

R02441

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September 13, 2005

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

Re: **Agency Response and Revised Site Investigation Report**
Shell-branded Service Station
9750 Golf Links Road
Oakland, California
SAP Code 135683
Incident #98995744
Fuel Leak Case # RO0002441

Alameda County
SEP 16 2005
Environmental Health



Dear Mr. Jerry Wickham:


Cambria Environmental Technology, Inc. (Cambria) prepared this agency response and revised site investigation report on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) in response to the July 13, 2005 Alameda County Environmental Health (ACEH) letter. The ACEH letter was prepared in response to Cambria's May 5, 2005 *Site Investigation Report* and the June 7, 2005 *Groundwater Monitoring Report – First Quarter 2005*. Presented below is a site description, a summary of the previous investigative work, and Cambria's responses to ACEH's technical comments in the above-referenced correspondence.

SITE DESCRIPTION

The site is an active Shell-branded Service Station, located at the intersection of Golf Links Road and Mountain Boulevard in Oakland, California (Figure 1). The subject site currently operates three gasoline underground storage tanks (USTs) and associated product piping and dispenser island (Figure 2). As depicted on Figure 3, a former service station/current car detailing business is located immediately adjacent to the north of the site. State Highway 580 (I-580), with its associated on- and off-ramps, is located northwest, west, and southwest of the site (downgradient). Further west of I-580 are some residential properties, an active service station (corner of Las Vegas and 98th Avenue), and undeveloped land. South and southeast of the site is the Arroyo Viejo Creek and undeveloped land. East and northeast of the site are residential properties.

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PREVIOUS WORK

1995 Waste Oil Underground Storage Tank (UST) Removal: On March 7, 1995, Weiss Associates of Emeryville, California (WA) observed the removal of a 550-gallon, single-walled, steel waste-oil UST and collected soil samples from the tank excavation floor and sidewalls. The highest hydrocarbon concentrations were 12,000 parts per million (ppm) total oil and grease (TOG), 190 ppm total petroleum hydrocarbons as gasoline (TPHg) and 3,900 ppm total petroleum hydrocarbons as diesel (TPHd), detected at 7 feet below grade (fbg). After over excavation, confirmation soil samples from a depth of 11 fbg at the site contained 62 ppm TOG, and no TPHg or TPHd. No benzene was detected in any of the excavation samples. Sidewall confirmation samples from approximately 7 – 8 fbg reported no TPHd, no TPHg, and no benzene.

1995 Subsurface Investigation: On December 15, 1995, WA advanced one soil boring (B-1 on Figure 2) to 48 fbg in the vicinity of the former waste oil UST. Hydrocarbons detected were 2.8 ppm TPHd at 30.5 fbg and 56 ppm TOG at 40.5 fbg. No groundwater was encountered.

1998 Dispenser Upgrade: On February 4, 1998, Cambria observed station upgrade activities and collected soil samples from beneath one dispenser (D-4). The highest hydrocarbon concentrations were 7,800 ppm TPHg and 37 ppm benzene beneath dispenser D-4 at 4.0 fbg (Figure 2). No field indications of hydrocarbons were observed beneath the other dispensers, and sample collection was not required.

1998 Subsurface Investigation: On July 6 and 31, 1998, Cambria installed one soil boring (SB-1) to a depth of 30 fbg in the vicinity of dispenser sample D-4. Hydrocarbons were detected at a maximum concentration of 14,000 ppm TPHg and 100 ppm benzene at 13 fbg. A maximum concentration of 91 ppm of methyl tertiary butyl ether (MTBE) was reported at 9 fbg by EPA Method 8020. This detection was confirmed by EPA Method 8260 at a concentration of 23 ppm. Low concentrations of TPHg (5.6 ppm), benzene (0.035 ppm), and MTBE (0.16 ppm) by EPA Method 8020 were reported in the deepest sample collected at approximately 26 fbg. Cambria was unable to collect a groundwater sample, as the only water encountered was an apparent thin perched zone at approximately 12 fbg.

1999 Subsurface Investigation: On August 25, 1999, Cambria installed five soil borings (SB-1b and SB-2 through SB-5) to depths ranging from 16 to 30 fbg. The maximum TPHg concentration detected in soil was 243 ppm at approximately 10 fbg in boring SB-2. The maximum MTBE

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concentration detected in soil was 2.23 ppm (by EPA Method 8260) at approximately 10 fbg in boring SB-4. No benzene was reported in any of the analyzed soil samples collected. A perched water zone was encountered at approximately 12 fbg in boring SB-2 and approximately 20 fbg in boring SB-3. Groundwater was not encountered in the remaining soil borings. Grab water samples collected from the perched water encountered in borings SB-2 and SB-3 contained were both impacted with a maximum of 256 parts per billion (ppb) TPHg, 2.42 ppb benzene and 11,800 ppb MTBE (by EPA Method 8020) in SB-2.



2000 Sensitive Receptor Survey: In 2000, Cambria conducted a sensitive receptor survey for a ¼-mile radius of the site. Results of the survey are shown on Figure 1. The only well identified within the ¼-mile survey radius was a cathodic protection well located approximately 1,150 feet north-northwest of the site. Arroyo Viejo Creek was the only identified surface water body within the survey radius. The Arroyo Viejo Creek is located both above-ground and below ground in culverts in this area. From south-southeast of the site, the Arroyo Viejo is aboveground and flowing to the west. It flows underground at a culvert inlet approximately 60 feet south-southwest of the site, and flows beneath Golf Links Road. Ultimately, the Arroyo Viejo Creek daylights again over 500 feet to the northwest, near Encina Avenue and Golf Links Road (Figure 3).

2000 Conduit Study: In 2000, Cambria reviewed storm drain and sanitary sewer maps from the City of Oakland Public Works Department and the California Department of Transportation. Locations, depths, and pipe diameters for the sanitary sewer and storm drain lines in the site vicinity are shown on Figures 2 and 3. These locations we reviewed and updated during a site visit in January 2005, and discussed further in the agency response below.

2004 Dispenser Upgrades: During upgrades of the dispensers and piping at this site in April 2004, eight soil samples were collected from depths between 4.5 – 5 fbg. The highest TPHg concentration was reported in soil from beneath dispenser piping at 5 fbg in P-1. This sample location was in very close proximity to the 1998 dispenser sample D-4. These activities and results were submitted in Cambria's July 16, 2004 *Product Dispenser and Piping Replacement Report*.

2004 Subsurface Investigation: On June 14, 2004 Cambria installed one pilot hole soil boring (PH-1) to a depth of 68.5 fbg in the vicinity of northwestern dispenser sample D-3. No TPHg, BTEX, or MTBE were detected in the soil samples collected from boring PH-1. The results are presented in Cambria's July 19, 2004 *Site Investigation Report and Well Installation Work Plan*.

2005 Monitoring Well Installation: In January and February, 2005, Cambria installed four groundwater monitoring wells at the site. TPHg was reported in two soil samples at a maximum concentration of 21 ppm. Benzene was not detected in any soil samples. MTBE was reported in six of the 15 soil samples, at a maximum concentration of 0.63 ppm. All of the soil samples with reportable concentrations of constituents were obtained below the depth that groundwater was encountered, and represent saturated soil conditions. Results of the investigation were presented in Cambria's May 5, 2005 *Site Investigation Report*.

Groundwater Monitoring: Quarterly groundwater monitoring began at the site in March 2005. Depths to water have ranged from 5.2 to 11.5 feet below the top of well casings, and groundwater elevations have ranged from 147.98 to 155.03 feet above mean sea level. From the March and June 2005 sample events, TPHg has been reported only in well S-1 at concentrations up to 13,000 ppb. Benzene has been reported only in well S-5 at concentrations up to 45 ppb. MTBE is detected in all four site wells at concentrations ranging from 2.2 ppb to 2,800 ppb.

AGENCY RESPONSE

The July 13, 2005 ACEH letter notes several technical comments to our May 5, 2005 *Site Investigation Report*. Our responses to each recommendation follow excerpts from the ACEH letter, as indicated below.

Technical Comment # 1. Proposed Well S-3. *The "Site Investigation Report" indicates that well S-3 could not be installed and that well S-4 was relocated midway between the original locations for wells S-3 and S-4. The text of the report refers to "underground lithologic conditions, and/or underground utilities, and pea-gravel," interfering with well installation. Please fully describe the encountered conditions and how they affected well installation.*

Agency Response #1. Two attempts were made to install well S-3 near its proposed location. The initial attempt encountered an abandoned clay pipe within the first 3 feet of drilling. The clay pipe was inspected by California Utility Surveys (CUS) with a down-hole camera, and confirmed to be out-of-service. The boring was backfilled with grout and re-located a few feet to the west. At this location, as noted in the investigation report text, a subsurface "void" was encountered. At approximately 6-fbg, the drive sampler dropped about 6 feet into a 'void'. CUS was called again to the site and lowered their camera into the space. The void was encountered at approximately 6 fbg and appeared to be approximately 6 feet in rough diameter. There were no smooth sides and it did not look like concrete or anything man-made. The bottom surface of the void was irregular and rough and the robotic camera was unable to travel around the void for

closer inspection. According to conversations with the County of Alameda Public Works Agency (ACPWA), no underground utilities are present in the approximately location of the void (Figure 3). Under supervision of the ACPWA, Cambria backfilled the void to the extent possible. An initial attempt to grout the boring failed as too much grout was being placed in the boring and the level of the grout was not rising. Thus, an 8-inch diameter PVC pipe was installed through the open borehole, extending from above the void to the bottom. The PVC pipe was grouted and the remaining boring was grouted to grade.

The proposed location for well S-1 was between the dispenser islands, just southwest of the USTs at the site; however, pea-gravel and underground utilities interfered with the installation of well S-1 in its original location. The presence of pea-gravel and the potential for fuel-related piping to be located in the vicinity of the proposed well caused Cambria to adjust the location of well S-1 to north of the USTs.

Technical Comment #2. Locations of Storm Drains and Culvert. Please clarify... which is the correct location for the culvert and revise the site maps, if necessary.

Agency Response #2. Previous review of City of Oakland and Caltrans utility plan maps identified storm drains in the approximate locations shown in Cambria's June 7, 2000 *Subsurface Investigation Report*. Then, during field activities conducted in 2005, Mr. Marvin Edge of the ACPWA indicated that the location of the storm drain was incorrect on Cambria's previous utility map and identified the current location of the storm drains, which were depicted in Figure 2 of the May 5, 2005 *Site Investigation Report* and the June 7, 2005 *Groundwater Monitoring Report – First Quarter 2005*.

Based upon the request from ACEH to clarify this discrepancy, Cambria conducted significant additional research and has found that there are (at least) three generations of storm drains in this vicinity, as depicted on Figure 3, Storm Drain Location Map. The line shown in solid red is depicted on a 1962 Caltrans map as an "abandoned" storm drain. The line shown in solid purple is depicted as "proposed" on the 1962 Caltrans map, and is also depicted on a 1978 City of Oakland map. The line shown in green (dashed) depicts the current location of the storm drains, as described by ACPWA personnel during the 2005 field activities.

The Creek and Watershed Map of Oakland and Berkeley, published by the Oakland Museum of California in 2000, confirms the locations depicted on Figure 3 in purple. The site plan (Figure 2) has been modified accordingly.

Technical Comment #3. Surface Water Sampling from Arroyo Viejo Creek. *Collection of surface water samples from Arroyo Viejo Creek was proposed in the document entitled, "Agency Response and Well Installation Work Plan Addendum," dated December 5, 2002; however, no sampling results appear to have been presented in subsequent reports. Please confirm whether surface water samples have been collected from Arroyo Creek. If surface water sampling has not been conducted and future sampling is not planned, present the rationale for not collecting these samples.*

Agency Response #3. As of this date, no surface water sampling has been performed. Based upon a review of the groundwater flow direction at the site and the actual location of the storm drain diversion of Arroyo Viejo Creek, Cambria does not recommend conducting surface water sampling for a number of reasons.

To the south-southwest of the site, the Arroyo Viejo Creek is located crossgradient of the site and is not likely to be impacted by site conditions. Concentrations in wells S-2 and S-4 are low to non-detect and provide adequate delineation of the groundwater plume for surface water protection in the direction of the Arroyo Viejo Creek.

Based on the current configuration of storm drains, the storm water runoff from I-580, the on-ramp, and from Golf Links Road, drains into the Arroyo Viejo Creek. Also, as depicted on Figure 3, the entire watershed to the north of the site (Melrose Highland Branch, Rifle Range Branch, Country Club Branch) and the residential neighborhood further northwest of I-580 all discharge to the same storm drain outlet. Because of this, surface samples collected where the Arroyo Viejo Creek re-emerges across I-580 will include water from too many locations and therefore, if it is impacted, it will not necessarily represent impact from the Shell site.

Technical Comment #4. Cross Sections. *The revised report is to include one north-south and one east-west cross section.*

Agency Response #4. Cross-sectional diagrams are included as Figures 4 and 5. The cross-sections show surface topography, locations of site features and underground utilities in the site vicinity, lithologic interpretation, screen intervals for each monitoring well, analytical results from soil samples, grab groundwater data from historical borings, and groundwater elevation and constituent concentrations from the June 2005 monitoring event.

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CLOSING

If you have any questions regarding the contents of this document, please call Ana Friel at (707) 268-3812.

Sincerely,
Cambria Environmental Technology, Inc.

Martha Murphy



for Jacquelyn England
Project Geologist

Ana Friel

Ana Friel
Senior Project Geologist
PG 6452



Attachments:

- Figure 1. Site Vicinity/Area Well Survey Map
- Figure 2. Site Plan
- Figure 3. Storm Drain Location Map
- Figure 4. Geologic Cross Section A-A'
- Figure 5. Geologic Cross Section B-B'

cc: Denis Brown, Shell

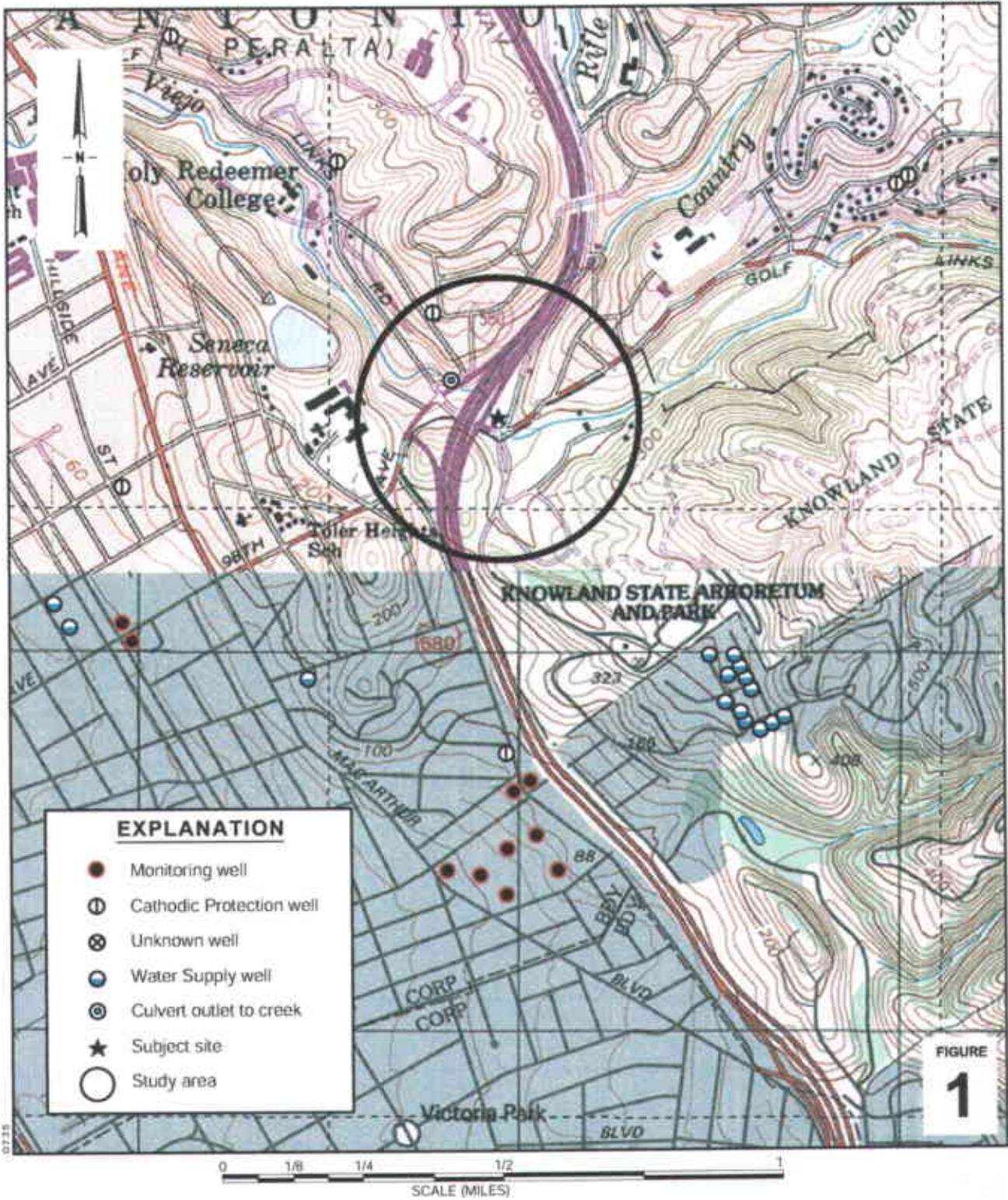


FIGURE 1











Shell-branded Service Station
 9750 Golf Links Road
 Oakland, California



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**Site Vicinity/
 Area Well Survey Map**
 (1/4-Mile Radius)

EXPLANATION

-  Monitoring well
-  Attempted monitoring well
-  Soil boring
-  Soil sample
-  Storm drain line
-  Former storm drain line
-  Sanitary sewer line
-  Water line
-  Electrical line
-  Flow direction where applicable

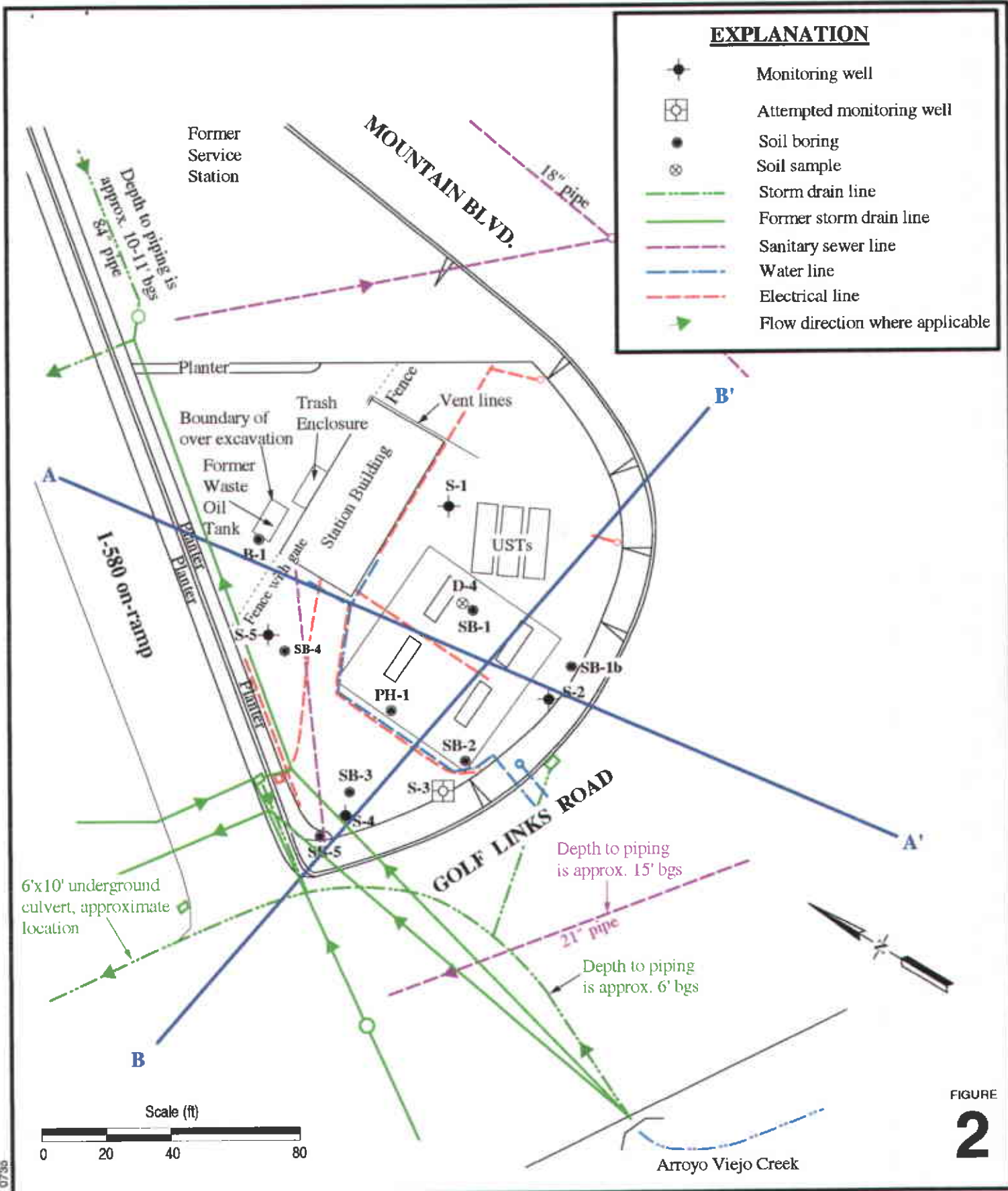


FIGURE 2

Shell-branded Service Station
 9750 Golf Links Road
 Oakland, California



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Site Plan

0735

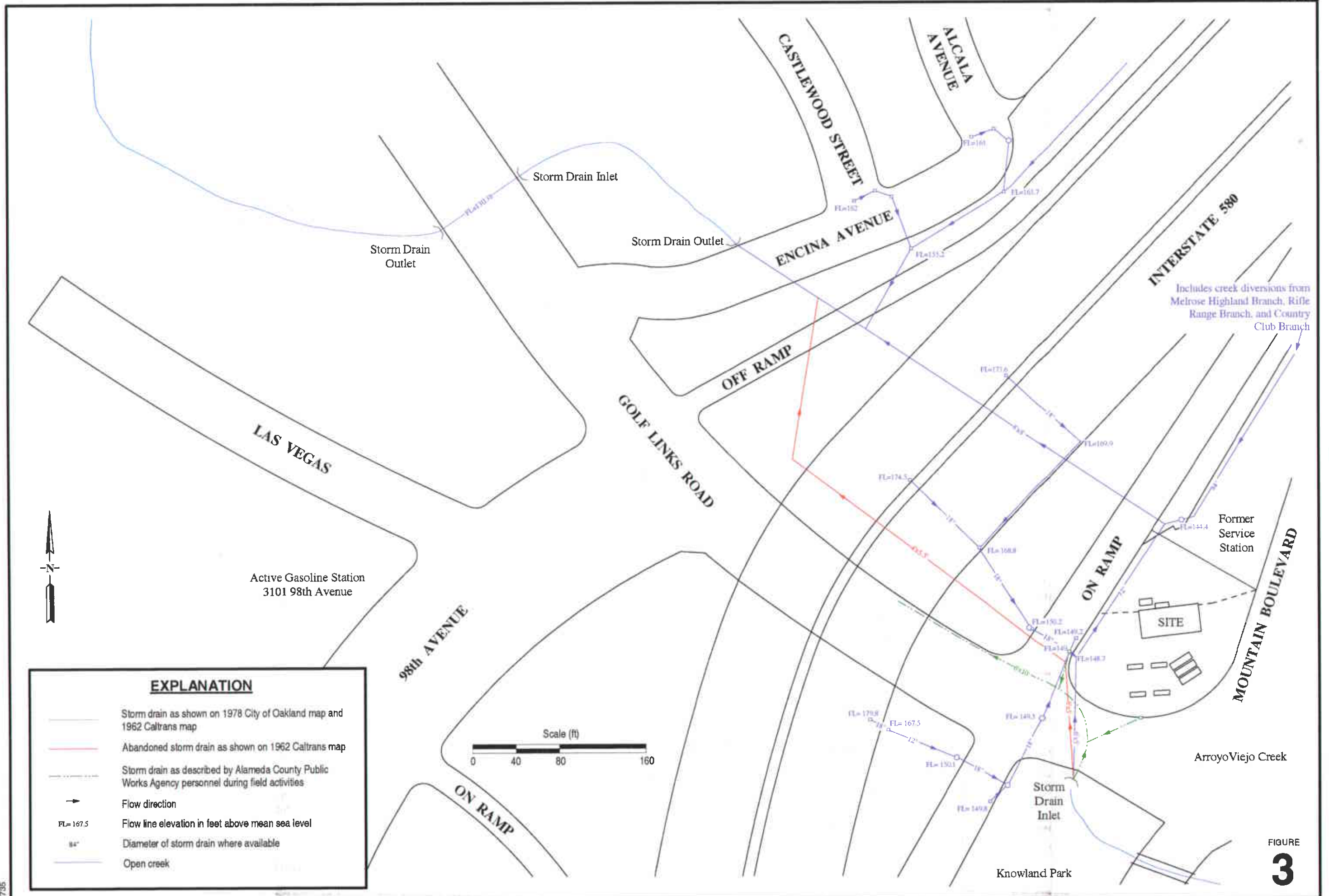
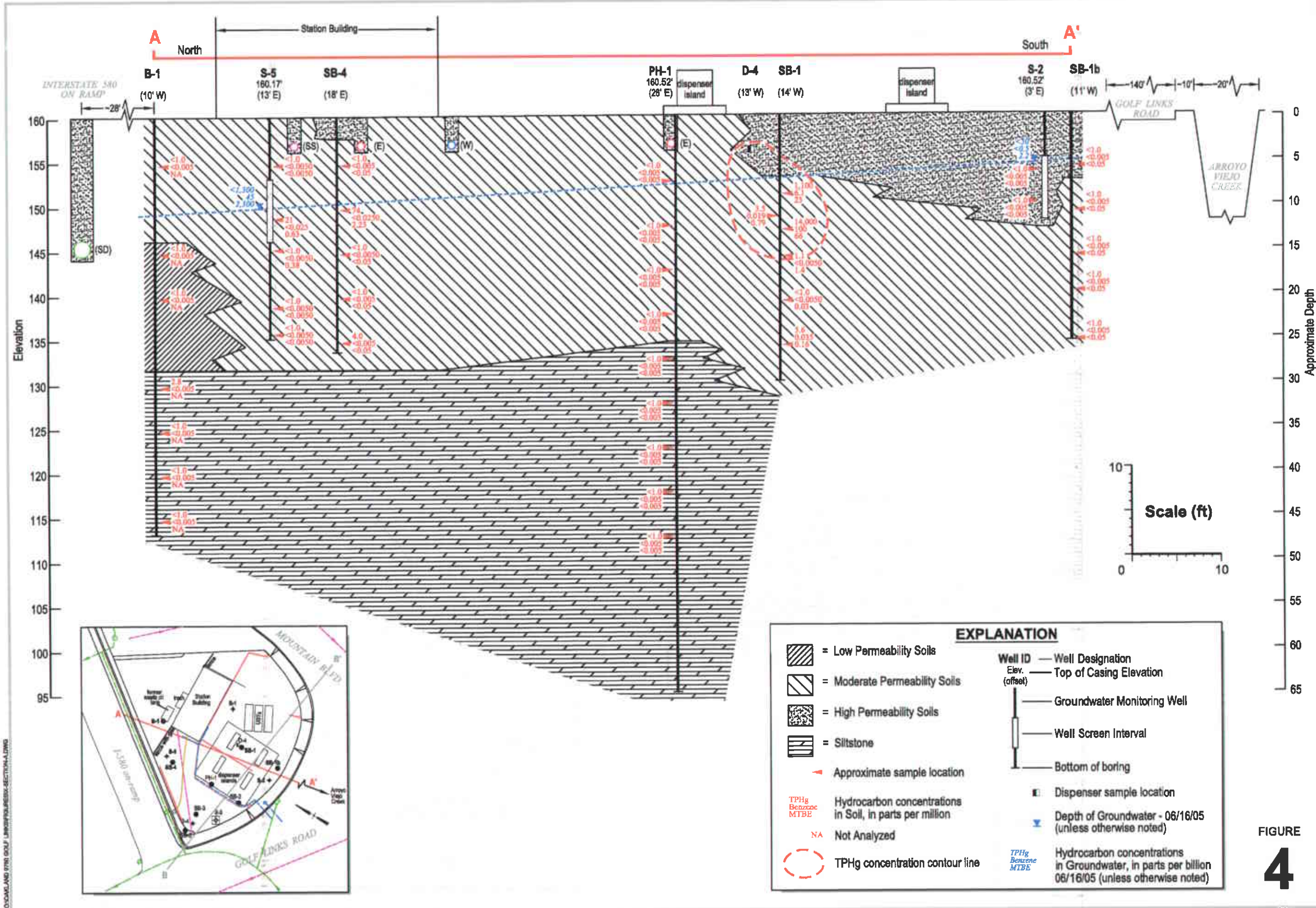


FIGURE
3

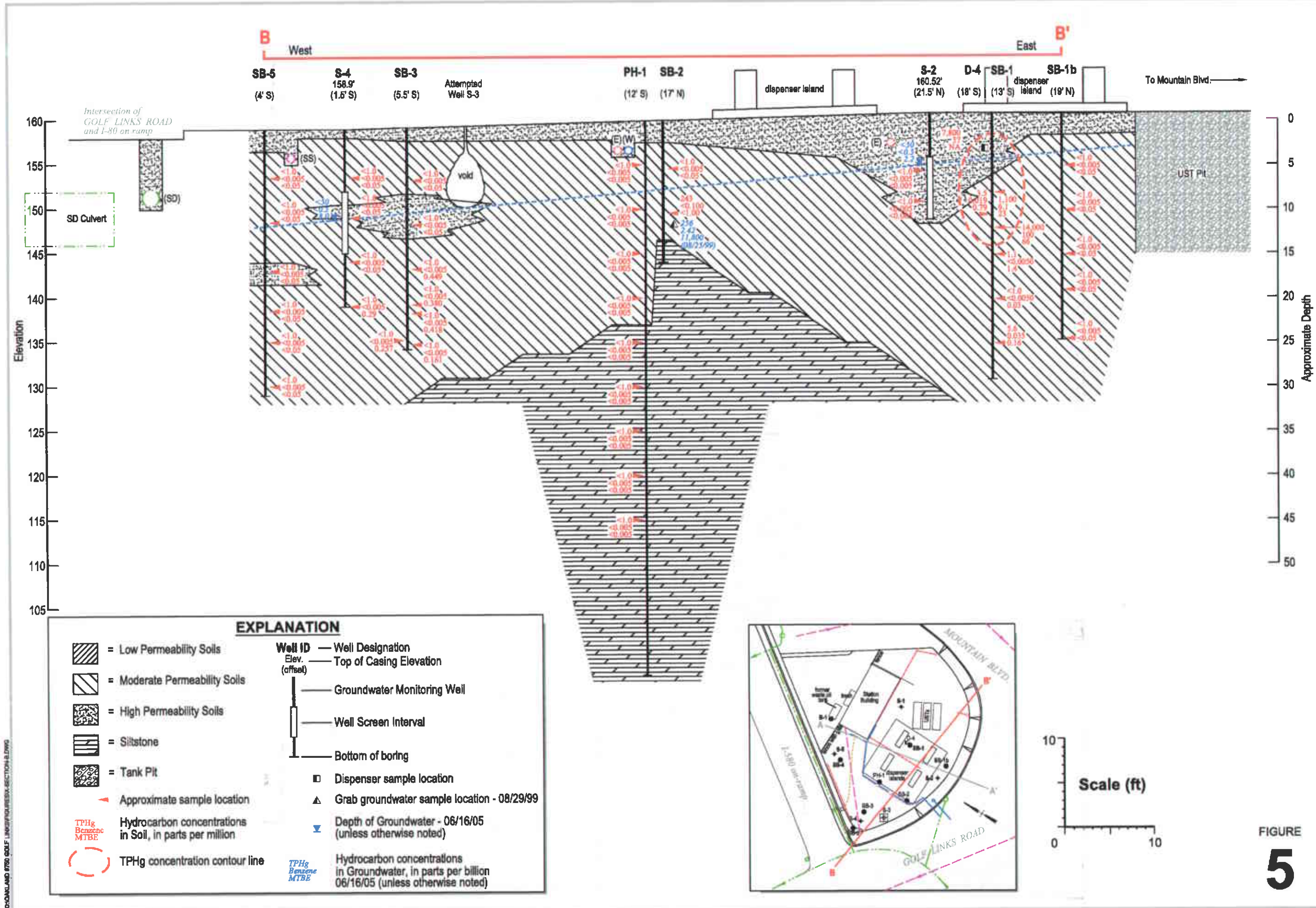


Geologic Cross Section A-A'



Shell-branded Service Station
 9750 Golf Links Road
 Oakland, California

FIGURE 4

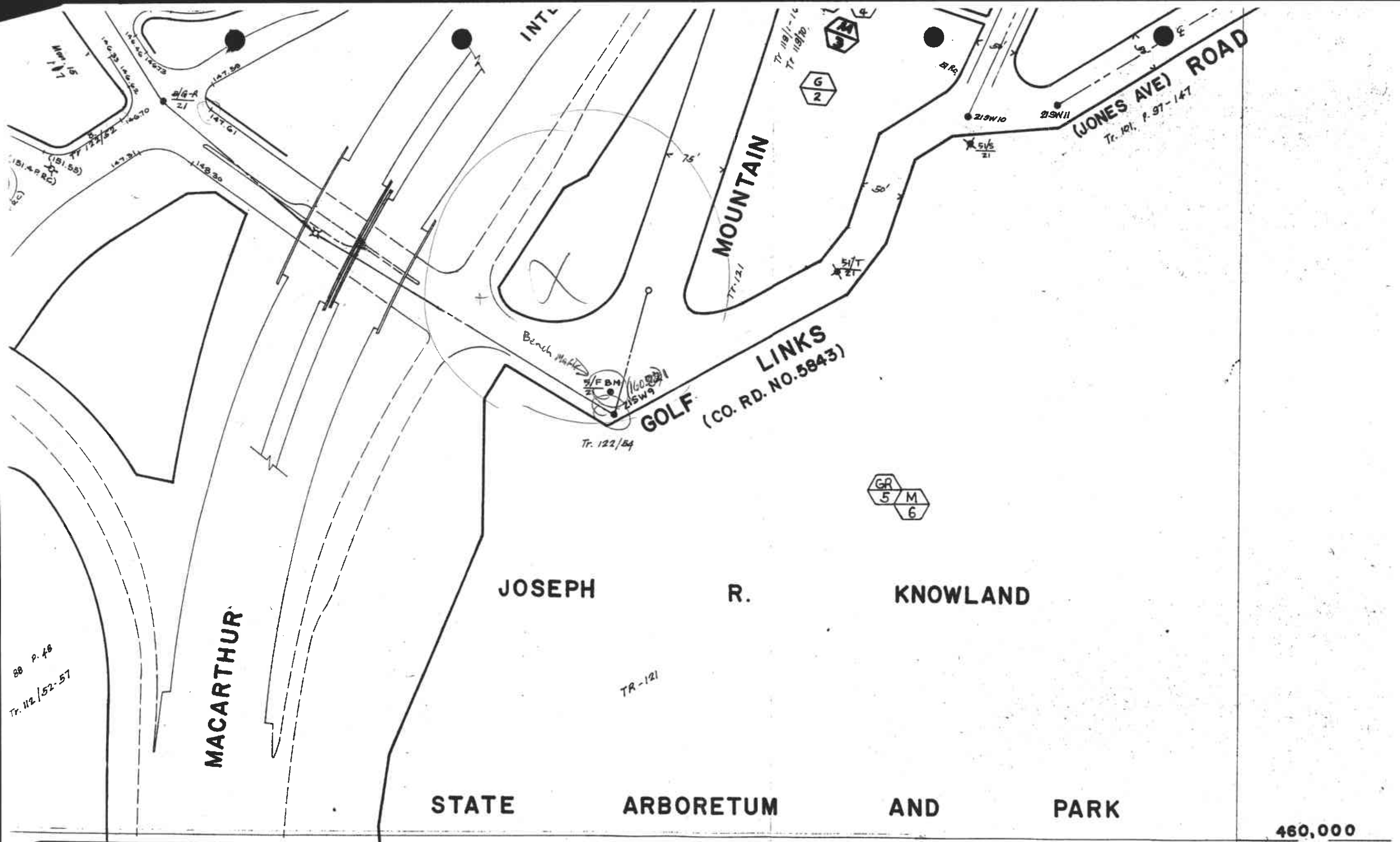


Geologic Cross Section B-B'



Shell-branded Service Station
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CHOKLAND 8780 GOLF LINKS/INQUIRIES/SECTION B-DWG



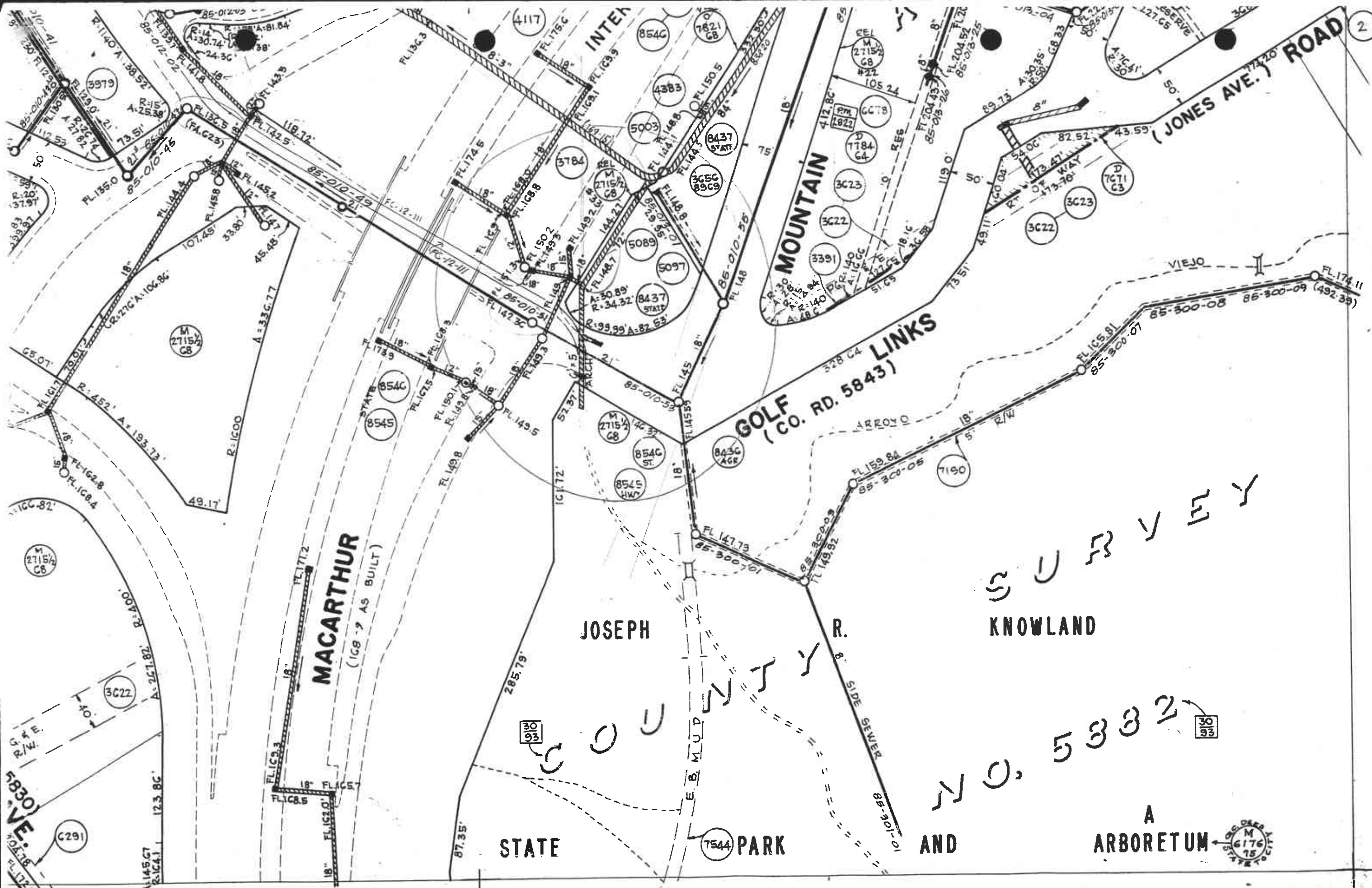
LEGEND

• G/A
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▲ TRIANGULATION STATION

1,000'

460,000



City of Oakland

L
 SANIT. STORM
 FLOW MANHOLES
 LAMP
 CLEAR

4,000