RO 2744

Shell Oil Products US

September 27, 2005

Re: **Work Plan Dated September 27, 2005**
Shell-branded Service Station
8999 San Ramon Road
Dublin, California

Dear Mr. Jerry Wickham:

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,
Shell Oil Products US

Denis L. Brown
Sr. Environmental Engineer

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September 27, 2005
Project SJ89-99S-1.2005

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

Re: Work Plan
Shell-branded Service Station
8999 San Ramon Road
Dublin, California

Dear Mr. Wickham,

Delta Environmental Consultants, Inc. (Delta), on behalf of Shell Oil Products US (Shell), has prepared a work plan for the site referenced above (Figure 1). The responses in this work plan were requested in a letter from the Alameda County Health Care Services Agency (ACHCSA) to Shell dated July 25, 2005.

BACKGROUND

In July 2005, Delta submitted an *Initial Site Conceptual Model* (SCM) to the ACHCSA. The SCM summarized data from 1) a soil investigation by Cambria Environmental Technology, Inc. associated with dispenser and product piping upgrades in July and August 2004, and 2) Delta's on-site soil and groundwater investigation performed in May and June 2005. The SCM identified the following data gaps:

- underground utilities in Alcosta Boulevard which might serve as contaminant conduits and any dewatering systems associated with Interstate 680 that might influence local groundwater flow patterns;
- lateral and vertical extent of fine-grained deposits (silt, clay, and clayey silt) encountered in shallow borings (28 feet) and one deep site boring (CPT-1) from near the ground surface to a depth of approximately 52 feet below grade (bg);
- lateral and vertical extent of sand encountered in boring CPT-1 from 52 feet to 60 feet bg (CPT refusal at 60 feet);
- extent of soil contamination in the southern portion of the site;
- lateral extent of dissolved metyl tert-butyl ether (MTBE) and tert-butanol (TBA) in the first encountered groundwater zone (23 feet to 27 feet bg);

- insufficient data on flow direction of first encountered groundwater due to limited number of monitoring events
- vertical extent of MTBE and TBA (if any) in sand layer below a depth of 52 feet bg;
- aquifer parameters for first encountered groundwater that may be required in design of an interim remediation system;

WORK PLAN

The following sections describe tasks to be performed in response to currently identified data gaps.

1. UNDERGROUND UTILITIES

Delta will contact the Cities of Dublin and San Ramon regarding the location of underground utilities in Alcosta Boulevard. Delta will also contact the California Department of Transportation regarding the presence of any drainage and/or groundwater suppression systems in the area of Interstate 680 and Alcosta Boulevard. The location and depth of any underground features identified will be marked on a map submitted as part of an updated SCM.

2. LATERAL AND VERTICAL EXTENT OF SURFICIAL FINE GRAINED DEPOSITS

Initial direct push borings (GP-1 through GP-3 and GP-5 through GP-14) encountered fine grained soils (silt and clay) to their maximum depth of 28 feet bg. Cone penetrometer testing (CPT) boring CPT-1 encountered fine grained deposits to a depth of 52 feet bg. Two hydrogeologic cross-sections are attached to this work plan (Figures 2 and 3), and are provided in the Site Geology section of the SCM. Shell proposes to drill a series of additional on-and off-site borings to define the lateral and vertical extent of the fine grained deposits.

Shell proposes to define the lateral extent of the fine grained deposits by drilling five borings for the installation of groundwater monitoring wells MW-5 through MW-9 (Figure 4), and three CPT borings.

a. PREFIELD ACTIVITIES

Prior to drilling, Delta will mark all boring locations and contact Underground Services Alert a minimum of 48 hours beforehand. In addition, a private utility locator will be retained to perform a geophysical survey of the proposed boring locations. Each location will then be air-knifed to a depth of approximately seven feet to minimize the possibility of encountering underground utilities during drilling activities. Delta will obtain all required drilling permits from the Zone 7 Water Agency. ACHCSA will be notified a minimum of 72 hours prior to any drilling activities. Prior to conducting any field work at the site, Delta will prepare a site specific Health and Safety Plan (HASP). The Delta field geologist on-site will review the HASP with site subcontractors at the start of each work day.

b. WELL BORINGS

Borings for new monitoring wells will be drilled with 10-inch diameter hollow stem auger equipment provided and operated by Gregg Drilling (C57-485165). Well borings will be drilled to a depth of approximately 27 feet bg. Discrete soil samples will be collected at 5-foot depth intervals. Soils will be classified by a field geologist using the Unified Soil Classification System. All work will be performed under the direction and supervision of a California Professional Geologist. All boring logs will be included in a revised SCM.

c. CPT SOIL PROFILING

Shell proposes the advancement of three additional CPT borings (CPT-2 through CPT-4, Figure 4). The CPT borings will aide in defining both the lateral and vertical extent of the fine grained soils. The CPT investigation will consist of two separate boreholes – one for stratigraphic profiling and a second for collecting discrete groundwater samples. The initial boring will be advanced to define the underlying soil profile. Soil classifications will be based on the cone penetration resistance, sleeve friction, and friction ratio. A soil classification graph will be generated during the advancement of the CPT borehole. CPT refusal was met in CPT-1 at a depth of approximately 60 feet bg. The new CPT borings will be advanced to a depth of 75 feet bg or to refusal. Soil profile graphs will be provided in a revised SCM. Grout will be pumped into the initial borehole behind the cone by using a grout collar (retraction grouting).

3. LATERAL EXTENT OF SAND DEPOSITS

Borings CPT-2 through CPT-4 will be used to characterize the lateral and vertical extent of the sand deposits underlying surficial fine grained deposits. CPT borings are planned for 75 feet in depth unless refusal occurs. A soil classification graph will be generated during the advancement of the three new CPT boreholes (CPT-2 through CPT-4).

4. EXTENT OF SOIL CONTAMINATION

The extent of MTBE and TBA in soil is not defined south of monitoring Well MW-1 (see MTBE Concentration Maps in SCM). Shell proposes to collect and analyze soil samples from the boring for Well MW-5 located south of the site (Figure 2). Soil samples from 10 feet, 15 feet, and 20 feet bg will be analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, and xylene (BTEX compounds), and the fuel oxygenates MTBE and TBA by EPA Method 8260B and total petroleum hydrocarbons as diesel (TPH-D) by EPA Method 8015M.

5. LATERAL EXTENT OF MTBE AND TBA IN FIRST ENCOUNTERED GROUNDWATER

Shell proposes to install five new monitoring wells (MW-5 through MW-9, Figure 4) and drill an off-site downgradient CPT boring (CPT-4) to define the lateral extent of MTBE and TBA in first encountered groundwater. The wells will be installed using hollow-stem auger drilling equipment provided by Gregg Drilling (License C57- 485165).

Soil samples will be collected every 5 feet from ground surface to the total depth of each boring for well installation. Discrete soil samples will be retained for laboratory analysis in brass liners at 5-foot intervals. Samples will be capped with Teflon tape and a tight fitting cap, and placed in a cooler with ice for transportation to Severn Trent Laboratories in Pleasanton, California. A PID will be used to measure soil hydrocarbon concentrations at 5-foot intervals. The PID soil samples will be placed in a sealed plastic bag. After approximately 5-minutes, the PID probe will be inserted into the plastic bag and soil gas allowed to pass through the PID until readings stabilize. The resulting concentration reading will be recorded on the geologist's field log.

Wells will be constructed of 4-inch diameter PVC casing and well screens. Wells will be constructed in the same manner as initial Wells MW-1 through MW-4. Well depth will be approximately 27 feet bg with well screens from 23 feet to 27 feet bg and sand pack from 22 feet to 27 feet bg. Wells will be developed by cycles of surging followed by pumping until clear water is obtained. Wells will be sampled by Blaine

Tech Services (Blaine) a minimum of 24 hours after development. The location and top of casing elevation of each well will be established by a California licensed surveyor.

A groundwater sample from boring CPT-4 will be collected in the 23-foot to 27-foot depth interval. Additional groundwater samples will be collected from deeper zones between 25-feet and 75-feet bg.

Groundwater samples will be analyzed for TPH-G, TPH-D, BTEX compounds, and fuel oxygenates MTBE and TBA. All analyses, with the exception of TPH-D, will be performed by EPA Method 8260B. Analysis for TPH-D will be performed by EPA Method 8015M.

6. GROUNDWATER FLOW DIRECTION AND GRADIENT

May 9 on figure

Groundwater levels in Wells MW-1 through MW-4 have been collected on three occasions (May 5 and May 19, and August 15, 2005). Groundwater elevation contour maps are presented in the SCM. On both May 5 and May 19, the groundwater flow direction was to the west. On August 15, 2005, the groundwater flow direction was to the southwest. The installation of five additional monitoring wells will refine the flow direction and gradient of the first encountered groundwater. Delta will collect groundwater level measurements in all site wells during the initial sampling of new wells. A groundwater elevation contour map based on data from all nine site wells will be provided in an updated SCM. In compliance with the ACHCSA letter dated July 25, 2005, quarterly monitoring has been implemented for the site. The quarterly report for the Third Quarter of 2005 will be submitted to the ACHCSA by November 15, 2005.

7. VERTICAL EXTENT OF MTBE AND TBA IN LOWER SAND DEPOSITS

Groundwater samples were collected from the lower sand deposits at depths of 53 feet and 60 feet in boring CPT-1. MTBE and TBA were not detected in either sample. Groundwater samples collected from Borings CPT-2 through CPT-4 will be used to characterize the vertical extent of MTBE and TBA below a depth of 52 feet. Groundwater samples will be collected from the sand deposits immediately below their contact with the overlying fine grained deposits, and a second sample collected at 70 feet to 75 feet bg. If CPT refusal occurs, a groundwater sample will be collected from the bottom four feet of the boring.

Groundwater samples will be analyzed for TPH-G, TPH-D, BTEX compounds, and fuel oxygenates MTBE and TBA. All analyses, with the exception of TPH-D, will be performed by EPA Method 8260B. Analysis for TPH-D will be performed by EPA Method 8015M.

8. REMEDIATION TESTING

Most of the mass of MTBE and TBA appears to be contained in the fine grained deposits that extend from the surface to a depth of approximately 53 feet bg. Groundwater extraction is anticipated to be difficult due the predominance of silt and clay. Shell proposes to seal monitoring well MW-1 (highest MTBE and TBA concentrations) and use a vacuum truck to apply a vacuum to the well while extracting groundwater. The vacuum applied and groundwater yield will be monitored during the test. The one day test will provide initial information on the application of vacuum extraction as a remedial option.

9. GROUNDWATER MONITORING

Groundwater monitoring will be performed on a quarterly basis. All groundwater monitoring wells will be gauged, purged, and sampled by Blaine. Groundwater samples will be analyzed for TPH-G, TPH-D, BTEX compounds, MTBE, and TBA. A third quarter 2005 groundwater monitoring report will be submitted to the ACHCSA by November 15, 2005.

SUMMARY

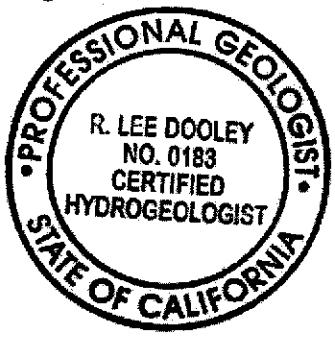
Shell proposes the following site assessment activities:

- Drilling of three additional CPT borings to a depth of approximately 75 feet bg. Depth discrete groundwater samples will be collected from within the fine grained deposits (if possible) and underlying sand layers.
- Installation of five additional groundwater monitoring wells completed in the first encountered groundwater 20 feet to 25 feet bg. Soil samples will be collected and analyzed.
- Development and sampling of all new wells.
- Establishment of the location and elevation of each well by a licensed surveyor.
- Performance of a vacuum aided groundwater extraction test.
- Preparation of an updated SCM containing a description of field activities, summary analytical tables, boring logs, hydrogeologic cross sections, groundwater contour map, certified laboratory analytical reports, and identification of any remaining data gaps.

If you have any questions, please call me at (408) 224-4724.

Sincerely,
Delta Environmental Management, Inc.

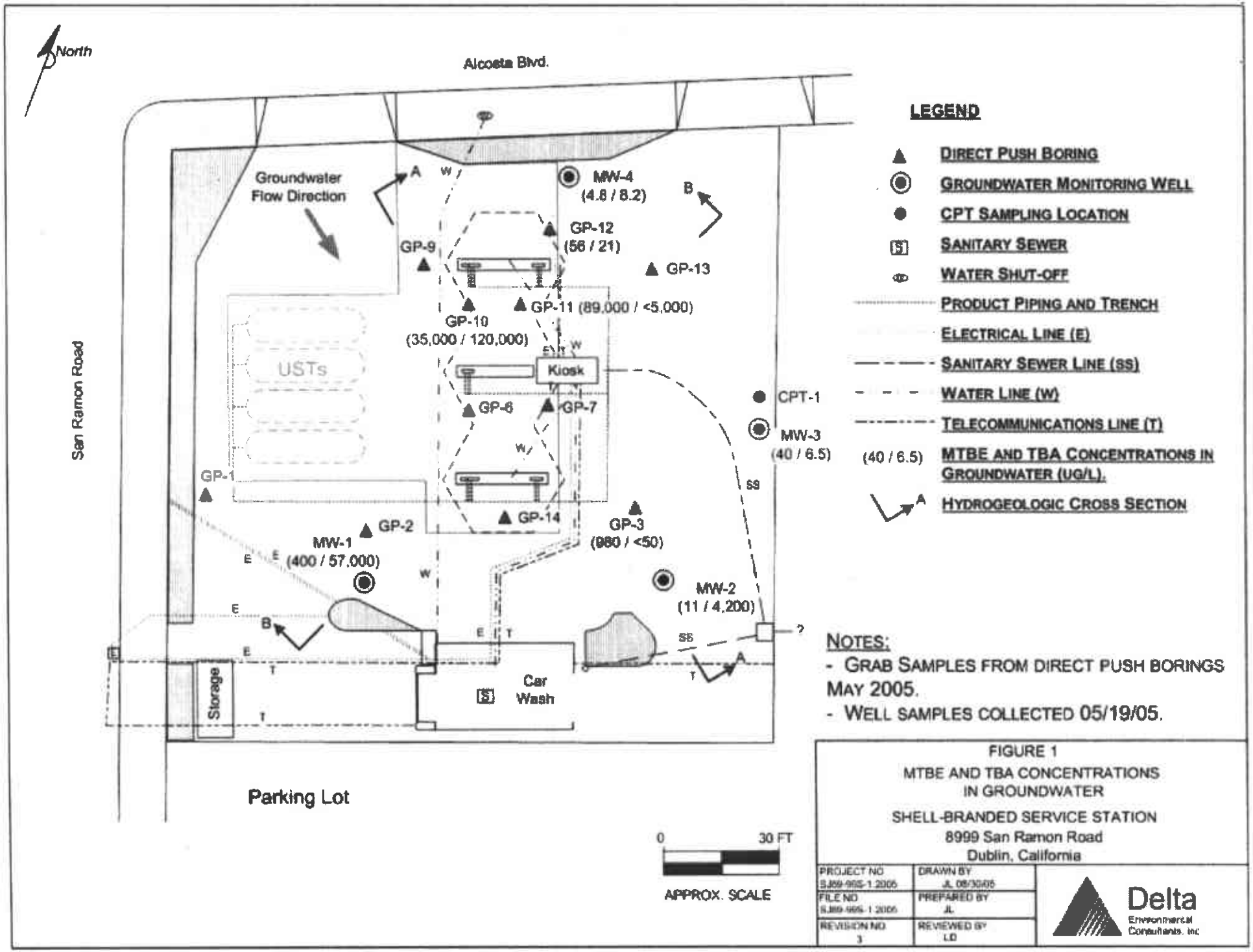
R. Lee Dooley
Senior Hydrogeologist
CHG 183



Attachments:

Figure 1 – MTBE and TBA Concentrations in Groundwater
Figure 2 – Hydrogeologic Cross Section A-A', August 2005
Figure 3 – Hydrogeologic Cross Section B-B', August 2005
Figure 4 – Extended Site Map

cc. Denis Brown, Shell Oil Products US
Betty Graham, RWQCB – San Francisco Bay Region
Danielle Stefani, Livermore-Pleasanton Fire Department
Matthew Katen, Zone 7 Water Agency
Susan Smallwood, Shell Oil Products, Houston



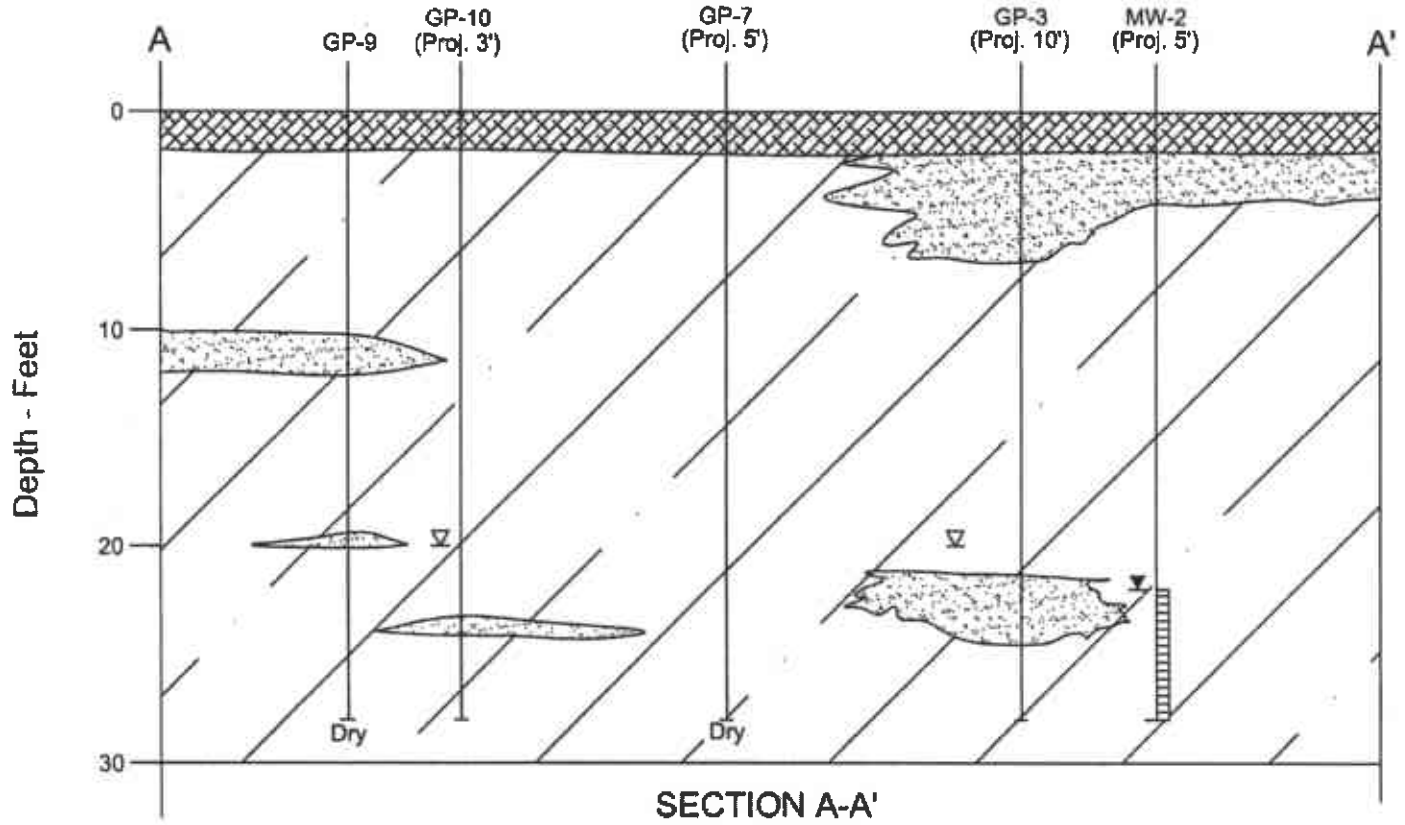
NOTES:

- GRAB SAMPLES FROM DIRECT PUSH BORINGS MAY 2005.
- WELL SAMPLES COLLECTED 05/19/05.

FIGURE 1
MTBE AND TBA CONCENTRATIONS IN GROUNDWATER
SHELL-BRANDED SERVICE STATION
8999 San Ramon Road
Dublin, California

PROJECT NO SJ99-9905-1.2005	DRAWN BY JL 06/30/05
FILE NO SJ99-9905-1.2005	PREPARED BY JL
REVISION NO 3	REVIEWED BY LD

Delta Environmental Consultants, Inc



SECTION A-A'
(See Figure 1)

LEGEND:

MW-1 WELL/BORING IDENTIFICATION

DEPTH OF FIRST ENCOUNTERED GROUND WATER

DEPTH OF STABILIZED GROUND WATER

SCREEN AND SAND PACK INTERVAL

Dry NO GROUNDWATER ENCOUNTERED IN BOREHOLE

SILT AND CLAY

SILTY SAND; TRACE OF GRAVEL

ASPHALT

0 30 FT

HORZ. SCALE

FIGURE 2

HYDROGEOLOGIC CROSS-SECTION A-A'
AUGUST 2005

SHELL-BRANDED SERVICE STATION
8999 San Ramon Road
Dublin, California

PROJECT NO. SJ89-99S-1.2005	DRAWN BY JL 09/02/05
FILE NO. SJ89-99S-1.2005	PREPARED BY LD
REVISION NO. 1	REVIEWED BY LD

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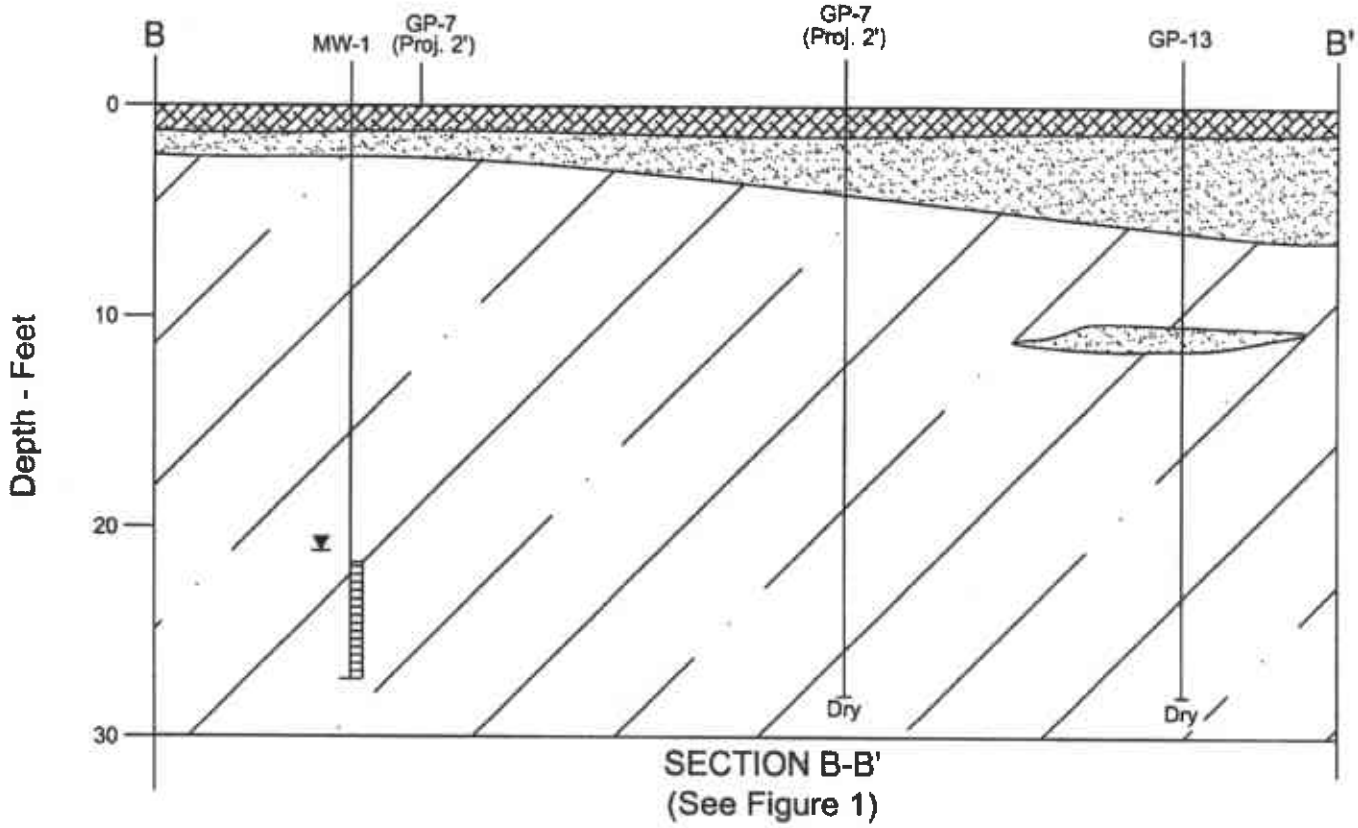

SECTION B-B'
(See Figure 1)

LEGEND:

MW-1 WELL/BORING IDENTIFICATION

DEPTH OF FIRST ENCOUNTERED GROUND WATER

DEPTH OF STABILIZED GROUND WATER

SCREEN AND SAND PACK INTERVAL

Dry NO GROUNDWATER ENCOUNTERED IN BOREHOLE

SILT AND CLAY

SILTY SAND; TRACE OF GRAVEL

ASPHALT

0 30 FT

HORZ. SCALE

FIGURE 3

HYDROGEOLOGIC CROSS-SECTION B-B'
AUGUST 2005

SHELL-BRANDED SERVICE STATION
8999 San Ramon Road
Dublin, California

PROJECT NO. SJ89-99S-1.2005	DRAWN BY JL 09/02/05
FILE NO. SJ89-99S-1.2005	PREPARED BY LD
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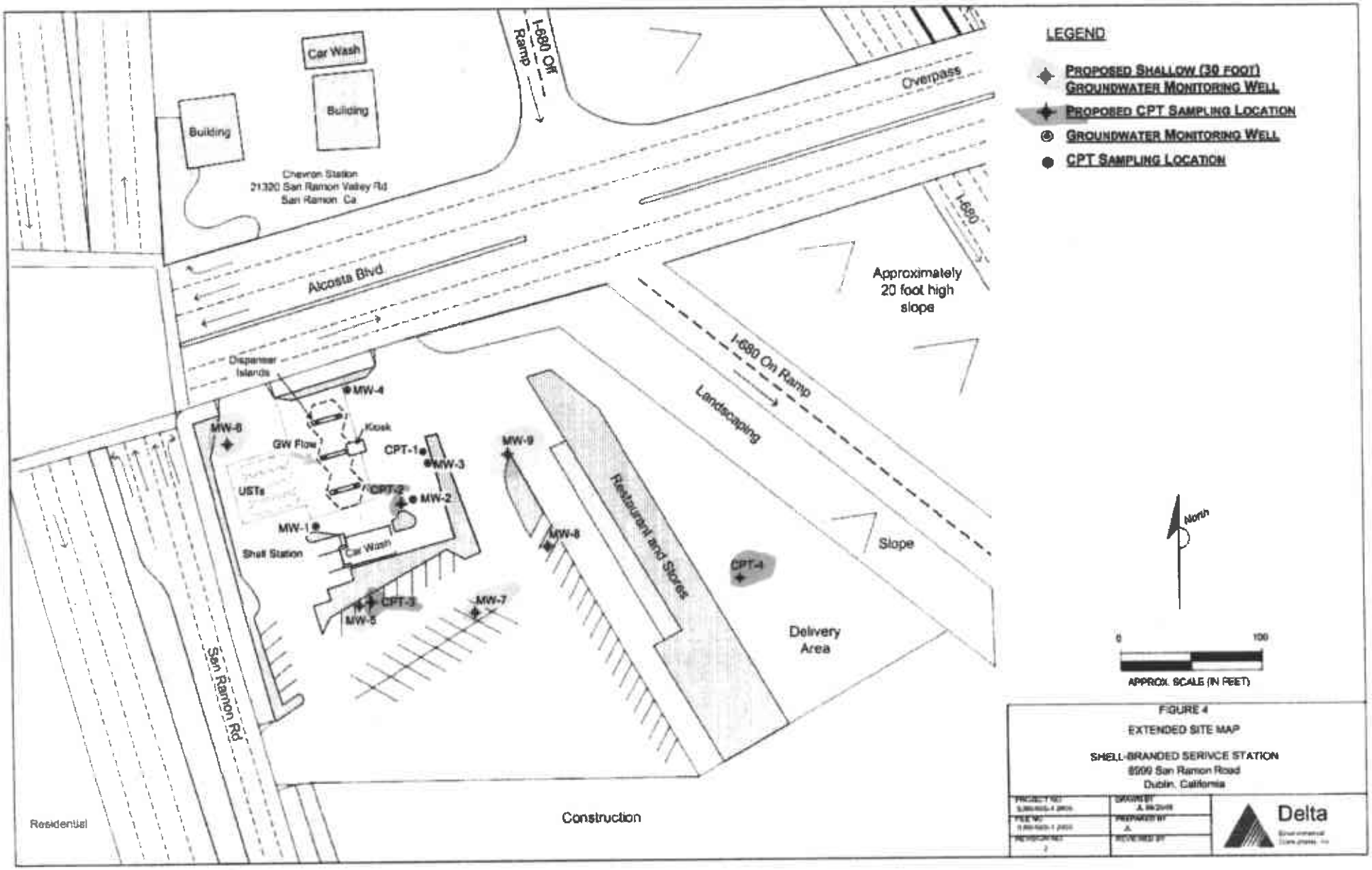

FIGURE 4

EXTENDED SITE MAP

SHELL-BRANDED SERIVCE STATION
6999 San Ramon Road
Dublin, California

Delta