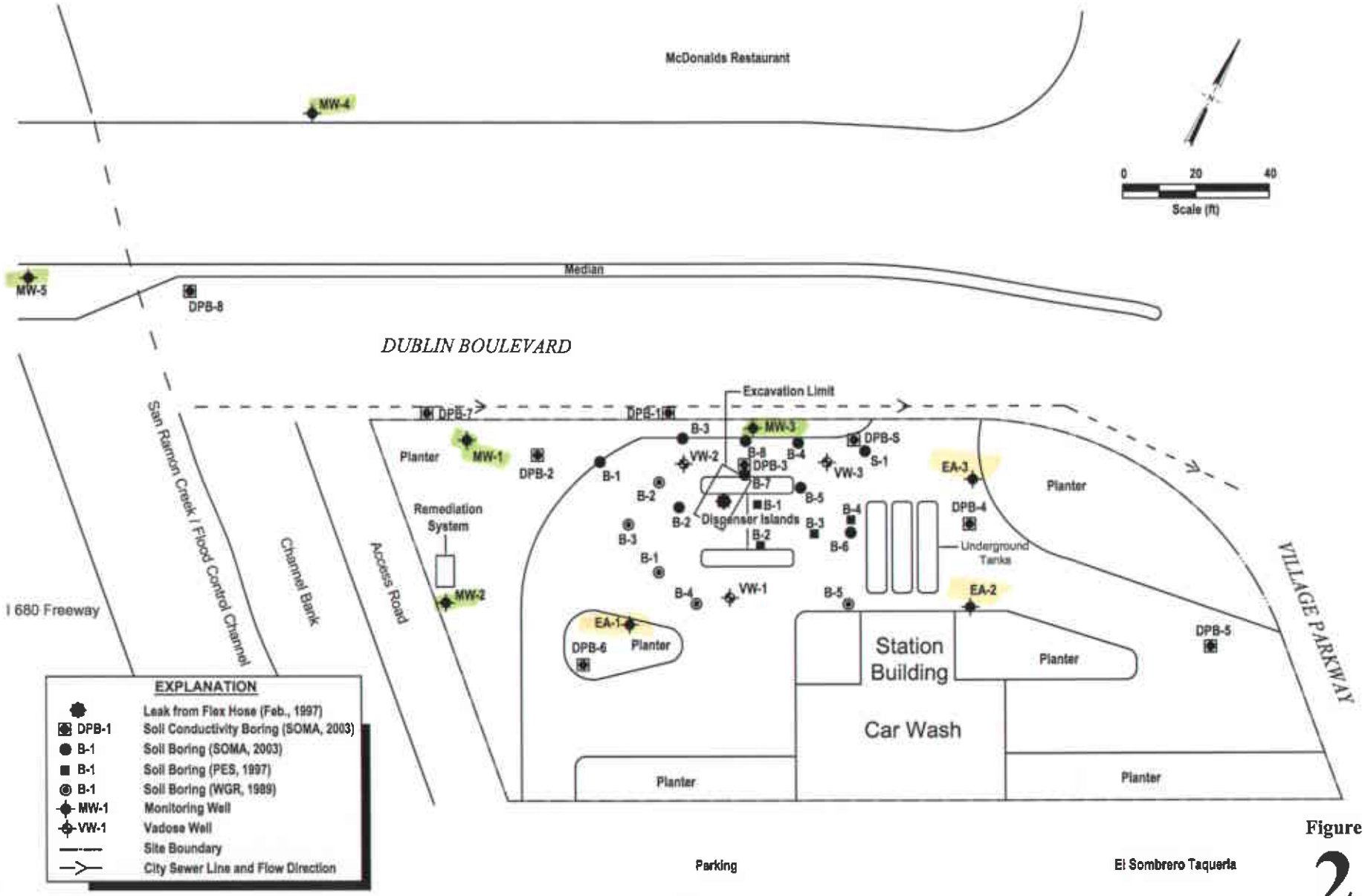
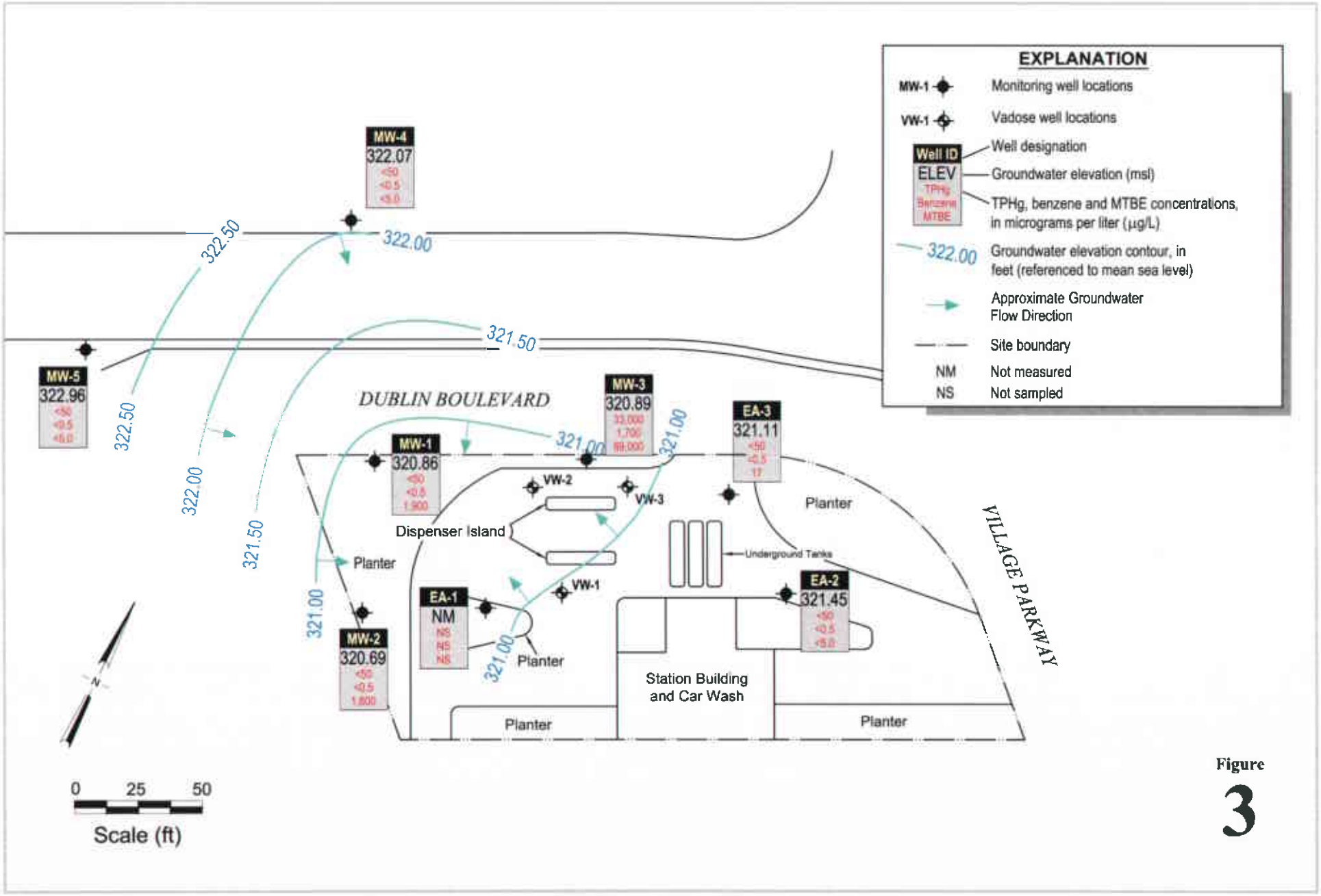


Figure 2

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

Pangea
Environmental Services, Inc.

Site Map



Figure

3

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

Pangea
Environmental Services, Inc.

Groundwater Elevation and Hydrocarbon Concentration Map
December 15, 2004

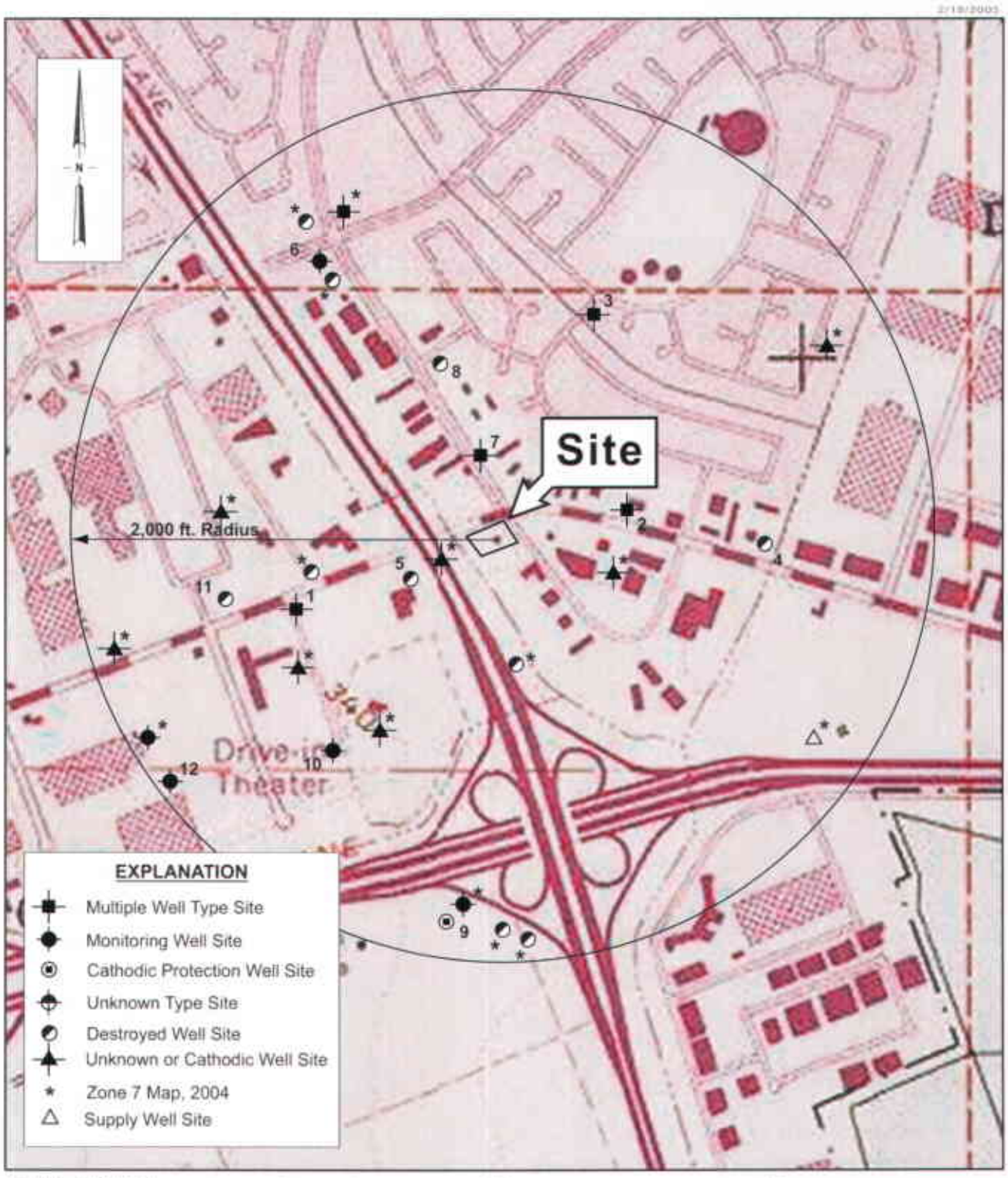


Figure
4

Dublin Auto Wash

7240 Dublin Boulevard
Dublin, California

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Environmental Services, Inc.

Vicinity Well Location Map

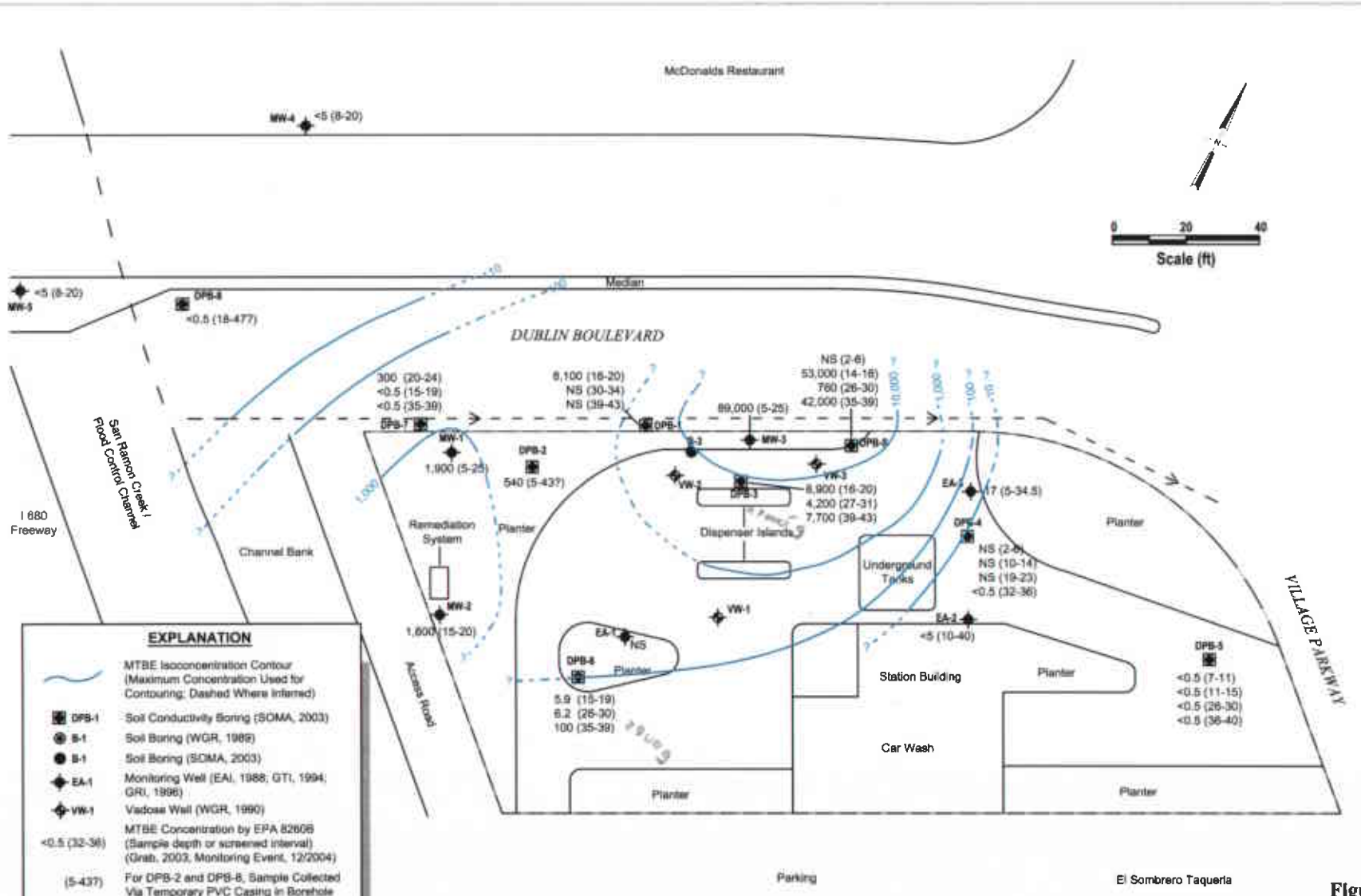

Figure 5

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

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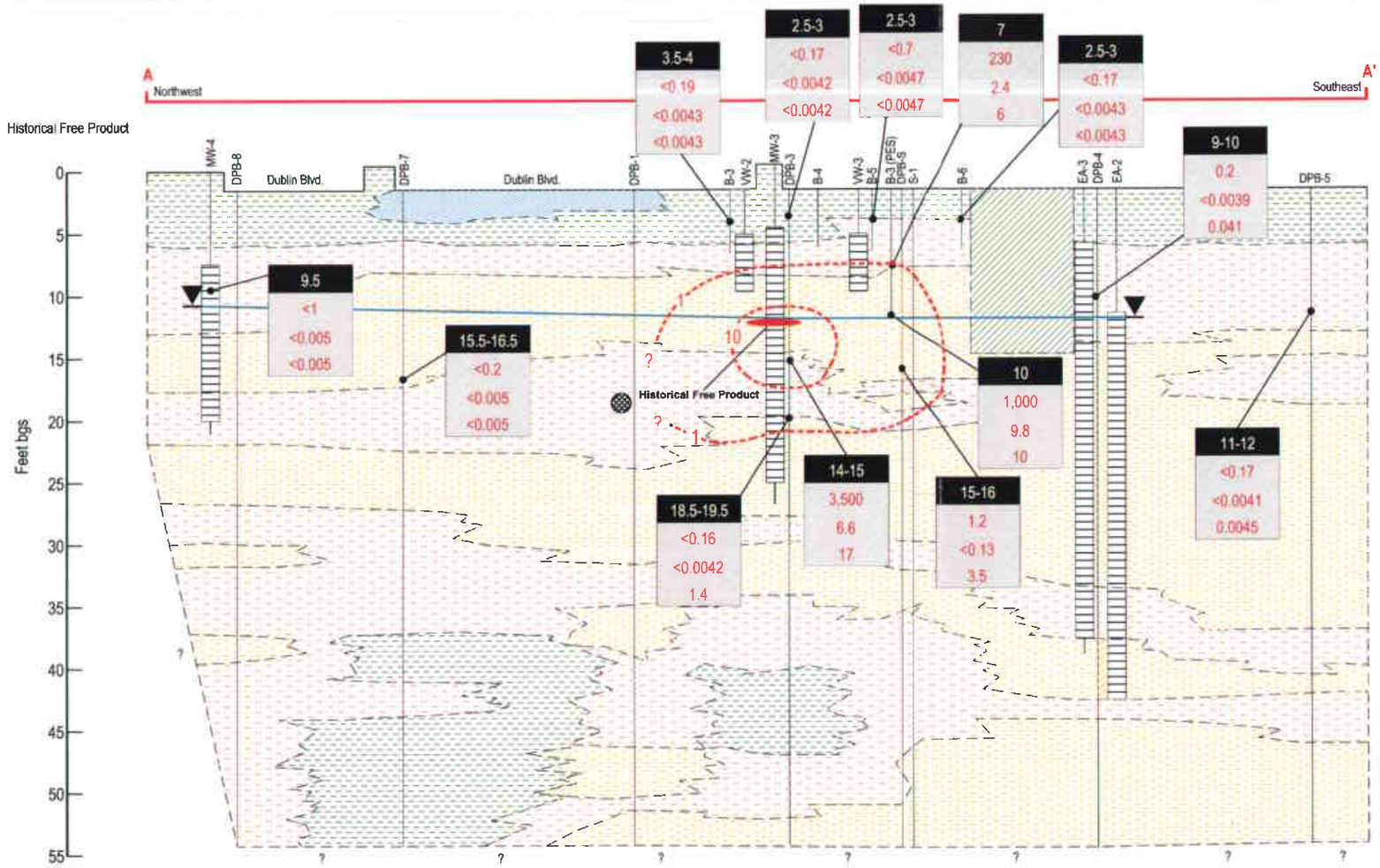
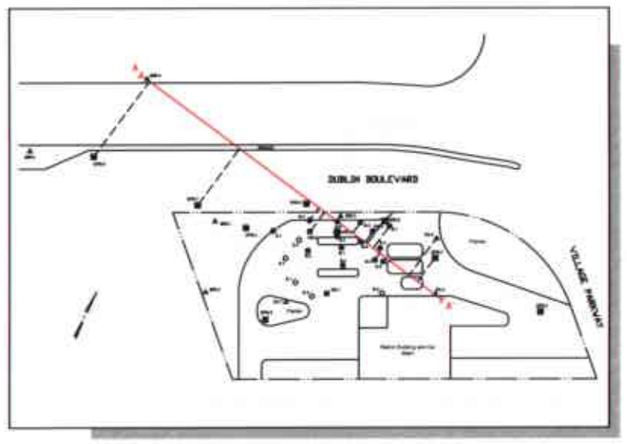
Maximum Lateral Extent of MTBE in Groundwater

Figure 6

Soil Analytical Data and Cross Section A-A'





EXPLANATION

- UST Area
- Moderate to High Permeability [SANDS (SW, SP), GRAVELS (GW, GP)]
- Low to Moderate Permeability [Clayey to Silty SANDS (SC, SM), Clayey to Silty Gravels (GC, GM)]
- Low Permeability [Sandy SILTS (ML, MH), Sandy CLAYS (CL, CH)]
- Very Low Permeability [SILTS (ML, MH), CLAYS (CL, CH), Silty CLAY / Clayey SILT (ML, CL)]
- Dublin Sanitary Sewer (18" Diameter)
- Well Casing
- Screened Interval
- Soil Boring Trace
- Water Table (12/15/2004)
- Static Water Depth (ft msl)
- 15 — Sample Depth/DTW
- 37 — TPHg (mg/kg)
- 0.21 — Benzene (mg/kg)
- NA — MTBE (mg/kg)
- MTBE Isoconcentration Contour (Dashed where inferred, queried where uncertain)
- Sample Point

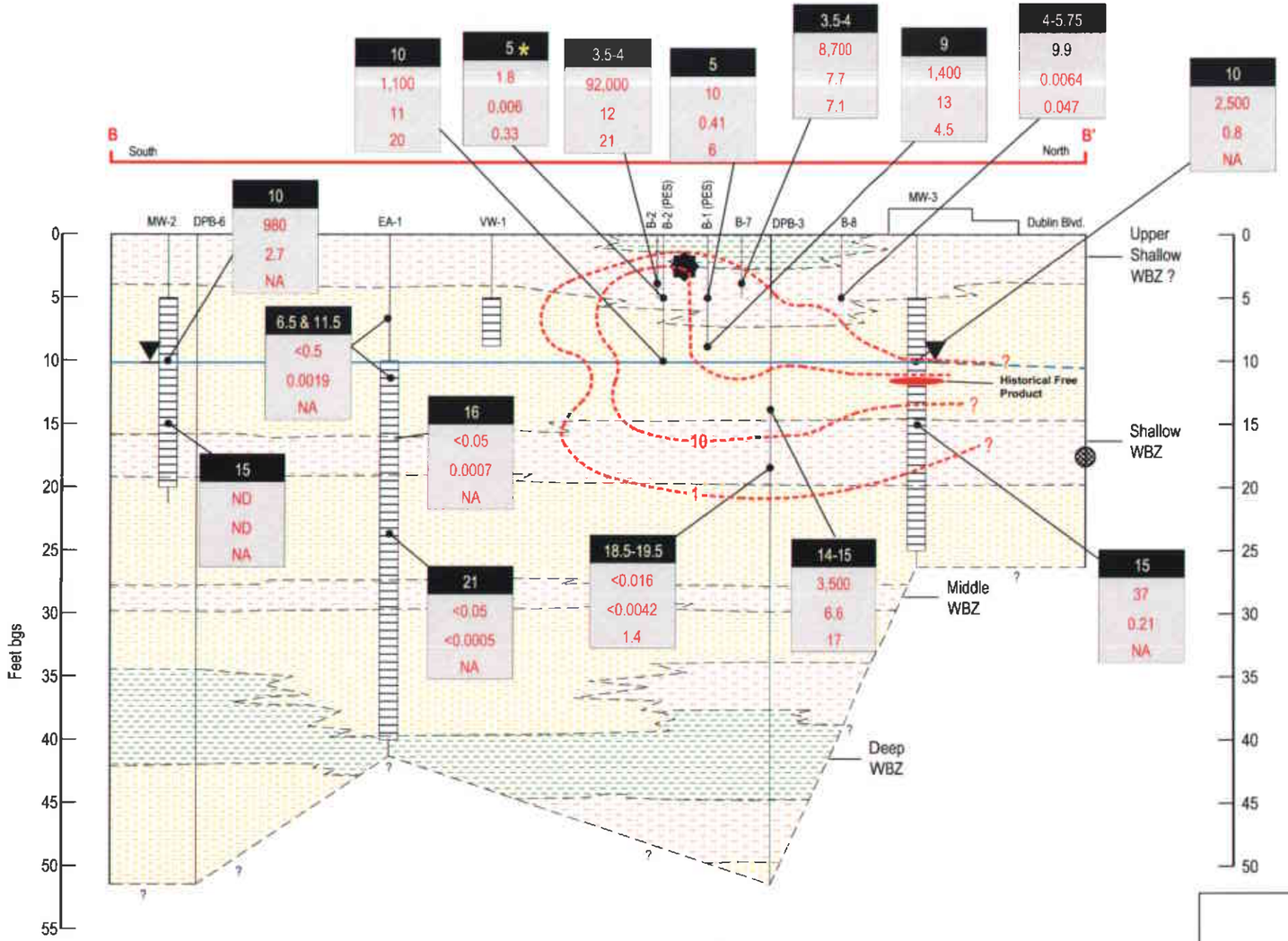
DTW = Depth to water in monitoring well
msl = Mean sea level

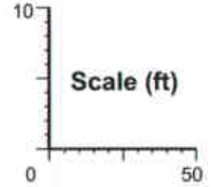
Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

Pangea Environmental Services, Inc.

Figure 7

Soil Analytical Data and Cross Section B-B'





EXPLANATION

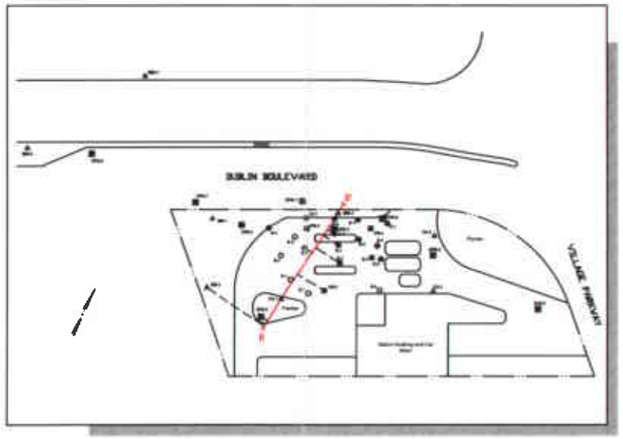
- Low to Moderate Permeability [Clayey to Silty SANDS (SC, SM), Clayey to Silty Gravels (GC, GM)]
- Lower Permeability [Sandy SILTS (ML, MH), Sandy CLAYS (CL, CH)]
- Very Low Permeability [SILTS (ML, MH), CLAYS (CL, CH), Silty CLAY / Clayey SILT (ML, CL)]

Notes:
ND = Not detected
NA = Not analyzed
DTW = Depth to water in monitoring well

- Dublin Sanitary Sewer (18" Diameter)
- Well Casing
- Screened Interval
- Soil Boring Trace
- Water Table (12/15/2004)
- Static Water Depth (ft msl)

15	Sample Depth
37	TPHg (mg/kg)
0.21	Benzene (mg/kg)
NA	MTBE (mg/kg)

- MTBE Isoconcentration Contour (Dashed where inferred, queried where uncertain)
- Sample Point
- Flex Hose Leak Location (Feb., 1997)
- * Not used for contouring



Dublin Auto Wash
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Dublin, California

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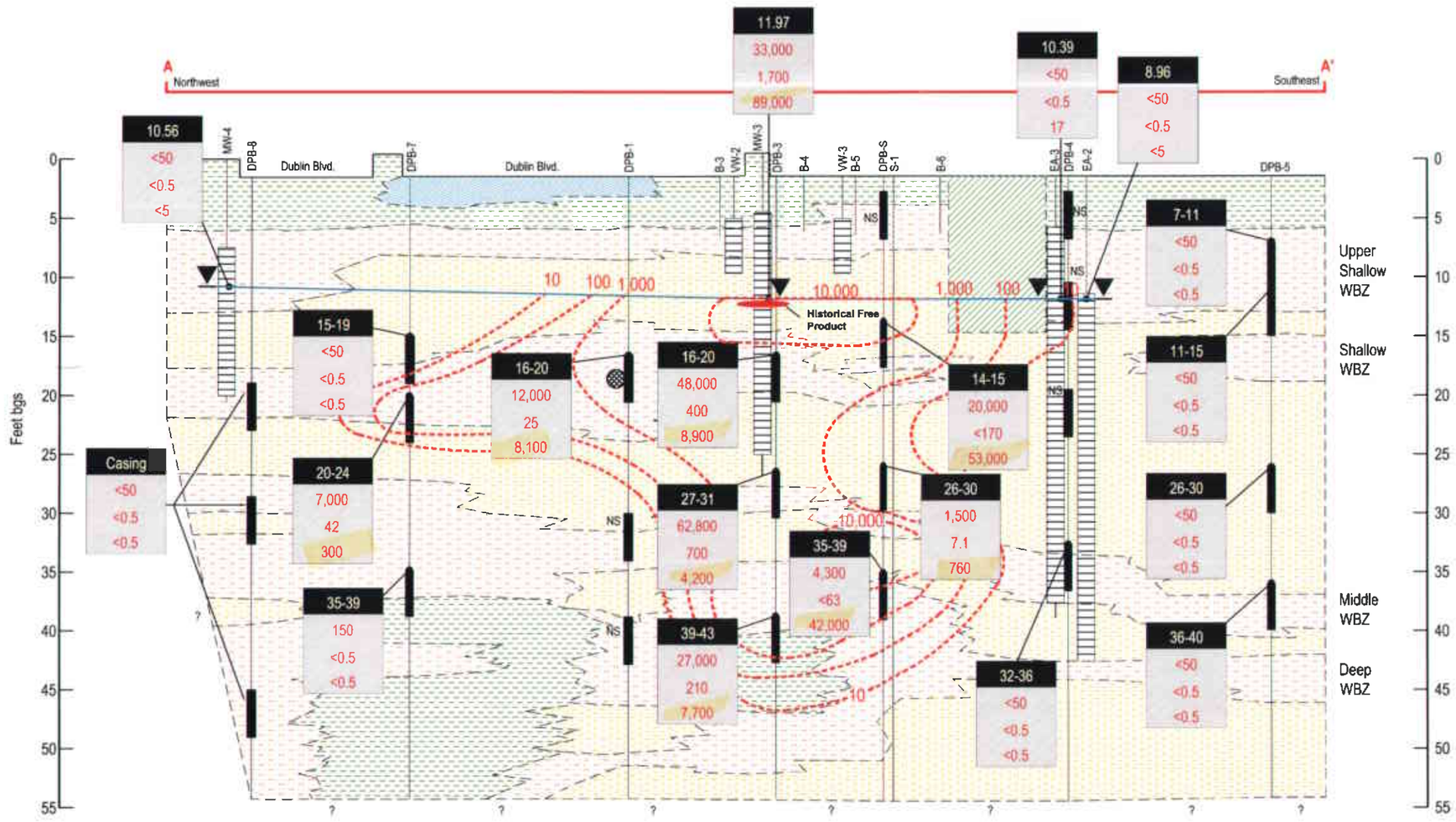
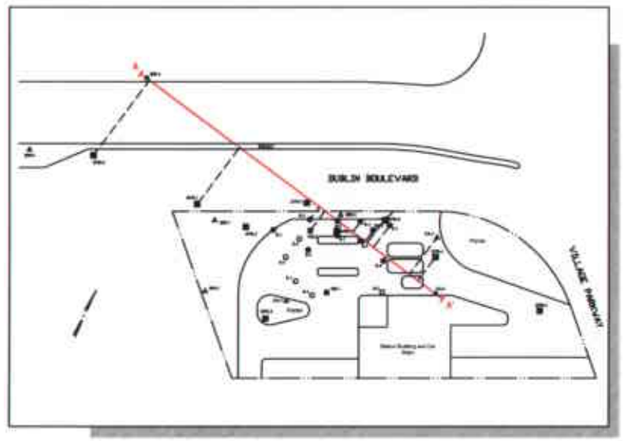
Groundwater Analytical Data and Cross Section A-A'

Figure 8





EXPLANATION

- UST Area
- Moderate to High Permeability [SANDS (SW, SP), GRAVELS (GW, GP)]
- Low to Moderate Permeability [Clayey to Silty SANDS (SC, SM), Clayey to Silty Gravels (GC, GM)]
- Low Permeability [Sandy SILTS (ML, MH), Sandy CLAYS (CL, CH)]
- Very Low Permeability [SILTS (ML, MH), CLAYS (CL, CH), Silty CLAY / Clayey SILT (ML, CL)]
- Dublin Sanitary Sewer (18" Diameter)
- Well Casing
- Screened Interval
- Soil Boring Trace
- Sample Point
- 32-36 / <50 / <0.5 / <0.5 — Sample Depth/DTW; TPHg (µg/L); Benzene (µg/L); MTBE (µg/L)
- MTBE Isoconcentration Contour (Dashed where inferred; queried where uncertain)
- Water Table (12/15/2004)
- Static Water Depth (12/15/2004)

NS = Not sampled; no groundwater in potential water bearing zone
DTW = Depth to water

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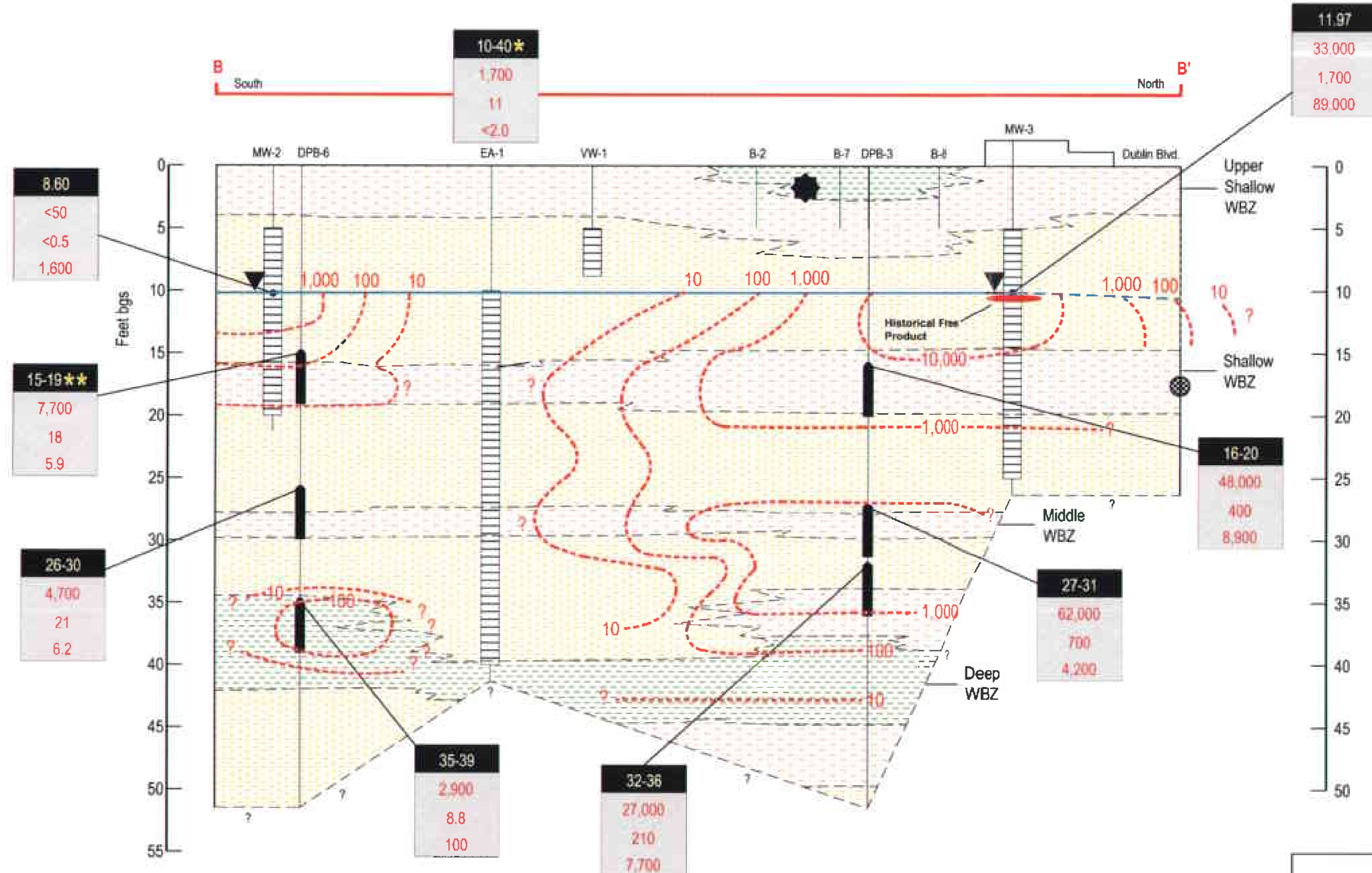
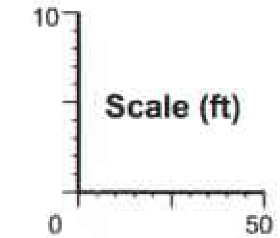
Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California





EXPLANATION

Low to Moderate Permeability [Clayey to Silty SANDS (SC, SM), Clayey to Silty Gravels (GC, GM)]	Dublin Sanitary Sewer (18" Diameter)
Lower Permeability [Sandy SILTS (ML, MH), Sandy CLAYS (CL, CH)]	Well Casing
Very Low Permeability [SILTS (ML, MH), CLAYS (CL, CH), Silty CLAY / Clayey SILT (ML, CL)]	Screened Interval
	Soil Boring Trace
	Sample Point

32-36 — Sample Depth/DTW
50 — TPHg (µg/L)
<0.5 — Benzene (µg/L)
<0.5 — MTBE (µg/L)

MTBE Isoconcentration Contour (Dashed where inferred; queried where uncertain)

Water Table (12/15/2004)

Static Water Depth (12/15/2004)

Flex Hose Leak Location (Feb., 1997)

DTW = Depth to water
NS = Not sampled

★ = EA-1 inaccessible 12/15/2004. Results from prior monitoring event. Decreasing concentration trends.

★★ = Not used for contouring. MW-2 is projected and approximately 40 feet from DPB-6

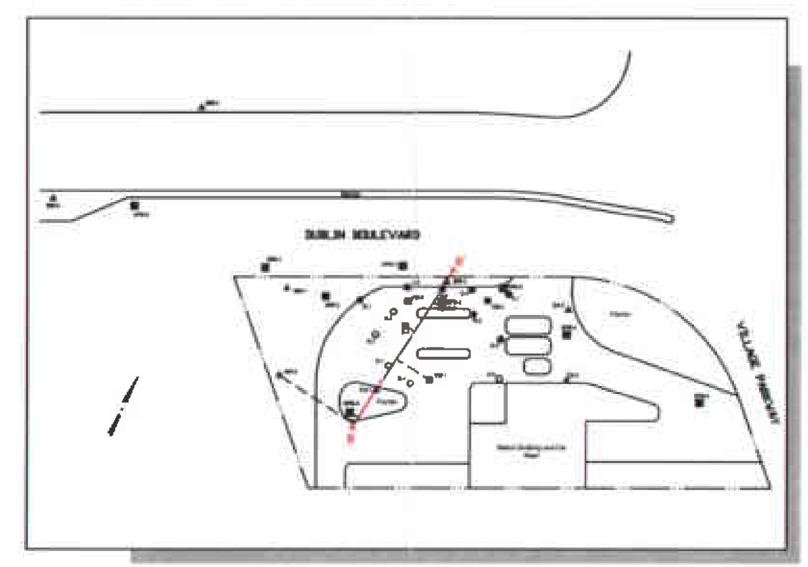


Figure 9

Groundwater Analytical Data and Cross Section B-B'

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Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

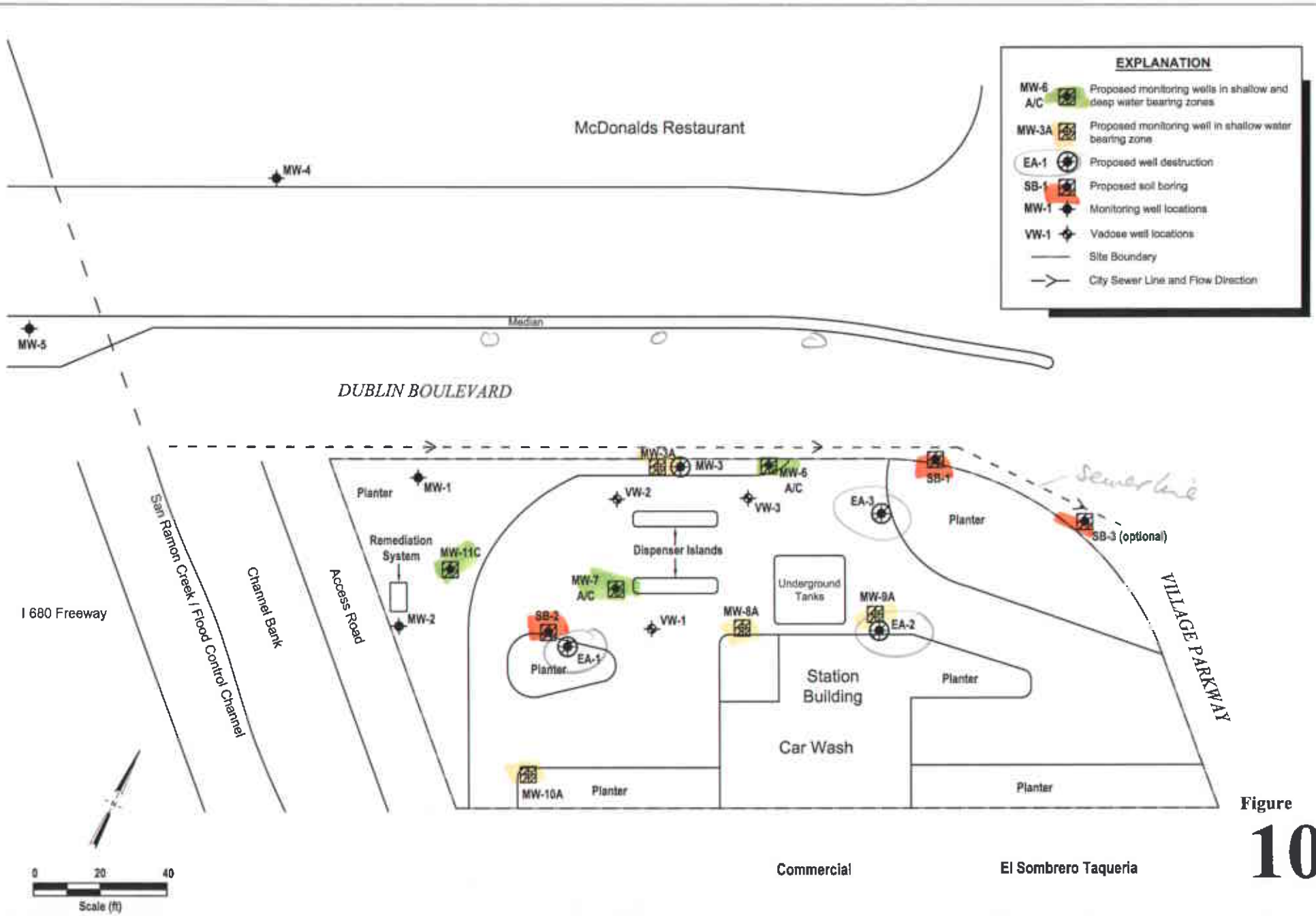

Figure 10

Dublin Auto Wash
7240 Dublin Boulevard
Dublin, California

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Proposed Boring and Well Locations

Table 1. Soil Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Boring/Well ID	Consultant	Date Sampled	Sample Depth (feet)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	TAME	TBA	Ethanol	Notes
				←				mg/kg				→	
Comm. ESL - Indoor Air Impacts				Use soil gas	0.5	420	13	100	5.6	NE	Use soil gas	NE	
Comm. ESL - Urban Ecotoxicity				--	25	--	--	--	--	NE	--	NE	
Comm. ESL - Ceiling Value				1,000	1,000	520	230	210	500	NE	500	NE	
Comm. ESL - Direct Exposure				5,800	0.38	440	19	180	70	NE	950	NE	
Comm. ESL - GW Protection (Leaching)				100	0.044	2.9	3.3	1.5	0.023	NE	0.073	NE	
Final ESL - Commercial, Drinking Water Resource				**100**	**0.044**	**2.9**	**3.3**	**1.5**	**0.023**	NE	**0.073**	NE	
EA-1	EA	10/17/1988	6.5 & 11.5	<0.05	0.0019	0.0097	<0.0005	0.0018	--	--	--	--	
			16	<0.05	0.0007	0.0015	<0.0005	0.0008	--	--	--	--	
			21	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	
EA-2	EA	10/20/1988	6	0.14	0.02	0.0013	0.0037	0.0018	--	--	--	--	
			11	0.11	0.0093	0.0034	0.0013	<0.0005	--	--	--	--	
			16	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	
			21	0.14	0.02	0.0059	0.0045	0.0043	--	--	--	--	
EA-3	EA	10/21/1988	6	0.086	0.0054	0.0013	0.0049	0.0024	--	--	--	--	
			11	0.27	0.032	0.0043	0.0067	<0.0005	--	--	--	--	
			16	<0.05	0.0016	0.0037	<0.0005	<0.0005	--	--	--	--	
			21-36	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	
B-1	WGR	3/17/1989	3-4	<0.5	**0.24**	<0.5	<0.5	<0.5	--	--	--	--	
			4.5-5.5	<0.5	**0.43**	<0.5	<0.5	<0.5	--	--	--	--	
			6.5-7.5	<0.5	**0.13**	<0.5	<0.5	<0.5	--	--	--	--	
			9.5-10.5	<0.5	**0.09**	<0.5	<0.5	<0.5	--	--	--	--	
			14.5-15.5	1.8	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
B-2	WGR	3/17/1989	3.5-4.5	NA	NA	NA	NA	NA	--	--	--	--	
			5.5-6.5	<0.5	**0.06**	<0.5	<0.5	<0.5	--	--	--	--	
			9.5-10.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
			14.5-15.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
B-3	WGR	3/17/1989	5.5-6.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
		3/18/1989	9.5-10.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
B-4	WGR	3/18/1989	3-4	<0.5	**0.06**	<0.5	<0.5	<0.5	--	--	--	--	
			5.5-6.5	<0.5	**0.07**	<0.5	<0.5	<0.5	--	--	--	--	
			9.5-10.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
B-5	WGR	3/18/1989	3-4	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
			5.5-6.5	<0.5	**0.06**	0.2	<0.5	0.1	--	--	--	--	
			9.5-10.5	<0.5	**0.9**	0.4	0.08	0.09	--	--	--	--	

Table 1. Soil Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Boring/Well ID	Consultant	Date Sampled	Sample Depth (feet)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	TAME	TBA	Ethanol	Notes
				←				mg/kg				→	
Comm. ESL - Indoor Air Impacts				Use soil gas	0.5	420	13	100	5.6	NE	Use soil gas	NE	
Comm. ESL - Urban Ecotoxicity				--	25	--	--	--	--	NE	--	NE	
Comm. ESL - Ceiling Value				1,000	1,000	520	230	210	500	NE	500	NE	
Comm. ESL - Direct Exposure				5,800	0.38	440	19	180	70	NE	950	NE	
Comm. ESL - GW Protection (Leaching)				100	0.044	2.9	3.3	1.5	0.023	NE	0.073	NE	
Final ESL - Commercial, Drinking Water Resource				**100**	**0.044**	**2.9**	**3.3**	**1.5**	**0.023**	NE	**0.073**	NE	
MW-1	GTI	9/13/1994	10	ND	ND	0.0099	ND	ND	--	--	--	--	
			15	23	**0.14**	0.47	0.37	**1.5**	--	--	--	--	
MW-2	GTI	9/13/1994	10	**980**	**2.7**	**19**	**15**	**78**	--	--	--	--	
			15	ND	ND	ND	ND	ND	--	--	--	--	
MW-3	GTI	9/13/1994	10	**2,500**	**0.8**	**4.8**	**5.1**	**120**	--	--	--	--	
			15	37	**0.21**	0.48	0.32	**1.5**	--	--	--	--	
MW-4	GRI	2/22/1996	9.5	<1	<0.005	<0.005	<0.005	<0.005	<0.025	--	--	--	
MW-5	GRI	2/22/1996	9.5	<1	<0.005	<0.005	<0.005	<0.005	<0.025	--	--	--	
B-1	PES	7/14/1997	5	10	**0.41**	0.027	0.16	0.01	**6**	--	--	--	hand augered
			9	**1,400**	**13**	**45**	**26**	**130**	**4.5**	--	--	--	
B-2	PES	7/14/1997	5	1.8	0.006	0.007	0.013	0.033	**0.33**	--	--	--	hand augered
			10	**1,100**	**11**	**35**	**18**	**91**	**20**	--	--	--	
B-3	PES	7/15/1997	7	230	**2.4**	2	**3.8**	**19**	**6**	--	--	--	hand augered
			10	**1,000**	**9.8**	**32**	17	**84**	**10**	--	--	--	
B-4	PES	7/15/1997	7	33	**0.11**	0.034	0.39	0.87	**1.5**	--	--	--	hand augered
			10	**1,900**	**2.2**	**14**	**19**	**170**	<4.5	--	--	--	
B-1	SOMA	4/23/2003	3.5-4	<0.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.1	<1	hand augered
B-2	SOMA	4/23/2003	3.5-4	**92,000**	**12**	**560**	**240**	**1,550**	**21**	20	<100	<1,000	hand augered
B-3	SOMA	4/23/2003	3.5-4	<0.19	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	**0.086**	0.86	hand augered
B-4	SOMA	4/23/2003	2.5-3	<0.17	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	**0.083**	0.83	hand augered
B-5	SOMA	4/23/2003	3.5-4	<0.19	<0.0047	<0.0047	<0.0047	0.0079	<0.0047	<0.0047	**0.094**	0.94	hand augered
B-6	SOMA	4/23/2003	2.5-3	<0.17	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	**0.086**	0.86	hand augered
B-7	SOMA	4/23/2003	3.5-4	**8,700**	7.7	**270**	**170**	**920**	**7.1**	<10	<140	<1,400	hand augered
B-8	SOMA	4/23/2003	4-5.75	9.9	0.0064	<0.0044	0.033	0.2	**0.047**	0.012	**0.088**	0.88	hand augered
DPB-3	SOMA	4/17/2003	14-15	**3,500**	**6.6**	**120**	**43**	**251**	17	--	--	--	
			18.5-19.5	<0.16	<0.0042	<0.0042	<0.0042	<0.0042	**1.4**	--	--	--	
DPB-4	SOMA	4/17/2003	9-10	0.2	<0.0039	<0.0039	<0.0039	<0.0039	**0.041**	--	--	--	
DPB-5	SOMA	4/17/2003	11-12	<0.17	<0.0041	<0.0041	<0.0041	<0.0041	**0.0045**	--	--	--	
DPB-6	SOMA	4/18/2003	18-18.75	<0.15	<0.004	<0.004	<0.004	<0.004	<0.004	--	--	--	
DPB-7	SOMA	4/18/2003	15.5-16.5	<0.2	<0.005	<0.005	<0.005	<0.005	<0.005	--	--	--	
DPB-S	SOMA	4/18/2003	15-16	1.2	<0.13	<0.13	<0.13	0.36	**3.5**	--	--	--	

Table 1. Soil Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Boring/Well ID	Consultant	Date Sampled	Sample Depth (feet)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	TAME	TBA	Ethanol	Notes
				←				mg/kg				→	
Comm. ESL - Indoor Air Impacts				Use soil gas	0.5	420	13	100	5.6	NE	Use soil gas	NE	
Comm. ESL - Urban Ecotoxicity				--	25	--	--	--	--	NE	--	NE	
Comm. ESL - Ceiling Value				1,000	1,000	520	230	210	500	NE	500	NE	
Comm. ESL - Direct Exposure				5,800	0.38	440	19	180	70	NE	950	NE	
Comm. ESL - GW Protection (Leaching)				100	0.044	2.9	3.3	1.5	0.023	NE	0.073	NE	
Final ESL - Commercial, Drinking Water Resource				**100**	**0.044**	**2.9**	**3.3**	**1.5**	**0.023**	NE	**0.073**	NE	

ABBREVIATIONS AND NOTES:

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M.
MTBE = Methyl tert-butyl ether by EPA Method 8020/8021. (Concentrations in parentheses are by EPA Method 8260B)
TAME = Tert-amyl methyl ether by EPA Method 8020/8021. (Concentrations in parentheses are by EPA Method 8260B)
TBA = Tert-butyl alcohol by EPA Method 8020/8021. (Concentrations in parentheses are by EPA Method 8260B)
mg/kg = milligram per kilogram
EA = EA Engineering Science and Technology Inc.
WGR = Western Geologic Resources
GTI = Groundwater Technology
GRI = Getler-Ryan Inc.
PES = Parker Environmental Services
SOMA = SOMA Environmental Engineering Inc.
ESL = Environmental Screening Levels from Table A-2, established by the SFBRWQCB, Interim Final -July 2003 and amended February 2004.
-- = Not analyzed
< = Not detected at or above indicated detection limit
Bold = Analytical results at or above the final ESL

Table 2. Groundwater Monitoring Data and Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Well ID / *TOC Elev (ft)*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft, msl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
				←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
Groundwater Monitoring Well Analytical Data												
EA-1	10/17/88	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
331.21	10/24/88	10.64	322.77	--	--	--	--	--	--	--	--	
	11/02/88	10.69	322.72	--	--	--	--	--	--	--	--	
	12/20/88	10.51	322.9	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	03/28/89	9.87	323.54	<250	<0.5	<0.5	<0.5	<0.5	--	--	--	
	08/02/89	10.34	323.07	<50	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	
	11/06/89	10.65	322.76	<500	<3.0	<5.0	<5.0	<5.0	--	<5.0	--	
	01/25/90	10.6	322.81	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	
	04/23/90	10.58	322.83	71	**2**	5	**3**	8	--	<0.5	--	
	08/01/90	10.88	322.53	**300**	**86**	21	10	**33**	--	--	--	
	10/24/91	11.12	322.29	**280**	**69**	13	11	16	--	--	--	
	01/31/91	11.16	322.25	**460**	**160**	11	17	**17**	--	--	--	
	08/21/91	10.8	322.61	**2,400**	**400**	**220**	**44**	**120**	--	--	--	
	08/21/91	10.8	322.61	**2,300**	**390**	**210**	**42**	**120**	--	--	--	Duplicate
	10/07/91	10.79	322.62	--	--	--	--	--	--	--	--	
	01/28/92	10.79	322.62	**3,600**	**320**	**360**	**110**	**310**	--	--	--	
	01/28/92	10.79	322.62	**3,000**	**290**	**320**	**99**	**270**	--	--	--	Duplicate
	06/05/92	10.84	322.57	**1,700**	**290**	**89**	**61**	**130**	--	--	--	
	09/30/92	11.06	322.35	**2,100**	**160**	**260**	**80**	**350**	--	--	--	
	12/30/92	10.15	323.26	**3,200**	**240**	**180**	**110**	**310**	--	--	--	
	03/29/93	9.42	323.99	**23,000**	**700**	**3,000**	**610**	**3,000**	--	--	--	
	06/25/93	10.42	322.99	2.7	**130**	**590**	**130**	**590**	--	--	--	
	09/16/93	10.66	322.75	3.9	**410**	**830**	**220**	**890**	--	--	--	
	12/20/93	10.6	322.81	27	**1,200**	**2,600**	**1,100**	**4,200**	--	--	--	
	03/29/94	10.41	323	6.3	**250**	**700**	**200**	**830**	--	--	--	
	06/22/94	10.4	323.01	4.1	**71**	**240**	**110**	**460**	<30	<10	--	
	09/20/94	10.37	323.04	**8,500**	**1,200**	**1,300**	**370**	**1,400**	--	--	--	
	10/04/94	10.34	323.07	**7,600**	**97**	**360**	**150**	**620**	--	--	--	
	11/30/94	9.46	323.95	**8,800**	**150**	**490**	**240**	**900**	--	--	--	
	03/02/95	9.96	321.07	6.9	**82**	**570**	**210**	**970**	--	--	--	
	06/15/95	9.8	321.23	4.8	**44**	**210**	**160**	**620**	<25	--	--	
	09/26/95	10.48	320.55	**13,000**	**150**	**620**	**370**	**1,400**	<125	--	--	
	12/28/95	10.14	320.89	**11,000**	**74**	**250**	**200**	**750**	**79**	--	--	
	02/29/96	8.74	322.29	**17,000**	**59**	**480**	**350**	**1,600**	<125	--	--	
	06/27/96	10.21	320.82	**3,600**	**22**	**130**	**130**	**49**	**46**	--	--	
	09/12/96	10.49	320.72	**2,000**	**20**	<10	18	**44**	<50	--	--	
	03/31/97	10.19	321.02	**17,000**	**87**	**230**	**330**	**1,200**	**310**	--	--	
	12/23/98	9.83	321.38	**290**	**20**	0.88	1.1	16	<2.5	--	--	
	03/25/99	9.13	322.08	**500**	**21**	<0.5	21	<0.5	**18**	--	--	
	02/03/00	9.05	322.16	**2,310**	**35.7**	**90**	21.8	**147**	1,280 (365)	--	--	
	01/23/01	--	--	--	--	--	--	--	--	--	--	Inaccessible
	05/01/01	9.82	321.39	**7,710**	**19.9**	12.6	22.3	**64**	**31.8**	--	--	
	08/28/01	10.04	321.17	**4,800**	**69**	<25	**50**	**140**	**160**	--	--	
	11/27/01	10.05	321.16	**5,300**	**25**	<5.0	**30**	**120**	<20	--	--	
	02/28/02	--	--	--	--	--	--	--	--	--	--	Inaccessible
	05/22/02	9.05	322.16	**110**	<1.0	<0.50	1	<1.5	<2.5	--	--	
	08/20/02	9.21	322	**410**	**2.6**	<0.50	8.5	**29**	<5.0	--	--	
	11/11/02	9.01	322.2	**3,800**	<0.50	1.3	17	**47**	<5.0	--	--	
	05/08/03	8.23	322.98	**1,700**	**11**	0.97	**63**	**161**	<2.0	--	--	
	12/15/04	--	--	--	--	--	--	--	--	--	--	Inaccessible

Table 2. Groundwater Monitoring Data and Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft, msl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
				←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
EA-2	10/17/88	--	--	<50	<0.5	<0.5	<0.5	1.2	--	--	--	
330.41	10/24/88	9.7	322.89	--	--	--	--	--	--	--	--	
	11/02/88	10.03	322.56	--	--	--	--	--	--	--	--	
	12/20/88	9.98	322.61	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	03/28/89	8.8	323.79	<250	<2	<0.5	<0.5	<0.5	--	<0.5	--	
	08/02/89	9.44	323.15	<50	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	
	11/06/89	9.53	323.06	<500	<3.0	<5.0	<5.0	<5.0	--	<5.0	--	
	01/25/90	9.27	323.32	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	
	04/23/90	9.35	323.24	<50	0.6	0.8	<0.5	2	--	<0.5	--	
	08/01/90	9.71	322.88	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	10/24/90	10.08	322.51	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	01/31/91	10.21	322.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	01/31/91	10.21	322.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	Duplicate
	08/21/91	9.8	322.79	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	10/07/91	9.98	322.61	--	--	--	--	--	--	--	--	
	01/28/92	9.81	322.78	<50	0.8	<0.5	<0.5	<0.5	--	--	--	
	06/05/92	9.86	322.73	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	09/30/92	10.6	321.99	66	**1**	3.2	1.3	7.4	--	--	--	
	12/30/92	9.11	323.48	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	03/29/93	7.73	324.86	<50	<0.5	<0.5	<0.5	<1.5	--	--	--	
	06/25/93	9.22	323.37	<50	<0.5	<0.5	<0.5	<1.5	--	--	--	
	09/16/93	10	322.59	<50	<0.5	<0.5	<0.5	<1.5	--	--	--	
	12/20/93	9.38	323.21	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	03/29/94	9.3	323.29	<50	<0.5	0.6	<0.5	<0.5	--	--	--	
	06/22/94	9.49	323.1	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	09/26/94	9.72	322.87	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	10/04/94	9.58	323.01	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	11/30/94	8.7	323.89	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	03/02/95	8.54	321.67	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	06/07/95	8.42	321.79	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	09/26/95	9.34	320.87	**540**	**6.8**	<0.5	**47**	**29**	**13**	--	--	
	12/28/95	8.84	321.37	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	02/29/96	7.44	322.77	<50	<0.5	<0.5	<0.5	1.5	<2.5	--	--	
	06/27/96	8.83	321.38	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	09/12/96	9.4	321.01	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	03/31/97	9.11	321.3	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	12/23/98	8.91	321.5	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	03/25/99	8.1	322.31	<50	<0.5	<0.5	<0.5	<0.5	2.7	--	--	
	02/03/00	8.36	322.05	<50	<0.5	<0.5	<0.5	<0.5	<2.5 (<2.0)	--	--	
	01/23/01	9.08	321.33	**441 (1)**	**1.27**	0.542	**40.3**	**31**	**72.9**	--	--	
	05/01/01	8.87	321.54				SAMPLED ANNUALLY					
	08/28/01	9.45	320.96				SAMPLED ANNUALLY					
	11/27/01	9.5	320.91				SAMPLED ANNUALLY					
	02/28/02	9.05	321.36	<50	<0.50	<0.50	<0.5	<1.5	**74**		--	
	05/22/02	9.04	321.37				SAMPLED ANNUALLY					
	08/20/02	9	321.41				SAMPLED ANNUALLY					
	11/11/02	9.03	321.38				SAMPLED ANNUALLY					
	05/08/03	7.26	323.15	<50	<0.5	<0.5	<0.5	<0.5	2.2/0.9	--	--	
	12/15/04	8.96	321.45	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	

Table 2. Groundwater Monitoring Data and Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Well ID	Date	Depth	Groundwater								
TOC Elev	Sampled	to Water	Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
(ft)		(ft)	(ft, msl)	←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
EA-3	10/17/88	--	--	<50	**1.8**	<0.5	<0.5	3	--	--	--	
331.5	10/24/88	11.03	322.61	--	--	--	--	--	--	--	--	
	11/02/88	11.03	322.61	--	--	--	--	--	--	--	--	
	12/20/88	10.96	322.68	**240**	**90**	1.2	13	3.3	--	--	--	
	03/28/89	9.77	323.87	**2,300**	**380**	**130**	**240**	**910**	--	--	--	
	08/02/89	10.65	322.99	<50	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	
	11/06/89	10.78	322.86	<500	<3.0	<5.0	<5.0	<5.0	--	<5.0	--	
	01/25/90	10.66	322.98	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	
	04/23/90	10.68	322.96	<50	0.8	<0.5	0.9	<0.5	--	<0.5	--	
	08/01/90	11.03	322.61	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	10/24/90	11.35	322.29	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	01/31/91	11.52	322.12	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	08/21/91	--	--	--	--	--	--	--	--	--	--	
	10/07/91	11.15	322.49	**180**	**40**	20	4.7	8.4	--	--	--	
	10/7/1991	--	--	**200**	**43**	17	4.1	6.7	--	--	--	Duplicate
	01/28/92	11.08	322.56	**640**	**69**	**85**	13	**46**	--	--	--	
	06/05/92	10.98	322.66	**250**	**63**	8.3	3	9.5	--	--	--	
	09/30/92	11.38	322.26	**330**	**120**	33	6.3	**22**	--	--	--	
	12/30/92	10.48	323.16	58	**7.6**	1.3	2.5	5.4	--	--	--	
	03/29/93	9.3	324.34	**120**	**11**	4.5	6.2	13	--	--	--	
	06/25/93	10.46	323.18	<50	<0.5	<0.5	<0.5	<1.5	--	--	--	
	09/16/93	10.9	322.74	85	**3.9**	8.8	4.5	**22**	--	--	--	
	12/20/93	10.66	322.98	**190**	**12**	12	13	**50**	--	--	--	
	03/29/94	10.5	323.14	<50	<0.5	1.2	<0.5	0.9	--	--	--	
	06/22/94	10.64	323	<50	<0.5	<0.5	<0.5	<0.5	<3.0	<1.0	--	
	09/26/94	10.72	322.92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	10/04/94	10.68	322.96	<50	<0.5	<0.5	<0.5	0.7	--	--	--	
	11/30/94	9.66	323.98	**170**	**6.1**	3	6.5	**28**	--	--	--	
	03/02/95	9.92	321.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
	06/07/95	9.72	321.58	<50	<0.5	<0.5	<0.5	<0.5	3.2	--	--	
	09/26/95	10.6	320.7	**2,000**	**140**	<5.0	<5.0	**190**	**280**	--	--	
	12/28/95	9.82	321.48	<50	<0.5	<0.5	<0.5	<0.5	**26**	--	--	
	02/29/96	8.28	323.02	<50	**2.1**	<0.5	2.5	6	**31**	--	--	
	06/27/96	9.91	321.39	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	09/12/96	10.59	320.91	**13,000**	<20	<20	<20	<20	**48**	--	--	
	03/31/97	--	--	--	--	--	--	--	--	--	--	Inaccessible
	04/15/97	10.25	321.25	<125	**2**	<1.2	<1.2	<1.2	**680**	--	--	
	12/23/98	--	--	--	--	--	--	--	--	--	--	Inaccessible
	03/25/99	--	--	--	--	--	--	--	--	--	--	Inaccessible
	02/03/00	--	--	--	--	--	--	--	--	--	--	Inaccessible
	01/23/01	10.31	321.19	**862 (1)**	**3.97**	1.15	18.9	**48.6**	**289**	--	--	
	05/01/01	10.15	321.35				SAMPLED SEMI-ANNUALLY					
	08/28/01	10.56	320.94	<50	<0.50	<0.50	<0.50	<0.50	**37**	--	--	
	11/27/01	10.65	320.85				SAMPLED SEMI-ANNUALLY					
	02/28/02	10.37	321.13	<50	**1.3**	<0.50	2	1.8	**90**	--	--	
	05/22/02	10.27	321.23				SAMPLED SEMI-ANNUALLY					
	08/20/02	10.3	321.2	<50	<0.50	<0.50	<0.50	<1.5	**40**	--	--	
	11/11/02	9.05	322.45				SAMPLED SEMI-ANNUALLY					
	05/08/03	8.83	322.67	<50	<0.5	<0.5	<0.5	<0.5	**39/37**	--	--	
	12/15/04	10.39	321.11	<50	<0.5	<0.5	<0.5	<0.5	**18 (17)**	--	--	

Table 2. Groundwater Monitoring Data and Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Well ID *TOC Elev* *(ft)*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft, msl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
				←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
MW-1	10/04/94	12.8	320.76	**2,100**	**150**	**170**	**61**	**320**	--	--	--	
333.66	11/30/94	12.38	321.18	**1,500**	**210**	17	**73**	**130**	--	--	--	
	03/02/95	12.88	320.68	**2,600**	**510**	<10	**160**	<10	--	--	--	
	06/07/95	12.58	320.98	**710**	**160**	<2.0	**45**	<2.0	<10	--	--	
	09/26/95	13.15	320.41	**1,100**	**140**	1.4	**92**	1.8	<5.0	--	--	
	12/28/95	13.09	320.47	**750**	**96**	2.5	**61**	7.4	**37**	--	--	
	02/29/96	12.17	321.39	**250**	**17**	<0.5	18	0.81	**9**	--	--	
	06/27/96	12.95	320.61	**710**	**72**	<2.0	**92**	2.2	<10	--	--	
	09/12/96	13.11	320.55	**300**	**53**	<0.5	**32**	0.65	**21**	--	--	
	03/31/97	12.99	320.67	<200	**4.1**	<2.0	4.8	<2.0	**640**	--	--	
	12/23/98	13.87	319.79	<50	<50	<0.5	<0.5	<0.5	**3200**	--	--	
	03/25/99	12.01	321.65	<50	<0.5	<0.5	<0.5	<0.5	**5,200 (5,200)**	--	--	
	02/03/00	11.91	321.75	<500	<5.0	<5.0	<5.0	<5.0	**3,180 (3,350)**	--	--	
	01/23/01	12.57	321.09	<50.0	<0.500	<0.500	<0.500	<0.500	**4,420**	--	--	
	05/01/01	12.6	321.06				SAMPLED SEMI-ANNUALLY					
	08/28/01	12.74	320.92	<50	<0.50	<0.50	<0.50	<0.50	**4,800**	--	--	
	11/27/01	12.7	320.96				SAMPLED SEMI-ANNUALLY					
	02/28/02	12.7	320.96	<50	<0.50	<0.50	<0.50	<1.5	**1,400**	--	--	
	05/22/02	12.38	321.28				SAMPLED SEMI-ANNUALLY					
	08/20/02	12.57	321.09	<50	<0.50	<0.50	<0.50	<1.5	**1,400**	--	--	
	11/11/02	11.31	322.35				SAMPLED SEMI-ANNUALLY					
	05/08/03	11.85	321.81	<50	<0.50	<0.50	<0.50	<0.50	**1,300 (1,200)**	--	--	
	12/15/04	12.80	320.86	<50	<0.50	<0.50	<0.50	<0.50	**1,700 (1,900)**	--	--	
MW-2	10/04/94	8.56	320.62	**2300**	**160**	**280**	**96**	**480**	--	--	--	
329.29	11/30/94	8.33	320.85	**1,600**	**170**	16	**110**	**120**	--	--	--	
	03/02/95	8.35	320.83	**1,200**	**220**	5.6	**140**	**36**	--	--	--	
	06/07/95	8.62	320.56	**160**	**25**	<0.5	16	<0.5	**240**	--	--	
	09/26/95	8.71	320.47	**150**	**15**	<0.5	7.2	<0.5	**120**	--	--	
	12/28/95	8.78	320.4	**400**	**34**	1.3	26	5.1	**170**	--	--	
	02/29/96	7.82	321.36	**120**	**29**	<0.5	<0.5	<0.5	**790**	--	--	
	06/27/96	8.72	320.46	**150**	**13**	<0.5	7	<0.5	**850**	--	--	
	09/12/96	8.81	320.48	<1,000	**18**	<10	<10	<10	**3,100**	--	--	
	03/31/97	8.65	320.64	<500	<5.0	<5.0	<5.0	<5.0	**1,400**	--	--	
	12/23/98	8.32	320.97	<50	<0.5	<0.5	<0.5	<1.5	**900**	--	--	
	03/25/99	7.89	321.4	<50	**2.6**	<0.5	<0.5	<0.5	**1,100 (670)**	--	--	
	02/03/00	7.53	321.76	<125	<1.25	<1.25	<1.25	<1.25	**1,020 (1,100)**	--	--	
	01/23/01	8.18	321.11	<50.0	<0.500	<0.500	<0.500	<0.500	**642**	--	--	
	05/01/01	8.43	320.86	70.8	<0.500	<5.00	<5.00	<5.00	**342**	--	--	
	08/28/01	8.39	320.9	<50	<0.50	<0.50	<0.50	<0.50	**530**	--	--	
	11/27/01	8.46	320.83	**210**	<0.50	<0.50	<0.50	<1.5	**260**	--	--	
	02/28/02	8.48	320.81	<50	<0.50	<0.50	<0.50	<1.5	**180**	--	--	
	05/22/02	8.14	321.15	<50	<0.50	<0.50	<0.50	<1.5	**180**	--	--	
	08/20/02	8.24	321.05	<50	<0.50	<0.50	<0.50	<1.5	**160**	--	--	
	11/11/02	8.06	321.23	<50	<0.50	<0.50	<0.50	<1.5	**130**	--	--	
	05/08/03	7.86	321.43	<50	<0.50	<0.50	<0.50	<0.50	**180 (160)**	--	--	
	12/15/04	8.60	320.69	<50	<0.50	<0.50	<0.50	<0.50	**1,400 (1,600)**	--	--	

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Well ID *TOC Elev* *(ft)*	Date Sampled	Depth to Water (ft)	Groundwater Elevation (ft, msl)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
				←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
MW-3	10/04/94	12.06	320.67	**6,300**	**610**	**750**	**68**	**670**	--	--	--	
332.86	11/30/94	11.38	321.35	17	**3,600**	**490**	**430**	**610**	--	--	--	
	03/02/95	11.97	320.76	**8,500**	**2,200**	<50	**240**	<50	**64,000**	--	--	
	06/07/95	11.54	321.19	**3,000**	**710**	18	**220**	**44**	**3,100**	--	--	
	09/26/95	12.36	320.37	<10,000	**230**	<100	**130**	<100	**64,000**	--	--	
	12/28/95	12.07	320.66	<12,500	**760**	<125	<125	<125	**100,000**	--	--	
	02/29/96	11.01	321.72	**1,600**	**380**	<10	**84**	**17**	**33,000**	--	--	
	06/27/96	11.93	320.8	**1,400**	<2.5	4.3	**130**	4	**96,000**	--	--	
	09/12/96	12.26	320.6	<10,000	**560**	<100	**110**	<100	**100,000**	--	--	
	03/31/97	12.04	320.82	<25,000	**1,200**	**370**	<250	**380**	**130,000**	--	--	
	12/23/98	12.92	319.94	--	--	--	--	--	--	--	--	0.1' SPH; 0.079 gal SPH removed
	03/25/99	12.56	320.3	--	--	--	--	--	--	--	--	0.05' SPH: 0.05 gal SPH removed
	02/03/00	11.12	321.74	**92,100**	**4,780**	**11,400**	**2,270**	**15,800**	**137,000 (162,000)**	--	--	
	1/23/2001	11.78	321.08	**60,600**	**4,810**	**7,500**	**1,870**	**11,000**	**148,000**	--	--	Absorbent sock in well
	5/1/2001	10.66	322.2	**56,000**	**3,760**	**5,640**	<2,500	**8,740**	**136,000**	--	--	Absorbent sock in well
	8/28/2001	11.79	321.07	**32,000**	**3,800**	**2,600**	**1,200**	**7,500**	**160,000**	--	--	Absorbent sock in well
	11/27/2001	11.98	320.88	**110,000**	**1,300**	**2,400**	**1,500**	**9,400**	**90,000**	--	--	Absorbent sock removed
	02/28/02	11.81	321.05	**24,000**	**1,900**	**820**	**520**	**3,100**	**90,000**	--	--	
	05/22/02	11.6	321.26	**110,000**	**4,000**	**3,200**	**2,800**	**18,000**	**140,000**	--	--	
	08/20/02	11.81	321.05	**37,000**	**2,600**	**1,500**	**890**	**4,800**	**110,000**	--	--	
	11/11/02	11.63	321.23	**81,000**	**2,900**	**2,100**	**2,100**	**14,000**	**110,000**	--	--	
	05/08/03	10.91	321.95	**5,700**	**770**	**69**	**130**	**365**	**76,000 (70,000)**	--	--	
	12/15/04	11.97	320.89	**33,000**	**1,700**	**430**	**1,300**	**7,000**	**70,000 (89,000)**	--	--	
MW-4	03/01/96	9.9	322.74	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
332.63	04/02/96	9.77	322.87	--	--	--	--	--	--	--	--	
	06/27/96	10	322.64	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	09/12/96	11.67	320.96	<50	<0.5	<0.5	<0.5	<0.5	3.5	--	--	
	03/31/97	10.59	322.04	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	12/23/98	10.37	322.26	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--	--	
	03/25/99	9.91	322.72	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	02/03/00	10.32	322.31	<50	<0.5	<0.5	<0.5	<0.5	<2.5/<2.0 (3)	--	--	
	01/23/01	10.54	322.09	<50	<0.500	<0.500	<0.500	<0.500	<5.00	--	--	
	05/01/01	10.32	322.31				SAMPLED ANNUALLY					
	08/28/01	10.57	322.06				SAMPLED ANNUALLY					
	11/27/01	10.29	322.34				SAMPLED ANNUALLY					
	02/28/02	10.3	322.33	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--	
	05/22/02	10.12	322.51				SAMPLED ANNUALLY					
	08/20/02	10.43	322.2				SAMPLED ANNUALLY					
	11/11/02	9.89	322.74				SAMPLED ANNUALLY					
	05/08/03	9.79	322.84	<50	<0.5	<0.5	<0.5	<0.5	<2	--	--	
	12/15/04	10.56	322.07	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	

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ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	
MW-5	03/01/96	10.62	322.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
333.47	04/02/96	10.14	323.06	--	--	--	--	--	--	--	--	
	06/27/96	10.22	322.98	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	09/12/96	10.85	322.19	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	03/31/97	10.44	322.6	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	12/23/98	10.21	322.83	<50	<0.5	<0.5	<0.5	<1.5	<2.5	--	--	
	D3/25/99	9.92	323.12	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
	02/03/00	9.63	323.41	<50	<0.5	<0.5	<0.5	<0.5	<2.5/<2.03	--	--	
	01/23/01	10.35	322.69	<50	<0.500	<0.500	<0.500	<0.500	<5.00	--	--	
	05/01/01	10.34	322.7				SAMPLED ANNUALLY					
	08/28/01	10.44	322.6				SAMPLED ANNUALLY					
	11/27/01	10.17	322.87				SAMPLED ANNUALLY					
	02/28/02	10.2	322.84	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--	
	05/22/02	10.38	322.66				SAMPLED ANNUALLY					
	08/20/02	10.36	322.68				SAMPLED ANNUALLY					
	11/11/02	10.03	323.01				SAMPLED ANNUALLY					
	05/08/03	9.56	323.48	<50	<0.5	<0.5	<0.5	<0.5	3.4/<0.5	--	--	
	12/15/04	10.08	322.96	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	
Grab Groundwater Analytical Data												
DPB-1	5/1/2003	16-20	NA	**12,000**	**25**	**440**	**440**	**2,180**	**8,100**	--	<25	
DPB-2	4/22/2003	NA	NA	**710**	**1.1**	<1	18	**74**	**540**	--	<1	
DPB-3	4/17/2003	16-20	NA	**48,000**	**400**	**5,800**	**1,500**	**9,500**	**8,900**	--	790	
	4/17/2003	27-31	NA	**62,000**	**700**	**9,900**	**1,300**	**7,900**	**4,200**	--	2,100	
	4/17/2003	39-43	NA	**27,000**	**210**	**3,200**	**640**	**4,100**	**7,700**	--	610	
DPB-4	4/17/2003	32-36	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
DPB-5	04/30/03	7-11	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
	04/17/03	11-15	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
	04/30/03	26-30	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
	04/17/03	36-40	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
DPB-6	04/18/03	15-19	NA	**7,700**	**18**	**77**	**170**	**640**	**5.9**	--	<1	
	04/18/03	26-30	NA	**4,700**	**21**	**76**	**160**	**650**	**6.2**	--	<0.8	
	04/18/03	35-39	NA	**2,900**	**8.8**	24	**54**	**249**	**100**	--	<0.5	
DPB-7	04/18/03	15-19	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	
	04/18/03	20-24	NA	**7,000**	**42**	**640**	**190**	**990**	**300**	--	110	
	04/18/03	35-39	NA	**150**	<0.5	1.8	0.8	5.7	<0.5	--	<0.5	
DPB-8	05/01/03	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<1	
DPB-S	04/18/03	14-18	NA	**20,000**	<170	<170	**380**	**6,600**	**53,000**	--	270	
	04/18/03	26-30	NA	**1,500**	**7.1**	<3.1	7.4	**170**	**760**	--	<3.1	
	04/18/03	35-39	NA	**4,300**	<63	<63	<63	**910**	**42,000**	--	190	
		ESLs (final screening level)		100	1	40	30	13	5	50	NE	

Table 2. Groundwater Monitoring Data and Analytical Results - Dublin Auto Wash, 7240 Dublin Boulevard, Dublin, CA

Well ID	Date	Depth	Groundwater								
TOC Elev	Sampled	to Water	Elevation	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	1,2-DCA	TAME	Notes
(ft)		(ft)	(ft, msl)	←				µg/L			→	
ESL - Indoor Air Impacts				Use soil gas	530	500,000	14,000	150,000	24,000	200	NE	
ESL - Aquatic Habitat Goal (Chronic)				500	46	130	290	13	8,000	10,000	NE	
ESL - Ceiling Value				100	170	40	30	20	5	7,000	NE	
ESL - Drinking Water Toxicity				210	1	150	700	1,800	13	50	NE	
Final ESL (Drinking Water Resource)				**100**	**1**	**40**	**30**	**13**	**5**	**50**	NE	

ABBREVIATIONS AND NOTES:

Groundwater monitoring data and laboratory analytical results prior to December 14, 2004, were scanned from a report by SOMA.
(ft) = Feet
(msl) = Mean sea level
TOC Elev. (ft) = Top of casing elevation
µg/L = micrograms per liter - approximately equal to parts per billion = ppb
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015M.
BTEX by EPA Method 8020/8021.
MTBE = Methyl tertiary-butyl ether by EPA Method 8020/8021. (Concentrations in parentheses are by EPA Method 8260B).
1,2-DCA = 1,2-Dichloroethane
SPH = Separate Phase Hydrocarbons Thickness, in feet
-- = Not Measured/Not Analyzed
1 Laboratory report indicates weathered gasoline C6-C12.
ESL = Environmental Screening Levels for Groundwater considered a current or potential drinking water resource, established by the SFBRWQCB, Interim Final - July 2003 and amended February 2004, Table F-1a.
Bold = Concentrations exceeding the final groundwater screening level from Table F-1a of ESLs.

Table 3. Well Survey Summary -Dublin Car Wash, 7240 Dublin Boulevard, Dublin, CA

Map ID	Township, Range, and Section (DWR Well No.)	Owner's Well ID	Installation Date	Owner	Use	Total Depth (ft)	Well Location	Distance from site (ft)	Map	Comments
1	03S01W1 (E10)	MW-16	Aug-89	Enea Plaza	DES	26.5	Amador Plaza Road, Dublin, CA	800	M	Destroyed 4/27/98
1	03S01W1 (E11)	MW-4	Dec-93	Enea Plaza	DES	23	Amador Plaza Road, Dublin, CA	800	M	Destroyed 4/27/98
1	03S01W1 (E11)	MW-4	Dec-93	Enea Plaza	MON	23	Amador Plaza Road, Dublin, CA	800	M	
1	03S01W1 (E12)	PZ-1	Feb-94	Enea Plaza	DES	20	Amador Plaza Road, Dublin, CA	800	M	Destroyed 4/27/98
1	03S01W1 (E13)	EW-1	Feb-94	Enea Plaza	DES	22	Amador Plaza Road, Dublin, CA	800	M	Destroyed 4/27/98
2	03S01W1 (B10)	N/A	Feb-96	Dublin San Ramon Service District	MON	560	7051 Dublin Blvd, Dublin, CA	500	M	
2	03S01W1 (B11)	N/A	Feb-96	Dublin San Ramon Service District	MON	560	7051 Dublin Blvd, Dublin, CA	500	M	
2	03S01W1 (B2)	N/A	Aug-72	Valley Community Service District	MUN	530	Dublin Blvd behond VCSD office, Dublin, CA	500	M	[redacted]
2	03S01W1 (B3)	N/A	UNK	Dublin San Ramon	DES	500	7051 Dublin Blvd, Dublin, CA	500	M	Destroyed 1980
2	03S01W1 (B3)	5	Jun-73	Valley Community Service District	MUN	500	Dublin Blvd, Dublin, CA	500	M	
2	03S01W1 (B9)	N/A	Feb-96	Dublin San Ramon Service District	MON	560	7051 Dublin Blvd, Dublin, CA	500	M	
3	03S01W1 (B4)	N/A	May-76	Zone 7 Water Agency	MON	25	Near Maple Avenue and Flod Control Channel F-4, Dublin, CA	1000	M	
3	03S01W1 (B5)	N/A	May-79	Alameda County Flood Control	TEST	112	Maple Ave at flood control channel, Dublin, CA	1000	M	
4	03S01W1 (H2)	#4	UNK	Dublin San Ramon Service District	DES	35 (?)	1/2 Block E of 7051 Dublin Blvd, Dublin, CA	700	M	Destroyed 1/17/85
5	03S01W1 (F19)	MW-4	Aug-93	Caltrans	DES	119.3	Dublin Blvd and 680, Dublin, CA	100	M	Destroyed 1/28/99
6	03S01W1 (C1)	MW-9	Feb-89	Shell	MON	18	7194 Amador Valley Blvd, Dublin, CA	1700	M	
6	03S01W1 (C2)	MW-11	Feb-89	Shell	MON	18	7194 Amador Valley Blvd, Dublin, CA	1700	M	
6	03S01W1 (C3)	MW-12	Feb-89	Shell	MON	18	7194 Amador Valley Blvd, Dublin, CA	1700	M	
7	03S01W1 (B6M)	MW-1	Feb-94	Interstate Brands	DES	18.5	6841 Village Pkwy, Dublin, CA	500	M	Destroyed 1/30/97
7	03S01W1 (B6M)	MW-1	Feb-94	Continental Baking	MON	18.5	6841 Village Pkwy, Dublin, CA	500	M	
7	03S01W1 (B7)	MW-2	Feb-94	Continental Baking	MON	18.5	6841 Village Pkwy, Dublin, CA	500	M	
7	03S01W1 (B7M)	MW-2	Feb-94	Interstate Brands	DES	18.5	6841 Village Pkwy, Dublin, CA	500	M	Destroyed 1/30/97
7	03S01W1 (B7M)	MW-2	1994	Continental Baking	MON	18.5	6841 Village Pkwy, Dublin, CA	500	M	
7	03S01W1 (B8M)	MW-3	Mar-94	Interstate Brands	DES	18.2	6841 Village Pkwy, Dublin, CA	500	M	Destroyed 1/30/97
7	03S01W1 (B8M)	MW-3	Mar-94	Continental Baking	MON	18.2	6841 Village Pkwy, Dublin, CA	500	M	
8	03S01W1 (C4)	MW-1	Jun-93	Corwood Car Wash	DES	26	6973 Village Parkway, Dublin, CA	700	M	Destroyed 12/10/98

Table 3. Well Survey Summary -Dublin Car Wash, 7240 Dublin Boulevard, Dublin, CA

Map ID	Township, Range, and Section (DWR Well No.)	Owner's Well ID	Installation Date	Owner	Use	Total Depth (ft)	Well Location	Distance from site (ft)	Map	Comments
8	03S01W1 (C5)	MW-2	Jun-93	Corwood Car Wash	DES	26	6973 Village Parkway, Dublin, CA	700	M	Destroyed 12/10/98
8	03S01W1 (C6)	MW-3	Jun-93	Corwood Car Wash	DES	26	6973 Village Parkway, Dublin, CA	700	M	Destroyed 12/10/98
9	03S01W1 (K3)	N/A	Jan-79	Livermore-Amador Valley Mgmt Agency	CAT	210	SW Corner 580 and 680, Pleasanton, CA	1900	M	
10	03S01W1 (E12)	EW-1	Feb-94	Enea Properties	MON	UNK	6700-6780 Amador Plaza Rd., Dublin, CA	1500	M	
10	03S01W1 (E13)	PZ-1	Feb-94	Enea Properties	MON	20	6700-6780 Amador Plaza Rd., Dublin, CA	1500	M	
11	03S01W1	7	Jan-89	Montgomery Ward	ABA	3	Dublin, CA	2200	NM	Abandoned due to punctured water line
11	03S01W1 (E10)	16	Aug-89	Montgomery Ward	MON	26.5	Dublin, CA	2200	NM	
11	03S01W1 (E14)	MW-100	May-93	Montgomery Ward	DES	28	7575 Dublin Blvd, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E15)	MW-101	May-93	Montgomery Ward	DES	28	7575 Dublin Blvd, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E16)	MW-102	May-93	Montgomery Ward	DES	28	7575 Dublin Blvd, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E2)	5	Jan-89	Montgomery Ward	MON	22	Dublin, CA	2200	NM	
11	03S01W1 (E3)	6	Jan-89	Montgomery Ward	MON	V/P	Dublin, CA	2200	NM	
11	03S01W1 (E4)	8	Jan-89	Montgomery Ward	MON	V/P	Dublin, CA	2200	NM	
11	03S01W1 (E5)	R-5	Feb-89	Montgomery Ward	DES	22	Dublin Blvd near Golden Gate Drive, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E5)	9	Jan-89	Montgomery Ward	MON	V/P	Dublin, CA	2200	NM	
11	03S01W1 (E6)	R-10	Feb-89	Montgomery Ward	DES	22	Dublin Blvd near Golden Gate Drive, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E6)	10	Feb-89	Montgomery Ward	MON	22.5	Dublin, CA	2200	NM	
11	03S01W1 (E7)	R-12	Feb-89	Montgomery Ward	DES	22	Dublin Blvd near Golden Gate Drive, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E7)	12	Dec-88	Montgomery Ward	MON	V/P	Dublin, CA	2200	NM	
11	03S01W1 (E8)	13	Dec-88	Montgomery Ward	MON	13.5	Dublin, CA	2200	NM	
11	03S01W1 (E9)	MW-15	Aug-89	Montgomery Ward	DES	23	Dublin Blvd near Golden Gate Drive, Dublin, CA	2200	NM	Destroyed 4/27/98
11	03S01W1 (E9)	15	Aug-89	Montgomery Ward	MON	23	Dublin, CA	2200	NM	
12	03S01W1 (M1)	MW-1	Nov-91	Bedford Properties	MON	30	6700 Golden Gateway, Dublin, CA	1500	M	
--	03S01W1 (B1)	UNK	Jan-92	UNK	DES	UNK	UNK	?	--	Destroyed 1/7/92
--	03S01W1 (D4)	MW-1	Feb-91	Target	MON	20.5	Dublin, CA	2500	NM	
--	03S01W1 (D5)	MW-2	Feb-91	Target	MON	20.5	Dublin, CA	2500	NM	

Table 3. Well Survey Summary -Dublin Car Wash, 7240 Dublin Boulevard, Dublin, CA

Map ID	Township, Range, and Section (DWR Well No.)	Owner's Well ID	Installation Date	Owner	Use	Total Depth (ft)	Well Location	Distance from site (ft)	Map	Comments
--	03S01W1 (D6)	MW-3	Feb-91	Target	MON	20.5	Dublin, CA	2500	NM	
--	03S01W1 (D7)	MW-4	Feb-91	Target	MON	23	Dublin, CA	2500	NM	
--	03S01W1 (D8)	MW-5	Jun-91	Target	MON	20	7608 Amaedor Valley Blvd, Dublin, CA	2500	NM	
--	03S01W1 (D9)	MW-6	Sep-91	Target	MON	15	7601 Amaedor Valley Blvd, Dublin, CA	2500	NM	
--	03S01W1 (F1)	1	Feb-60	Volk-McLain Co.	DOM	583	Near Old Hwy 50 and 5000 feet east of San Ramon Rd, Dublin, CA	8000	NM	
--	03S01W1 (F7)	MW-1	Jan-93	Enea Properties	DES	16	6670 Dublin Blvd, Dublin, CA	2700	NM	Destroyed 4/27/98
--	03S01W1 (F7)	MW-1	Jan-93	Enea Properties	MON	16	6620 Amador Valley Blvd, Dublin, CA	4800	NM	
--	03S01W1 (F8)	MW-2	Jan-93	Enea Properties	DES	13	6670 Dublin Blvd, Dublin, CA	2700	NM	Destroyed 4/27/98
--	03S01W1 (F8)	MW-2	Jan-93	Enea Properties	MON	16	6620 Amador Valley Blvd, Dublin, CA	4800	NM	
--	03S01W1 (F9)	MW-3	Jan-93	Enea Properties	DES	16	6670 Dublin Blvd, Dublin, CA	2700	NM	Destroyed 4/27/98
--	03S01W1 (F9)	MW-3	Jan-93	Enea Properties	MON	16	6620 Amador Valley Blvd, Dublin, CA	4800	NM	
--	03S01W1 (G1)	3	Sep-61	Volk-McLain Co.	MUN	610	Near State Rd 21 and N. Country Club Rd, Dublin, CA	8000	NM	
--	03S01W1 (J1)	N/A	Dec-84	Dublin San Ramon Service District	MON	44	Near Johnson Drive S of 580, Pleasanton, CA	2600	NM	
--	03S01W1 (J2)	N/A	Dec-84	Dublin San Ramon Service District	MON	37	Near Johnson Drive S of 580, Pleasanton, CA	2600	NM	
--	03S01W1 (L1)	N/A	UNK	Mozart Development	DES	53	West of 680 near 580, Pleasanton, CA	6000	NM	Destroyed 5/24/85
--	03S01W1 (L1)	N/A	Jun-49	J. R. Cronin	IRR	52	Dublin, CA	6000	NM	
--	03S01W1 (L2)	N/A	UNK	Mozart Development	DES	50	West of 680 near 580, Pleasanton, CA	6000	NM	Destroyed 5/24/85
--	03S01W1 (L4)	N/A	UNK	Mozart Development	DES	53	West of 680 near 580, Pleasanton, CA	6000	NM	Destroyed 5/24/85
--	03S01W1 (N1)	SR-1	May-91	Stoneridge Chrysler	MON	30	5440 Stoneridge Mall Road, Pleasanton, CA	3200	NM	
--	03S01W1 (N2)	SR-2	May-91	Stoneridge Chrysler	MON	30.5	5440 Stoneridge Mall Road, Pleasanton, CA	3200	NM	
--	03S01W1 (N3)	SR-3	May-91	Stoneridge Chrysler	MON	30	5440 Stoneridge Mall Road, Pleasanton, CA	3200	NM	
--	03S01W1 (N4)	SR-4	May-91	Stoneridge Chrysler	MON	30	5440 Stoneridge Mall Road, Pleasanton, CA	3200	NM	
--	03S01W1 (N5)	1N5	Jul-98	Safeway	MON	35	5918 Soneridge Mall Road, Pleasanton, CA	4800	NM	
--	03S01W1 (N5)	EB-1	Jul-98	Safeway	UNK	38	Stoneridge Mall Road/Canyon Way, Pleasanton, CA	4800	NM	
--	03S01W1 (R2M)	#1	Feb-90	Clorox	IND	210	7200 Johnson Drive, Pleasanton, CA	4400	NM	
--	03S01W1 (R3M)	#2	Feb-90	Clorox	IND	211	7200 Johnson Drive, Pleasanton, CA	4400	NM	

Table 3. Well Survey Summary -Dublin Car Wash, 7240 Dublin Boulevard, Dublin, CA

Map ID	Township, Range, and Section (DWR Well No.)	Owner's Well ID	Installation Date	Owner	Use	Total Depth (ft)	Well Location	Distance from site (ft)	Map	Comments
--	03S01W1 (R4)	MW-1	May-92	Clorox	MON	25	7034 Commerce Circle, Pleasanton, CA	3500	NM	
--	03S01W1 (R5)	MW-2	Apr-97	Corning	MON	21.6	7035 Commerce Circle, Pleasanton, CA	3400	NM	
--	03S01W1 (R6)	MW-3	Apr-97	Corning	MON	19.8	7035 Commerce Circle, Pleasanton, CA	3400	NM	
--	03S01W1 (R7)	MW-4	Apr-97	Corning	MON	20	7035 Commerce Circle, Pleasanton, CA	3400	NM	
--	03S01W1 (R8)	MW-5	May-97	Corning	MON	21	7035 Commerce Circle, Pleasanton, CA	3400	NM	
--	03S01W2 (A2)	N/A	Jun-76	Zone 7 Water Agency	MON	47	San Ramon Road and Amador Valley Blvd, Dublin, CA	4000	M	
--	03S01W2 (A3)	N/A	UNK	Public Storage Inc.	DES	UNK	7436 San Ramon Road, Dublin, CA	5000	NM	Destroyed 7/27/90
SITE	03S01W1 (F1)	EA-1	Oct-88	Chevron	MON	40	7240 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F17)	MW-5	Feb-96	Chevron	MON	21.5	7420 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F18)	MW-4	Feb-96	Chevron	MON	21.5	7420 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F2)	EA-2	Oct-88	Chevron	MON	40	7240 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F3)	EA-3	Oct-88	Chevron	MON	40	7240 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F4)	VW-1	May-90	Chevron	MON	9	7240 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F5)	VW-2	May-90	Chevron	MON	9	7240 Dublin Blvd, Dublin, CA	SITE		
SITE	03S01W1 (F6)	VW-3	May-90	Chevron	MON	9	7240 Dublin Blvd, Dublin, CA	SITE		

Abbreviations:

BOR = boring (may be geotechnical)
CAT = Cathodic protection well
DES = Destroyed Well
PIE = Piezometer
TES = Test Well
? = information not available

GEO = boring (may be geotechnical or geoprobe boring)
M = Well location shown on map
NM = Not mapped, well is not a potential sensitive receptor
* = unspecified note added by ACPWA
IRR = Irrigation Well
MON = Monitoring Well

DIS = Disposal Well
DOM = Domestic Well
UNK = Unknown
N/A = Not applicable
ABA = Boring abandoned
V/P = Vapor/Product Removal Well

MUN = Municipal well
IND = Industrial well
TEST = Test Well

APPENDIX A

Regional Geologic and Hydrogeologic Information

REGIONAL GEOLOGIC AND HYDROGEOLOGIC INFORMATION

Preliminary geologic map emphasizing bedrock formations in Alameda County, California, United States Geological Survey (USGS) Open-File Report 96-252, 1996

Lithologic associations in Alameda County are divided into nine assemblages; I, II, and V - XI (Assemblages III and IV occur only in Contra Costa County). As defined in Graymer, Jones, and Brabb (1994), assemblages are large, fault - bounded blocks that contain a unique stratigraphic sequence. The stratigraphic sequence differs from that of neighboring assemblages by containing different rock units (e.g. the freshwater limestone (Tlp) in Assemblage VIII is missing from the other Assemblages), or by different stratigraphic relationship among similar rock units (e.g. the Orinda Formation (Tor) overlies the Claremont Chert (Tcc) in Assemblage I, whereas in Assemblage VI three other formations (To, Tt, and Tbr) totaling more than 500 meters thick lie between the Orinda and Claremont). These stratigraphic differences represent changes in depositional conditions in one or more large depositional basins. The current adjacent location of the different assemblages reflects the juxtaposition of different basins or parts of basins by large offsets along the faults that bound the assemblages.

In general, in Alameda County the Tertiary strata rest with angular unconformity on two complexly deformed Mesozoic rock complexes. One of these Mesozoic complexes is made up of: the Coast Range ophiolite, which includes serpentinite, gabbro, diabase, and basalt; keratophyre; and overlying Great Valley sequence. Within this complex in the Berkeley and Hayward areas the Great Valley sequence rests unconformably on ophiolite and volcanic rocks in several places. This complex represents the accreted and deformed remnants of Jurassic oceanic crust, and overlying arc volcanic rocks and a thick sequence of turbidites.

The second Mesozoic complex is the Franciscan complex, which is composed of weakly to strongly metamorphosed graywacke, argillite, limestone, basalt, serpentinite, chert, and other rocks. The rocks of the Franciscan complex in Alameda County were probably Jurassic oceanic crust and pelagic deposits, overlain by Late Jurassic to Late Cretaceous turbidites. Although Franciscan rocks are dominantly little metamorphosed, high-pressure, low-temperature metamorphic minerals are common in the Franciscan complex (Bailey, Irwin, and Jones, 1964), and the presence of high grade metamorphic blocks in sheared but relatively unmetamorphosed argillite matrix (Blake and Jones, 1974) reflects the complicated history of the Franciscan. The complex was subducted beneath the Coast Range ophiolite during Cretaceous time. Because the Novato Quarry terrane (Kfn) forms the lowest in the stacked sequence of terranes in the Bay Area (Wakabayashi, 1992) subduction took place, at least in part, after the Late Cretaceous (Campanian) deposition of the sandstone of the Novato Quarry terrane. Because of the subduction relationship, the contact between the two Mesozoic complexes is everywhere faulted (Bailey, Irwin, and Jones, 1964), and the Franciscan complex presumably underlies the entire county. Tertiary rocks rest with angular unconformity on both Mesozoic complexes. In Assemblages IX and X, Tertiary rocks are on the Franciscan complex. The more usual situation is observed in all other assemblages, where Tertiary rocks overlie strata of the Great Valley sequence, although in most assemblages the contact is now faulted.

Three types of intrusive rocks have been mapped in Alameda County. One is a small stock of coarse-grained, crystalline granular, quartz diorite that intrudes the Coast Range ophiolite

in the Cedar Mtn. quadrangle (KJqd). Another type occurs as small rhyolite plugs intruding Cretaceous and Tertiary strata in the Sunol area (Tsv). The third type forms a large body of fine grained quartz diorite in the Oakland area (Kfgm). These rocks are not included in any assemblage because of their intrusive nature.

The faults of Alameda County are characterized by both strikeslip and dip-slip components of displacement. There are four major fault systems that display large right-lateral offsets, the Hayward, the Stonybrook-Palomares-Miller Creek-Moraga, the Calaveras, and the Greenville. These fault systems trend roughly N30W. Most of these fault systems include many fault strands in a broad (as much as 10 km wide) zone. Offset is distributed on the various faults in the zones, and the locus of fault movement associated with a fault zone has changed through geologic time (see Graymer, Jones, and Brabb, 1995, for a description of the Hayward fault zone, Montgomery and Jones, 1992, for a description of part of the Calaveras fault zone). All of the fault systems have strands which have been active during Quaternary time and some, such as the Hayward, Calaveras, and Greenville, have generated historic earthquakes or display active creep (Lienkaemper, 1992, Radbruch- Hall, 1974, Herd, 1977a, 1977b and 1978, Cockerham and others, 1980). As much as 170 km of right slip has been taken up by the Hayward, Stonybrook-Palomares-Miller Creek-Moraga, and Calaveras fault systems since 8 Ma (McLaughlin and others, 1996). Of this, about 43 km was probably taken up by the Hayward fault system (Fox and others, 1985). These fault systems also form most of the boundaries of the assemblages. The juxtaposition of rocks with different stratigraphic histories across these faults lends support to the idea of large offsets. Note, however, that the Hayward fault system does not form an assemblage boundary.

In addition to strike-slip faults, faults in Alameda County can be divided into three categories based on the fault-normal component of displacement and orientation. The first of these categories comprises transpressional faults within the major strikeslip fault zones. These faults trend roughly parallel to the strike-slip faults discussed above, but display a large component of thrust or reverse displacement. Examples of this type of fault are the Mission, Warm Springs, and Arroyo Aguague faults in the Hayward fault zone.

The compressional component of deformation on these faults is caused by the small but important component of plate motion at right angles to the trend of the strike-slip fault zones (Jones and others, 1995), as well as fault-normal compression related to changes in trend of the strike-slip fault zone (Andrews and others, 1993). The transpressional faults also have a component of strike-slip offset, although the amount of offset is for the most part undetermined.

The second category of fault consists of thrust and reverse faults that trend at high angle to the strike-slip fault zones (N60EN60W). Examples of this type include the Verona and Williams faults. These faults reflect compression directed parallel to plate motion.

The third category of fault with a fault-normal component of offset in Alameda County comprises transtensional faults, or faults with oblique normal offset. These faults occur within the major strike-slip fault zones (trending about N30W). The best example of this type is the Chabot fault. The transtensional faults reflect deformation during a period (late Pliocene to early Pleistocene, see Graymer, Jones, and Brabb, 1995) when regional stress contained a small but significant fault-normal extensional component.

Both types of faults with compressional deformation underwent late Quaternary deformation (Graymer, Jones, and Brabb, 1995, Andrews and others, 1993, Herd and Brabb, 1980), but

the amount of seismic hazard that they represent remains to be determined. The transtensional faults, on the other hand, appear to have ceased moving for the most part by late Pleistocene time.

Folds in Alameda County can be divided into three categories based on axial trend and style of deformation. The first category includes tight folds and overturned folds with inclined axial planes whose axes trend obliquely to the major strike-slip fault zones (about N60W). These folds were probably caused by the same component of regional stress that formed the strike-slip faults and the thrust and reverse faults of the second category discussed above. These folds occur in the north-central part of the county, in the region between the Calaveras and Moraga-Miller Creek-Palomares faults.

The second category of fold contains tight, upright folds whose axes strike roughly parallel to the major strike-slip faults (about N30W). These folds must have been formed by a component of regional compression perpendicular to the strike-slip faults (Jones and others, 1995). For the most part, only synclines of this category are preserved, anticlines having been disrupted by faulting of the first category discussed above. Folding of this type is present in the western part of the county between the Hayward and Moraga-Miller Creek-Palomares-Stonybrook faults and on either side of the Calaveras fault in the south part of the county.

The third category of fold in Alameda County includes the broad anticline and related smaller folds of the Altamont anticline in the northeastern part of the county, east of the Greenville fault. This fold trends roughly parallel to the major strike-slip faults, and therefore must be caused by regional compression perpendicular to the strike-slip faults, in a manner similar to that of the second category of folds. Preserved folds in Alameda County for the most part formed in late Miocene or later time, as late Miocene strata are involved in the folds. Pre-late Miocene folding undoubtedly occurred, associated with subduction of the Franciscan complex beneath the Coast Range ophiolite and subsequent deformation associated with the unconformity at the base of the Tertiary sequence. These folds have been totally disrupted, being best preserved as homoclinal sequences of Cretaceous strata. The youngest folding must postdate the Pliocene and Pleistocene deposition of the Livermore gravels (QTl), as those strata are folded in at least one area. Late Pleistocene strata have not been observed to be folded, but are tilted and uplifted in several places in the west part of the county.

Bulletin 118: California's Groundwater, California Department of Water Resources DWR), October 2003

The Livermore Valley lies about 40 miles east of San Francisco and 30 miles southwest of Stockton within a structural trough of the Diablo Range. The groundwater basin extends from the Pleasanton Ridge east to the Altamont Hills (about 14 miles) and from the Livermore Upland north to the Orinda Upland (about 3 miles). Surface drainage features include Arroyo Valle, Arroyo Mocho, and Arroyo las Positas as principal streams, with Alamo Creek, South San Ramon Creek, and Tassajara Creek as minor streams. All streams converge on the west side of the basin to form Arroyo de la Laguna, which flows south and joins Alameda Creek in Sunol Valley. Some geologic structures restrict the lateral movement of groundwater, but the general groundwater gradient is to the west, then south towards Arroyo de la Laguna. Elevations within the basin range from about 600 ft in the east, near the Altamont Hills, to about 280 ft in the southwest, where Arroyo de la Laguna flows into Sunol Groundwater Basin. Average annual precipitation ranges from 16 inches on the valley floor to more than 20 inches along the southeast and northwest basin margins.

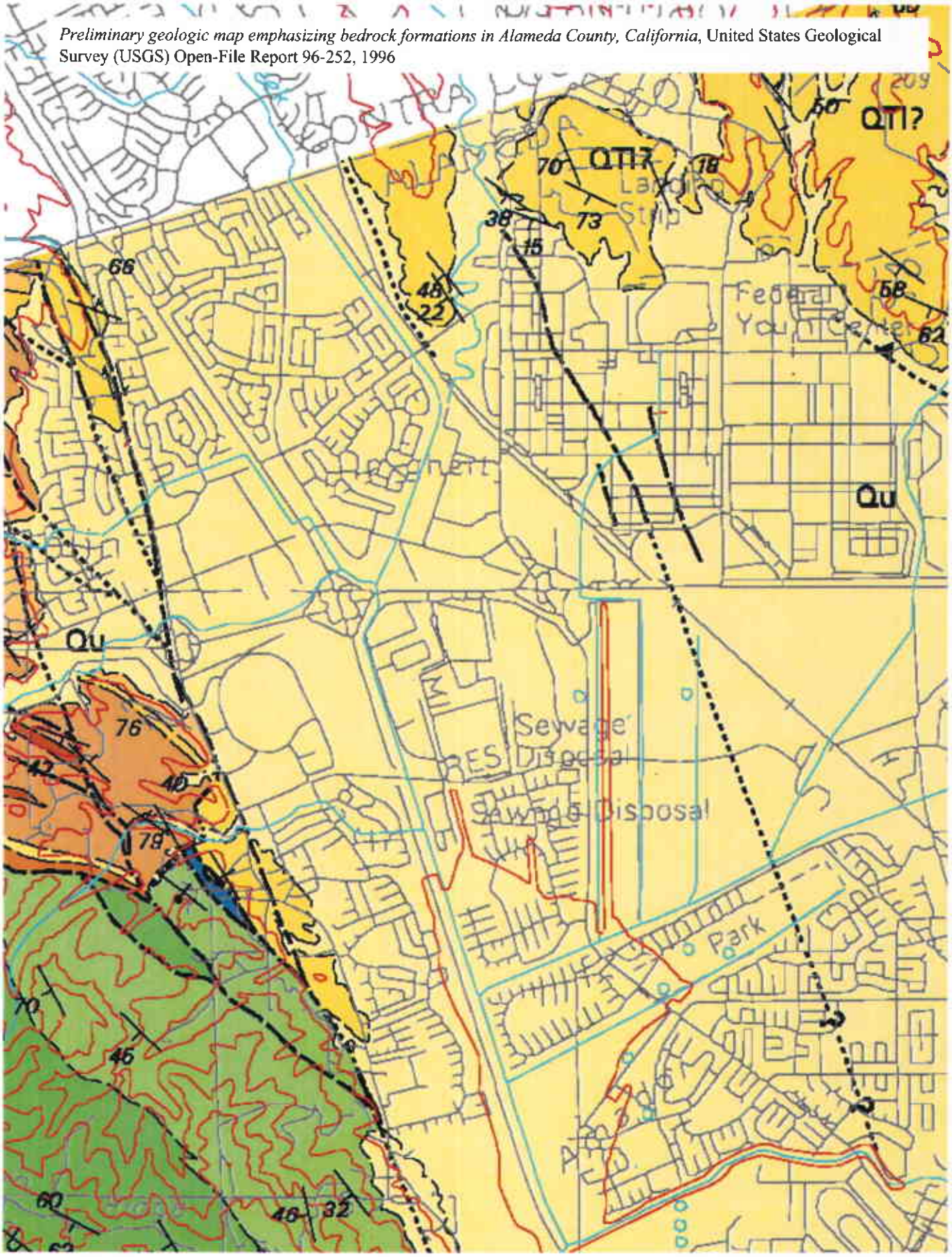
The entire floor of the Livermore Valley and portions of the upland areas on all sides of the valley overly groundwater-bearing materials. The materials are continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation. Under most conditions, the valley-fill and Livermore sediments yield adequate to large quantities of groundwater to all types of wells. The quality of water produced from these rocks ranges from poor to excellent, with most waters in the good to excellent range.

The Holocene age surficial valley-fill materials range in thickness from a few tens of feet to nearly 400 feet. They occur as stream channel deposits, alluvium, alluvial fan deposits, and terrace deposits, and are composed of unconsolidated sand, gravel, silt, and clay. In the central and southern portions of the valley, 50 to 80 percent of the valley-fill is comprised of aquifer material that yields significant quantities of water to wells. Clay deposits up to 40 feet thick cap the valley-fill in the western part of the Basin; where deep wells draw groundwater from underlying aquifer material. Several gravel extraction pits have been dug into the upper portions of the valley fill material near the central portion of the basin. Dewatering activities related to the mining change ground water flow patterns and locally limit the storage capacity of the basin. Mining activities are scheduled to cease by 2030.

The Plio-Pleistocene Livermore Formation is primarily exposed over the south and southwest regions of the Livermore Valley groundwater basin, but occurs almost everywhere beneath the surface at depths up to 400 ft. This formation is up to 4,000 feet thick and consists of unconsolidated to semi-consolidated beds of gravel, sand, silt, and clay. Limey concretions are fairly common in its lower portion, and tuffaceous beds are present at its base. Erosion of Jurassic and Cretaceous rocks to the south of the basin produced the coarse-grained Livermore Formation. These grains consist of black to red chert, micaceous sandstone, black shale, and quartzite. Deep wells in the eastern half of the basin produce from the Livermore Formation. Upland wells to the South have limited groundwater yields. Generally, yields are adequate for most irrigation, industrial, or municipal purposes.

The Pliocene-age Tassajara Formation surfaces in the uplands to the north of the Livermore Valley and occurs beneath the central portion of the valley at depths ranging from 200 to 750 feet. Beds of the Tassajara are composed of sandstone, siltstone, shale, conglomerate, and limestone. Coarse-grained beds typically contain tuff and clay particles, reducing their overall permeability. Wells tapping the Tassajara Formation yield only sufficient water for domestic or stock purposes. There is little hydrologic continuity between the Tassajara and overlying water-bearing units.

Within the Livermore Valley groundwater basin, faults are the major structural features known to have marked affect on the movement of groundwater. Faults in this region tend to act as barriers to the lateral movement of groundwater. The resulting groundwater levels stand higher on the up-gradient side. The Livermore, Pleasanton and Parks faults act as such barriers, dividing the Quaternary Alluvium into 5 groundwater subbasins.



Preliminary geologic map emphasizing bedrock formations in Alameda County, California, United States Geological Survey (USGS) Open-File Report 96-252, 1996

MAP EXPLANATION

Surficial Deposits

- Qar Artificial Deposits
- Qu Undivided surficial deposits
- Qls Landslide deposits
- Qoa Older alluvial deposits
- Qt Terrace deposits

Tertiary Intrusive Rocks

- Tsv Silicic intrusive rocks

Mesozoic Intrusive Rocks

- KJqd Quartz diorite

Franciscan Complex

- KJf Undivided Franciscan rocks
- Kfn Novato Quarry terrane - sandstone and siltstone
- Kljm Diorite in Novato Quarry terrane
- KJfs Undivided Franciscan sandstone
- KJfg Undivided Franciscan greenstone
- KJfe Eyler Mountain terrane - sandstone, siltstone, conglomerate and chert
- KJfm Melange terrane
- fc chert
- fg greenstone
- fl limestone
- fs meta-graywacke
- sp Serpentinite

Assemblage I

- Tbp Bald Peak volcanics
- Tst Sonoma Formation - siltstone and sandstone
- Tmb Moraga volcanics
- Tor Orinda Formation - conglomerate, sandstone, and siltstone
- Tcc Claremont Chert
- Tccs Claremont Chert, sandstone interbeds
- Tush Unnamed gray shale
- Tsms Unnamed brown sandstone
- Tsss Unnamed brown sandstone
- Tss Unnamed sandstone and green sandstone
- Ts Unnamed glauconite sandstone

Assemblage II

- QTl Livermore gravels
- Kcls Lower Unit C, sandstone member
- Klsh Unit B, shale member

Assemblage VII

- QTl Irvington gravels
- QTl Livermore gravels
- Tv Unnamed volcanic rocks
- Tor Orinda Formation - conglomerate, sandstone, and siltstone
- Torv Orinda Formation, dacite lava
- Tbr Briones Formation - sandstone and shell breccia
- Tt Tice Shale
- To Oursan Sandstone
- Tcc Claremont Formation - shale and chert
- Tccs Claremont Formation, sandstone member
- Ts Sobrante Sandstone
- Tsh Unnamed shale and sandstone
- Tlls Tulares Formation, limestone member
- Tss Tolman Formation, glauconite sandstone member
- Tgs Unnamed shale and glauconite sandstone
- Kp Pinehurst Shale
- Kr Redwood Canyon Formation - sandstone
- Ksc Shephard Creek Formation - siltstone and sandstone
- Ks Unnamed sandstone and shale
- Kcv Unnamed sandstone, conglomerate, and shale
- Ko Oakland Formation - conglomerate and sandstone
- Kjm Joaquin Miller Formation - fine sandstone and shale
- Ksh Unnamed shale
- KJk Knoxville Formation - sandstone and shale
- KJkc Knoxville Formation - conglomerate member
- KJkv Knoxville Formation - volcanic breccia member
- Jsv Keratophyre and quartz keratophyre
- Jpb Pillow basalt
- Jb Basalt and diabase
- Jgb Gabbro
- sp Serpentinite
- sc Silica carbonate rock

- Oblique fault with thrust or reverse component, concealed and uncertain
- Oblique fault with normal component
- Oblique fault with normal component, approximately located
- Oblique fault with normal component, concealed
- Fold axis
- Fold axis, inferred
- Fold axis, concealed
- Tuff bed
- Strike and dip of bedding
- Strike and dip of overturned bedding
- Strike of vertical bedding
- Flat bedding
- Strike and dip of bedding, top direction known
- Strike and dip of overturned bedding, top direction known
- Strike of vertical bedding, top direction known
- Approximate strike and dip of bedding
- Crumpled bedding
- Strike and dip of bedding and foliation
- Strike of vertical bedding and foliation
- Strike and dip of foliation
- Strike of vertical foliation
- Strike and dip of joint
- Anticline
- Syncline
- Overturned syncline
- Right lateral offset on fault

Tush Unnamed gray shale

Tuss Unnamed brown sandstone

Tusu Unnamed brown sandstone

Tus Unnamed sandstone and green mudstone

Tu Unnamed glauconitic mudstone

Assemblage II

QTl Livermore gravels

Tmll Mulholland Formation - lower member

Tmls Mulholland Formation - sandstone(?) member

Tus Unnamed sedimentary and volcanic rocks

Tml Limestone member

Tn Neroly Formation - blue sandstone

Tbr Briones Formation, undivided - sandstone, locally divided into:

Tbl Briones Formation, I member -

Tbg Briones Formation, G member - sandstone and shell breccia

Tbgc conglomerate beds

Tbgl limestone beds

Tbf Briones Formation, F member - sandstone and shale

Tbe Briones Formation, E member - sandstone and shell breccia

Tbd Briones Formation, D member - massive sandstone

Tro Rodeo, Hambre, Tice, and Orinda Formations, undivided

Tr Rodeo Shale

Th Hambre Sandstone

Tt Tice Shale

To Orinda Sandstone

Tm Claremont Formation - shale and chert

Tccs Claremont Formation, sandstone member

Ts Sobrante Sandstone

Ku Unnamed sandstone and shale

Kc Unnamed conglomerate

Assemblage V

QTl Livermore gravels

Tgvt Green Valley/Tassajara group

Tgvtt Green Valley/Tassajara group tuff member

Tn Neroly Formation - blue sandstone

Tc Claeho Formation - white sandstone

Ku Unnamed sandstone

KJkv Knoxville Formation - volcanic breccia member

Jsv Keratophyre and quartz keratophyre

Jpb Pillow basalt

Jb Basalt and diabase

Jgb Gabbro

sp Serpentinite

ss Silica carbonate rock

Assemblage VII

QTl Livermore gravels

Tfp Unnamed freshwater limestone and sandstone

Tm Unnamed sandstone, chert, and limestone

Tbr Briones Formation - sandstone and shell breccia

Tt Tice Shale - brown sandstone

To Orinda Sandstone - olive sandstone and siltstone

Kg Unnamed sandstone and shale

Assemblage IX

Tbr Briones Formation - sandstone and shell breccia

Tt Tice Shale - brown sandstone

To Orinda Sandstone - olive sandstone and siltstone

Tcc Claremont Formation - chert and siliceous shale

Tsan Sandstone

NOTE Tsan unconformably overlies rocks of the Franciscan complex in this assemblage

Assemblage X

Tn Neroly Formation - blue sandstone

Tnc Neroly Formation, conglomerate member

Tbr Briones Formation - sandstone and shell breccia

NOTE Tbr unconformably overlies rocks of the Franciscan complex in this assemblage.

Assemblage XI

Tol Orinda Formation - reddish silt, sand, and gravel

Tn Neroly Formation - blue sandstone

Tc Claeho Formation - white sandstone

Tts Tassajara Formation - sandstone, claystone, and coal

Kmsh Unnamed shale

Kmss Unnamed sandstone

Ku Unnamed mudstone and shale

Kc Unnamed conglomerate

Assemblage V

QTl Livermore gravels

Tgvt Green Valley/Tassajara group

Tgvtt Green Valley/Tassajara group tuff member

Tn Neroly Formation - blue sandstone

Tc Clarke Formation - white sandstone

Ku Unnamed sandstone

Kslt Unnamed siltstone

Ks Unnamed shale

Jb Basalt and diabase

Jgb Gabbro

sp Serpentinite

Assemblage VI

Tol Orv Loma Formation - reddish silt, sand, and gravel

Tn Neroly Formation

Tc Clarke Formation - white sandstone

Great Valley Sequence

Kul Lower Unit E - siltstone

Kd Unit D - sandstone

Kdg Unit D, shale member

Kcu Upper Unit C - shale

Kcsg Upper Unit C, sandstone member

Kcm Middle Unit C - sandstone

Kcl Lower Unit C - shale

NOTE The unconformity overlies rocks of the Franciscan complex in this assemblage.

Assemblage XI

Tol Orv Loma Formation - reddish silt, sand, and gravel

Tn Neroly Formation - blue sandstone

Tc Clarke Formation - white sandstone

Tts Tesla Formation - sandstone, claystone, and coal

Kssh Unnamed shale

Kssu Unnamed sandstone

Kssu Unnamed sandstone and shale

Klsh Horsetown Formation - dark shale and sandstone

Contact

Contact, approximately located

Contact, inferred

Contact, concealed

Fault

Fault, approximately located

Fault, inferred

Fault, uncertain

Fault, concealed

Fault, concealed and uncertain

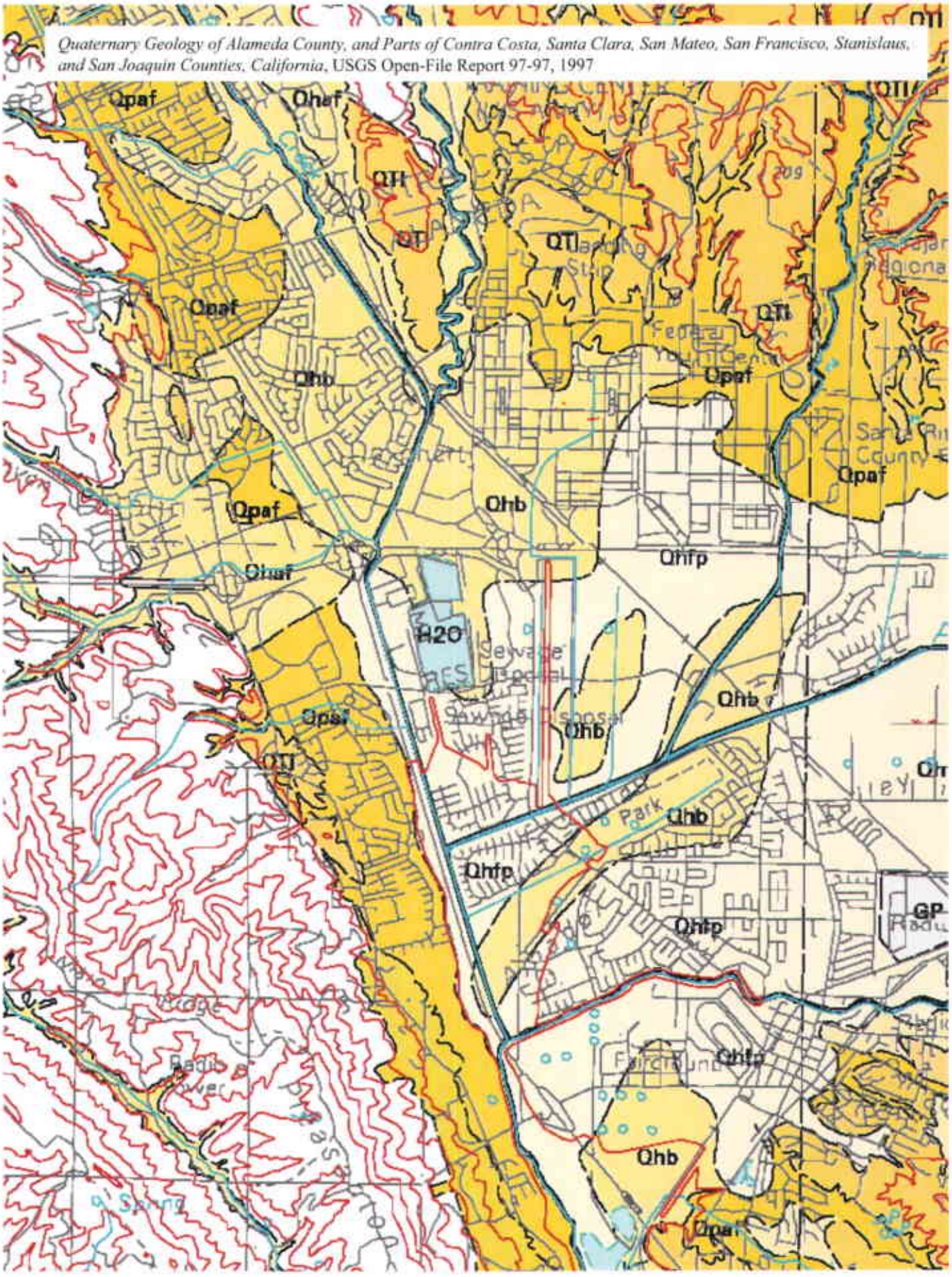
Oblique fault with thrust or reverse component

Oblique fault with thrust or reverse component, approximately located

Oblique fault with thrust or reverse component, inferred

Oblique fault with thrust or reverse component, uncertain

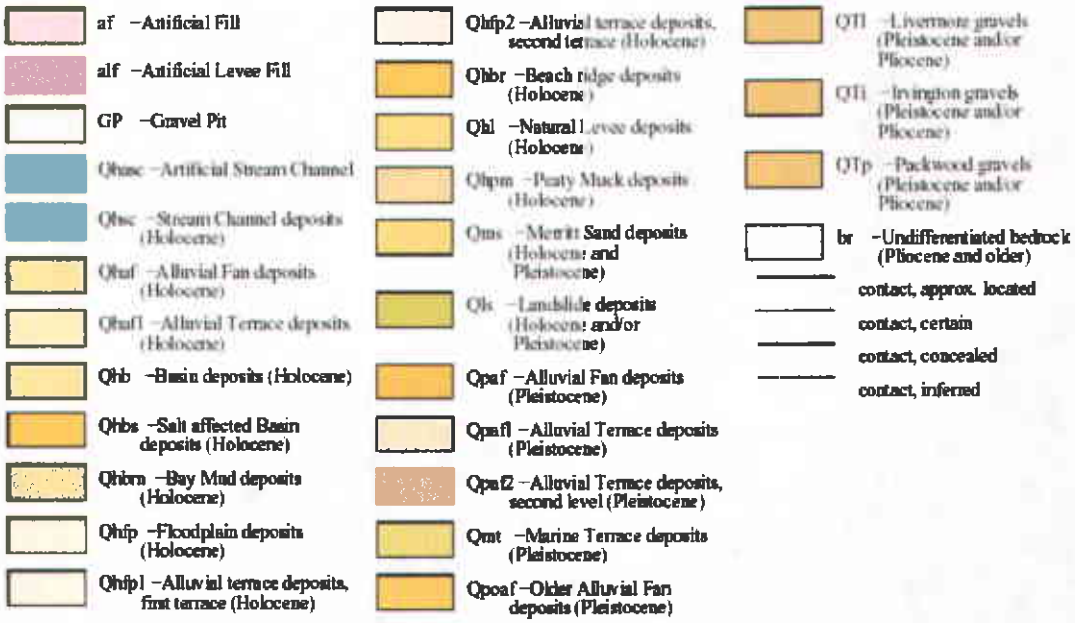
Oblique fault with thrust or reverse component, concealed



Quaternary Geology of Alameda County, and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California, USGS Open-File Report 97-97, 1997

Quaternary Geology of Alameda County…USGS Open-File Report 97-97, 1997

MAP EXPLANATION



APPENDIX B

Aerial Photograph Review Information

AERIAL PHOTO REVIEW DETAILS

The 1939 aerial photographs show that the Site was undeveloped. The adjacent properties appeared to be undeveloped as well. The general area appeared to be used for agriculture. I-680 and US 50 (now known as I-580) had not been constructed west or south of the Site. The flood control channel west of the Site was visible in these photographs but did not appear to be concrete lined.

The 1958 aerial photographs show that the Site was undeveloped. The adjacent properties appeared to be undeveloped as well. The general area appeared to be used for agriculture. I-680 had not been constructed to the west, but the US 50 (now known as I-580) had been constructed south of the Site. Sewage treatment ponds had been built southeast of the Site.

The 1960 aerial photograph shows that the Site and the adjacent properties were undeveloped land. A small structure appears to have been constructed northeast of the Site.

The 1966 aerial photographs show that Site and its vicinity had been prepared for development. The Site's ground surface appeared to have been disturbed. Dublin Boulevard had been widened north of the Site, and Village Parkway had been constructed north and east of the Site. The ground surface on the northern, eastern, and southern adjacent properties were disturbed; however, no structures were present on them. Highway I-680 had been constructed immediately west of the Site, and the properties across I-680 were undeveloped except for a drive-in to the southwest. In addition, it appears that the flood control channel west of the Site had been lined with concrete.

The 1979 aerial photograph shows that the Site had been developed with a service station. The northern, eastern, and southern adjacent properties had been developed with retail and commercial buildings. Commercial and retail buildings had been constructed to the west across I-680 from the Site north and south of Dublin Boulevard.

No changes in the uses of the Site and its adjacent properties from 1979 were apparent in the 1984 aerial photograph, except for the removal of the drive-in theater southwest of the Site.

No changes in the uses of the Site and its adjacent properties from 1984 were apparent in the 1987 aerial photograph, except for the construction of retail or commercial buildings at the former drive-in theater location southwest of the Site.

No changes in the uses of the Site and its adjacent properties from 1987 were apparent in the 1996 aerial photograph, except for the construction of additional retail or commercial buildings at the former drive-in theater location southwest of the Site.

No changes in the uses of the Site and its adjacent properties from 1996 were apparent in the 1999 aerial photograph, except for the destruction of retail or commercial buildings south and southwest of the Site.

No changes in the uses of the Site and its adjacent properties from 1999 were apparent in the 2004 aerial photograph, except for the construction of on and off ramps south and southwest of the Site.


5-8-02
WAC-C-02CA 9-84
waccorp.com
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NAC-C-02CA 9-85
naccorp.com
(C) Copyright NAC Corp 2002


8-16-79
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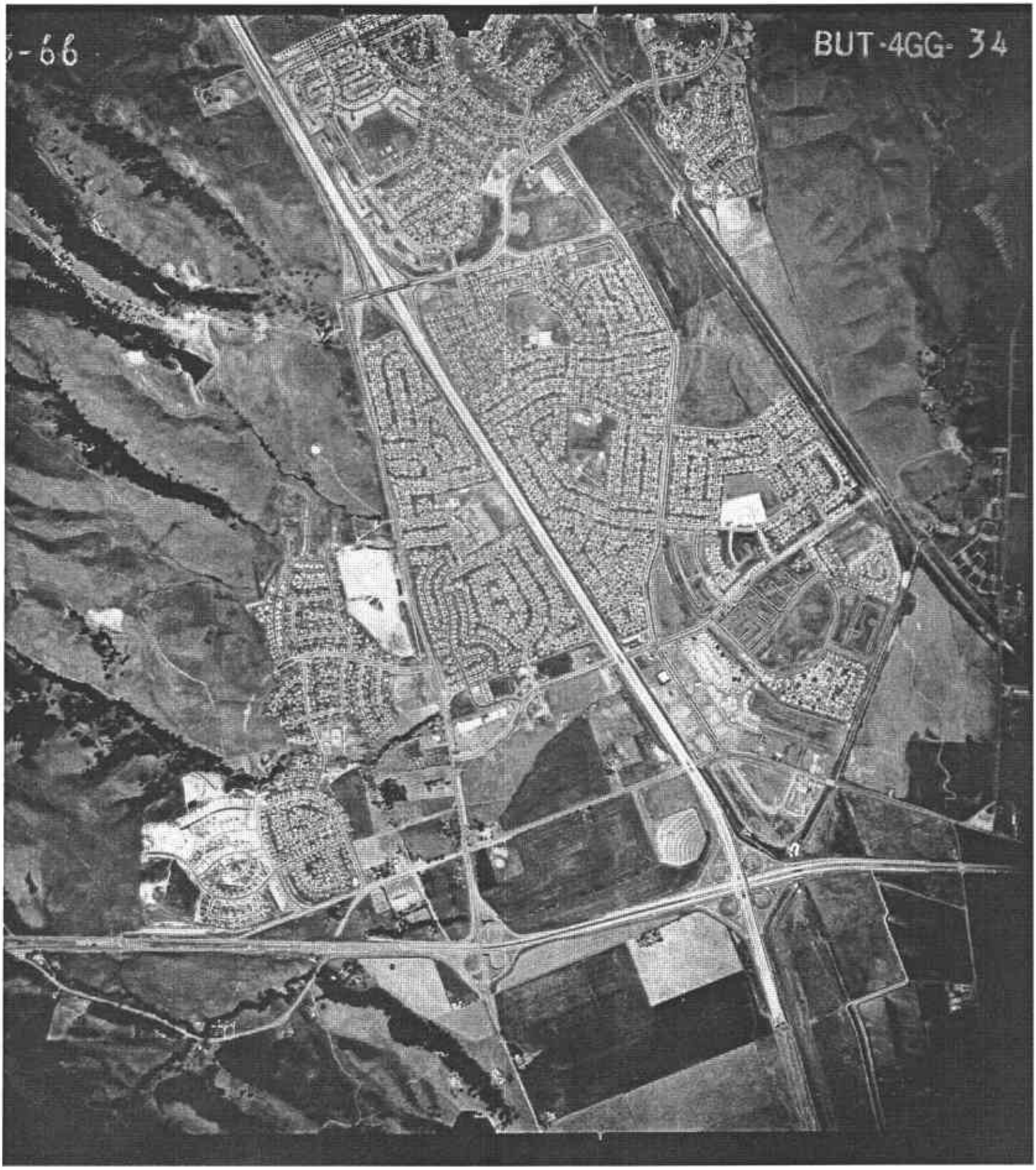
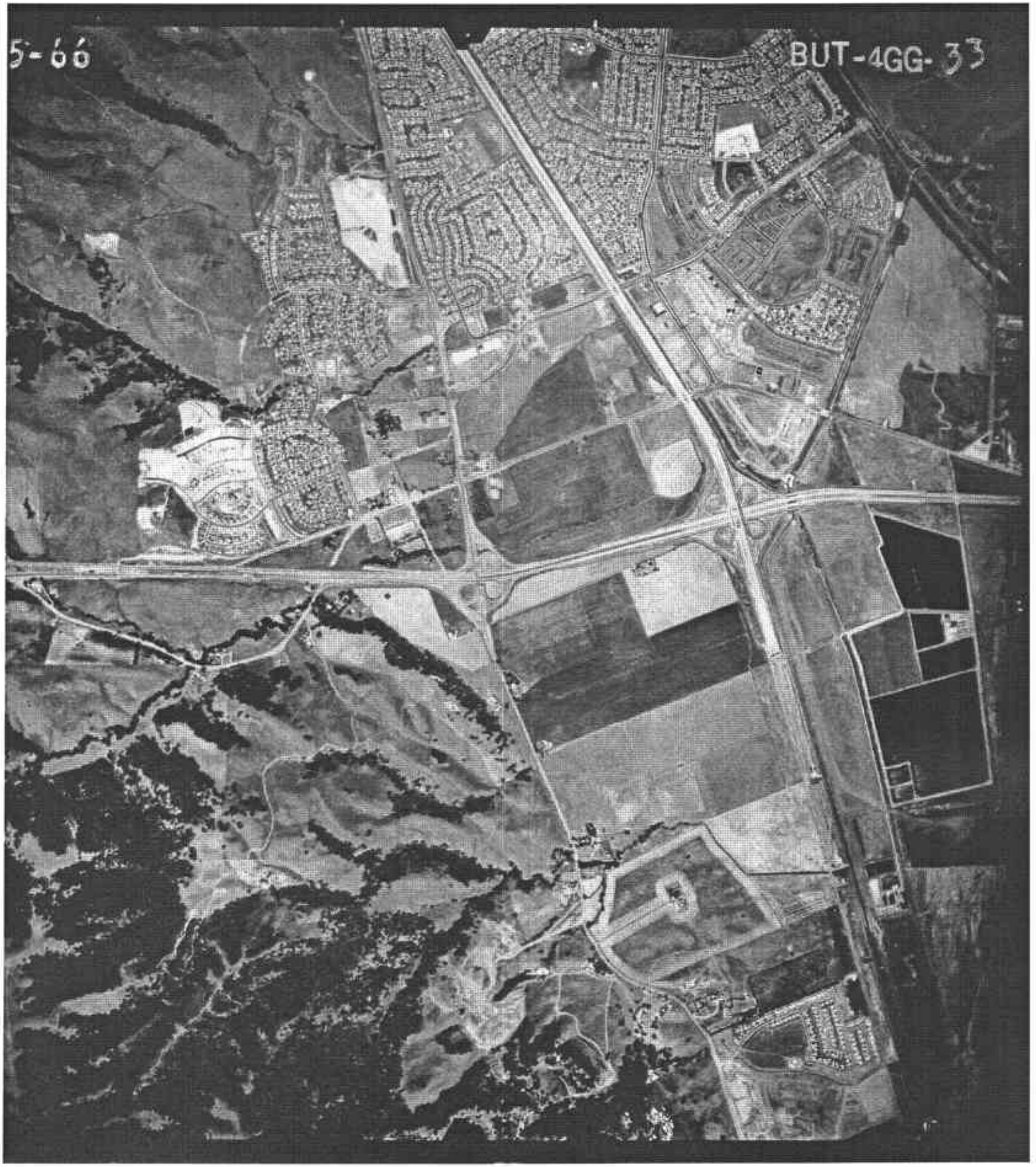
SDA 06001
179-1


-66
BUT-4GG-34

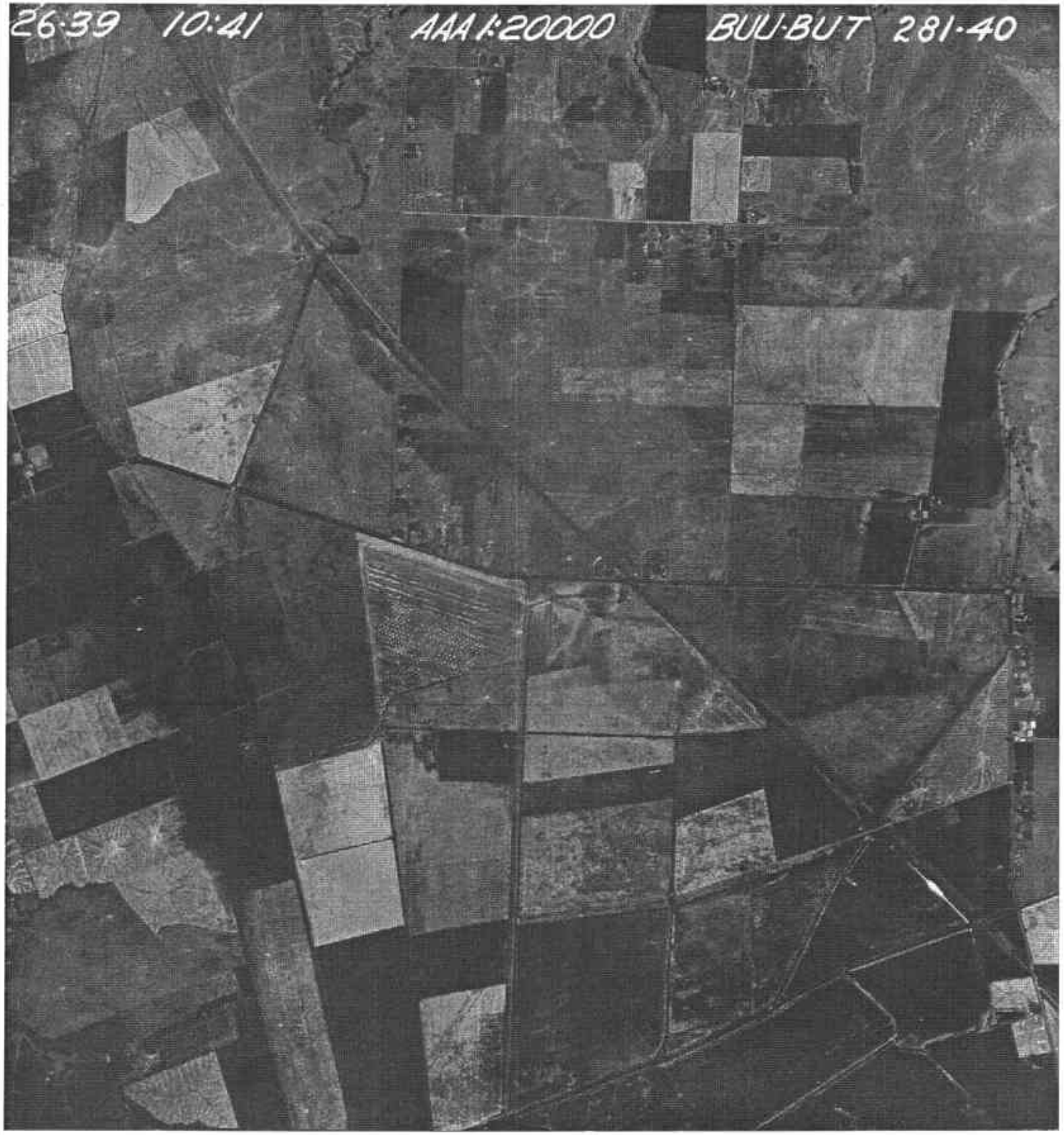

5-66
BUT-4GG-33


1960
757


9-13-58
BUT -5V-1


-13-58
BUT -5V-12


25-39
BUT-BUD-219-116


26·39 10:41 AAA 1:20000 BUJ·BUT 281·40

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: EA 1

Coordinates: 121 55' 20" West
37 41' 10" North
Elevation top of casing:333.41
Casing below surface:0.28 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS Rotary with 10 inch hollow stem auger and CA modified split tube sampler lined with 2 inch brass sleeves; HEW Drilling Co C57:384167

				DRILLING START	DRILLING FINISH
WATER LEVEL	10.71	10.39			
TIME	1200	1205		TIME 0930	TIME 1230
DATE	10-20	10-21			
REFERENCE	T of C	T of C		DATE 10-17	DATE 10-17

SURFACE CONDITIONS Landscaped grass

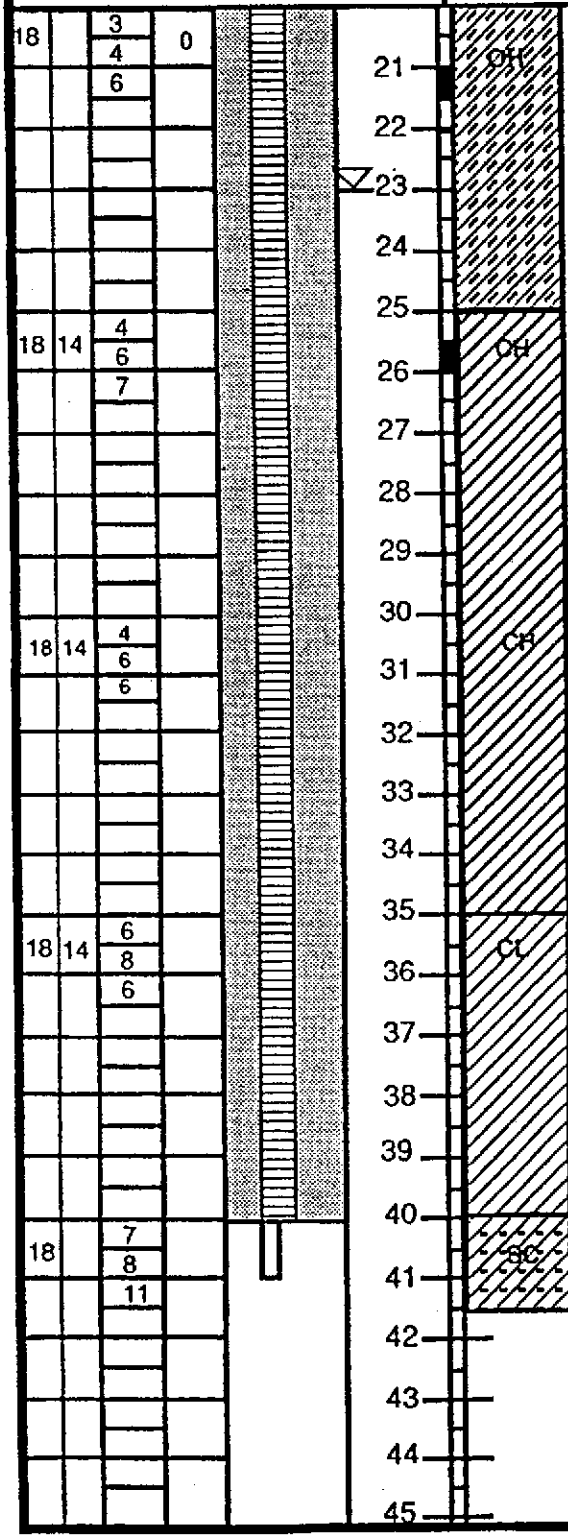
DESCRIPTION by: T. R. Winsor

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	
					0		
					1		Dark greenish-black silt and clay-rich soil, with rare coarse sand grains, abundant tree roots and organics.
					2		
					3		
					4		
					5		
18	12	3 3 4	0		6	CL	Dark greenish-black silty clay, angular silt sized fragments of quartz in plastic clay; locally goes to gray-green and has the appearance of a fill; aggregated chunks and pieces of clay-rich material; very plastic, damp, no odor.
					7		
					8		
					9		
					10		
18	14	3 4 6	0.6		11	CH	Dark olive-gray to greenish-gray clay; soft and lustrous, plastic and pliable, damp but no odor; rare sand/silt grains,still has the aggregated look of a fill.
					12		
					13		
					14		
					15		
18	16	3 5 6	0		16	CH	Olive-gray clay, loses the aggregated appearance of a fill , very rare silt grain, damp, no odor, plastic; a consistent clay
					17		
					18		
					19		
					20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

LOG OF SOIL BORING **EA1**



Olive-gray clay, very plastic, damp with no odor, rare silt grains and abundant organics.

Gray-green clay, very tough plastic clay with local Fe oxides and organics, rare silt grains and angular lithics.

Tough, sticky pliable clay-dark, angular silt is visible in small %, not sufficient to give clay a gritty feel; still smooth, wet/moist but not yielding a lot of water

Gray-green silty clay to clayey silt/sand, much more silt than above but still very plastic and pliable, silt is evenly distributed rounded silt sized grains of quartz cemented by clay; wet ;silt to 80%, (3 brass tubes).

Very fine-grained sand or silt cemented with clay, sample is still coherent and pliable to a point; ultimately is rather friable; grains are rounded and very well sorted; no angular lithics or sand.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: **EA 2**

Coordinates:121 55'20" West
37 41'10" North

Elevation top of casing:332.59

Casing below surface: 0.26 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS: Rotary with 10 inch hollow stem auger and CA split spoon sampler lined with 2 inch brass sleeves; HEW Drilling Co. C57:384167

				DRILLING START	DRILLING FINISH
WATER LEVEL	10.09				
TIME	12:00			TIME 09:30	TIME 12:30
DATE	10-21			DATE 10-20-88	DATE 10-20-88
REFERENCE	T of C				

SURFACE CONDITIONS: Level asphalt SE corner of tank field

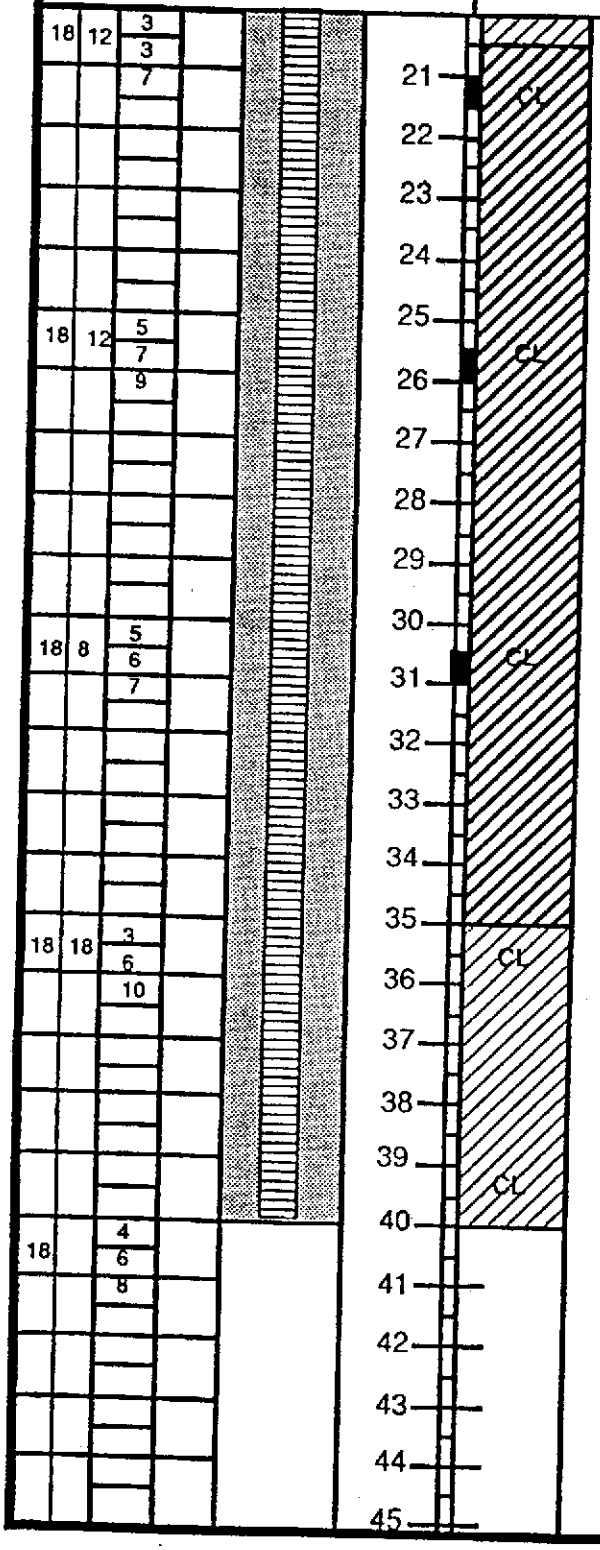
DESCRIPTION by: T.R. Winsor

Inches Driven	Inches Recovered	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG	
					0		Concrete.
					1		Right at the edge of the tank field: - part of the sample is fill; rounded sand and gravel - part is olive-gray clay, moist.
					2		
					3		
					4		
18	15	4 2 4	90		5	CL	Olive-gray fine grained sand and olive-gray clay; some odor.
					6		
					7		
					8		
					9		
18		4 4 7	1		10	CH	Olive-gray clay, very plastic with no obvious grit, faint odor.
					11		
					12		
					13		
					14		
18		4 6 8	0		15		Olive-gray, plastic clay, moist, rare subangular sand grains; local Fe oxide mottling distributed thru an apparent but weak, blocky, jointing; black carbon also distributed throughout; clay is very pliable, almost elastic.
					16		
					17		
					18		
					19		Water at 19 ft., can feel grit in clay on bit, no odor.
					20		

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin California

LOG OF SOIL BORING EA 2



Gray-green, sticky pliable clay; local Fe oxide mottling and rare subangular sand grains; pebbles of siltstone; some black carbon, sample is very moist and sticky but not saturated; upper tube contains a fine-grained sand; quartz and dark lithics give the sand a salt and pepper appearance.

Gray-green clay, sticky and pliable with little grit; locally mottled with Fe oxides, oxides are not heavy but are evenly distributed at intersections of small blocky texture; sample is wet but not saturated.

Darker gray-green clay, stiff but pliable and very sticky, still local Fe oxides but significantly less in amount.

Silty clay, fine angular silt-sized grains in clay similar to above, silt is approximately 20% of sample, dark angular lithics also occur with the quartz.

Silty clay to clayey sand; no sharp breaks, grades smoothly from silty clay to clayey sand to silty clay; sand contains subrounded quartz that is very fine grained, almost silt sized with 5-10% lithic fragments, also has 1-2% rounded quartz grains that are sand sized; clay contains 20-30% silt or very fine grained sand.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

LOG OF SOIL BORING: EA 3

Coordinates:121 55'20" West
37 41'10"North

Elevation top of casing:333.64

Casing below surface: 0.30 ft

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

DRILLING AND SAMPLING METHODS: Rotary drill with 10 inch hollow stem auger with CA split spoon auger lined with 2 inch brass liners; HEW Drilling Co.C57: 384167

				DRILLING START	DRILLING FINISH
WATER LEVEL					
TIME				TIME 08:30	TIME 15:30
DATE				DATE 10-21-88	DATE 10-21-88
REFERENCE					

SURFACE CONDITIONS: Concrete that slopes to the south

DESCRIPTION by: T. R. Winsor TRW

Inches Driven	Inches Recover	Blows/6" Sampler	OVA Reading	WELL DETAIL	DEPTH (Feet)	GRAPHIC LOG
					0	
					1	CL
					2	
					3	
					4	
					5	
18	10		20		6	SC
					7	
					8	CL
					9	
					10	
18	10	2 4 7			11	
					12	
					13	
					14	
					15	
18	10	2 5 7			16	CH
					17	
					18	
					19	
					20	

Olive-gray clay, plastic, locally with high silt but generally high clay, odor.

Very fine grained sand, salt and pepper appears with quartz and dark lithics, clay approximately 10%, subangular quartz.

Olive-gray clay, silt evenly dispersed, less than 2% in otherwise homogeneous clay, some clay is lighter colored gray giving a variegated appearance, sample is moist with very weak odor, rare pebbles of siltstone

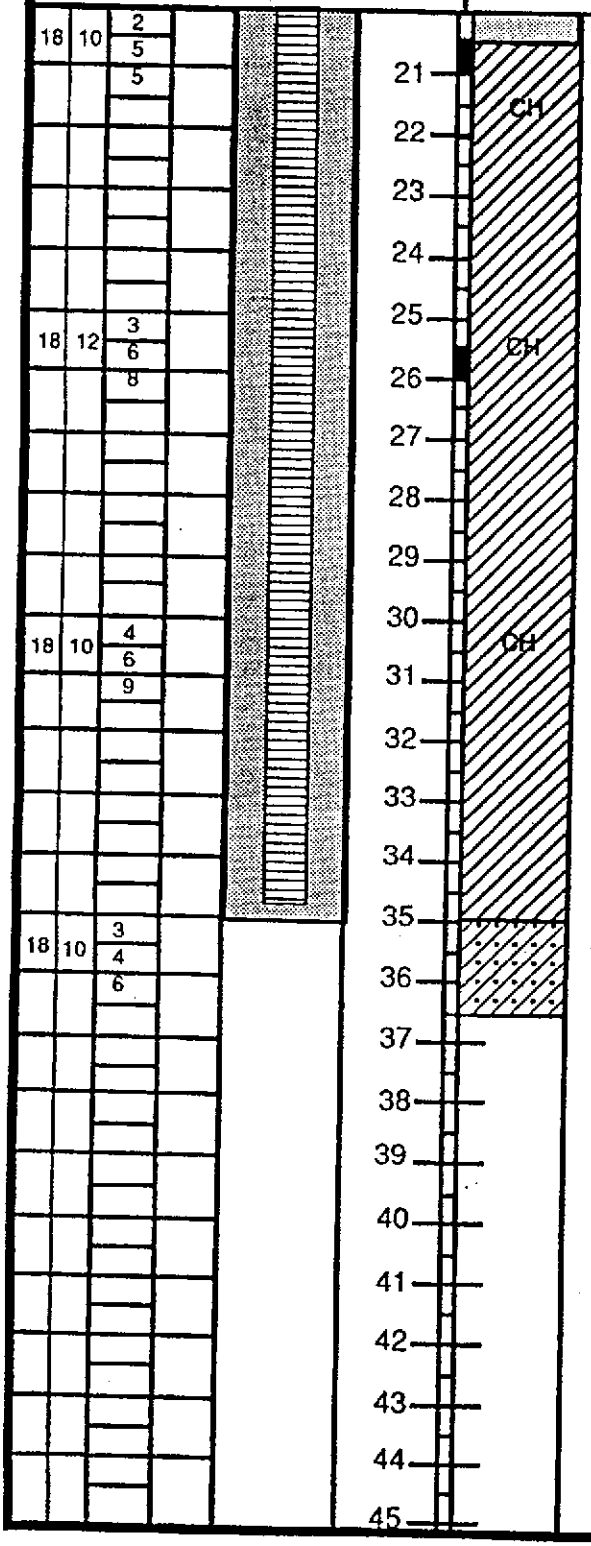
Olive-gray clay, less than 1% silt, rare pebbles or grains of siltstone, similar olive-gray/gray variegation to above, spotty Fe oxides, some organic debris; clay is almost elastic; clay is almost vitreous.

Fine-grained sand and clay is lithic-rich and subangular, still with significant clay content.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

CLIENT	STATION #	LOCATION
Chevron USA	SS 9-2582	7240 Dublin Blvd Dublin, California

LOG OF SOIL BORING EA 3



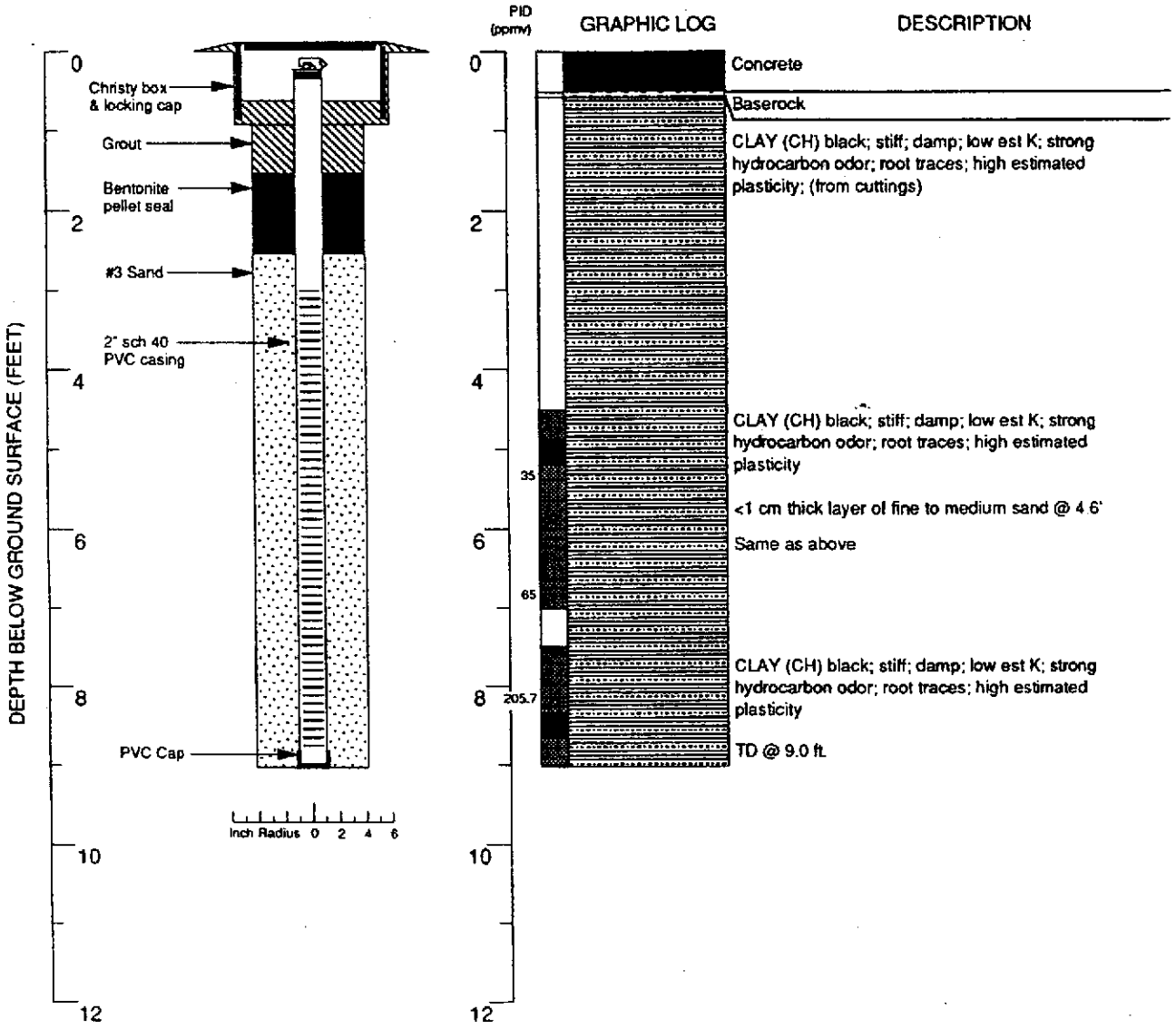
Sand

Grayish-green clay, clay is very sticky, stiff and almost elastic, not as vitreous as above, does not contain the silt.

Gray-green clay, with local fe oxides, rare pebbles of gray siltstone, clay is very tough, almost elastic, wet.

Gray-green clay, with limited local Fe oxides, less than 2%, rare sand grains, clay is very stiff and tough.

Clayey sand to sandy clay, grades evenly from a sand composed of very fine grained (almost silt sized) grains of quartz and lithics cemented by gray-green clay to a clay with only 30-40% sand; the sand is almost friable, and clay is still very pliable, wet.



Logged by:	Ken Leonard	Drilling Company:	B & F Drilling (Chempro)	Well Head Completion:	Christy box & locking cap
Project Mgr:	Tom Howard	Drilling Method:	8.25" Hollow stem auger	Type of Sampler:	2" split barrel
Dates Drilled:	5/1/90	Driller:	Breese Franks	TD (Total Depth):	9.0 ft.

EXPLANATION

- Water level during drilling
- Water level in completed well
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Grab sample

Contacts:
- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary

NR — No recovery

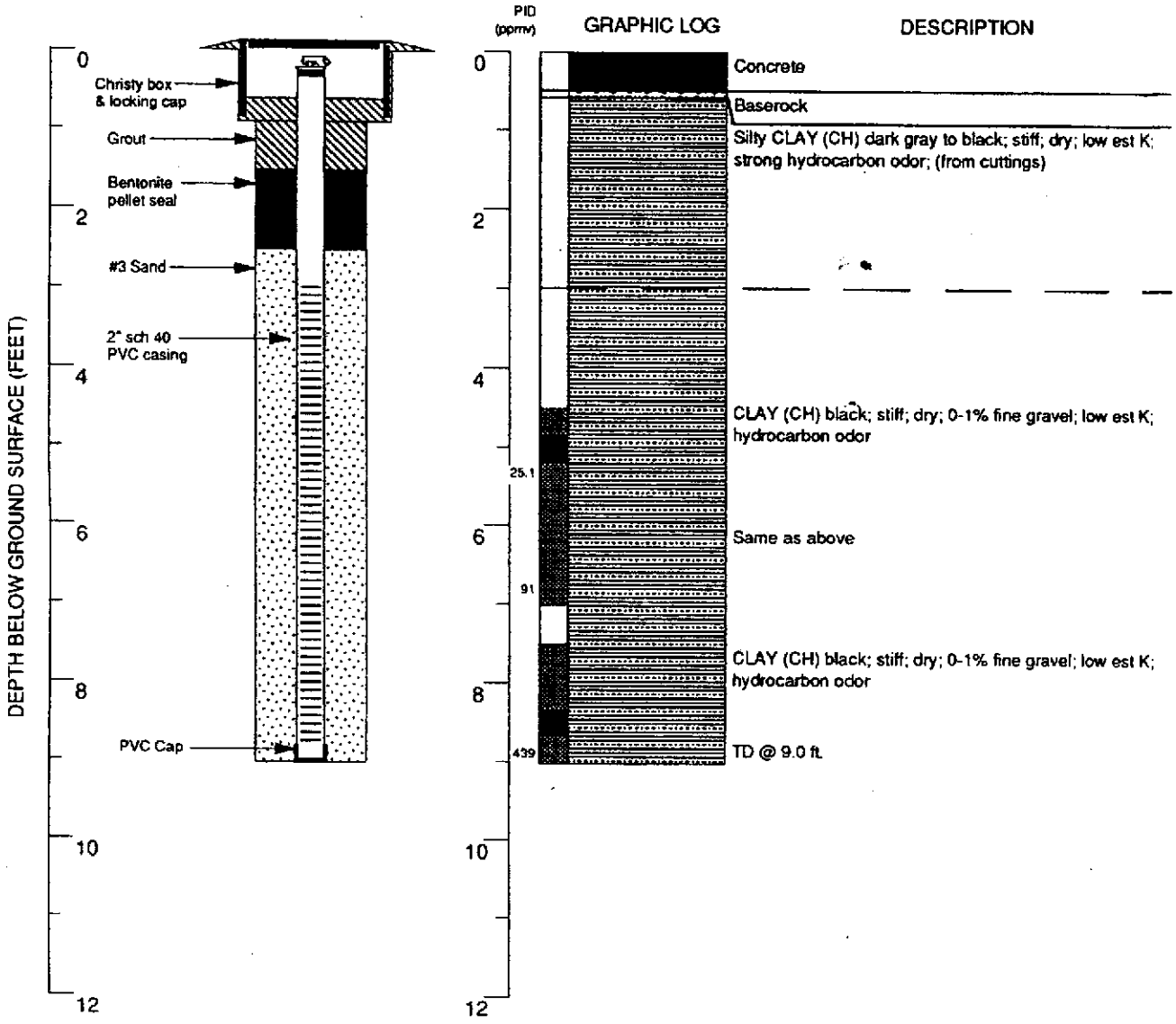
Boring Log and Well Completion Details
VW-1 (Boring B-6)

Chevron Service Station #92582
Dublin, California

VADOSE WELL 1

WESTERN GEOLOGIC RESOURCES, INC.

1-124.05



Logged by:	Ken Leonard	Drilling Company:	B & F Drilling (Chempro)	Well Head Completion:	Christy box & locking cap
Project Mgr:	Tom Howard	Drilling Method:	8.25" Hollow stem auger	Type of Sampler:	2" split barrel
Dates Drilled:	5/1/90	Driller:	Breese Franks	TD (Total Depth):	9.0 ft.

EXPLANATION

- Water level during drilling
- Water level in completed well
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Grab sample

Contacts:
- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery

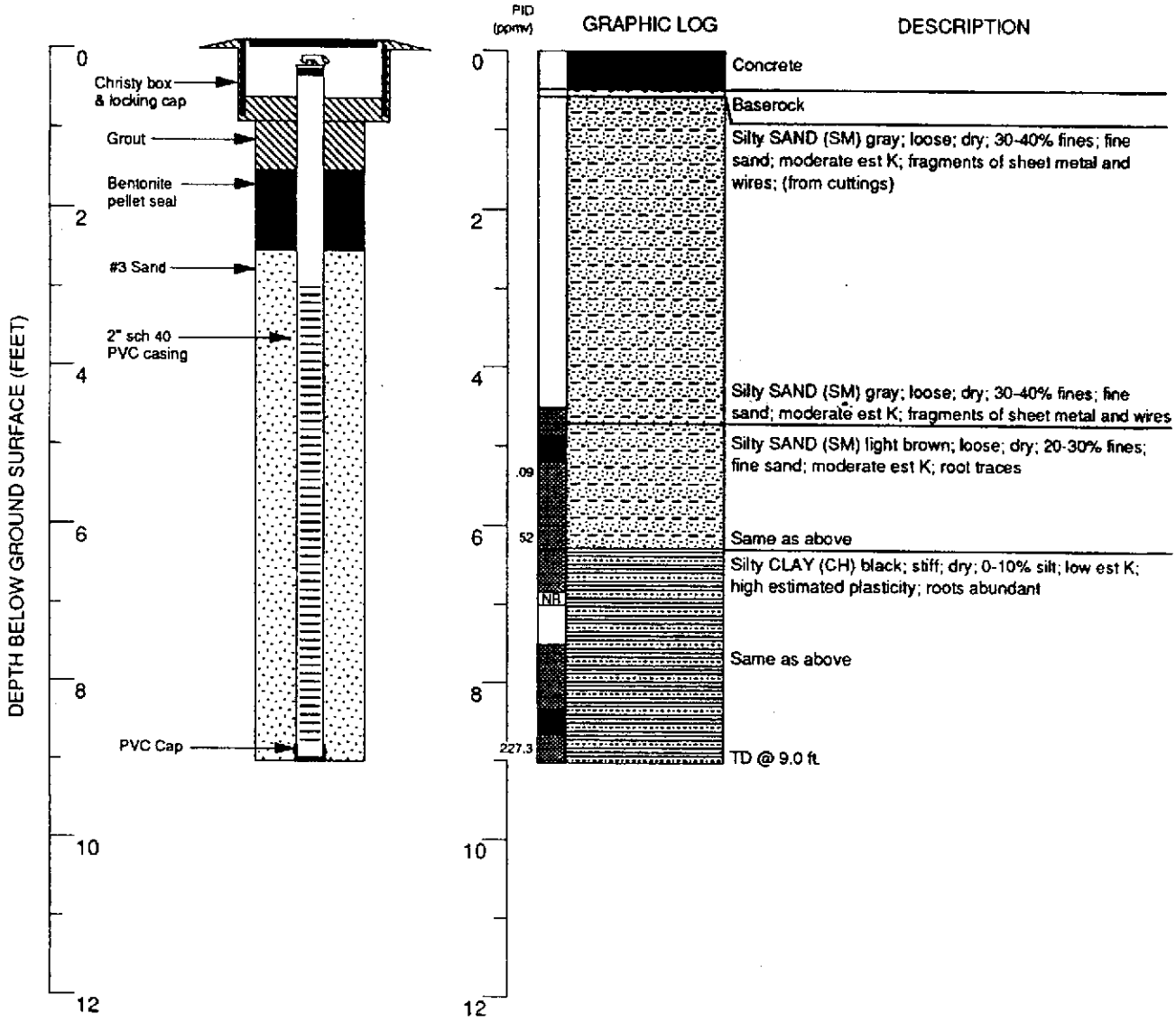
Boring Log and Well Completion Details
VW-2 (Boring B-7)

Chevron Service Station #92582
Dublin, California

VADOSE WELL
2

WESTERN GEOLOGIC RESOURCES, INC.

1-124.05



Logged by:	Ken Leonard	Drilling Company:	B & F Drilling (Chempro)	Well Head Completion:	Christy box & locking cap
Project Mgr:	Tom Howard	Drilling Method:	8.25" Hollow stem auger	Type of Sampler:	2" split barrel
Dates Drilled:	5/1/90	Driller:	Breese Franks	TD (Total Depth):	9.0 ft.

EXPLANATION

- Water level during drilling
- Water level in completed well
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Grab sample

Contacts:
- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery

Boring Log and Well Completion Details
VW-3 (Boring B-8)

Chevron Service Station #92582
Dublin, California

VADOSE WELL
3

WESTERN GEOLOGIC RESOURCES, INC.

1-124.05

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well MW-1

Project Chevron-Dublin — Owner Chevron USA Products Company

Location 7240 Dublin Boulevard, Dublin, CA — Proj. No. 02070 0027

Surface Elev. 333.8 ft. — Total Hole Depth 26.5 ft. — Diameter 8 in.

Top of Casing 333.56 ft. — Water Level Initial 18 ft. — Static 12.81 ft.

Screen: Dia 2 in. — Length 20 ft. — Type/Size 0.020 in.

Casing: Dia 2 in. — Length 5 ft. — Type Sch 40 PVC

Fill Material #3 Sand — Rig/Core CME-55/Split Spoon

Drill Co. SES, Inc. — Method Hollow Stem Auger/PID

Driller Morris Peterson — Log By Bruce Beale — Date 09/13/94 — Permit # _____

Checked By Ed Simonis — License No. RG#4422

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							Grass over dark brown silty CLAY (moist, no hydrocarbon odor)
2						CL	
4							Grayish brown silty CLAY (40, 60) with roots from nearby redwood tree (moist, no hydrocarbon odor)
6		1.0	MW-1 -5'	5 8 10		CL	
8							
10		1.0	MW-1 -10'	5 9 10		CL	(grades dark gray with white chalky patches, very stiff)
12							Static 09/23/94
14							(grades very plastic, hydrocarbon odor)
16		80	MW-1 -15'			CL	
18							Encountered Water, 09/13/94, 10:30am.
20		3.0	MW-1 -20'	3 5 8			Mottled gray, greenish gray, and brown silty CLAY (moist to wet, no hydrocarbon odor)
22						CL	
24						CL	

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well MW-1

Project Chevron-Dublin
Location 7240 Dublin Boulevard, Dublin, CA

Owner Chevron USA Products Company
Proj. No. 02070 0027

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							
26		2	MW-1 -25'	3 4 6		CL	Tan and light gray CLAY (wet, no hydrocarbon odor)
28							End of boring. Installed monitoring well.
30							
32							
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							

11/22/1994 lithlog-mar93

GROUNDWATER TECHNOLOGY

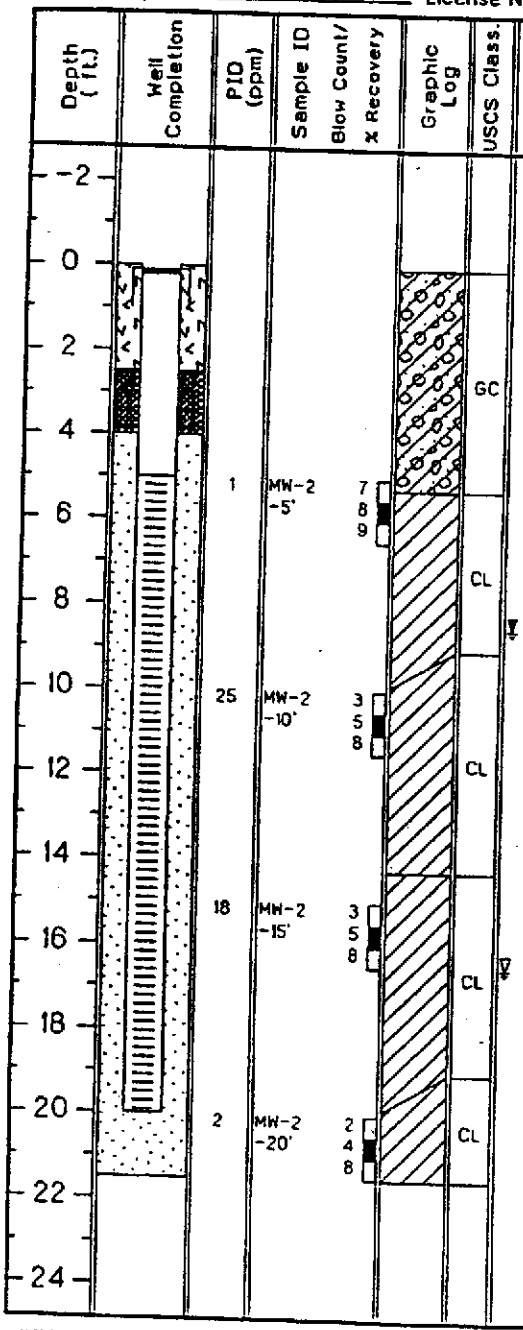
Drilling Log

Monitoring Well MW-2

Project Chevron-Dublin — Owner Chevron USA Products Company
Location 7240 Dublin Boulevard, Dublin, CA — Proj. No. 02070 0027
Surface Elev. 329.4 ft. — Total Hole Depth 21.5 ft. — Diameter 8 in.
Top of Casing 329.18 ft. — Water Level Initial 16.5 ft. — Static 8.5 ft.
Screen: Dia 2 in. — Length 15 ft. — Type/Size 0.020 in.
Casing: Dia 2 in. — Length 5 ft. — Type Sch 40 PVC
Fill Material #3 Sand — Rig/Core CME-55/Split Spoon
Drill Co. SES, Inc. — Method Hollow Stem Auger/PID
Driller Morris Peterson — Log By Bruce Beale — Date 09/13/94 — Permit #
Checked By Ed Simonis — License No. RG#4422

See Site Map For Boring Location

COMMENTS:



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Brown gravelly SAND SILT CLAY mixture (dry, no hydrocarbon odor)

Dark brown-gray mottled with tan and brown-orange silty CLAY (30, 70) (dry to moist, plastic, no hydrocarbon odor)

Static 09/23/94

Dark gray with brown mottling, sandy silty CLAY (5, 10, 85) with white calc areous specks (moist, moderate hydrocarbon odor)

Dark brown, silty CLAY (10, 90) (moist to wet, plastic, increasing hydrocarbon odor)

Encountered Water, 09/13/94, 10:30am.

Mottled green-gray and brown gray CLAY (moist to wet, no hydrocarbon odor)

End of boring. Installed monitoring well.

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well MW-3

Project Chevron-Dublin — Owner Chevron USA Products Company
Location 7240 Dublin Boulevard, Dublin, CA — Proj. No. 02070 0027
Surface Elev. 333.1 ft. — Total Hole Depth 26.5 ft. — Diameter 8 in.
Top of Casing 332.73 ft. — Water Level Initial 18 ft. — Static 12.07 ft.
Screen: Dia 2 in. — Length 20 ft. — Type/Size 0.020 in.
Casing: Dia 2 in. — Length 5 ft. — Type Sch 40 PVC
Fill Material #3 Sand — Rig/Core CME-55/Split Spoon
Drill Co. SES, Inc. — Method Hollow Stem Auger/PID
Driller Morris Peterson — Log By Bruce Beale — Date 09/13/94 — Permit #
Checked By Ed Simonis — License No. RG#4422

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							Grass over gray brown silty CLAY with pieces of glass
2						CL	
4							(grades with chunks of concrete)
6		0	MW-3 -5'	4 8 5		CL	Mottled brown and tan silty CLAY (30, 70) with white calcareous specks (moist, no hydrocarbon odor)
8							
10		160	MW-3 -10'	2 3 7			Dark gray-brown silty CLAY (40, 60) (stiff, moist/dry, non plastic, moderate to strong hydrocarbon odor)
12						CL	Static 09/23/94
14							Mottled gray/brown-gray CLAY (30, 70) with pale gray chalky patches (moist, plastic, moderate hydrocarbon odor)
16		30	MW-3 -15'	2 3 6		CL	
18							Encountered Water, 09/13/94, 17:10pm.
20		3	MW-3 -20'	2 3 8			Mottled gray and brown silty sandy CLAY (10, 40, 50) (moist, very slight hydrocarbon odor)
22						CL	
24						CL	

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well MW-3

Project Chevron-Dublin
Location 7240 Dublin Boulevard, Dublin, CA
Owner Chevron USA Products Company
Proj. No. 02070 0027

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							
26		0	MW-3 -25'	3 5 7		CL	(grades silty clay (20, 80) with light gray irregular-shaped hard calcareous concentrations to 1"long, no hydrocarbon odor) End of boring. Installed monitoring well.
28							
30							
32							
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							

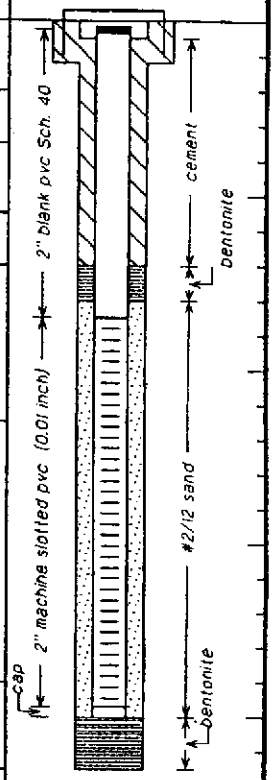
Gettler-Ryan, Inc.

Log of Boring MW-4

PROJECT: *Chevron SS# 9-2582*	LOCATION: *7240 Dublin Boulevard, Dublin, CA*
G-R PROJECT NO. : *5274.01*	SURFACE ELEVATION: *332.64 feet MSL*
DATE STARTED: *02/22/96*	WL (ft. bgs): *11.5* DATE: *02/22/96* TIME: *14:40*
DATE FINISHED: *02/22/96*	WL (ft. bgs): *10.4* DATE: *02/22/96* TIME: *15:20*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *21.5 Feet*
DRILLING COMPANY: *Bay Area Exploration, Inc.*	GEOLOGIST: *B. Sieminski*

DEPTH (feet)	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					PAVEMENT – concrete over sand.
				CL	CLAY (CL) – black (10YR 2/1), damp, stiff, medium plasticity; 100% clay.
				CL	CLAY (CL) – very dark grayish brown (10YR 3/2), mottled strong brown (7.5YR 3/4), moist, stiff, low plasticity; 95% clay, 5% fine sand.
5	0	8	MW4-6	CL/SC	SANDY CLAY WITH LENSES OF CLAYEY SAND (CL/SC) – very dark gray (5Y 3/1), moist, stiff, low plasticity; 70% clay, 30% fine sand.
				CH	CLAY (CH) – black (N/0) mottled gray (N 5/0), moist, stiff, high plasticity; 95–100% clay, 0–5% carbonate nodules.
10	0	12	MW4-9.5		
				CL	SANDY CLAY (CL) – dark gray (10YR 4/1) mottled light brownish gray (10 YR 6/1), saturated, stiff, low plasticity; 70% clay, 30% fine to coarse sand consisting of carbonate grains.
15	0	11	MW4-16		
				CL	CLAY (CL) – dark gray (5Y 4/1) mottled olive (5Y 4/3), damp to moist, stiff, medium plasticity; 95% clay, 5% fine sand.
20	0	10	MW4-21		
					Bottom of boring at 21.5 feet, 02/22/96.
25					
30					(* = converted to equivalent standard penetration blows/ft.)
35					

WELL DIAGRAM



JOB NUMBER: *5274.01*

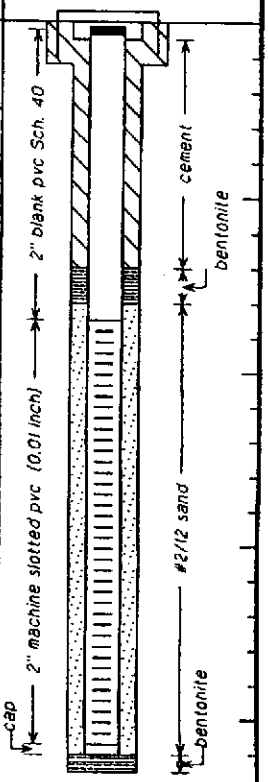
Gettler-Ryan, Inc.

Log of Boring MW-5

PROJECT: *Chevron SS# 9-2582*	LOCATION: *7240 Dublin Boulevard, Dublin, CA*
G-R PROJECT NO.: *5274.01*	SURFACE ELEVATION: *333.20 feet MSL*
DATE STARTED: *02/22/96*	WL (ft. bgs): *17.0* DATE: *02/22/96* TIME: *11:10*
DATE FINISHED: *02/22/96*	WL (ft. bgs): *9.7* DATE: *02/22/96* TIME: *12:30*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *21.5 Feet*
DRILLING COMPANY: *Bay Area Exploration, Inc.*	GEOLOGIST: *B. Sieminski*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					PAVEMENT – clay bricks over sand, asphalt and baserock.
				CL	CLAY (CL) – black (10YR 2/1), damp, stiff, medium plasticity; 100% clay.
5	0	8	MW5-6	CL/SC	SANDY CLAY WITH GRAVEL AND LENSES OF CLAYEY SAND (CL/SC) – dark gray (10YR 4/1), moist, stiff, low plasticity; 60% clay, 30% fine sand, 10% fine gravel.
	0	6	MW5-8	CH	CLAY (CH) – black (10YR 2/1), moist, stiff, high plasticity; 100% clay.
10	0	10	MW5-9.5		With carbonate nodules.
				CL	CLAY WITH SAND (CL) – very dark gray (5Y 3/1), moist, stiff, medium plasticity; 85% clay, 15% fine to coarse sand consisting of carbonate grains.
	0	11	MW5-14		With olive (5Y 4/3) mottling.
15	0	12	MW5-16		Sand increases to 25%, no olive mottling, low plasticity.
				CL/SC	CLAYEY SAND WITH LENSES OF SANDY CLAY (CL/SC) – dark gray (5Y 4/1) mottled olive (5Y 4/3), saturated, medium dense; 50% fine sand, 50% clay; soft drilling at 17-18 feet.
20	0	13	MW5-21	CL	CLAY (CL) – dark gray (5Y 4/1) mottled olive (5Y 4/3), moist, stiff, medium plasticity; 90% clay, 10% fine sand; carbonate nodules.
25					Bottom of boring at 21.5 feet, 02/22/96.
30					(* = converted to equivalent standard penetration blows/ft.)
35					

WELL DIAGRAM



JOB NUMBER: *5274.01*

ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE S-1

Boring Location: See Site Map.

Project: 2692
Site Location: 7240 Dublin Blvd, Dublin CA
Drilling Method: HSA
Driller: Woodward Drilling (Frank Ramirez)
Logged By: R Papler

Date Drilled: April 25, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 6.5 ft
Approved By: M Sepehr PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: continuous core	SAMPLED: blow count per 1 ft	POTENTIAL WATER-BEARING ZONE AS PER EC LOGS
				4" concrete over 3" baserock			
0			CH	CLAY: dark gray brown, firm to stiff, moist, highly plastic. No petroleum hydrocarbon (PHC) odors.			
0			CL	SANDY CLAY: dark gray brown, firm to stiff, moist, plastic, 30-40% very fine sand. No PHC odor.			
97	5		SM&ML	SILTY SAND & SANDY SILT: light gray brown, loose to medium dense, firm, moist to v. moist becoming wet at 5 to 6'. No PHC odor.		10	UPPER-SHALLOW
115			CL	SILTY CLAY: dark gray brown, stiff to v. stiff, moist, plastic w/ stringer of moist v. fine sand at 7'. Moderate PHC odor.		17	
180						15	
	10					23	
						12	
				As Above with some caliche below 11'		21	
56						18	
						32	
31						24	
	15					28	
20			SC/CL	CLAYEY SAND/SANDY CLAY: light gray brown, firm to stiff, moist, slightly to moderately plastic, 40-60% v. fine sand w/ v. moist stringers of med. to fine sand. Slight PHC odor.		16	
15			CH	CLAY: gray, firm to stiff, moist, highly plastic w/ gastropod shells and carbonaceous deposits. No PHC odor.		19	
10			SM	SILTY SAND: brownish gray, loose to med. dense, v. moist to wet, fine to coarse, moderately sorted. No PHC odor.		12	SHALLOW
5			CL	SANDY CLAY: gray, stiff, moist, plastic, 30-40% v. fine sand w/ v. moist stringer of sandy silt at 19.5'. No PHC odor.		18	
	20					40	
						43	
			CL	GRAVELLY CLAY w/some Sand: ls brownish gray, wet, 20-30% well rounded gravel to 1/2", <15% v. fine sand. No PHC odor.		10	
0			CL	SILTY CLAY: gray brown mottled gray, moist, v. stiff to hard, plastic w/ some caliche. No PHC odor.		22	
						15	
	25					23	

ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE S-1

Boring Location: See Site Map.

Project: 2692
Site Location: 7240 Dublin Blvd
Dublin CA
Drilling Method: HSA
Driller: Woodward Drilling (Frank Ramirez)
Logged By: R Papler

Date Drilled: April 25, 2003
Casing Elevation: NA
Depth to 1st Groundwater: NA
Approved By: M Sepehr PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED continuous	SAMPLED blow counts	POTENTIAL WATER-BEARING ZONE AS PER EC LOGS
0			CL	SILTY CLAY: gray brown mottled gray, moist, v. stiff, to hard, plastic w/ some caliche. No PHC odor		25	MIDDLE
				As Above		33	
						28	
						40	
						20	
	30						
0			CL	SANDY CLAY: gray, stiff, v. moist, plastic, 15-30% v. fine sand. No PHC odor.		38	
						22	
0			SP&ML	SAND interbedded w/ SANDY SILT: gray, loose to medium dense, wet, v. fine, well sorted. No PHC odor.		37	
						20	
0			SC/CL	CLAYEY SAND/SANDY CLAY: gray becoming grayish brown w/ depth, medium dense to dense, moist, plastic. No PHC odor.		36	
	35					54	
				As above w/ stringer of wet silty sand at 36'.		64	
						48	DEEPER
						62	
0			SC	CLAYEY SAND: gray brown mottled gray, medium dense to dense, moist to v. moist, slightly plastic w/ stringers of wet silty sand at 41', 41.5', and 43'. No PHC odor.		15	
	40					27	
				As above with stringers of wet silty sand at 41', 41.5', and 43'.		18	
						34	
0			CL	SILTY CLAY: gray brown mottled gray, v. stiff to hard, moist, plastic w/ stringer of v. moist silty sand at 47.25' w/ abundant caliche at 45-46'. No PHC odor.		55	
	45					66	
				As above with moist silty sand stringer at 47'.		26	
						38	
						47	
						57	
	50			Total Depth: 49 ft bgs			

APPENDIX D

Standard Field Procedures

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch type sampler, collected from the open borehole via pump/bailer, or collected from within screened PVC inserted into the borehole via a pump/bailer. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

STANDARD FIELD PROCEDURES FOR MONITORING WELLS

This document describes Pangea Environmental Services' standard field methods for drilling, installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Well Construction and Surveying

Groundwater monitoring wells are installed in soil borings to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security. The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

APPENDIX E

Well Survey Information

STATE OF CALIFORNIA -- THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
CENTRAL DISTRICT
3251 S STREET
SACRAMENTO, CA 95816-7017

DEC 7 2004

Mr. D. Edward MacDaniel
Pangea Environmental Services, Inc.
3210 Gough Street, Suite 105
San Francisco, California 94123

Dear Mr. MacDaniel:

In response to your request, enclosed is the well location information for all types of wells in the following area:

A 2,000-foot radius of 7240 Dublin Boulevard, Dublin
Township 03 South, Range 01 West, Section 1

Your data request required one hour of staff time. We located 73 well drillers reports as a result of this search. The total charge to reproduce the copies is $96.50 ($50 per hour of staff time plus 25 cents per page for 186 pages). Your remittance should be made payable to the Department of Water Resources, General Accounting Office, Post Office Box 942836, Sacramento, California 94236-0001. Please show **"Invoice DEC 6-1"** on your remittance and return it with the enclosed copy of this letter to our Accounting Office.

If you need additional information or have any questions, please contact Anne Roth at (916) 227-7632 or fax (916) 227-7600.

Sincerely,

Robert L. Niblack, Chief
Geology and Groundwater Section

Enclosures

cc: Mr. Bob Clark-Riddell
Pangea Environmental Services, Inc.
64 Sonia Street, Suite B
Oakland, California 94618

	ZONE 7 WATER AGENCY **5997 PARKSIDE DRIVE** **PLEASANTON, CA 94588**	**WELL LOCATION MAP**	**SCALE: 1"= 700 ft** **DATE: 12/03/04** **7240 Dublin Boulevard** H:\FLOOD\REFERALS\REFERALS.WOR

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

01-607

WELL NUMBER 3S/1W 1E12

ADDRESS: AMADOR PLAZA RD & DUBLIN BLVD
DUBLIN

OWNER: ENEA PLAZA

PRIMARY USE: WATER SUPPLY [ ]
CATHODIC [ ]
MONITORING [X]

Destroy

DRILLER: EPIGENE

DATE COMPLETED: 02/04/1994

DEPTH: COMPLETED 20 Ft
DRILLED 20 Ft

DIAMETER 1 In

OTHER DESIGNATION: PZ-1

PUMP: TYPE
MAKE
HP
DISCHARGE In

METER NUMBER

SOUNDED DEPTH Ft

DATE SOUNDED

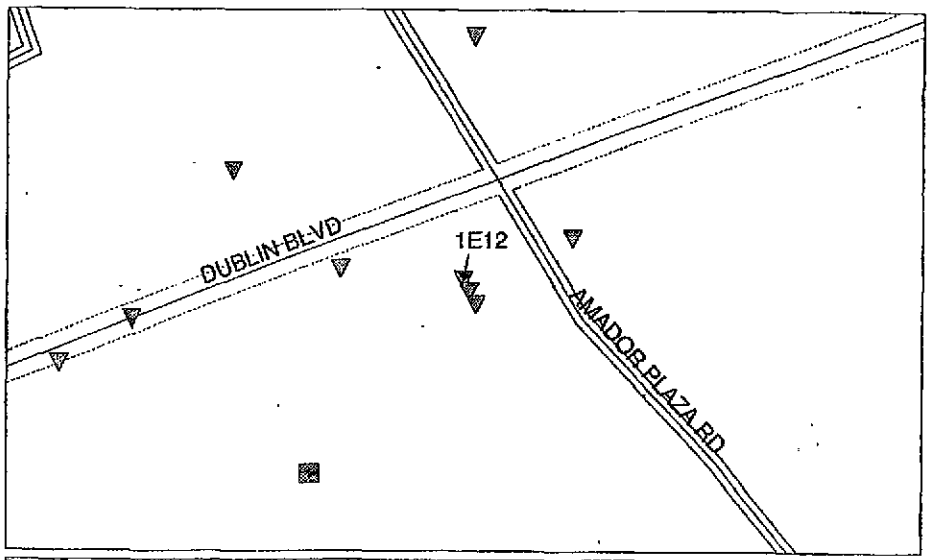
DATE DESTROYED 04/27/1998

DATE UNLOCATABLE

LOCATION SKETCH

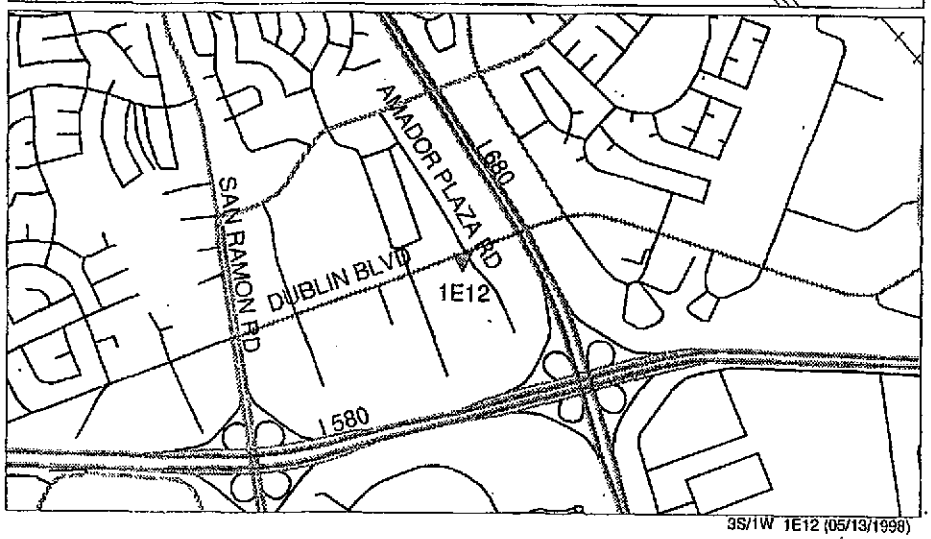
1285

DETAIL



Scale: 1 inch = 200 ft

GENERAL



Scale: 1 inch = 2000 ft

0 2000

3S/1W 1E12 (05/13/1998)

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

01-608

WELL NUMBER **3S/1W 1E13**

ADDRESS: **AMADOR PLAZA RD & DUBLIN BLVD**
DUBLIN

OWNER: **ENEA PLAZA**

Destroy

PRIMARY USE: WATER SUPPLY [ ]
CATHODIC [ ]
MONITORING [X]

DRILLER: **EPIGENE**

DATE COMPLETED: **02/04/1994**

DEPTH: COMPLETED **22** Ft
DRILLED **22** Ft

DIAMETER **4** In

OTHER
DESIGNATION: **EW-1**
PUMP: TYPE
MAKE
HP
DISCHARGE In

METER NUMBER

SOUNDED DEPTH Ft

DATE SOUNDED

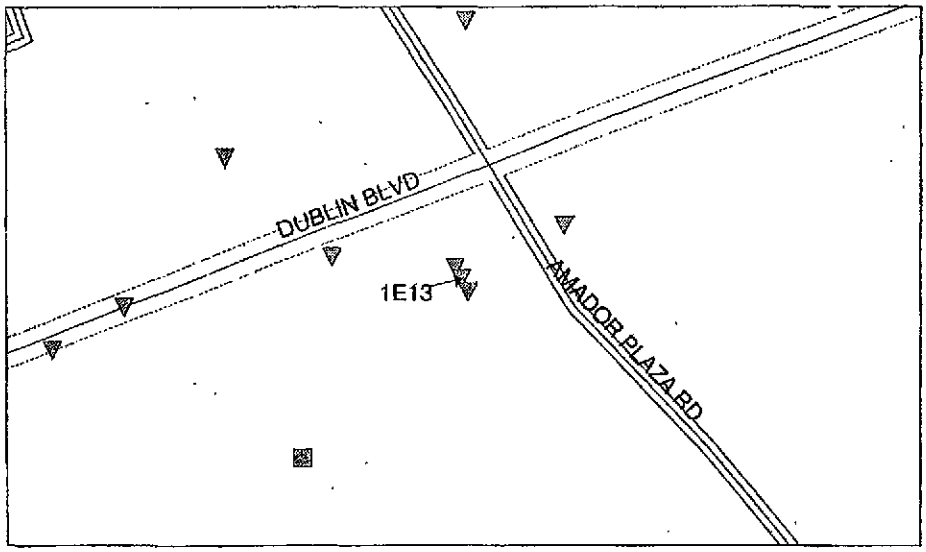
DATE DESTROYED **04/27/1998**

DATE UNLOCATABLE

LOCATION SKETCH

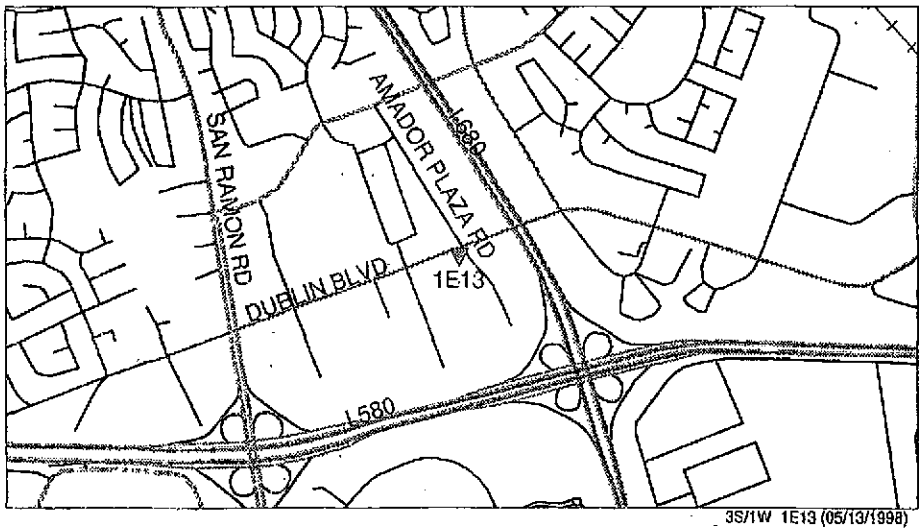
1780

DETAIL



Scale: 1 inch = 200 ft

GENERAL



Scale: 1 inch = 2000 ft

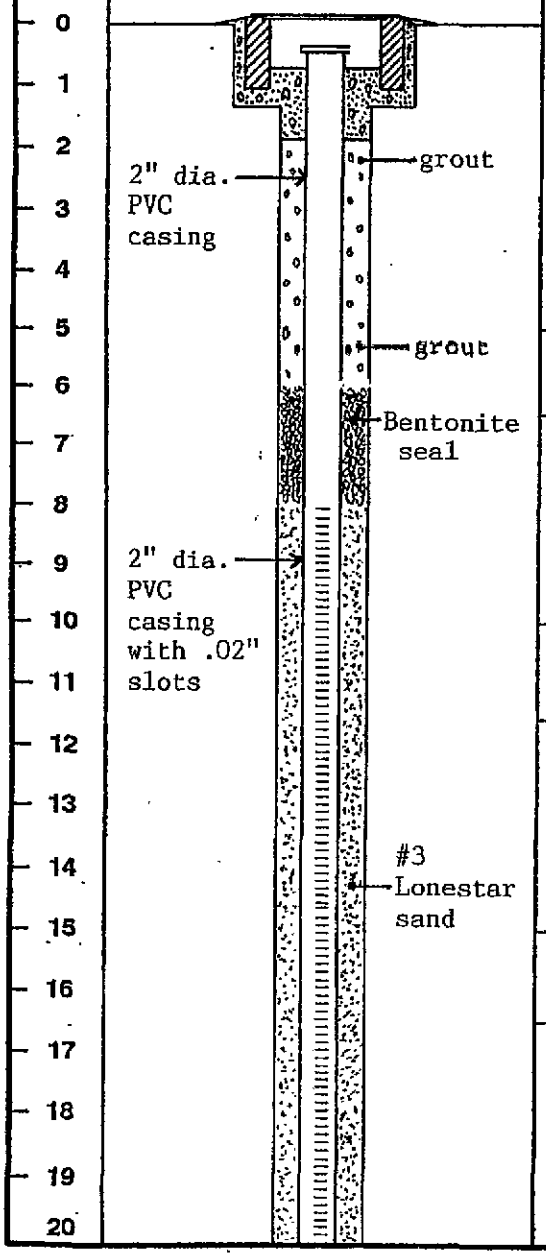
0 2000

3S/1W 1E13 (05/13/1998)

WELL LOG

PERMIT 93636 01-555R 3S/1W 1E11

Project	Enea Plaza	Well Number	MW-4
Location	Amador Plaza Road, Dublin, California.	Diameter of Boring	8 inches
Project #	93-035	Total Depth of Boring	23 feet
Geologist	John Alt, CEG	Date Started	December 13, 1993
Drill Company	Great Sierra Exploration 1763	Date Completed	December 13, 1993
Comments	Drilled using hollow-stem auger, with split-spoon sampler.		



Depth in Feet	Sample #	Blow Counts	Graphic Log	DESCRIPTION
0				sod
1				Black silty CLAY, organic, moist, topsoil fill.
2				
3				
4				
5				Black CLAY with gray motteling, some sand and small angular gravel, plastic, moist, stiff.
6	1			
7				
8				
9				
10		2		
11	2	2 3		Gray silty CLAY, moist, some sand, plastic, tan motteling,
12				
13				grading to
14				
15				
16	3	3 3 3		Light brown CLAY, wet, some silt, minor gray motteling.
17				
18				
19				
20				

EPIGENE INTERNATIONAL

WELL LOG

01-558R

Project Name: Enea Plaza
Well Number: MW-4
Project Number: 93-035
Page: 2 of 2

Depth in Feet	WELL CONSTRUCTION DETAIL	Sample #	Blow Counts	Graphic Log	DESCRIPTION
20			4		Light brown CLAY, as above, with sand, thin beds of brown clayey sand.
21	2" dia. PVC casing with .02" slots; #3 Lonestar sand	4	5		
22			7		
23	screw-on end cap				Bottom of boring
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					

EPIGENE INTERNATIONAL

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

01-606

WELL NUMBER **3S/1W 1E11**

ADDRESS: **AMADOR PLAZA RD & DUBLIN BLVD**
DUBLIN
OWNER: **ENEA PLAZA**

Destroy

PRIMARY USE: WATER SUPPLY ☐
CATHODIC ☐
MONITORING ☒

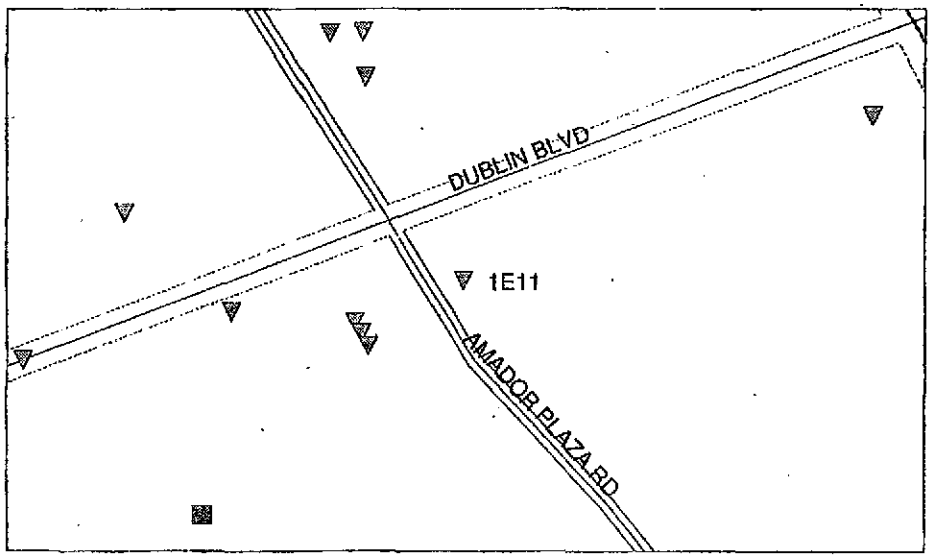
DRILLER: **EPIGENE**
DATE COMPLETED: **12/13/1993**
DEPTH: COMPLETED **23** Ft
DRILLED **23** Ft
DIAMETER **2** In

OTHER
DESIGNATION: **MW-4**
PUMP: TYPE
MAKE
HP
DISCHARGE In
METER NUMBER
SOUNDED DEPTH Ft
DATE SOUNDED
DATE DESTROYED **04/27/1998**
DATE UNLOCATABLE

LOCATION SKETCH

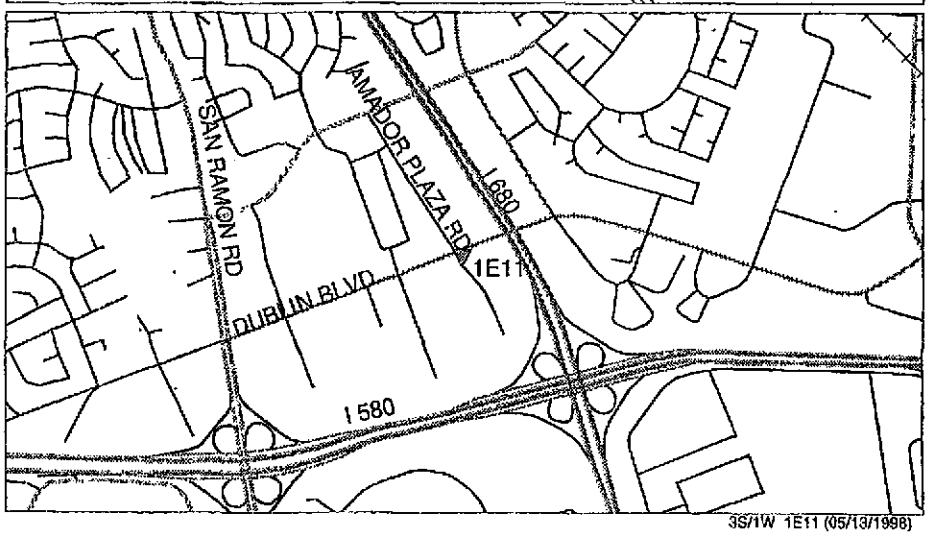
1785

DETAIL



Scale: 1 inch = 200 ft

GENERAL



Scale: 1 inch = 2000 ft

0 2000

3S/1W 1E11 (05/13/1998)

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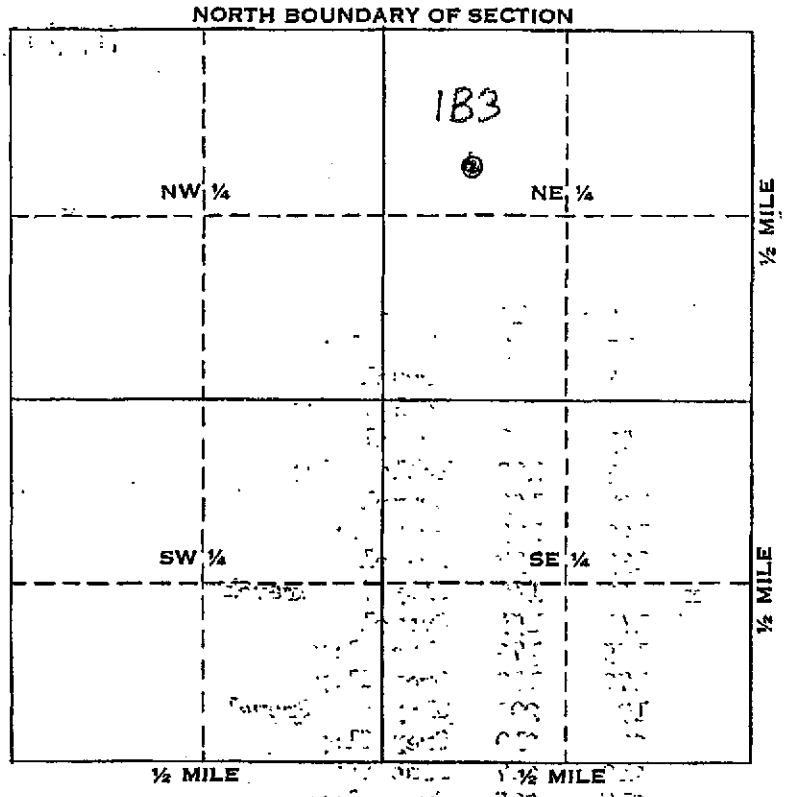
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

WELL LOCATION SKETCH

88162

2



Township 3S N/S

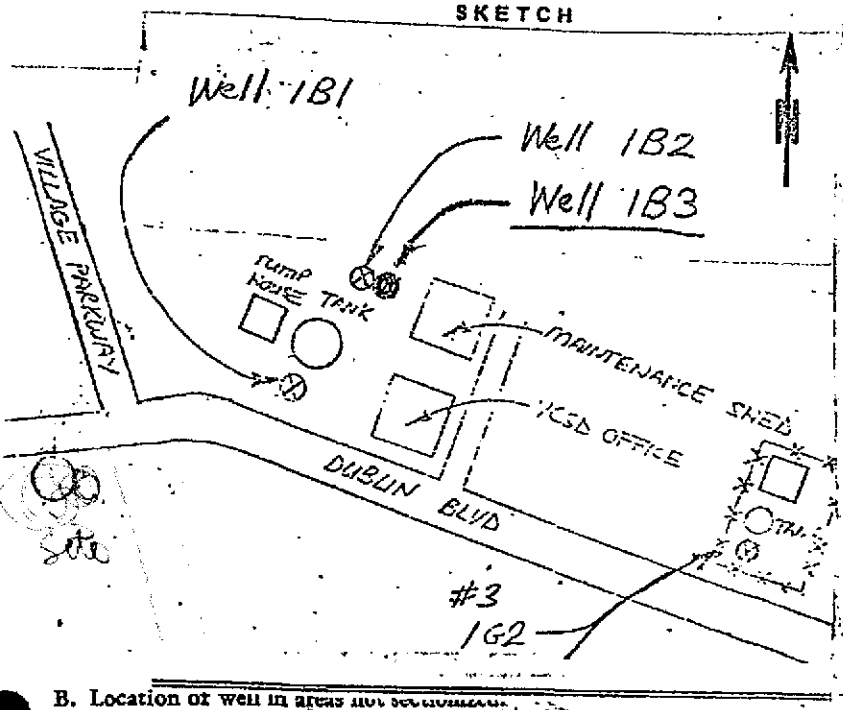
Range 1W E/W

Section No. 1B2

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.

DEPT. OF WATER RESOURCES
1973 AUG 14 AM 11 24

SKETCH



B. Location of well in areas not sectionized.
Sketch roads, railroads, streams, or other features as necessary.
Indicate distances.

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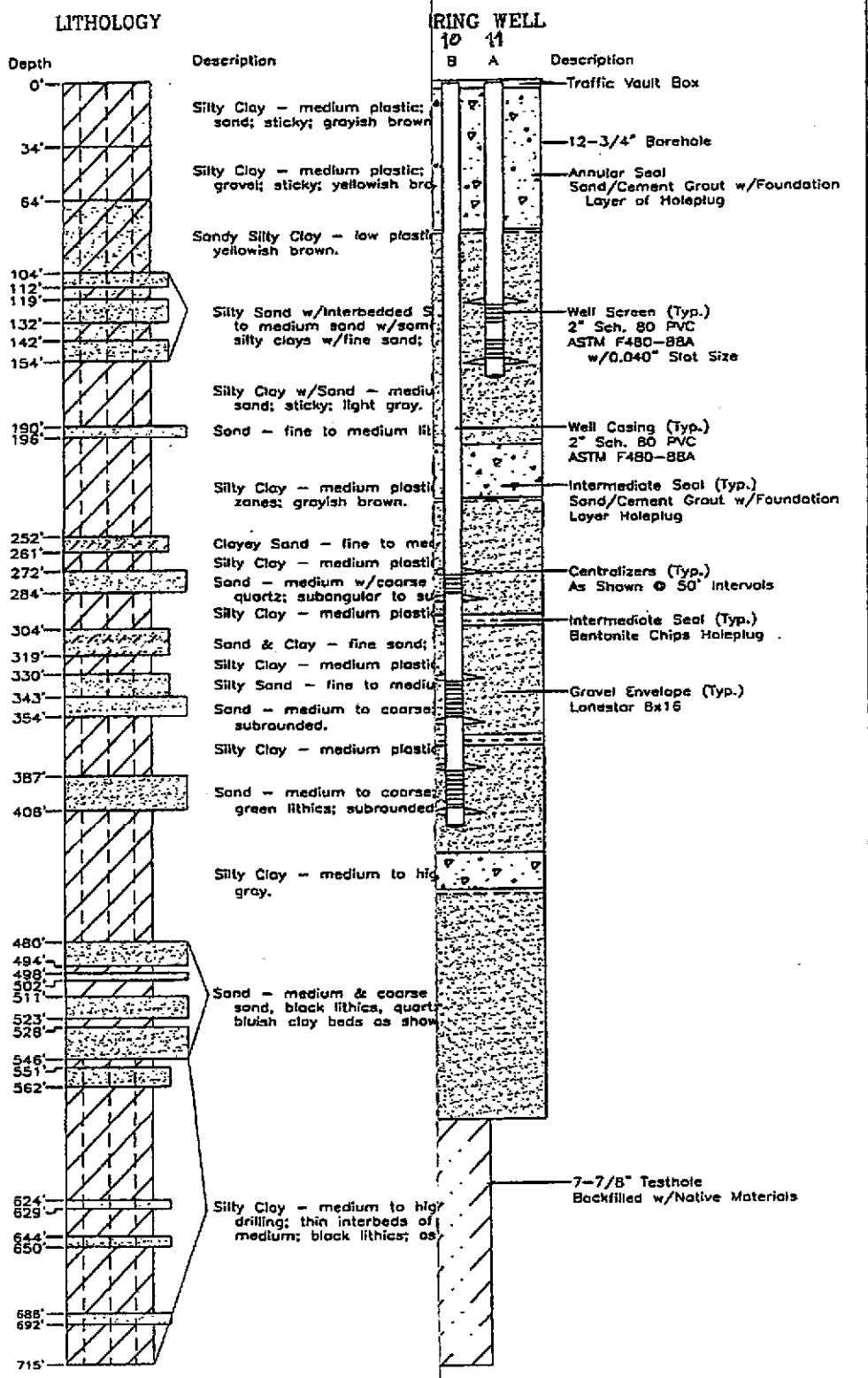
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

453740, A, B

3S/1W 1B9 TO 1B11



MONITORING WELL PROFILE

DUBLIN/SAN RAMON SERVICES DISTRICT
TEST HOLE SITE #3

LIHDORFF & SCALMANINI
CONSULTING ENGINEERS

REVISIONS

NO.	DATE	REVISION

DATE: DECEMBER 1995
JOB NO.: 95-2-080
DESIGN BY: KWU
DRAWN BY: LDC
CHECKED BY: LHE
FILE: DUBLINW3

SHEET: 1/1

OF:

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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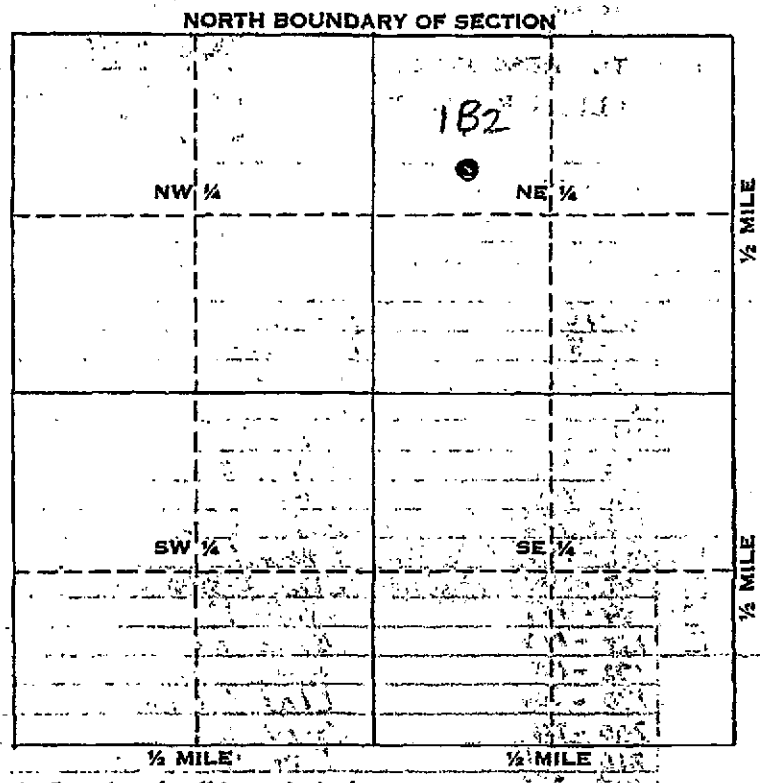
WELL LOCATION SKETCH

120760

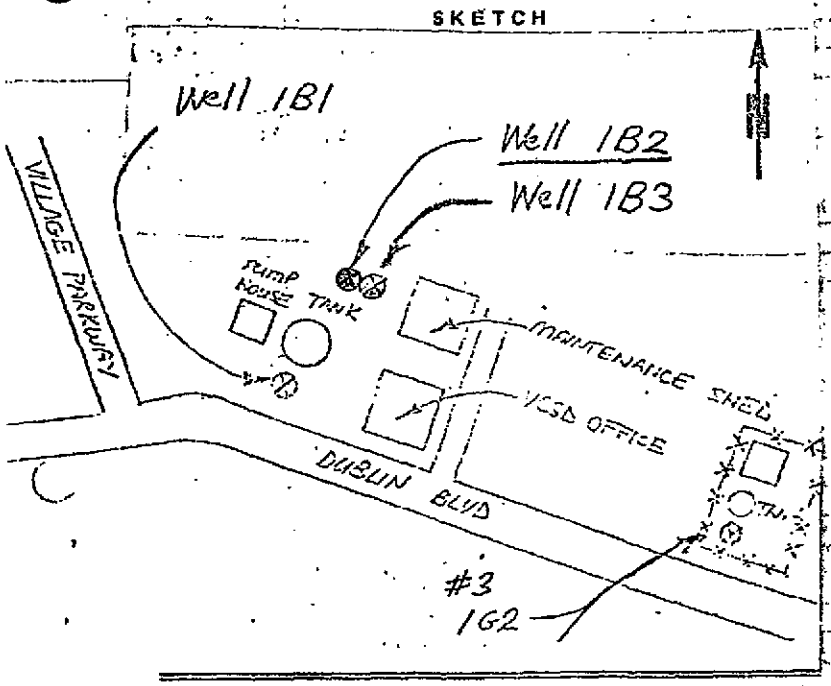


Township 3S N/S

Range 1W E/W

Section No. 1B2

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.



B. Location of well in areas not sectionized.
Sketch roads, railroads, streams, or other features as necessary.
Indicate distances.

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WELL COMPLETION REPORT
(WELL LOGS)

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WELL COMPLETION REPORT
(WELL LOGS)

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ZONE 7
MONITORING WELL COMPLETION DETAILS

Well No. 3S/1W-18S

Drilling Method Cable Tool Date Completed May 10, 1979

Outer Casing

type steel inner dia. 8" guage 10 length installed 112'

perforating method Mills Knife

perforated production zones:

Depth	Slot Size	Slots/Row	No. Rows
97-102	~1/4"	4	6

Inner Casing

type plastic inner dia. 4" guage sched 40 length installed 108'

perforating method saw cut final sounded depth 108'

perforated production zones:

Depth	Slot Size	Slots/Row	No. Rows
97-102'	0.05'	20/ft	5'ft

Seal Zones

Depth	Material	Outer Casing Perforated
0-2'	cement grout	No
70-90'	cement grout	yes

Well Development

method(s) compressor-pump total time 2.3 hr pump rate: initial 15 gpm final 15 gpm

draw-down 60' static water level: initial 9' final 11' EC: initial 1200 final 950

percent sand & silt: initial 16% final <<1% final water color greyish

Remarks (1) outer casing developed (2) grout poured around outer casing from surface

ZONE 7
Monitoring Well Log

Location Maple Ave. at flood control channel crossing, Dublin Well No. 3S/1W-18S

Driller Louis A. Wood Co. Date Drilled Feb. 1979

Cased Depth 112' Elev. TOC 331.5' Casing Dia. 8"

Engineer or Technical Rep. C. Lischeske

Material Description	Thickness	Depth	Water Bearing	Observed DTW*	SC
Brown silt fill	3'	0-3'	No		
Black clay	7'	3-10'	No		
Yellow clay	6'	10-16'	No		
Yellow sandy clay w/ gravel	4'	16-20'	Yes	10'	4500
Brown-blue clayey sand	8'	20-28'	No		
Blue clay, some sand, salt nodules & streaks at 37'	12'	28-40'	No		
Brown sandy clay, water bearing from 40-42'	14'	40-54'	Partially	N/A	1600
Gravel, avg. dia. 1/4" - 1/2", little clay	2'	54-56'	Yes	12-20'	2000
Brown clayey sand w/ some gravel	4'	56-60'	Yes	20'	2000
Brown sandy clay	2'	60-62'	No		
Blue clay, gravelly and sandy in parts, water bearing gravel at 73'	20'	62-82'	Partly	N/A	1700
Brown clayey sand	3'	82-85'	Yes	N/A	1600
Brown sandy clay	5'	85-90'	No		
Blue sandy clay w/fine gravel	10'	90-100'	Yes	N/A	900
Gravel, avg. dia. 3/4" - 1 1/2"	2'	100-102	Yes	36'	850
Brown sandy clay	3'	102-105'	No		
Blue sandy clay w/some gravel	6'	105-111'	No		

* Measured during drilling operations - not necessarily static.

109/182

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

C

5331/2

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

WELL NUMBER **3S/1W 1F19**

ADDRESS: **DUBLIN BLVD & I-680**

OWNER: **CALTRANS**

USE: **MONITOR**

DRILLER: **WOODWARD-CLYDE**

DATE COMPLETED: **08/26/1993**

DEPTH:
DRILLED **119.3** Ft

DIAMETER: **2** In

OTHER
DESIGNATION: **MW-4**

PERFS: UPPER **10**
LOWER **50**

METER NUMBER:

RP ELEVATION: **332** Ft

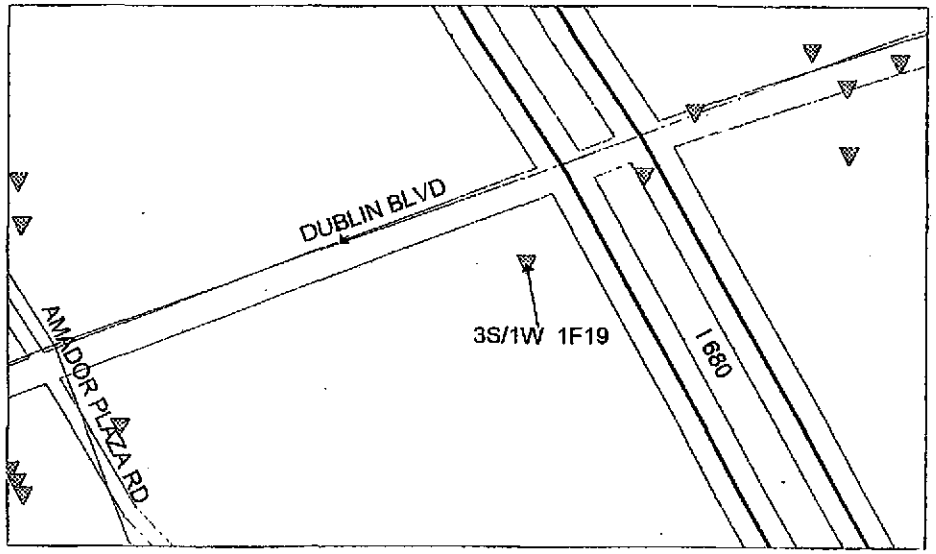
DATE SOUNDED:

DATE DESTROYED: **01/28/1999**

DATE UNLOCATABLE:

LOCATION SKETCH

DETAIL



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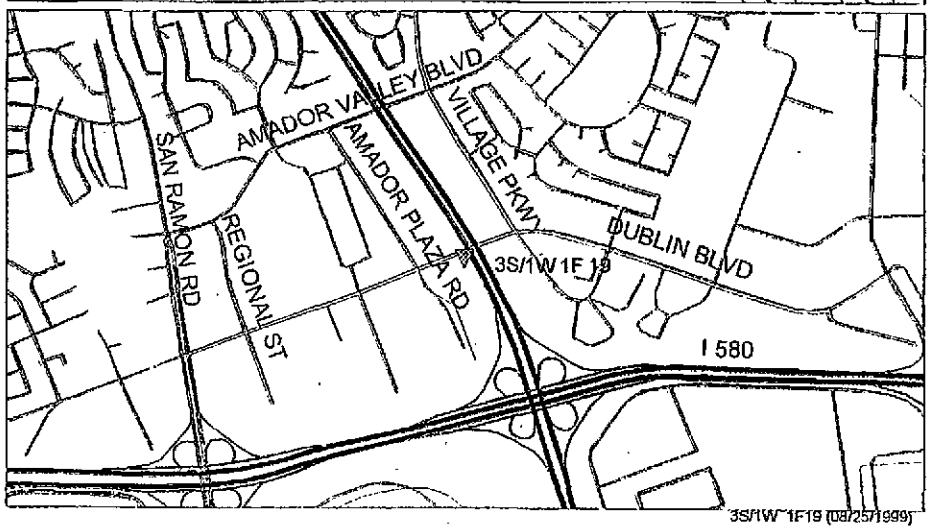

Scale: 1 inch = 2000 ft

0 2000

3S/1W 1F19 (08/25/1999)

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WELL COMPLETION REPORT
(WELL LOGS)

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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7

3S/1W 1C1

3037/6

Monitoring Well Detail

PROJECT NUMBER 1826G

PROJECT NAME 7194 AMADOR VALLEY BLVD.

COUNTY ALAMEDA

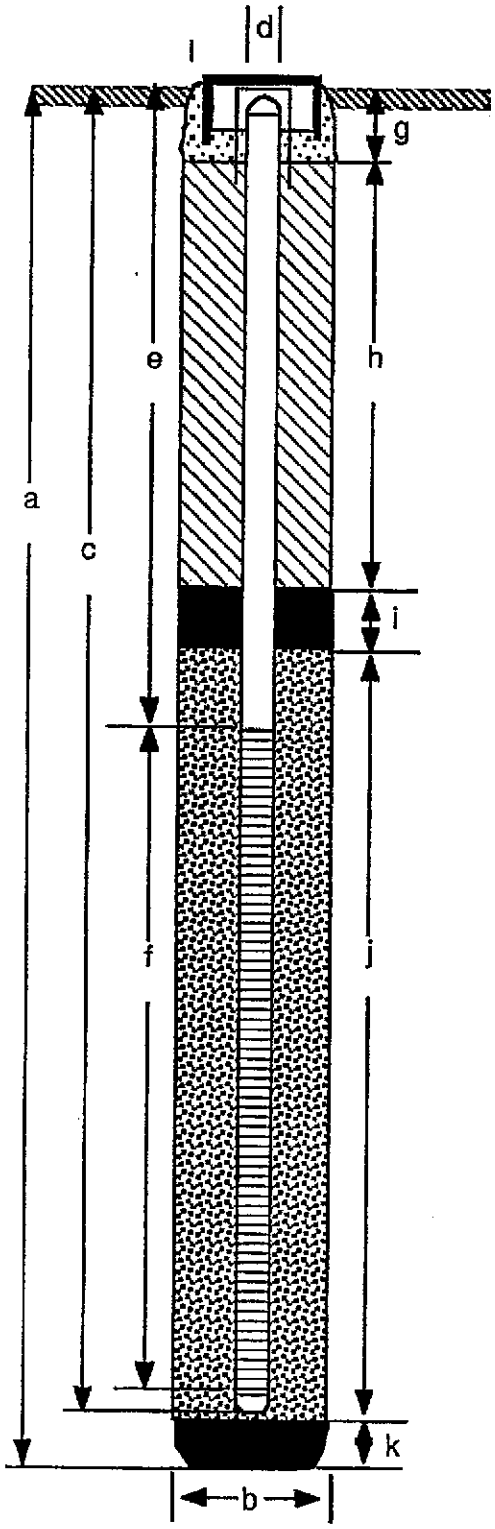
WELL PERMIT NO. 89036

BORING / WELL NO. MW-9

TOP OF CASING ELEV. 334.57 ft.

GROUND SURFACE ELEV. 335.07 ft.

DATUM LOCAL



EXPLORATORY BORING

a. Total Depth 18 ft.

b. Diameter 10 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 18 ft.

Material Schedule 40 PVC

d. Casing diameter 4 in.

e. Depth to top perforations 8 ft.

f. Perforated length 10 ft.

Perforated interval from 8 to 18 ft.

Perforation type Machine Slot

Perforation size 0.02 in.

g. Surface seal 1 ft.

Seal Material Concrete

h. Backfill 3 ft.

Backfill material Neat Cement Grout

i. Seal 2 ft.

Seal Material Bentonite

j. Gravel pack 12 ft.

Pack material 2/12 Sand

k. Bottom seal N/A ft.

Seal material N/A

l. Traffic Rated Vault Box With Locking Device

ensco environmental services, inc.

EXPLORATORY BORING LOG

3037/6

ensco environmental services, inc.

PROJECT NAME: Former Shell Station
7194 Amador Valley Blvd.
Dublin, CA
PROJECT NUMBER: 1826 G

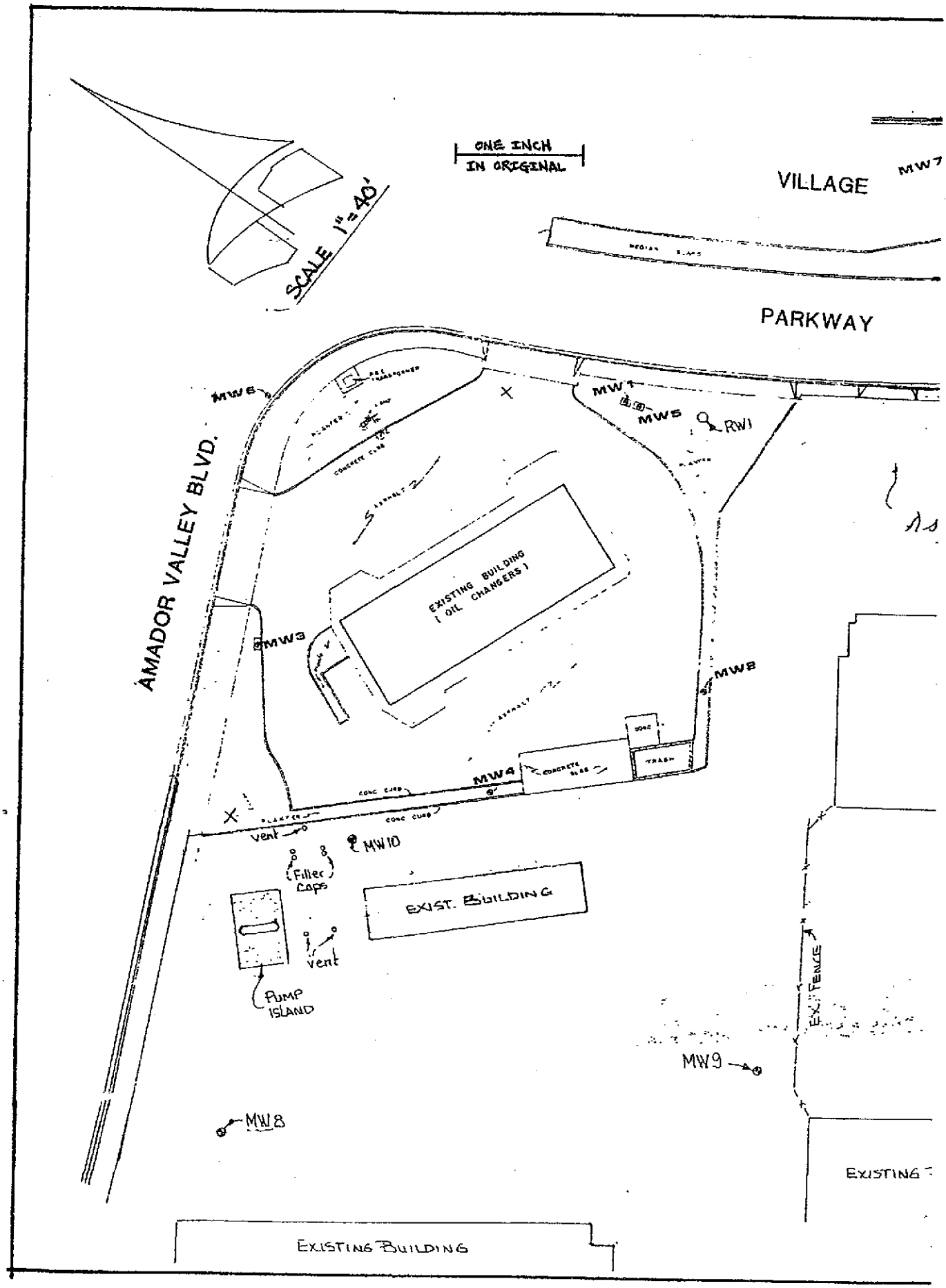
BORING NO. MW-9

DATE DRILLED: 2/22/89

LOGGED BY: R.A.G.

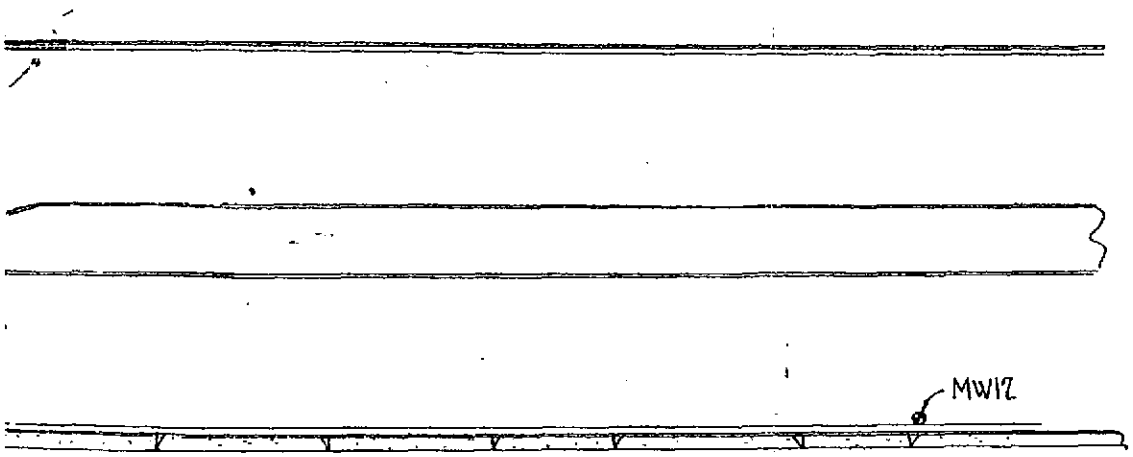
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
1				Asphalt 4", Baserock 8"		
2			OH	SILTY CLAY, dark grayish brown to very dark grayish brown (2.5Y 4/2 to 3/2), no petroleum odor, moderate to high plasticity, stiff, moist		
3						
4						
5						
6	MW 9-1	16				0
7			CL	SANDY CLAY, gray to dark gray (2,5Y 5/0 to 4/0), up to 30% fine grained sand interbedded with silty clay, no petroleum odor, medium plasticity, stiff, moist to very moist		
8						
9						
10	MW 9-2	15	OH	SILTY CLAY, very dark gray to dark olive gray (5Y 3/1 to 3/2), up to 15% fine grained sand, some light brown clay stone fragments, root holes, no petroleum odor, high plasticity, stiff, moist		0
11						
12						
13						
14						
15	MW 9-3	11		Groundwater encountered = 15 ft	▽	0
16				color changing to dark gray to very dark gary localized sandy areas		
17						
18	MW 9-4	8				0
19				Bottom of boring = 18 feet		
20						
21						

SUPERVISED AND APPROVED BY R.G./C.E.G.


SCALE 1"=40'
ONE INCH
IN ORIGINAL
VILLAGE
MW7
PARKWAY
MW6
MW1
MW5
RW1
AMADOR VALLEY BLVD.
EXISTING BUILDING
1 OIL CHANGERS 1
MW3
MW2
MW4
TRASH
CONC CURB
Vent
MW10
Fillec Caps
EXIST. BUILDING
Vent
PUMP ISLAND
EXIST. FENCE
MW9
MW8
EXISTING
EXISTING BUILDING

8

303716



REV: MARCH 6, 1989
AUGUST 30, 1988

JOB NO. 1457

PLAT SHOWING EXISTING MONITOR WELL LOCATIONS AT THE "OIL CHANGERS" FACILITY, 7194 AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, CITY OF DUBLIN, ALAMEDA COUNTY, CALIFORNIA.

E.E.S. PROJECT NO. 1826G

BENCHMARK: A FOUND BRASS DISC SET IN CONCRETE IN WESTERLY CENTER ISLAND OF AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, 15' FROM NOSE AND 0.8'± FROM NORTHERLY CURB. STAMPED "VL-PK-AM-VY 1977". ELEVATION TAKEN AS 337.402 M.L.S.

REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
CIVIL
STATE OF CALIFORNIA

NOTE: MONITOR WELLS 1, 3 & 5 ARE SET INSIDE OF ELECTRIC TYPE BOXES WITH AN IRON GRATE IN PLANTER AREAS.

Revised 11-30-88 To Switch Numbers on MW6 & 7 (RAII)

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

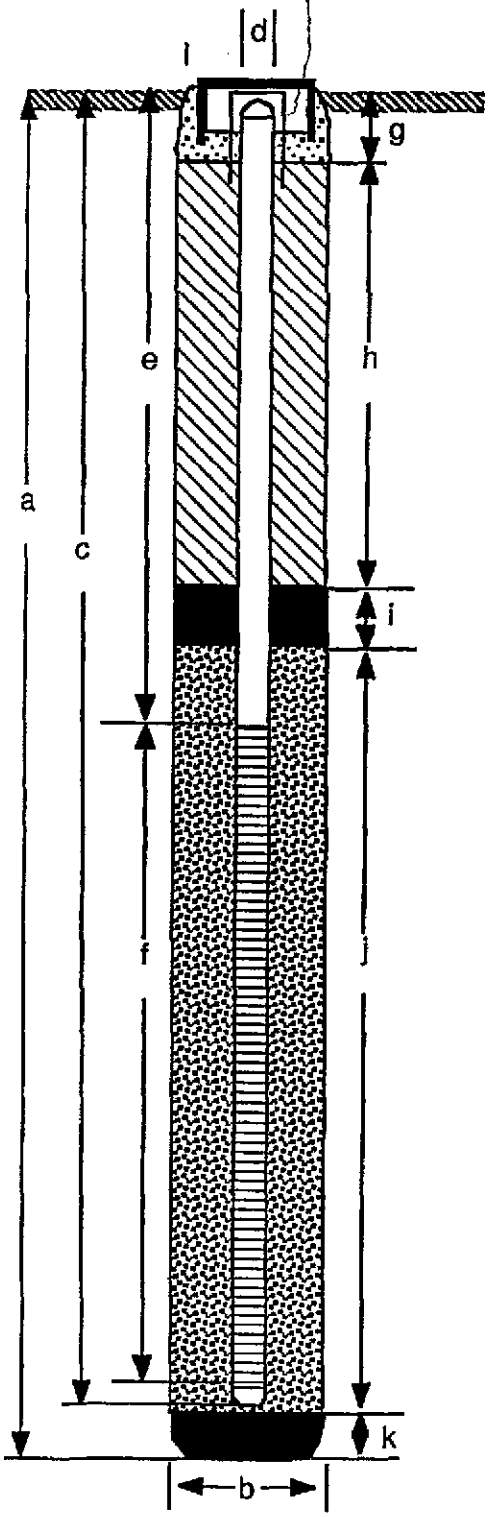
REMOVED

3S/1W 1C2
30317

Monitoring Well Detail

PROJECT NUMBER 1826G
PROJECT NAME 7194 AMADOR VALLEY BLVD.
COUNTY ALAMEDA
WELL PERMIT NO. 89036

BORING / WELL NO. MW-11
TOP OF CASING ELEV. 334.20 ft.
GROUND SURFACE ELEV. 334.87 ft.
DATUM LOCAL



EXPLORATORY BORING

a. Total Depth 17 ft.
b. Diameter 10 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 17 ft.
Material Schedule 40 PVC
d. Casing diameter 4 in.
e. Depth to top perforations 7 ft.
f. Perforated length 10 ft.
Perforated interval from 7 to 17 ft.
Perforation type Machine Slot
Perforation size 0.02 in.
g. Surface seal 1 ft.
Seal Material Concrete
h. Backfill 2 ft.
Backfill material Neat Cement Grout
i. Seal 2 ft.
Seal Material Bentonite
j. Gravel pack 12 ft.
Pack material 2/12 Sand
k. Bottom seal N/A ft.
Seal material N/A
l. Traffic Rated Vault Box With Locking Device

ensco environmental services, inc.

EXPLORATORY BORING LOG

303717

ensco environmental services, inc.

PROJECT NAME: Former Shell Station
7194 Amador Valley Blvd.
Dublin, CA
PROJECT NUMBER: 1826 G

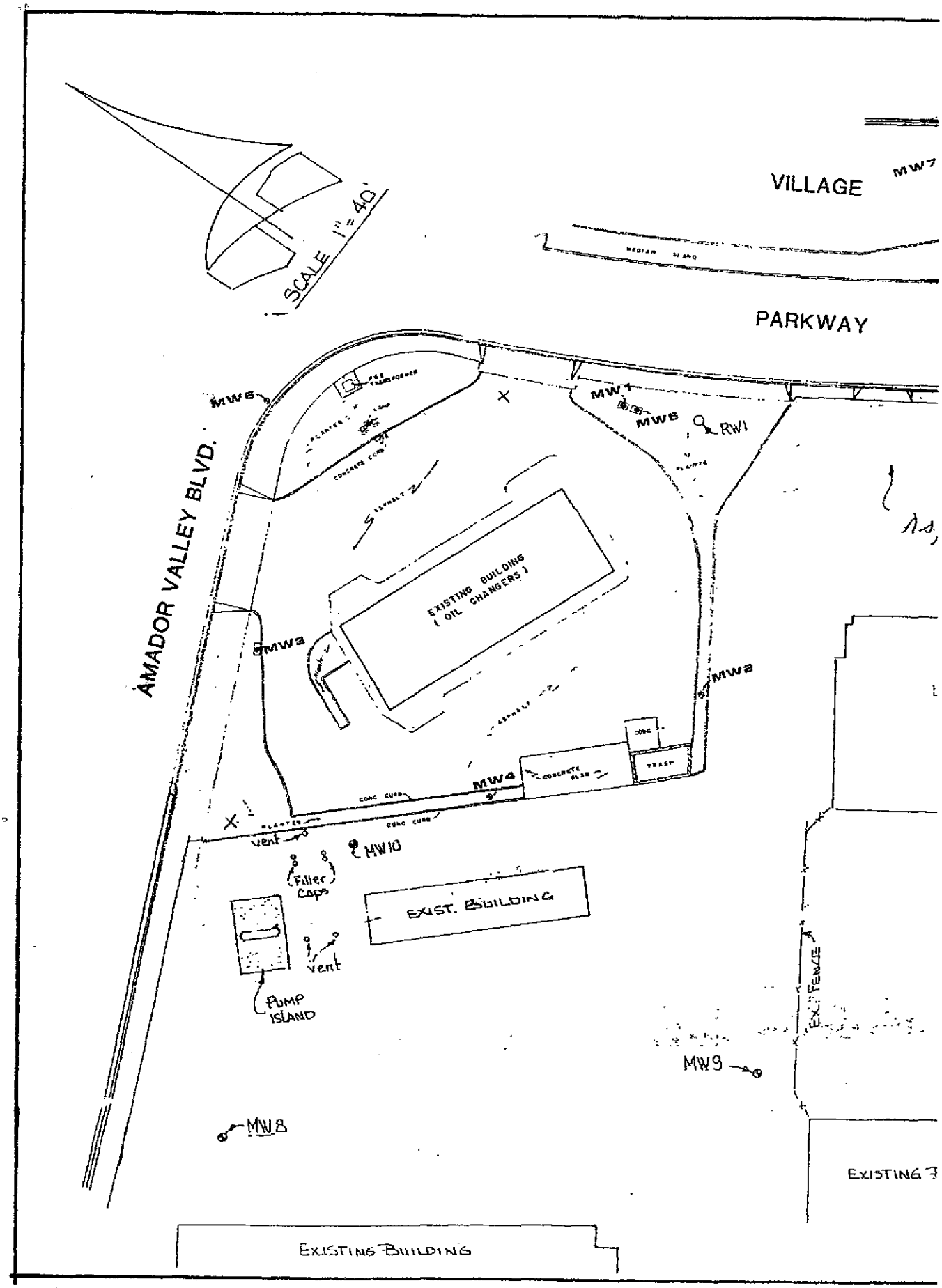
BORING NO. MW-11

DATE DRILLED: 2/23/89

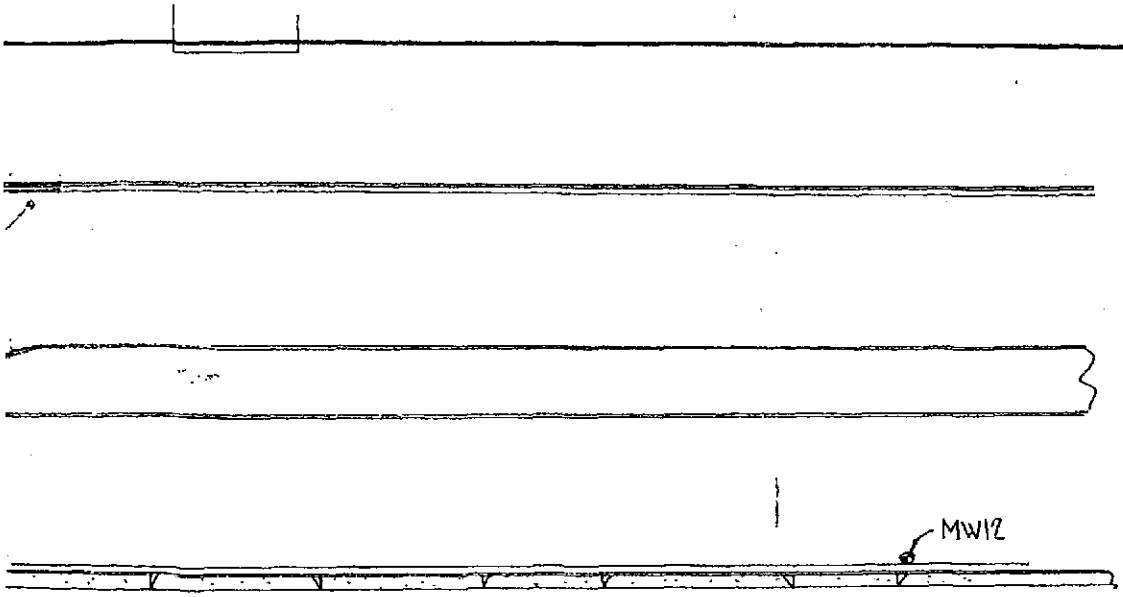
LOGGED BY: R.A.G.

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
1				Asphalt 4", Baserock 8"		
2			OH	SILTY CLAY, very dark gray (2.5Y 3/0), roots, root holes, no petroleum odor, high plasticity, stiff, moist		
3						
4						
5			C L/ S C	SANDY CLAY to CLAYEY SAND, dark gray to gray (2.5Y 4/0 to 5/0), very fine to fine grained sand, no petroleum odor, medium dense, moist		
6	MW 11-1	11				
7			OH	SILTY CLAY, very dark gray (2.5Y 3/0), roots, root holes, up to 15% fine grained sand with same coarse grained sands, no petroleum odor, high plasticity, stiff, moist		
8						
9						
10		12				0
11				light brown claystone fragments		
12				Isolated, well rounded gravels up to 1/2" across		
13						
14				Groundwater encountered =14 ft	▽	
15		10	OH	SILTY CLAY, dark gray brown to very dark grayish brown (2.5Y 4/2 to 3/2) with some olive gray (5Y 5/2) mottling, localized fine grained sand, roots, root holes, no petroleum odor, moderate to high plasticity, firm to stiff, moist to very moist, free water in many root holes		
16	MW 11-2					
17		8				0
18				Bottom of boring = 17 feet		
19						
20						
21						

SUPERVISED AND APPROVED BY R.G./C.E.G.


SCALE 1" = 40'
VILLAGE
MW7
PARKWAY
AMADOR VALLEY BLVD.
MW6
MW1
MW5
RW1
EXISTING BUILDING
(OIL CHANGERS)
MW3
MW2
MW4
CONC CURB
Vent
MW10
Fillec Caps
EXIST. BUILDING
Vent
PUMP ISLAND
EX. FENCE
MW9
MW8
EXISTING BUILDING
EXISTING

303717



REV. MARCH 6, 1989
AUGUST 30, 1988 JOB NO. 1457

PLAT SHOWING EXISTING MONITOR WELL LOCATIONS AT THE "OIL CHANGERS" FACILITY, 7194 AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, CITY OF DUBLIN, ALAMEDA COUNTY, CALIFORNIA.

E.E.S. PROJECT NO. 1826G

BENCHMARK: A FOUND BRASS DISC SET IN CONCRETE IN WESTERLY CENTER ISLAND OF AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, 15' FROM NOSE AND 0.8'± FROM NORTHERLY CURB. STAMPED "VL-PK-AM-VY 1977". ELEVATION TAKEN AS 337.402 M.L.S.

REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
CIVIL
STATE OF CALIFORNIA

NOTE: MONITOR WELLS 1, 3 & 5 ARE SET INSIDE OF ELECTRIC TYPE BOXES WITH AN IRON GRATE IN PLANTER AREAS.

Revised 11-30-88 To Switch Numbers on MW6 & 7 (RAE)

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

3S/1W 1C3

3037/8

Monitoring Well Detail

PROJECT NUMBER 1826G

PROJECT NAME 7194 AMADOR VALLEY BLVD.

COUNTY ALAMEDA

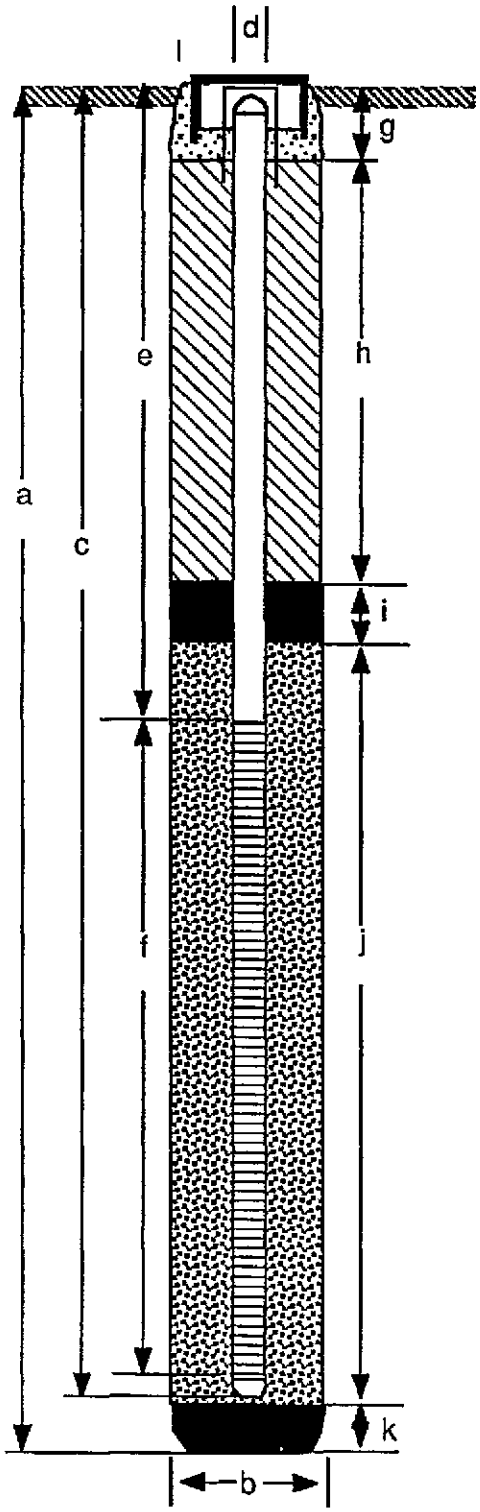
WELL PERMIT NO. 89036

BORING / WELL NO. MW-12

TOP OF CASING ELEV. 332.53 ft.

GROUND SURFACE ELEV. 332.89 ft.

DATUM LOCAL



EXPLORATORY BORING

a. Total Depth 18 ft.

b. Diameter 10 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 18 ft.

Material Schedule 40 PVC

d. Casing diameter 4 in.

e. Depth to top perforations 8 ft.

f. Perforated length 10 ft.

Perforated interval from 8 to 18 ft.

Perforation type Machine Slot

Perforation size 0.02 in.

g. Surface seal 1 ft.

Seal Material Concrete

h. Backfill 3 ft.

Backfill material Neat Cement Grout

i. Seal 2 ft.

Seal Material Bentonite

j. Gravel pack 12 ft.

Pack material 2/12 Sand

k. Bottom seal N/A ft.

Seal material N/A

l. Traffic Rated Vault Box With Locking Device

ensco environmental services, inc.

EXPLORATORY BORING LOG

303718

ensco environmental services, inc.

PROJECT NAME: Former Shell Station
7194 Amador Valley Blvd.
Dublin, CA
PROJECT NUMBER: 1826 G

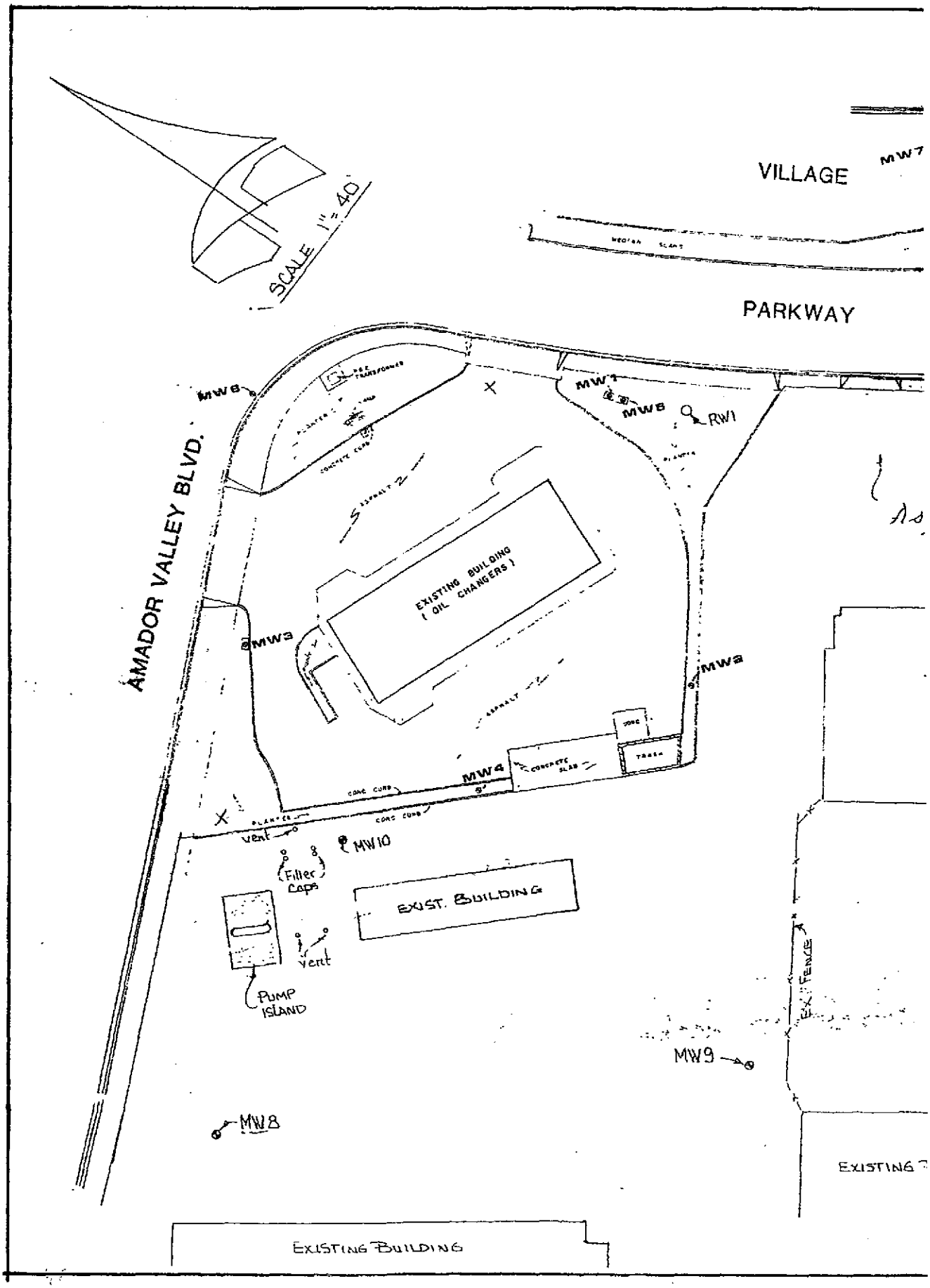
BORING NO. MW-12

DATE DRILLED: 2/23/89

LOGGED BY: R.A.G.

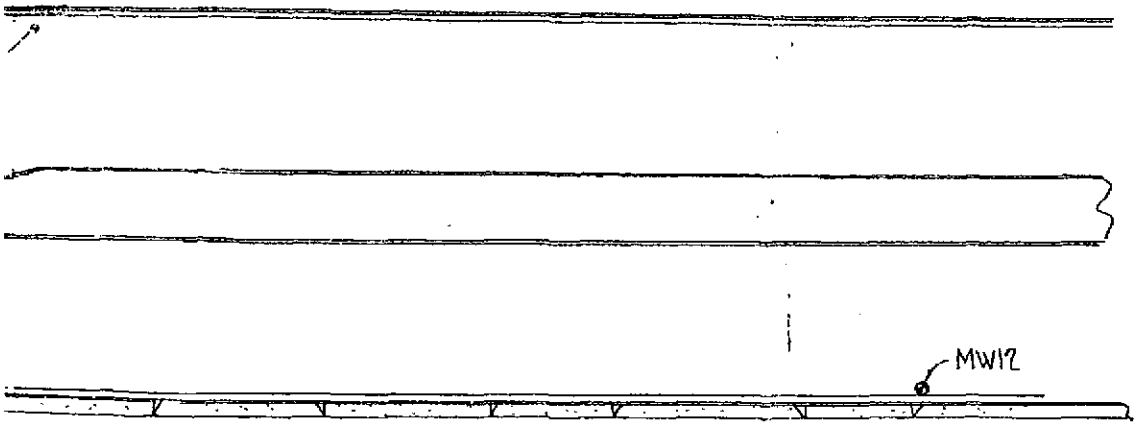
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
1				Asphalt 4", Baserock 8"		
2			CL	SANDY CLAY, dark gray to olive gray (5Y 4/1 to 5/2), up to 40% fine grained sand, no petroleum odor, moderate plasticity, very stiff, moist to very moist		
3						
4						
5						
6	MW 12-1	22				0
7			CL/ OH	SANDY CLAY and SILTY CLAY, very dark gray to brown (5Y 3/1 to 10YR 5/3), localized sandy and silty clays, fine grained sand, isolated well rounded gravels up to 1/2" across, no petroleum odor, moderate plasticity, stiff to very stiff, moist		
8						
9						
10	MW 12-2	16	OH	SILTY CLAY, very dark gray to dark olive gray (5Y 3/1) to 3/2), isolated fine grained sands and gravels, light brown claystone fragmetns, no petroleum odor, high plasticity, stiff, moist		0
11						
12						
13				Groundwater encountered ≈ 13.5 ft	▽	
14			OH	SILTY CLAY, dark gray to very dark gray (5Y 4/1 to 3/1) with some olive gray (5Y 4/2) mottling, disseminated fine to medium grained sand, no petroleum odor, stiff, moist to very moist		
15	MW 12-3	7				0
16						
17						
18		16		becoming very stiff		
19				Bottom of boring ≈ 18 feet		
20						
21						

SUPERVISED AND APPROVED BY R.G./C.E.G.


SCALE 1" = 40'
VILLAGE
MW7
MEDIAN SLANT
PARKWAY
AMADOR VALLEY BLVD.
MW6
MW1
MW5
RW1
EXISTING BUILDING
(OIL CHANGERS)
MW3
MW2
MW4
CONC CURB
CONCRETE SLAB
TRASH
Vent
MW10
Filler Caps
EXIST. BUILDING
Vent
PUMP ISLAND
EX. Fence
MW9
MW8
EXISTING BUILDING

10

303718



REV: MARCH 6, 1989
AUGUST 30, 1988 JOB NO. 1457

PLAT SHOWING EXISTING MONITOR WELL LOCATIONS AT THE "OIL CHANGERS" FACILITY, 7194 AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, CITY OF DUBLIN, ALAMEDA COUNTY, CALIFORNIA.

E.E.S. PROJECT NO. 1826G

BENCHMARK: A FOUND BRASS DISC SET IN CONCRETE IN WESTERLY CENTER ISLAND OF AMADOR VALLEY BLVD. AT VILLAGE PARKWAY, 15' FROM NOSE AND 0.8' FROM NORTHERLY CURB. STAMPED "VL-PK-AM-VY 1977". ELEVATION TAKEN AS 337.402 M.L.S.

NOTE: MONITOR WELLS 1,3 & 5 ARE SET INSIDE OF ELECTRIC TYPE BOXES WITH AN IRON GRATE IN PLANTER AREAS.

REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
CIVIL
STATE OF CALIFORNIA

Revised 11-30-88 To Switch Numbers on MW6 & 7 (RAE)

CONFIDENTIAL

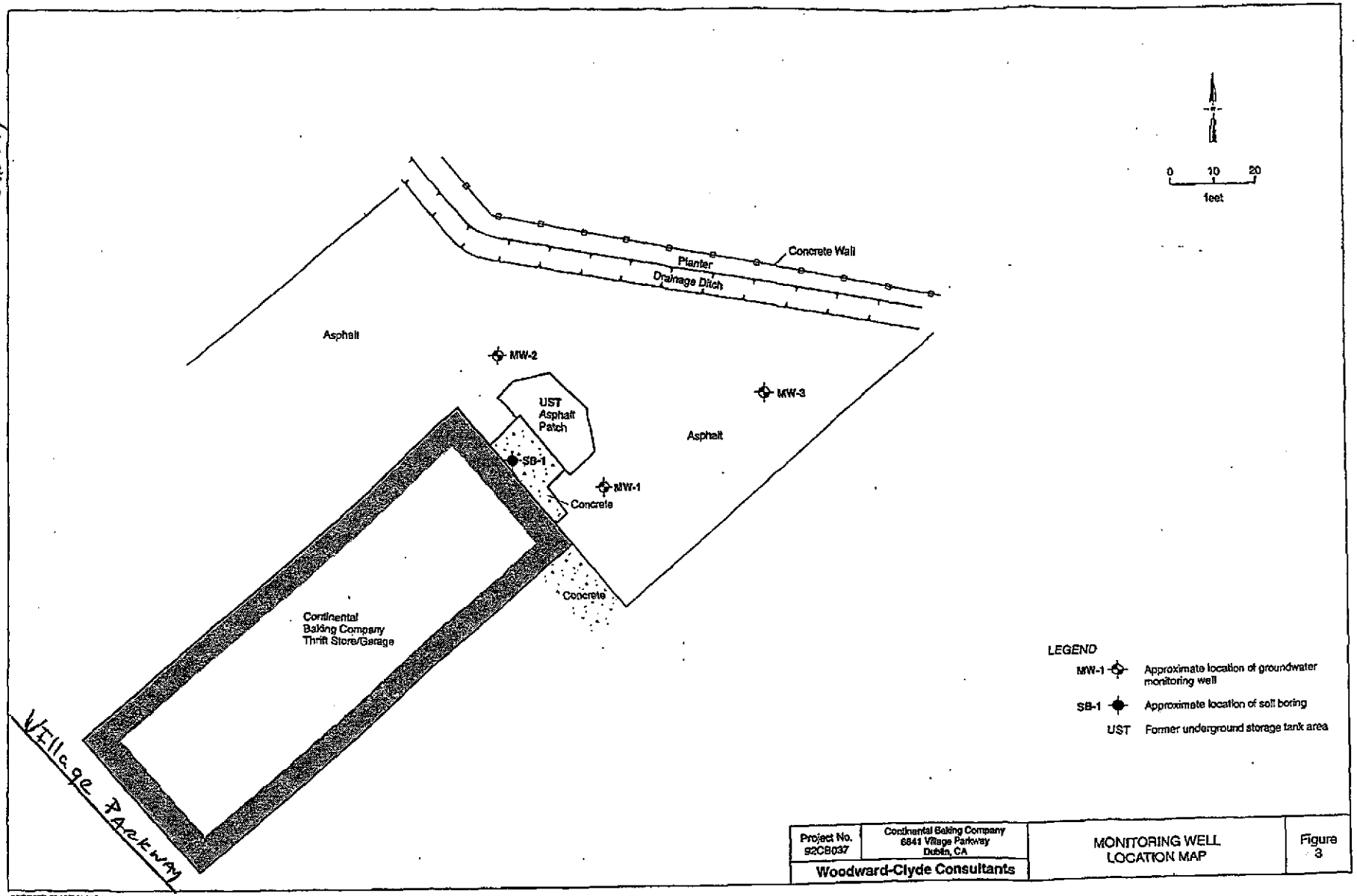
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED



Project No. 92CB037	Continental Baking Company 6841 Village Parkway Dublin, CA	MONITORING WELL LOCATION MAP	Figure 3
Woodward-Clyde Consultants			

92CB037-0010/0414P6

12

3S/6W 35 1W1B8

Project: CBC - Dublin Project Location: 6841 Village Parkway, Dublin, CA Project Number: 92CB037	**Log of Boring MW-3** Sheet 1 of 1

Date(s) Drilled	3/1/94			Logged By	M. Castellanos			Checked By	
Drilling Method	Hollow Stem Auger			Drill Bit Size/Type	11 1/4" Bullet Type			Approx. Surface Elevation (feet)	340.78 msl
Drill Rig Type	Mobile Drill B-61			Drilled By	Kvilhaug Well Drilling			Total Depth Drilled (feet)	18.2
Groundwater Level (feet, bgs)	First 12.5	Completion 9.32	24 Hours 9.31	Number of Samples	Disturbed:	Undisturbed:		Sampler Type	2 1/2-inch Split Spoon
Diameter of Hole (inches)	12	Diameter of Well (inches)	4	Type of Well Casing	4-inch Schedule 40 PVC			Screen Perforation	0.02-inch Slot 5'-17.5'
Type of Sand Pack	#2/12 Lonestar 4'-18.2'			Type/Thickness of Seal(s)	Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'				
Comments	Located cross-gradient of former UST								

Depth, feet	Elevation, feet	SAMPLES Type	SAMPLES Depth bgs feet	SAMPLES Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0	340						ASPHALT				Air Monitored with HNU
5	335		5-6.5	14	CL		SANDY CLAY Dark grayish green, firm, dry to slightly damp, 20% fine-grained sand, clay of low to moderate plasticity		<1		Chemical Sample (6'-6.5')
					SM		SILTY SAND Light olive gray, dry, ~70% fine-grained sand, 20% silt				
10	330		10'-11.5	13	CL/ML		SILTY SANDY CLAY Brownish gray, 40% fine sand to silt, clay of medium plasticity, moisture increase at 11', trace of white crystalline veins		<1		Chemical Sample (11'-11.5)
15	325		15-16.5	11	SC		CLAYEY SAND Moderate brown, dense, 40% fine sand, plastic to very plastic clay, trace of gravel				Note: Well completed below grade inside a traffic rated chrisy type box and locking cap
20	320										
25	315										
30											

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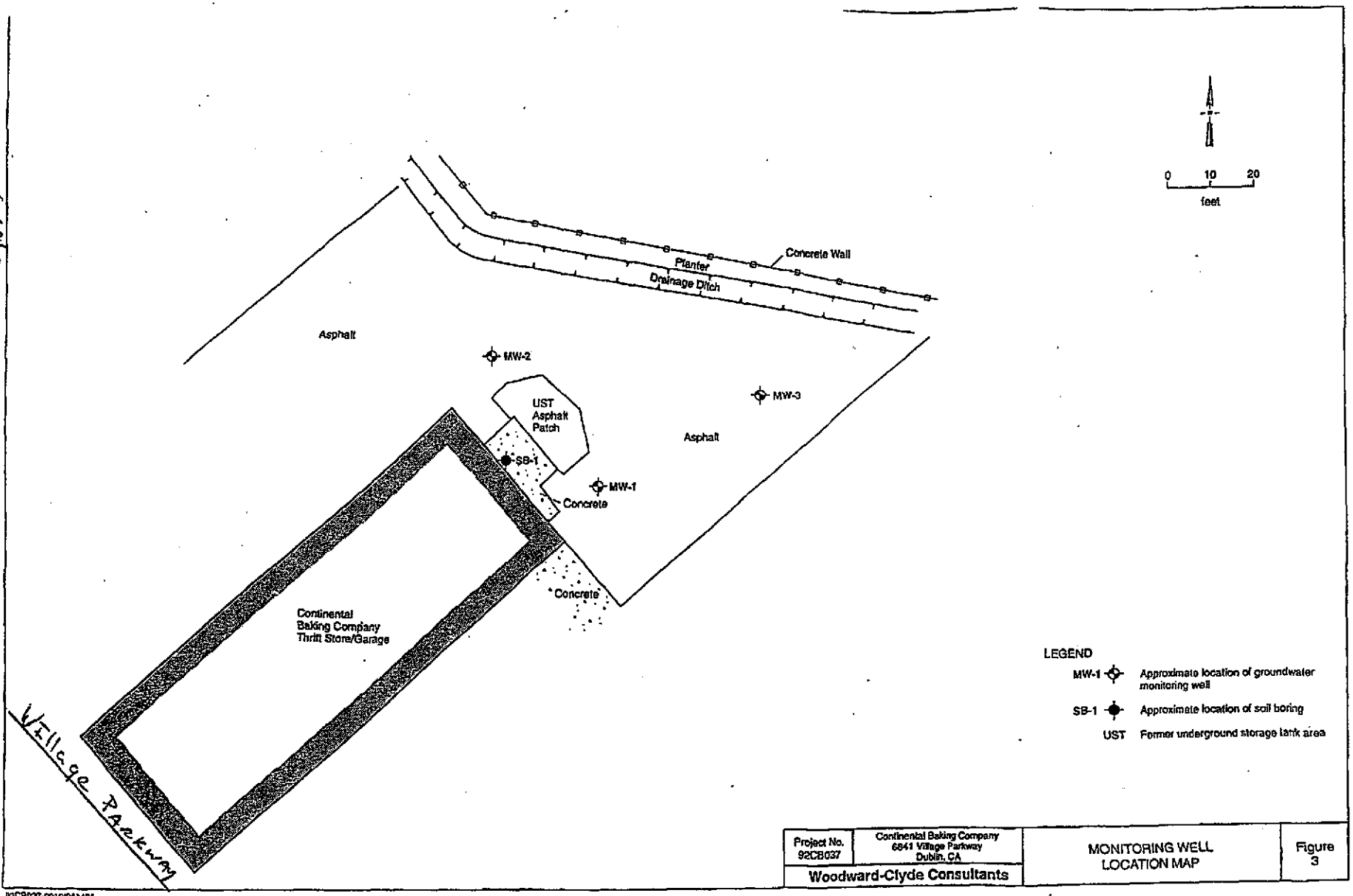
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED



Project No. 92CB037	Continental Baking Company 6641 Village Parkway Dublin, CA	MONITORING WELL LOCATION MAP	Figure 3
Woodward-Clyde Consultants			

92CB037-0010/041494

4676W7 3S/1W 18G

Project: CBC - Dublin
Project Location: 6841 Village Parkway, Dublin, CA
Project Number: 92CB037

Log of Boring MW-1

Sheet 1 of 1

Date(s) Drilled	2/28/94			Logged By	M. Castellanos	Checked By	
Drilling Method	Hollow Stem Auger			Drill Bit Size/Type	11 1/4" Bullet Type	Approx. Surface Elevation (feet)	341.37 msl
Drill Rig Type	Mobile B-61			Drilled By	Kvilhaug Well Drilling	Total Depth Drilled (feet)	18.5
Groundwater Level (feet, bgs)	First 12.5	Completion 10.4	24 Hours 10.28	Number of Samples	Disturbed:	Undisturbed:	Sampler Type 2 1/2-inch Split Spoon
Diameter of Hole (inches)	12	Diameter of Well (inches)	4	Type of Well Casing	4-inch Schedule 40 PVC	Screen Perforation	0.02-inch Slot 5'-18'
Type of Sand Pack	#2/12 Lonestar 5'-18.5'			Type/Thickness of Seal(s)	Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'		
Comments	Located downgradient of former UST						

Depth, feet	Elevation, feet	SAMPLES Type	SAMPLES Depth bgs feet	SAMPLES Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0	340						ASPHALT				
5	335		5-6.5	25	CL		SANDY CLAY Dark grayish green, firm, dry to slightly moist, 20% fine sand, clay of moderate plasticity		2		
			6.5-8	11							Odoriferous Soil at 7' Chemical Sample (7'-7.5')
					SM		SILTY SAND Light olive gray, trace of clay, dry, 70% fine-grained sand, ~20% silt				
10	330		11-12.5	17	SC		CLAYEY SAND Dark gray to moderate brown, dense, 40% clay, 60% fine to medium sand		44		Chemical Sample (11.5'-12.0') Note: Well completed below grade inside a traffic rated christy type box and locking cap
15	325		14.5-16	10			CLAYEY SAND Moderate brown, medium dense, fine to medium grained sand, 30% clay of moderate plasticity				
20	320										
25	315										
30											

Woodward-Clyde Consultants

4/19/94 LWL2 CBCD

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

4377N1

Project: CBC - Dublin
Project Location: 6841 Village Parkway, Dublin, CA
Project Number: 92CB037

Log of Boring MW-2

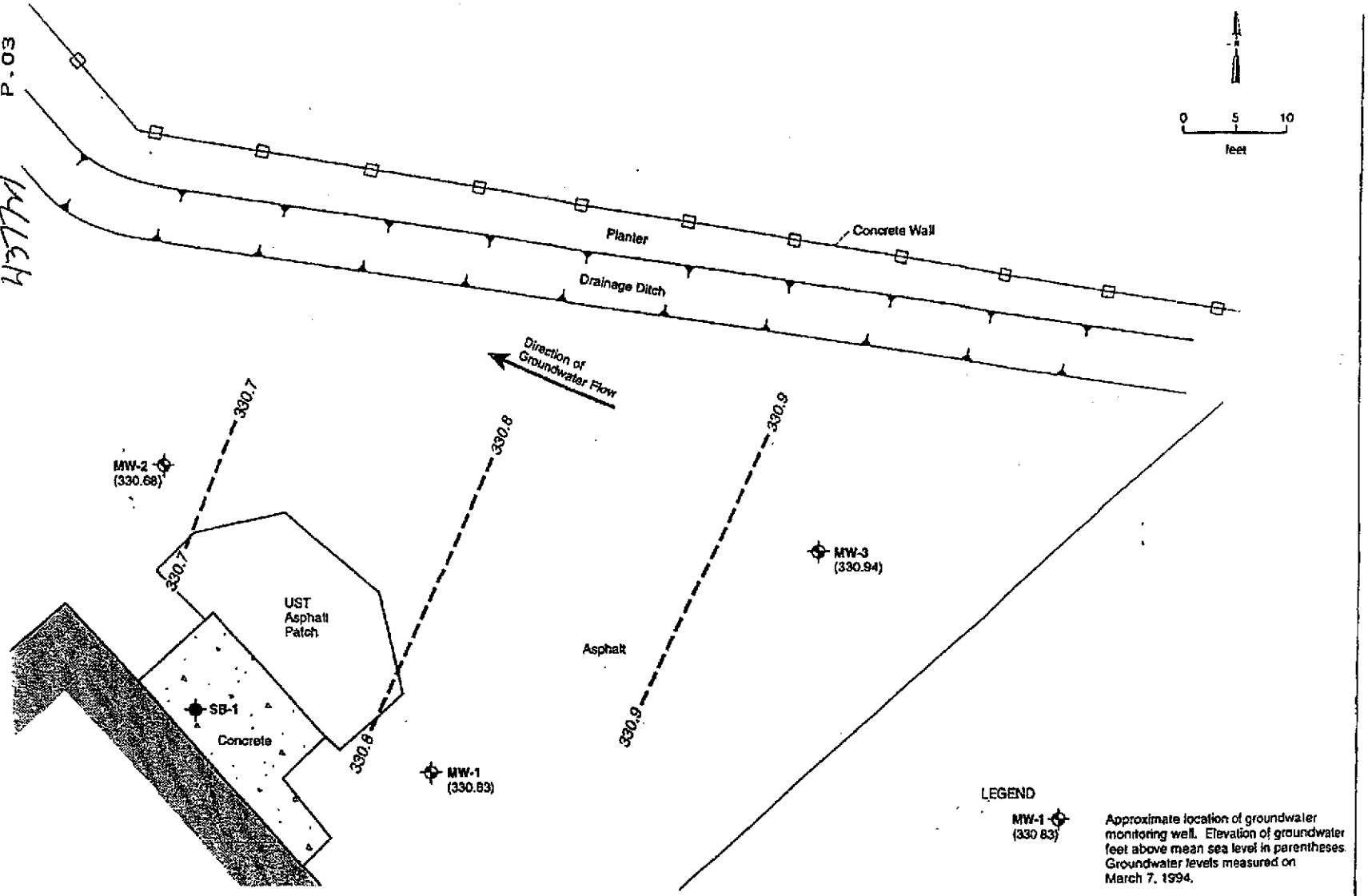
Sheet 1 of 1

Date(s) Drilled: 2/28/94	Logged By: M. Castellanos		Checked By:
Drilling Method: Hollow Stem Auger	Drill Bit Size/Type: 11 1/4" Bullet Type		Approx. Surface Elevation (feet): 341.16 msl
Drill Rig Type: Mobile Drill B-61	Drilled By: Kvilhaug Well Drilling		Total Depth Drilled (feet): 18.5
Groundwater Level (feet, bgs): First 13 / Completion 10.3 / 24 Hours 10.32	Number of Samples: Disturbed: / Undisturbed:		Sampler Type: 2 1/2-inch Split Spoon
Diameter of Hole (inches): 12	Diameter of Well (inches): 4	Type of Well Casing: 4-inch Schedule 40 PVC	Screen Perforation: 0.02-inch Slot 5'-18.5'
Type of Sand Pack: #2/12 Lonestar 4'-18.5'	Type/Thickness of Seal(s): Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'		
Comments: Continuously Sampled, Located upgradiant of former UST			

Depth, feet	Elevation, feet	SAMPLES Type	Depth bgs feet	Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0	340		1-2.5	42	CL		ASPHALT SANDY CLAY Olive gray, slightly moist, 30% fine to medium-grained sand, few rounded gravels, some silt, non plastic clay		<1	<1	Air Monitored with HNU
			2.5-4	43					<1	<1	
			4-5.5	22					<1	<1	
5	335		5.5-7	32							Chemical Sample (5'-5.5')
			7-8.5	26	SM		SILTY SAND Light olive gray, dry, 30% fine-grained sand, 40% medium grained sand, trace of silt, some slightly plastic clay		20		
			8.5-10	22	ML		SILTY CLAY Gray, firm to hard, moderately plastic clay, trace of fine sand		20		Odiferous Soil at 8' Chemical Sample (9'-9.5')
10	330		10-11.5	9					25		
			11.5-13	20	ML		SILTY CLAY Brownish gray with white crystilline veins, firm, moist, moderately plastic clay,				
			13-14.5	10	SC		CLAYEY SAND Moderate brown, saturated, very dense to dense, 40% fine-grained sand, plastic to very plastic clay				Note: Well completed below grade inside a christy type box (traffic rated)
15	325		14.5-16	11							
			16-17.5	14			Trace of gravel at bottom of sampling shoe				
20	320										
25	315										
30											

4/18/94 1WL2 CBCD

Woodward-Clyde Consultants



LEGEND

MW-1 (330.83) — Approximate location of groundwater monitoring well. Elevation of groundwater feet above mean sea level in parentheses. Groundwater levels measured on March 7, 1994.

330.9 — Inferred groundwater elevation contour

Project No. 92CB037	Continental Baking Company 6841 Village Parkway Dublin, CA	GROUNDWATER ELEVATION CONTOUR MAP	Figure 4
Woodward-Clyde Consultants			

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

43773

Project: CBC - Dublin
Project Location: 6841 Village Parkway, Dublin, CA
Project Number: 92CB037

Log of Boring MW-1

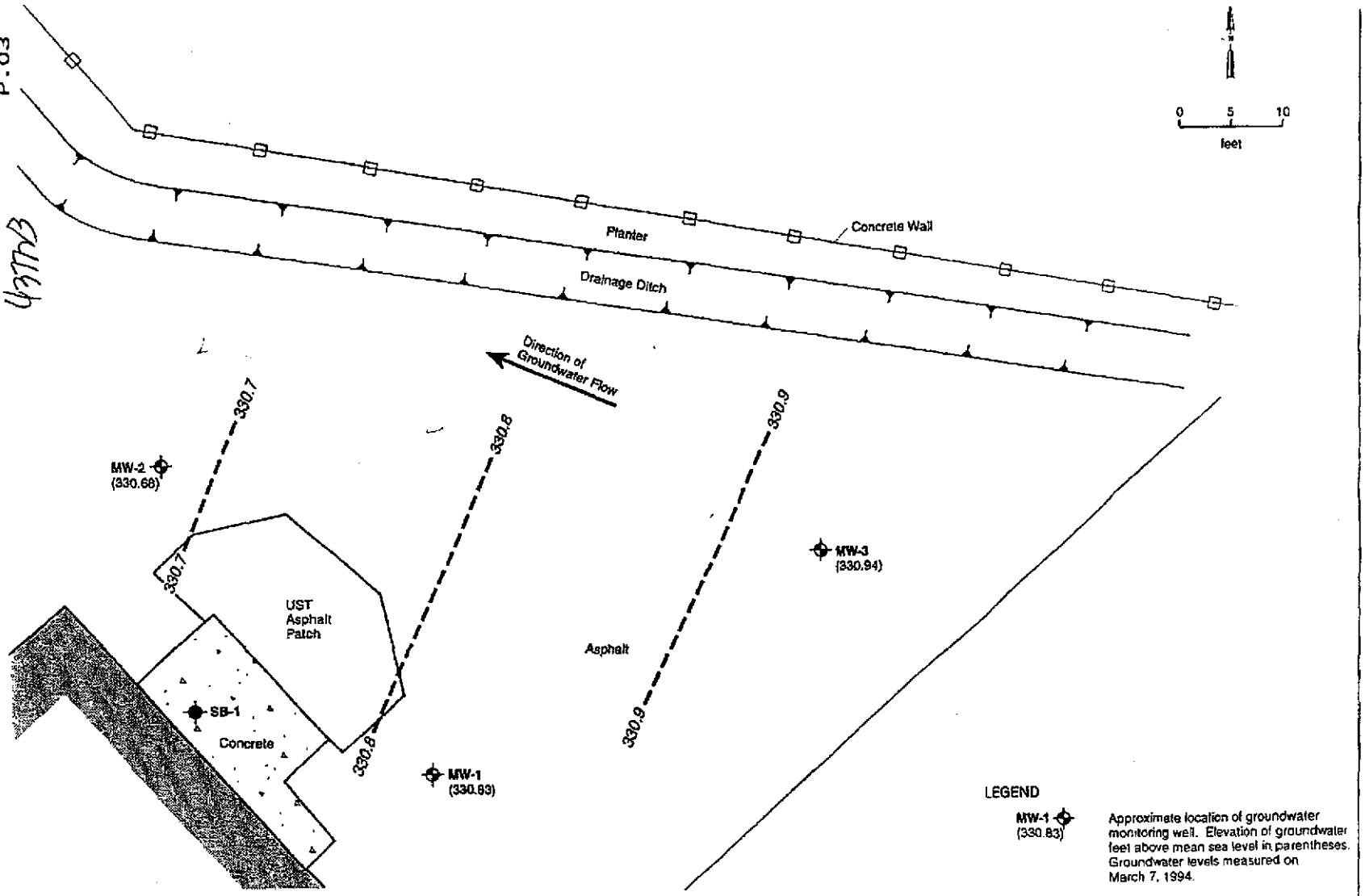
Sheet 1 of 1

Date(s) Drilled	2/28/94	Logged By	M. Castellanos	Checked By	
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	11 1/4" Bullet Type	Approx. Surface Elevation (feet)	341.37 msl
Drill Rig Type	Mobile B-61	Drilled By	Kvilhaug Well Drilling	Total Depth Drilled (feet)	18.5
Groundwater Level (feet, bgs): First 12.5 / Completion 10.4 / 24 Hours 10.28		Number of Samples: Disturbed: / Undisturbed:		Sampler Type	2 1/2-inch Split Spoon
Diameter of Hole (inches)	12	Diameter of Well (inches)	4	Type of Well Casing	4-inch Schedule 40 PVC
Screen Perforation	0.02-inch Slot 5'-18.5'				
Type of Sand Pack	#2/12 Lonestar 5'-18.5'	Type/Thickness of Seal(s)	Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'		
Comments	Located downgradient of former UST				

Depth, feet	Elevation, feet	SAMPLES Type	SAMPLES Depth bgs feet	SAMPLES Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0	340						ASPHALT				
5	335		6-6.5	26	CL		SANDY CLAY Dark grayish green, firm, dry to slightly moist, 20% fine sand, clay of moderate plasticity		2		
			6.5-8	11	SM		SILTY SAND Light olive gray, trace of clay, dry, 70% fine-grained sand, ~20% silt				Odoriferous Soil at 7' Chemical Sample (7'-7.5')
10	330		11-12.5	17	SC		CLAYEY SAND Dark gray to moderate brown, dense, 40% clay, 60% fine to medium sand		44		Chemical Sample (11.5'-12.0') Note: Well completed below grade inside a traffic rated christy type box and locking cap
15	325		14.5-16	10			CLAYEY SAND Moderate brown, medium dense, fine to medium grained sand, 30% clay of moderate plasticity				
20	320										
25	315										
30											

4/19/94 1WLZ CBCD

Woodward-Clyde Consultants



Project No. 92CB037	Continental Building Company 6641 Village Parkway Dublin, CA	GROUNDWATER ELEVATION CONTOUR MAP	Figure 4
Woodward-Clyde Consultants			

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

43770

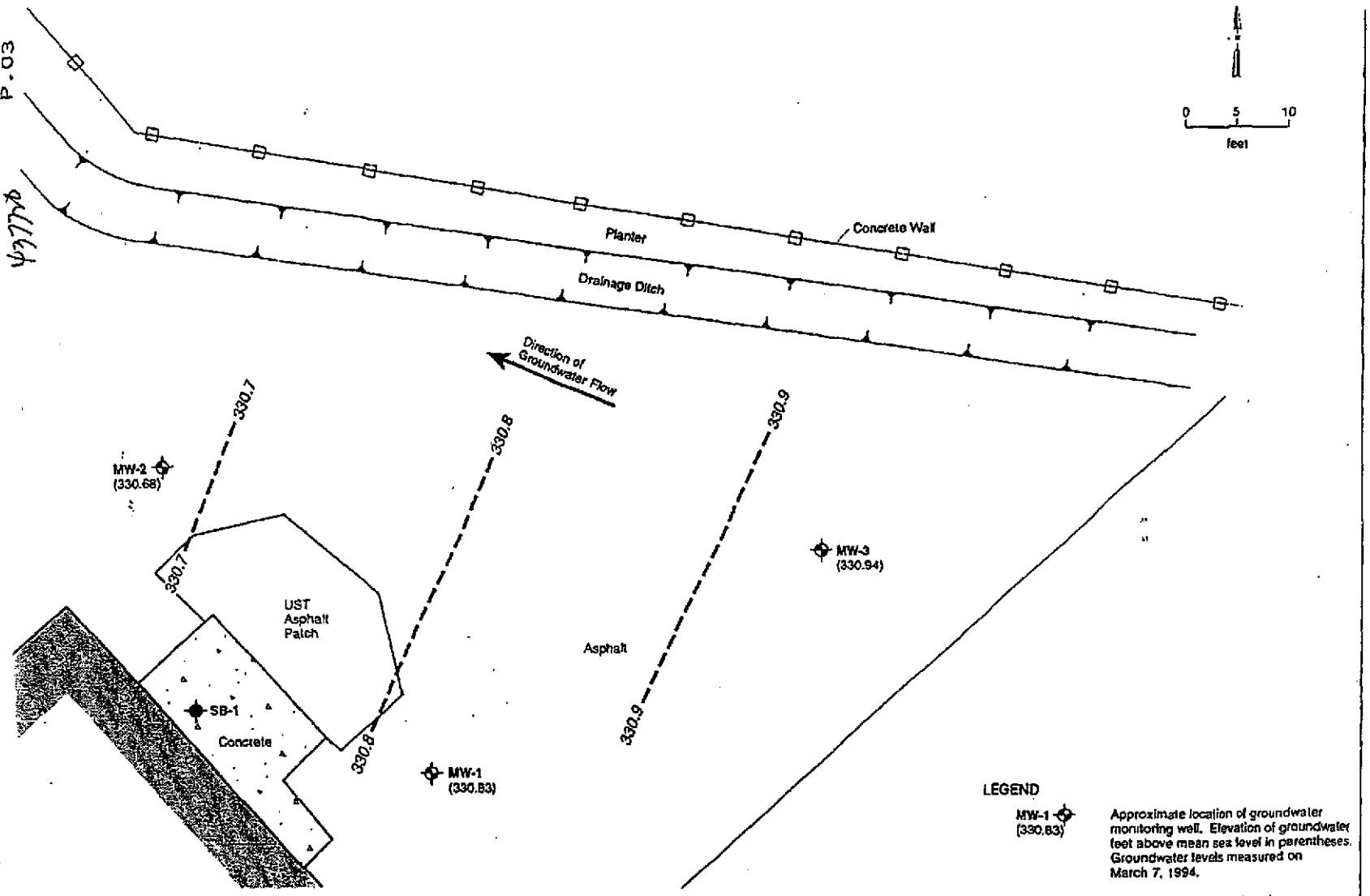
Project: CBC - Dublin
Project Location: 6841 Village Parkway, Dublin, CA
Project Number: 92CB037

Log of Boring MW-3

Sheet 1 of 1

Date(s) Drilled: 3/1/94	Logged By: M. Castellanos		Checked By:
Drilling Method: Hollow Stem Auger	Drill Bit Size/Type: 11 1/4" Bullet Type		Approx. Surface Elevation (feet): 340.78 msl
Drill Rig Type: Mobile Drill B-61	Drilled By: Kvilhaug Well Drilling		Total Depth Drilled (feet): 18.2
Groundwater Level (feet, bgs): First 12.5; Completion 9.32; 24 Hours 9.31	Number of Samples: Disturbed: Undisturbed:		Sampler Type: 2 1/2-inch Split Spoon
Diameter of Hole (inches): 12; Diameter of Well (inches): 4	Type of Well Casing: 4-inch Schedule 40 PVC		Screen Perforation: 0.02-inch Slot 5'-17.5'
Type of Sand Pack: #2/12 Lonestar 4'-18.2'	Type/Thickness of Seal(s): Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'		
Comments: Located cross-gradient of former UST			

Depth, feet	Elevation, feet	SAMPLES Type	SAMPLES Depth bgs feet	SAMPLES Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0	340						ASPHALT				Air Monitored with HNU
5	335		5-6.5	14	CL		SANDY CLAY Dark grayish green, firm, dry to slightly damp, 20% fine-grained sand, clay of low to moderate plasticity		<1		Chemical Sample (5'-6.5')
					SM		SILTY SAND Light olive gray, dry, ~70% fine-grained sand, 20% silt				
10	330		10.5-11.5	13	CL/ML		SILTY SANDY CLAY Brownish gray, 40% fine sand to silt, clay of medium plasticity, moisture increase at 11', trace of white crystalline veins		<1		Chemical Sample (11'-11.5)
15	325		15-16.5	11	SC		CLAYEY SAND Moderate brown, dense, 40% fine sand, plastic to very plastic clay, trace of gravel				Note: Well completed below grade inside a traffic rated chrisy type box and locking cap
20	320										
25	315										
30											



LEGEND

MW-1 (330.83) — Approximate location of groundwater monitoring well. Elevation of groundwater feet above mean sea level in parentheses. Groundwater levels measured on March 7, 1994.

330.9 — Inferred groundwater elevation contour

Project No. 92CB037	Continental Baking Company 6841 Village Parkway Dublin, CA	GROUNDWATER ELEVATION CONTOUR MAP	Figure 4
Woodward-Clyde Consultants			

35/1W 1B7 246x28

Project: CBC - Dublin
Project Location: 6841 Village Parkway, Dublin, CA
Project Number: 92CB037

Log of Boring MW-2

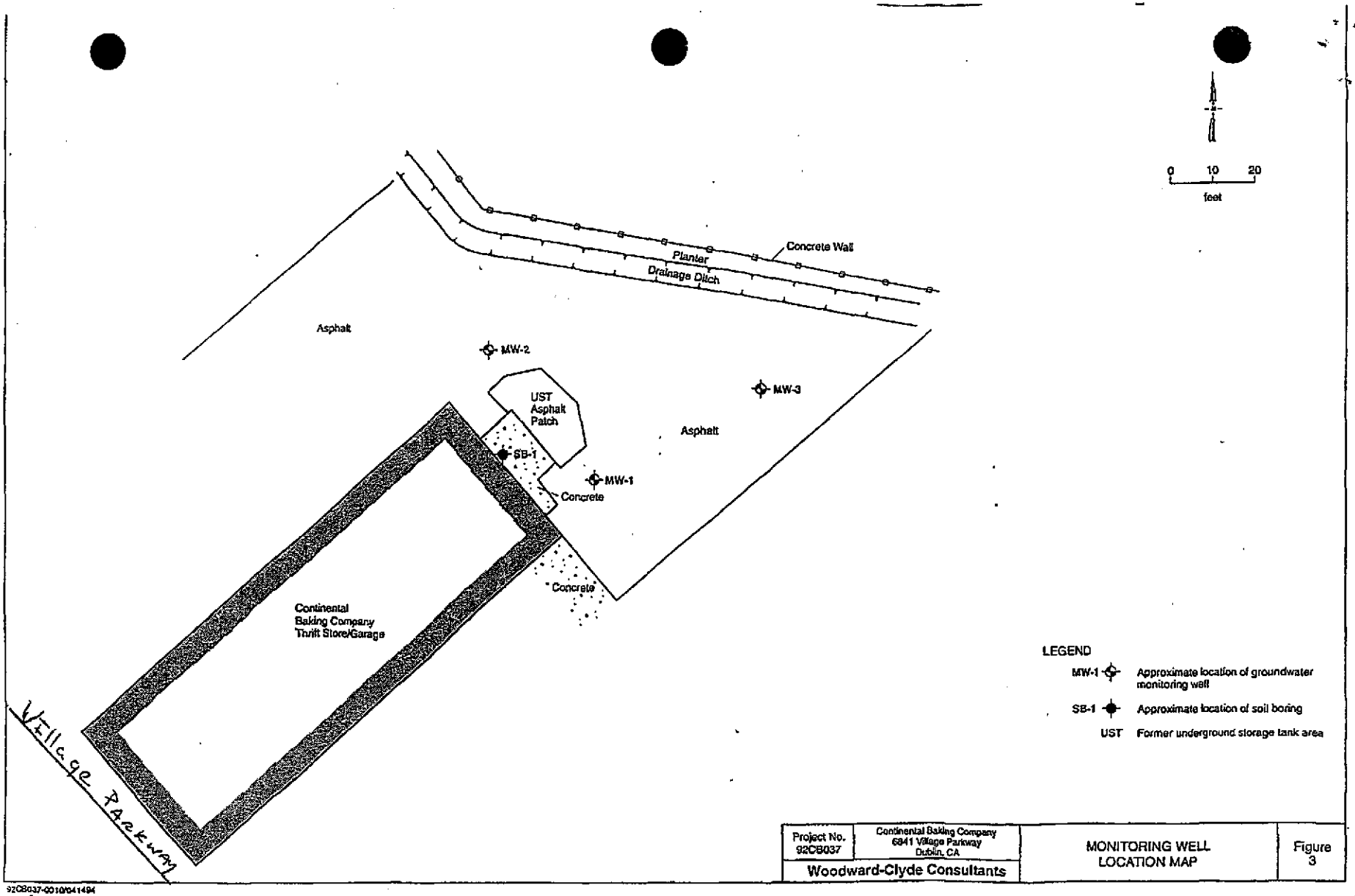
Sheet 1 of 1

Date(s) Drilled: 2/28/94	Logged By: M. Castellanos		Checked By:
Drilling Method: Hollow Stem Auger	Drill Bit Size/Type: 11 1/4" Bullet Type		Approx. Surface Elevation (feet): 341.16 msl
Drill Rig Type: Mobile Drill B-61	Drilled By: Kvilhaug Well Drilling		Total Depth Drilled (feet): 18.5
Groundwater Level (feet, bgs): First 13 / Completion 10.3 / 24 Hours 10.32	Number of Samples: Disturbed: / Undisturbed:		Sampler Type: 2 1/2-inch Split Spoon
Diameter of Hole (inches): 12	Diameter of Well (inches): 4	Type of Well Casing: 4-inch Schedule 40 PVC	Screen Perforation: 0.02-inch Slot 5'-18'
Type of Sand Pack: #2/12 Lonestar 4'-18.5'	Type/Thickness of Seal(s): Bentonite 3'-4' / Grout (Neat Cement) 0.5'-3'		
Comments: Continuously Sampled. Located upgradient of former UST			

Depth, feet	Elevation, feet	SAMPLES Type	Depth bgs feet	Blows/foot	USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNu (ppm) Headspace	HNu (ppm) Background	REMARKS
0							ASPHALT				
	340		1-2.5	42	CL		SANDY CLAY Olive gray, slightly moist, 30% fine to medium-grained sand, few rounded gravels, some silt, non plastic clay		<1	<1	Air Monitored with HNU
			2.5-4	43					<1	<1	
			4-5.5	22					<1	<1	
5			5.5-7	32							Chemical Sample (5'-5.5')
	335		7-8.5	25	SM		SILTY SAND Light olive gray, dry, 30% fine-grained sand, 40% medium grained sand, trace of silt, some slightly plastic clay		20		
			8.5-10	22	ML		SILTY CLAY Gray, firm to hard, moderately plastic clay, trace of fine sand		20		Odiferous Soil at 8' Chemical Sample (9'-9.5')
10			10-11.5	8					25		
	330		11.5-13	20	ML		SILTY CLAY Brownish gray with white crystilline veins, firm, moist, moderately plastic clay,				Note: Well completed below grade inside a christy type box (traffic rated)
			13-14.5	10	SC		CLAYEY SAND Moderate brown, saturated, very dense to dense, 40% fine-grained sand, plastic to very plastic clay				
15			14.5-16	11							
	325		16-17.5	14			Trace of gravel at bottom of sampling shoe				
20	320										
25	315										
30											

Woodward-Clyde Consultants

4/19/94 1WL2 CBCD



Project No. 92CB037	Continental Baking Company 6841 Village Parkway Dublin, CA	MONITORING WELL LOCATION MAP	Figure 3
Woodward-Clyde Consultants			

92CB037-0010/041494

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

17

ZONE 7
WATER RESOURCES ENGINEERING

701591A

WELL LOCATION DATA

WELL NUMBER **3S/1W 1C 4**

ADDRESS: **6973 VILLAGE PKWY**

OWNER: **CORWOOD CAR WASH**

USE: **MONITOR**

DRILLER: **AEGIS**

DATE COMPLETED: **06/08/1993**

DEPTH:
DRILLED **26** Ft

DIAMETER: **2** In

OTHER
DESIGNATION: **MW-1**

PERFS: UPPER **5**
LOWER **25**

METER NUMBER:

RP ELEVATION: **340** Ft

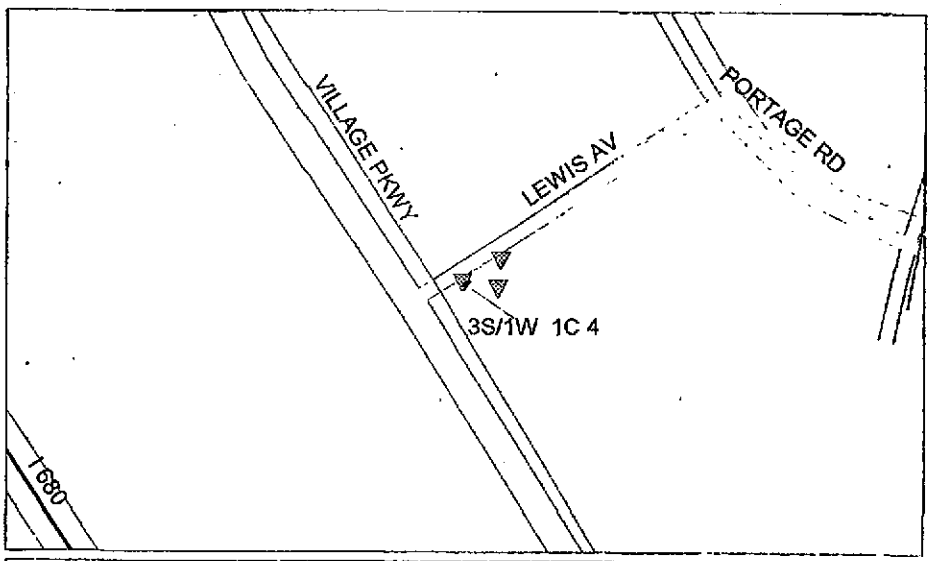
DATE SOUNDED:

DATE DESTROYED: **12/10/1998**

DATE UNLOCATABLE:

LOCATION SKETCH

DETAIL



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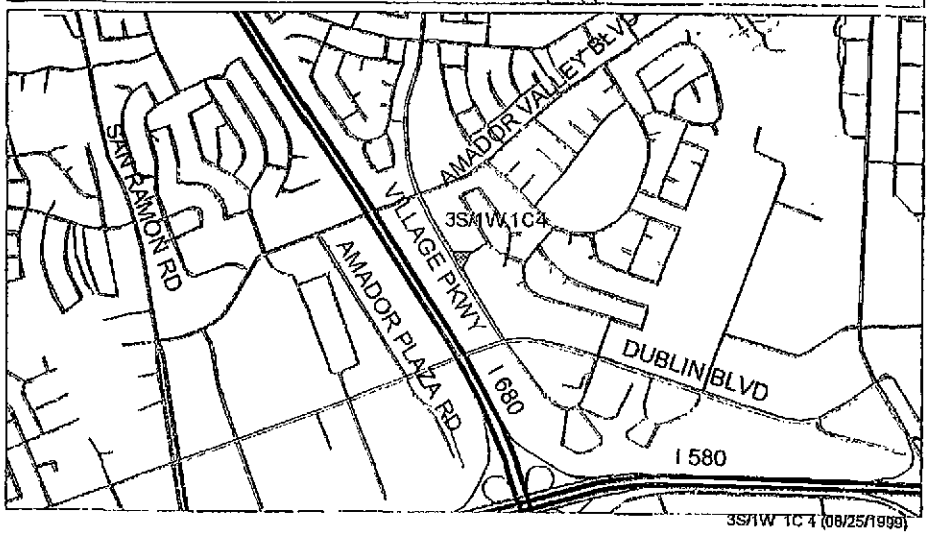

Scale: 1 inch = 2000 ft

0 2000

3S/1W 1C 4 (08/25/1999)

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

7015918

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

WELL NUMBER **3S/1W 1C 5**

ADDRESS: **6973 VILLAGE PKWY**

OWNER: **CORWOOD CAR WASH**

USE: **MONITOR**

DRILLER: **AEGIS**

DATE COMPLETED: **06/08/1993**

DEPTH:
DRILLED **26** Ft

DIAMETER: **2** In

OTHER
DESIGNATION: **MW-2**

PERFS: UPPER **5**
LOWER **25**

METER NUMBER:

RP ELEVATION: **340** Ft

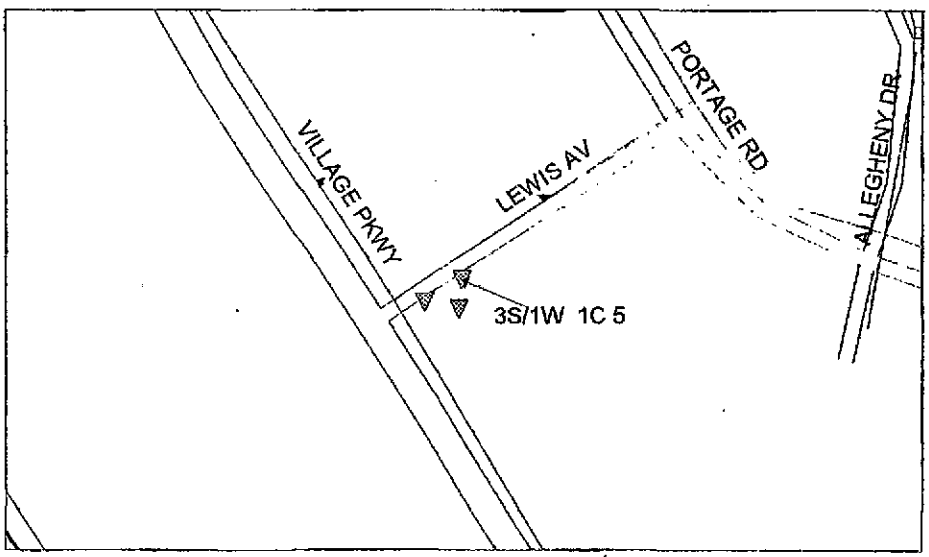
DATE SOUNDED:

DATE DESTROYED: **12/10/1998**

DATE UNLOCATABLE:

LOCATION SKETCH

DETAIL



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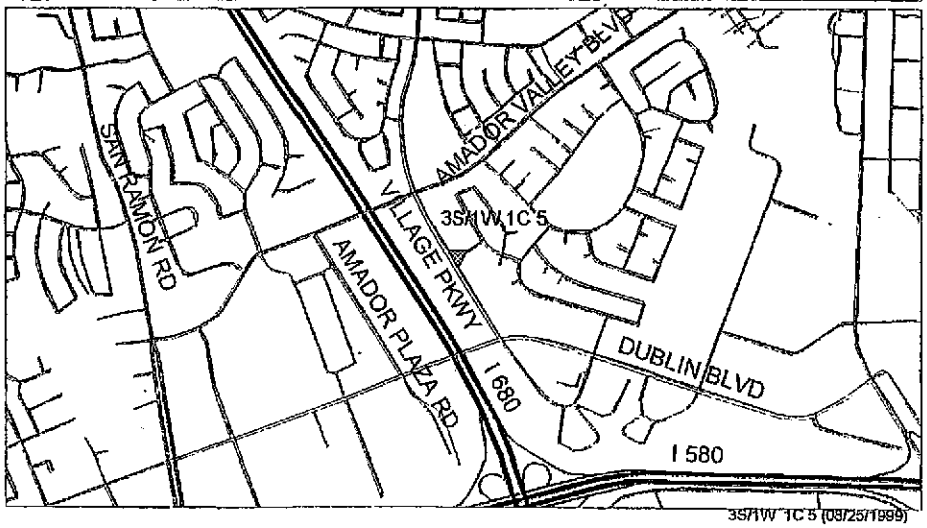

Scale: 1 inch = 2000 ft

0 2000

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STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

701591B

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

WELL NUMBER **3S/1W 1C 6**

ADDRESS: **6973 VILLAGE PKWY**
DUBLIN
OWNER: **CORWOOD CAR WASH**

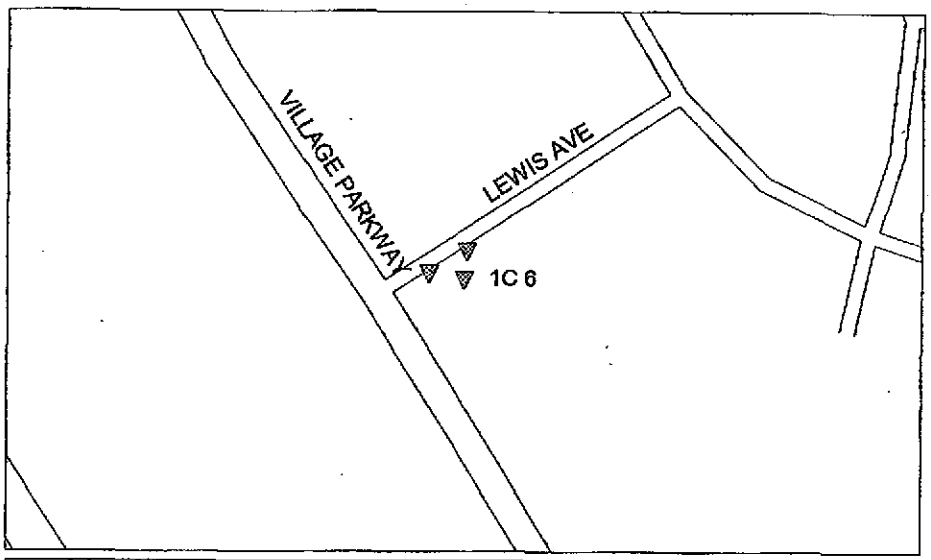
PRIMARY USE: WATER SUPPLY ☐
CATHODIC ☐
MONITORING ☒

DRILLER: **AEGIS**
DATE COMPLETED: **06/08/1993**
DEPTH: COMPLETED **25** Ft
DRILLED **26** Ft
DIAMETER **2** In

OTHER DESIGNATION: **MW-3**
PUMP: TYPE
MAKE
HP
DISCHARGE In
METER NUMBER
SOUNDED DEPTH Ft
DATE SOUNDED
DATE DESTROYED **12/10/1998**
DATE UNLOCATABLE

LOCATION SKETCH

DETAIL



Scale: 1 inch = 200 ft

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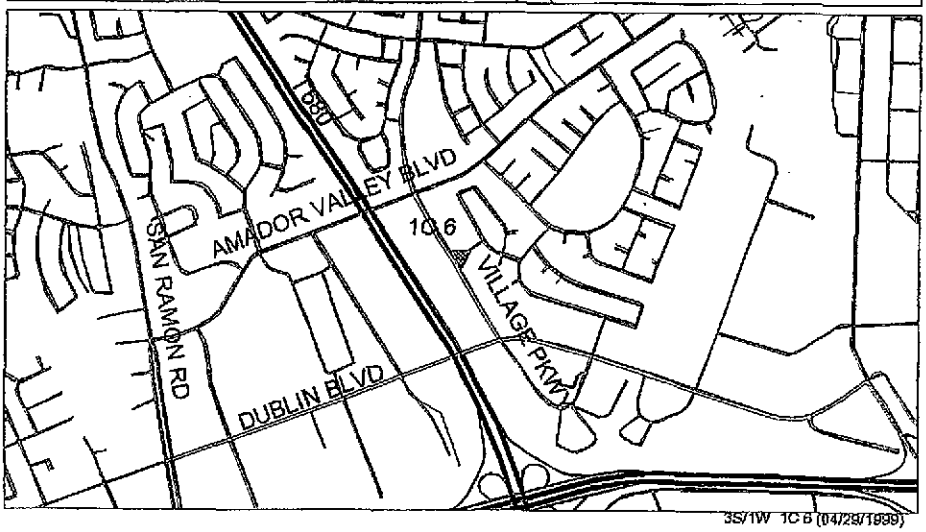

Scale: 1 inch = 2000 ft

0 2000

3S/1W 1C 6 (04/29/1999)

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WELL COMPLETION REPORT
(WELL LOGS)

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701591A

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

WELL NUMBER **3S/1W 1C 5**

ADDRESS: **6973 VILLAGE PKWY**
DUBLIN
OWNER: **CORWOOD CAR WASH**

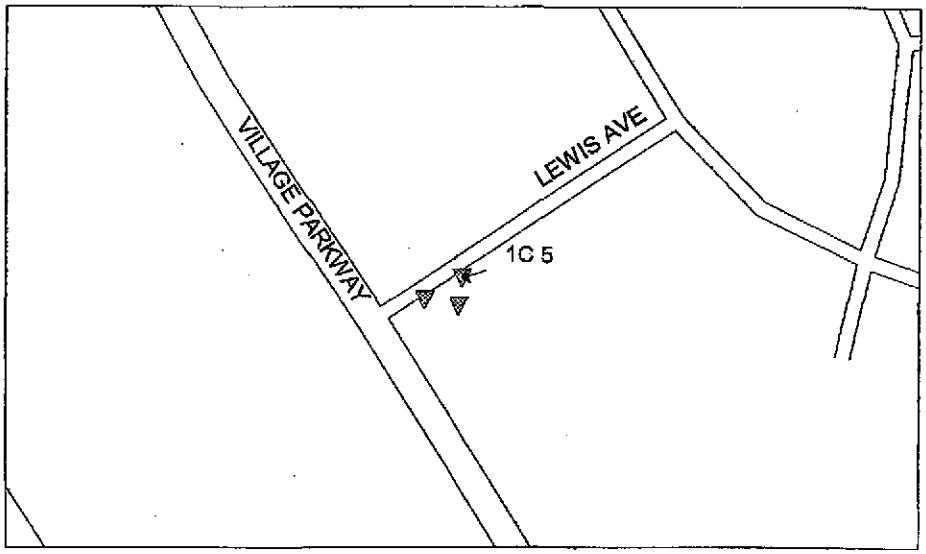
PRIMARY USE: WATER SUPPLY ☐
CATHODIC ☐
MONITORING ☒

DRILLER: **AEGIS**
DATE COMPLETED: **06/08/1993**
DEPTH: COMPLETED **25** Ft
DRILLED **26** Ft
DIAMETER **2** In

OTHER DESIGNATION: **MW-2**
PUMP: TYPE
MAKE
HP
DISCHARGE In
METER NUMBER
SOUNDED DEPTH Ft
DATE SOUNDED
DATE DESTROYED **12/10/1998**
DATE UNLOCATABLE

LOCATION SKETCH

DETAIL



Scale: 1 inch = 200 ft

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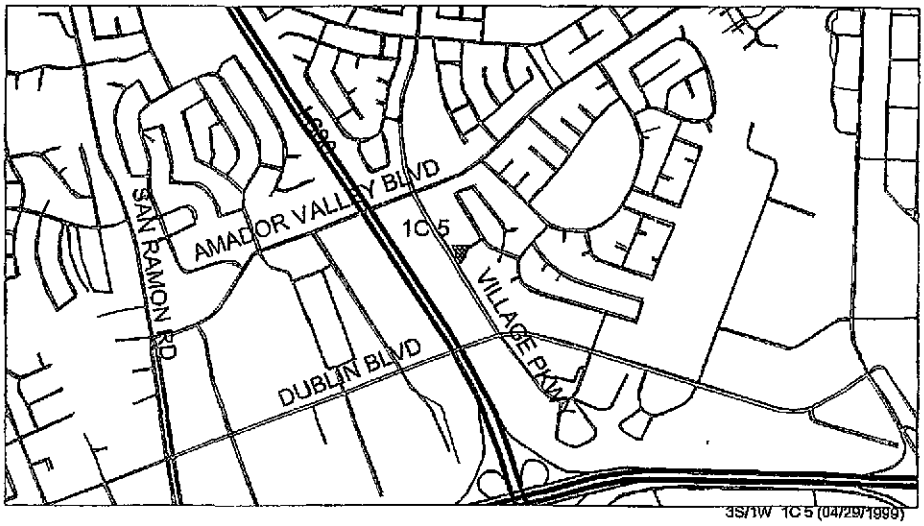

Scale: 1 inch = 2000 ft

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3S/1W 1C 5 (04/29/1999)

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WELL COMPLETION REPORT
(WELL LOGS)

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ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

WELL NUMBER **3S/1W 1C 4**

ADDRESS: **6973 VILLAGE PKWY**
DUBLIN
OWNER: **CORWOOD CAR WASH**

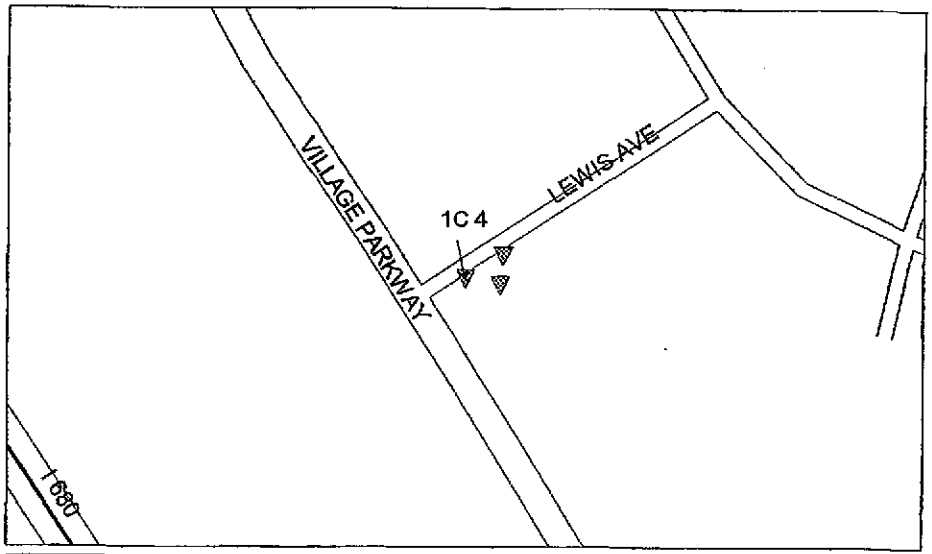
PRIMARY USE: WATER SUPPLY ☐
CATHODIC ☐
MONITORING ☒

DRILLER: **AEGIS**
DATE COMPLETED: **06/08/1993**
DEPTH: COMPLETED **25** Ft
DRILLED **26** Ft
DIAMETER **2** In

OTHER DESIGNATION: **MW-1**
PUMP: TYPE
MAKE
HP
DISCHARGE In
METER NUMBER
SOUNDED DEPTH Ft
DATE SOUNDED
DATE DESTROYED **12/10/1998**
DATE UNLOCATABLE

LOCATION SKETCH

DETAIL



Scale: 1 inch = 200 ft

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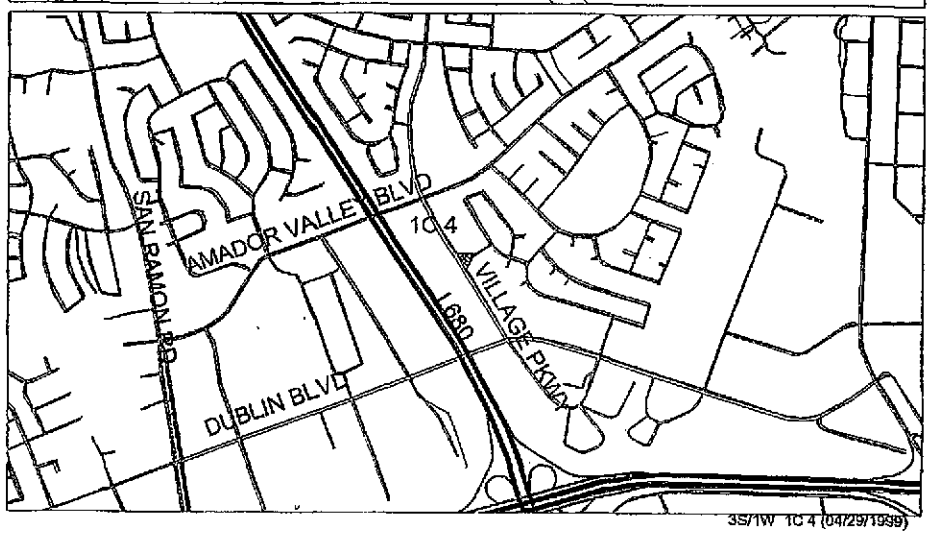

Scale: 1 inch = 2000 ft

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3S/1W 1C 4 (04/29/1999)

ZONE 7
WATER RESOURCES ENGINEERING

WELL LOCATION DATA

701591C

WELL NUMBER **3S/1W 1C 6**

ADDRESS: **6973 VILLAGE PKWY**

OWNER: **CORWOOD CAR WASH**

USE: **MONITOR**

DRILLER: **AEGIS**

DATE COMPLETED: **06/08/1993**

DEPTH:

DRILLED **26** Ft

DIAMETER: **2** In

OTHER DESIGNATION: **MW-3**

PERFS: UPPER **5**

LOWER **25**

METER NUMBER:

RP ELEVATION: **340** Ft

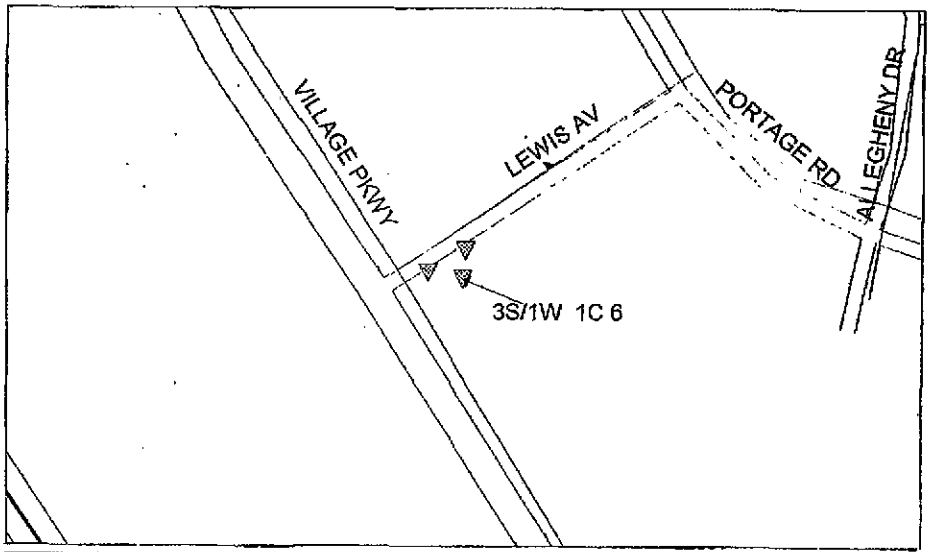
DATE SOUNDED:

DATE DESTROYED: **12/10/1998**

DATE UNLOCATABLE:

LOCATION SKETCH

DETAIL



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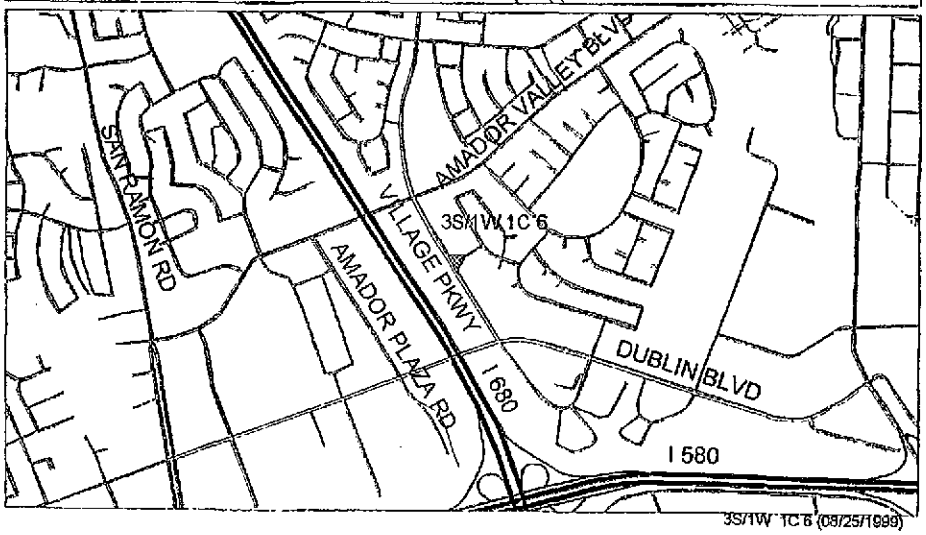

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Scale: 1 inch = 2000 ft

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WELL COMPLETION REPORT
(WELL LOGS)

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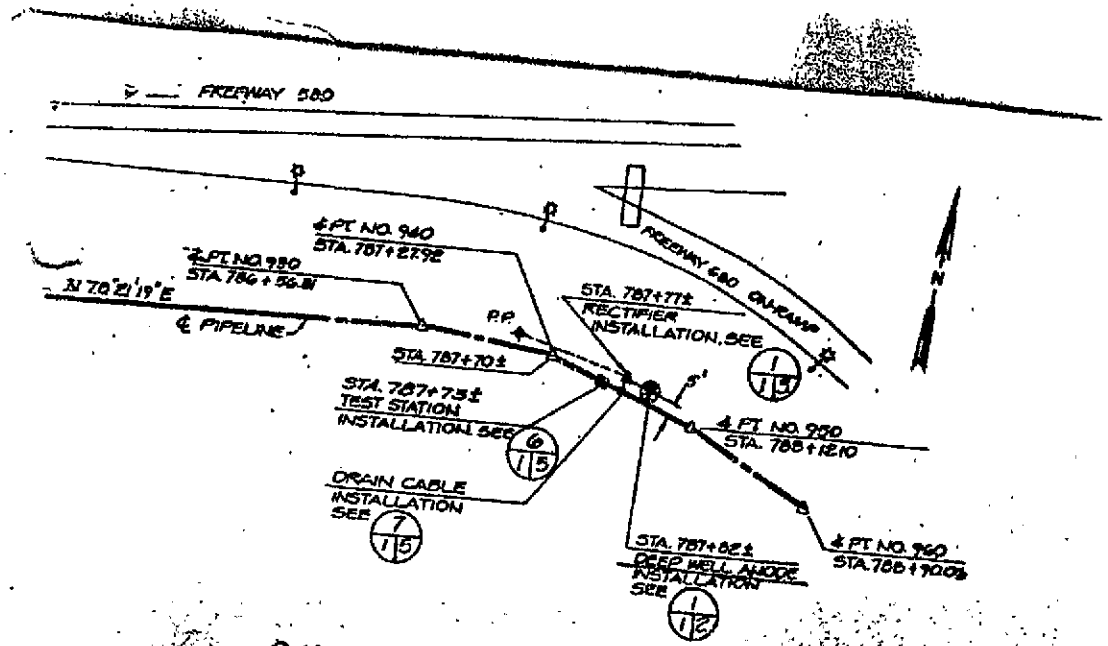
93643



CATHODIC STATION P-6

NTS.

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WELL COMPLETION REPORT
(WELL LOGS)

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3S/1W/1E13

LOG OF EXPLORATORY BORING

#98180 A

PROJECT No. _____ DATE 2/4/94
CLIENT Enea Plaza
LOCATION Amador Plaza Rd., Dublin
LOGGED BY JK DRILLER HEW/Jeff C604987

BORING No. PZ-1
Sheet 1 of 1

Field location of boring:

Drilling method HSA
Hole dia. 8"

Casing installation data Sch. 40 PVC (1" diam.) 0.020" screens from 10'-20'; blank 0-10'; No. 3 Lonestar sand 8.5'-20'; bentonite pellets 6.5'-8.5'; cement 0-6.5'

Ground Elev. Datum

Water level				
Time				
Date				

Pocket Torr vane TSF	Pocket Penetrometer TSF	Well Design	Blows/ft. or Pressure PSI	Recovery	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					1			Asphalt (4") Baserock (8") gravel to 1" w/ medium sand
					2			CLAY (CL), black (2.5Y N2), trace - 10% coarse sand - fine gravel, very stiff, damp
					3			
					4			@ 3.5': color change to very dark gray brown (2.5Y 3/2), silty, increase of silt w/ depth, softer w/ depth
					5			
					6			SILT (ML), dark olive brown (2.5Y 3/3), clayey, trace fine sand, soft, moist
					7			
					8			
					9			
					10			CLAY (CL), very dark gray (2.5Y N3) mottled w/ olive brown (2.5Y 4/3), trace - 20% very fine sand, stiff, moist, open rootholes filled w/ water @ 11.5'
			7	1'6"	11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			CLAY (CL), very dark gray (2.5Y N3) mottled w/ very dark gray brown (2.5Y 3/2), thin lenses or layers of very clayey - silty very fine sand, abundant rootholes, stiff, moist, wet in open rootholes and in sandy lenses.
			11	1'6"	19			
					20			TD = 20'

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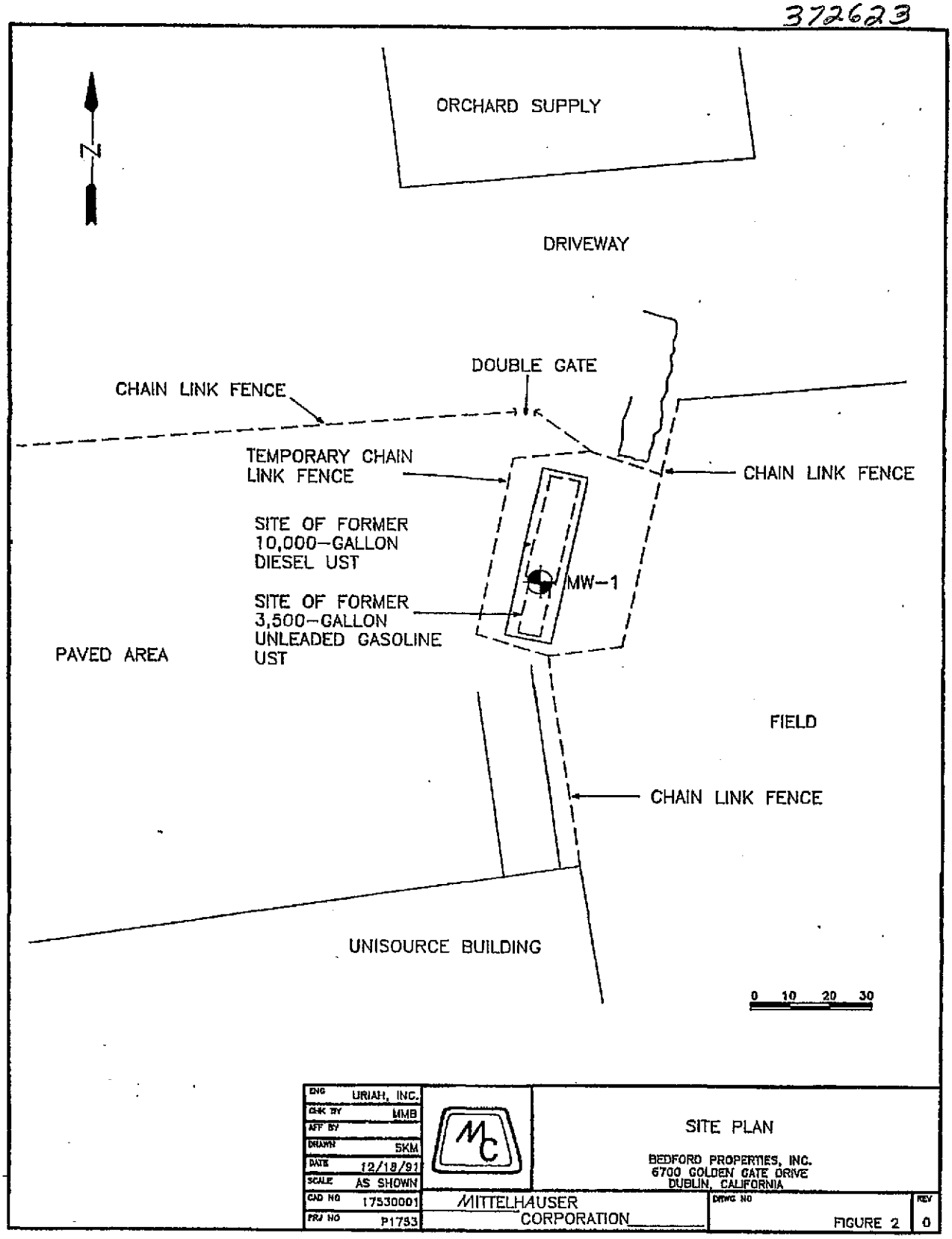
STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

3S/1W 1M1

372623



ENG	URIAH, INC.
CHK BY	MMB
APP BY	
DRAWN	SKM
DATE	12/18/91
SCALE	AS SHOWN
CAD NO	17530001
PRJ NO	P1753

MITTELHAUSER CORPORATION

SITE PLAN

BEDFORD PROPERTIES, INC.
6700 GOLDEN GATE DRIVE
DUBLIN, CALIFORNIA

DRWG NO FIGURE 2

REV 0

372623

3S/1W 1M1

MITTELHAUSER corporation

BORING NO.: MW-1 PROJECT NO.: 1753-05 PROJECT NAME: BEDFORD – 6700 GOLDEN GATE DRIVE, DUBLIN

BORING LOCATION: TANK PIT AT TANK JUNCTURE ELEVATION AND DATUM: NA

DRILLING AGENCY: HEW DRILLING DRILLER: ANIBEL

DRILLING EQUIPMENT: 8" DIAMETER HOLLOW-STEM AUGER

COMPLETION DEPTH: 30 FEET BEDROCK DEPTH: NA

FIRST WATER DEPTH: 20 FEET NO. OF SAMPLES: 1

DATE & TIME STARTED:	DATE & TIME FINISHED:
11/20/91 10:25 am	11/20/91 11:20 am
LOGGED BY:	CHECKED BY:
R. PAPLER	

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID/FID	REMARKS
0	6" ASPHALT					
	SILTY GRAVEL (GW); light brown, damp, becoming moist with depth, gravel fine to coars and well rounded (Fill).	GW	See attached diagram.			Borehole drilled using 8" OD hollow-stem augers. Samples collected using a 2 1/2" OD California-modified split-spoon sampler lined with brass tubes driven by a 140# downhole hammer falling 30".
5						
10	Gradational color change to grayish brown with slight increase in moisture.					
15	Drilling easier at ~17 feet.	▼				Groundwater later stabilized at 18.28 feet, 1:18 pm.
	SILTY CLAY (CH); brown, moist, firm, plastic.	CH				
20	SANDY SILT (ML/SM) interbedded with SILTY GRAVEL (GW); brown, wet, gravel: fine and well rounded, medium dense with some orange and gray mottling.	ML/SM & GW		5 9 4		Groundwater first encountered at 20 feet.
	SILTY CLAY (CH); gray, wet, soft, plastic, microporos.	CH		1 3 5		
25						Borehole terminated at 30'. 2" diameter PVC well with 10 feet of screen constructed in borehole 11/20/91.
30				1 3 5		Boring terminated at 30 feet at 11:20 a.m.