October 30, 2007

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

Re: Work Plan Addendum
76 Service Station No. 4186
1771 First Street
Livermore, California
Delta Project No. C104186181

DELTA

Dear Mr. Wickham:

On behalf of ConocoPhillips Company (COP), Delta Consultants, Inc. (Delta) has prepared this *Work Plan Addendum* proposing the installation of four middle water bearing zone and three lower water bearing zone groundwater monitoring wells. In addition, Delta proposes the abandonment of eight ozone injection wells and the installation of four additional ozone injection wells, two in the upper water bearing zone and two in the middle water bearing zone to address dissolved phase petroleum hydrocarbons in the groundwater at the above-referenced site.

This work plan addendum has been prepared at the request of the Alameda County Health Agency (ACHA) in a letter dated August 29, 2007 included as attachment A.

SITE BACKGROUND AND PREVIOUS ENVIRONMENTAL WORK

The site is located on the southwest corner of the intersection of First Street and N Street (Figure 1), and is an active 76 service station. Two 10,000-gallon gasoline underground storage tanks (USTs), four dispenser islands, and a station building are present at the site (Figure 2). The site is located in a generally commercial area.

In June 1996, during dispenser and piping replacement activities, six soil samples were collected beneath the dispensers and product piping. Total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethyl-benzene and total xylenes (BTEX) were not reported above the laboratories indicated reporting limits in any of the samples.

In September 1997, a soil gas survey was conducted at the site. Six soil gas probes were advanced and samples were collected at 3 or 15 feet below ground surface (bgs) in the vicinity of the USTs, dispenser islands, and product lines. TPHg was reported in the samples at concentrations ranging from 41 to 4,500 parts per billion by volume (ppbv), benzene was reported at concentrations up to 110 ppbv, and methyl tertiary butyl ether(MTBE) was reported at concentrations up to 8,000 ppbv. The highest concentrations were reported in the area of the USTs.

In June 1998, three groundwater monitoring wells (U-1 through U-3) were installed at the site to depths of 34 feet bgs. TPHg, benzene, and MTBE were not reported above the laboratories indicated reporting limits in soil samples collected from the well borings. The approximate well locations are presented on Figure 2.

A site conceptual model (SCM) was completed for the site in May 2000. The groundwater flow velocity was calculated to estimate plume travel time to the nearest down-gradient receptor. Groundwater velocity was calculated to be 46 feet per year. It was concluded that hydrocarbon impact to groundwater appears to fluctuate with the rise and fall of the groundwater surface beneath the site.

In February 2001, two additional monitoring wells (U-4 and U-5) were installed. The monitoring wells were installed to depths of 45 feet bgs (U-4) and 47 feet bgs (U-5). TPHg, BTEX, and MTBE were not reported above the laboratories indicated reporting limits in soil samples collected from the well borings. TPHg and benzene were not reported above the laboratories indicated reporting limits in the initial groundwater samples collected from monitoring wells U-4 and U-5; however, MTBE was reported at concentrations of 38.2 and 55.4 micrograms per liter (µg/L), respectively. The approximate well locations are presented on Figure 2.

In December 2001, two additional monitoring wells (U-6 and U-7) and eight ozone sparge wells (SP-1 through SP-4, SP-5/5S, SP-6S, SP-7S, and SP-8/8S) were installed at the site. The monitoring wells were installed to 45 feet bgs. The sparge points in wells SP-1 through SP-4 were installed to a depth of 45 feet bgs. The sparge points in wells SP-6S and SP-7S were installed to a shallower depth of 25 feet bgs. The remaining two sparge wells each contained dual-nested sparge points installed to 25 feet bgs (SP-5S and SP-8S) and 45 feet bgs (SP-5 and SP-8). An ozone microsparge system was then installed and began operation in December 2001. The system injected ozone into the 10 sparge points. The approximate well locations are presented on Figure 2.

In April 2006, seven borings (B-1 through B-7) were advanced at the site. Three boreholes were advanced at each boring location. The initial borehole was advanced to record a cone penetrometer (CPT) log of subsurface lithology. The second borehole was advanced for the purpose of collecting soil samples for observation and laboratory analysis, and to collect discrete groundwater samples at depths of approximately 38 feet to 44 feet bgs. The third borehole was advanced to collect a discrete groundwater sample at approximately 57 feet to 65 feet bgs. Three general stratigraphic zones were identified: an upper zone from 36 to 43 feet bgs, a middle clay zone from 43 to 55 feet bgs, and a lower zone from 55 to the maximum depth of 65.5 feet bgs explored. Soil samples from various depths were submitted for laboratory analysis. TPHg was reported in five upper zone, six clay zone, and three lower zone soil samples at concentrations up to 700 milligrams per kilogram (mg/kg). MTBE was reported in three

upper zone, three clay zone, and two lower zone soil samples at concentrations up to 0.29 milligrams per kilogram (mg/kg). Benzene was reported in three clay zone soil samples at concentrations up to 1.3 milligrams per kilogram (mg/kg). TPHg was reported in all of the 14 groundwater samples at concentrations up to 26,000 µg/L. Benzene was reported in five upper zone, and six lower zone groundwater samples at concentrations up to 510 µg/L. MTBE was reported in four upper zone, and six lower zone groundwater samples at concentrations up to 1,100 µg/L.

In March 2007, two additional on-site borings (B-8 and B-9) and one additional off-site boring (B-10) were drilled using a CPT rig. The borings were advanced to further evaluate the vertical extent of impacted groundwater to the base of the lowermost sand and gravel unit, to evaluate groundwater quality in the lowermost sand and gravel unit down-gradient of the site, and to evaluate the presence of a clay layer underlying the lowermost coarse-grained soils which may represent a regional aquitard. Four soil samples were collected for laboratory analysis from off-site boring B-10. MTBE was reported in two of the samples at concentrations up to 0.016 mg/kg; TPHg and benzene were not reported above the laboratories indicated reporting limits in any of the soil samples collected for analysis. TPHg (200 µg/L), benzene (0.94 µg/L), and MTBE (7.1 µg/L) were reported in the groundwater sample collected at 79 to 83 feet bgs from boring B-8. TPHg, BTEX, and fuel oxygenates were not reported above the laboratories indicated reporting limits in the groundwater sample collected at 78 to 88 feet bgs from boring B-9. A low concentration of MTBE (0.73 µg/L) was reported in the groundwater sample collected at 66 to 70 feet bgs from boring B-10, and a low concentration of toluene (1.4 µg/L) was reported in the groundwater sample collected at 83 to 87 feet bgs from boring B-10. Based on the results of the investigation, soil and groundwater in the area of off-site boring B-10 did not appear to be significantly impacted, groundwater within the lowermost sand and gravel unit in the area of boring B-8 was slightly impacted, and groundwater within the lowermost sand and gravel unit in the area of boring B-9 was not impacted.

Quarterly monitoring of the site wells has been performed since July 1998. Historically, the groundwater flow direction has varied from the north to the southwest. The depth to groundwater has varied from 21.62 feet bgs to 46.31 feet bgs.

Although the ozone system experienced problems with consistent operation, it appeared to be effective as TPHg, BTEX, and MTBE concentrations in monitoring well U-3 significantly decreased since startup of the system. The system was shut down in October 2006 to evaluate for groundwater concentration rebound. In March 2007, oxygen injection testing was performed in sparge wells SP-5/5S and SP-6S to evaluate the radius of influence (ROI) of the existing sparge wells, and to evaluate the effectiveness of the existing system. As described in our *Additional Subsurface Assessment Report*, dated April 26, 2007, the testing suggested a ROI of between 10 to 15 feet around the wells on average, but perhaps greater in some areas.

Impacted groundwater remains beneath the site in the areas of monitoring wells U-6 and U-7. Impacted groundwater also remains in the northwest portion of the site based on the results of the borings advanced in April 2006.

PRE-FIELD ACTIVITIES AND UTILITY LOCATION

Pre-Field Activities

Drilling permits will be obtained for the wells as necessary from the appropriate parties prior to commencing field work. Delta will also prepare a health and safety plan (HASP) specific to the site and work being performed.

Underground Utility Location

The proposed well locations as well as the locations of the ozone injection wells to be abandoned will be marked in the field prior to drilling, and Underground Services Alert (USA) will be contacted at least 48 hours prior to initiating drilling to minimize the risk of damaging underground utilities. A private utility locator will also be retained to survey the locations and further minimize the risk of damaging underground utilities. Additionally, an air-knife vacuum truck will be used to clear each proposed well location to a depth of at least 5 feet bgs prior to drilling.

PROPOSED OZONE INJECTION WELL ABANDONMENT

Based on the boring logs from ozone injection wells SP-1 through SP-4 these wells are screened in the fine-grained unit between the middle and lower water bearing zones that may retard the distribution of ozone. Therefore, Delta proposes that these four ozone injection wells be abandoned according to local agency requirements.

In addition, boring logs from the ozone injection wells SP-5 and SP-8 indicate that these wells are screened in the fine-grained unit between the middle and lower water bearing zones that may retard the distribution of ozone. Because the wells were constructed as dual completion wells, SP-5 and SP-5S in one boring and SP-8 and SP-8S in the second boring, Delta recommends that these ozone injection wells SP-5, SP-5S, SP-8, and SP-8S also be abandoned according to local agency requirements. However, Delta recommends that these ozone injection wells be replaced with four ozone injection wells in the vicinity of SP-5 and SP-8 with screen intervals corresponding with the upper and middle water bearing zones. Construction details are described below.

PROPOSED OZONE INJECTION WELL INSTALLATION

To attempt to remediate the dissolved phase petroleum hydrocarbons in the groundwater at the site and limit the off-site migration of dissolved phase petroleum hydrocarbons in the groundwater, Delta proposes the installation of three ozone injection wells at the locations shown on Figure 2, in addition to the installation of the seven ozone injection wells proposed in the previous work plan. As discussed above, these three wells as well as one of the wells discussed in the previous work plan will replace ozone injection wells SP-5, SP-5S, SP-8, and SP-8S with screen intervals corresponding with the upper and middle water bearing zones.

Upper Water Bearing Zone Injection Well Installation

The well borings will be advanced with truck-mounted 8-inch hollow-stem auger equipment. The injection wells will be constructed with 1.5-inch diameter by 18-inch-long sparge points attached to 1-inch Schedule 80 polyvinyl chloride (PVC) casing to near surface grade capped with a wellhead connection. A sand filter pack will extend

from the total depth of the well boring to 2 feet above the top of the sparge point, sealed with bentonite chips saturated in place and then capped to the ground surface with cement grout and completed with traffic-rated vault boxes. The sparge point depth will be based on the subsurface lithology encountered in the borings. A diagram detailing the proposed upper water bearing zone injection well construction is included as Figure 3.

Delta anticipates that the proposed upper water bearing zone injection wells will be installed to a depth of approximately 25 feet bgs, with the sparge point placed from approximately 24 to 22.5 feet bgs.

Soil samples for lithologic logging and chemical analysis will be collected at 5-foot intervals from each of the proposed borings to a depth of 15 feet bgs. From 15 feet bgs to the total depth of the borehole the soil will be collected and logged continuously. The screen intervals for the ozone injection wells will be determined based upon the lithology observed during the continuous logging in each borehole. Selected soil samples will be field screened with a photo-ionization detector (PID) for the presence of volatile organic compounds. Delta will collect one soil sample for laboratory analysis from each boring at the depths that exhibit the highest PID readings. Selected soil samples will be analyzed for total purgeable petroleum hydrocarbons (TPPH), BTEX, and MTBE by EPA Method 8260.

Down-hole drilling tools will be decontaminated between borings to avoid cross contamination. The decontamination process will consist of multiple wash and rinse cycles using potable water and a non-phosphate detergent.

Middle Water Bearing Zone Injection Well Installation

The well borings will be advanced with truck-mounted 8-inch hollow-stem auger equipment. The injection wells will be constructed with 1.5-inch diameter by 18-inch-long sparge points attached to 1-inch Schedule 80 polyvinyl chloride (PVC) casing to near surface grade capped with a wellhead connection. A sand filter pack will extend from the total depth of the well boring to 2 feet above the top of the sparge point, sealed with bentonite chips saturated in place and then capped to the ground surface with cement grout and completed with traffic-rated vault boxes. The sparge point depth will be based on the subsurface lithology encountered in the borings. A diagram detailing the proposed middle water bearing zone injection well construction is included as Figure 4.

Delta anticipates that the proposed middle water bearing zone injection wells will be installed to a depth of approximately 43 feet bgs, with the sparge point placed from approximately 42 to 40.5 feet bgs.

Soil samples for lithologic logging and chemical analysis will be collected at 5-foot intervals from each of the proposed borings to a depth of 35 feet bgs. From 35 feet bgs to the total depth of the borehole the soil will be collected and logged continuously. The screen intervals for the ozone injection wells will be determined based upon the lithology observed during the continuous logging in each borehole. Selected soil samples will be field screened with a photo-ionization detector (PID) for the presence of volatile organic compounds. Delta will collect one soil sample for laboratory analysis

from each boring at the depths that exhibit the highest PID readings. Selected soil samples will be analyzed for TPPH, BTEX, and MTBE by EPA Method 8260.

Down-hole drilling tools will be decontaminated between borings to avoid cross contamination. The decontamination process will consist of multiple wash and rinse cycles using potable water and a non-phosphate detergent.

Middle Water Bearing Zone Monitoring Well Installation

Delta proposes the installation of four monitoring wells to monitor the dissolved phase petroleum hydrocarbons in the groundwater in the middle water bearing zone. The proposed monitoring well locations are shown on Figure 2.

The borings for the proposed monitoring wells will be advanced to a depth of approximately 45 feet bgs using a truck mounted 8-inch hollow stem auger.

Soil samples for lithologic logging and chemical analysis will be collected at 5-foot intervals from each of the proposed borings to a depth of 35 feet bgs. From 35 feet bgs to the total depth of the borehole the soil will be collected and logged continuously. The screen intervals for the monitoring wells will be determined based upon the lithology observed during the continuous logging in each borehole. Selected soil samples will be field screened with a photo-ionization detector (PID) for the presence of volatile organic compounds. Delta will collect a minimum of two soil samples for laboratory analysis from each boring at the depths that exhibit the highest PID readings and the sample collected from just above first water. Selected soil samples will be analyzed for TPPH, BTEX, and MTBE by EPA Method 8260.

The borings will be converted to a groundwater monitoring well by installing a 2-inch diameter schedule 40 PVC well casing with a screened interval based on the lithology encountered during well installation. The screen interval is anticipated to be between 35 and 45 feet bgs, to correspond with the anticipate depth of the middle water bearing zone. The perforation size in the screen interval will be 0.020-inch. A sand pack of RMC Lonestar Sand #3 or equivalent will be installed into the annular space and extend approximately two (2) feet above the top of the screen interval.

A two (2) foot thick bentonite seal will be placed on top of the sand pack. The well will be surged prior to the placement of the bentonite seal to promote settling of the sand pack. The remainder of the annular space will be filled with neat cement and the well will be fitted with a locking cap and encased in a traffic-rated protective vault placed at existing ground level. A diagram detailing the proposed middle water bearing zone monitoring well construction is included as Figure 5.

Lower Water Bearing Zone Monitoring Well Installation

Delta proposes the installation of three monitoring wells to monitor the dissolved phase petroleum hydrocarbons in the groundwater in the lower water bearing zone. The proposed monitoring well locations are shown on Figure 2.

Prior to monitoring well installation and construction a conductor casing will be installed in each of the proposed borings for the purpose of reducing the possible migration of dissolved phase petroleum hydrocarbons in the groundwater from the

middle water bearing zone to the lower water bearing zone during monitoring well installation activities. The initial three borings will be advanced using a truck mounted mud-rotary drill-rig equipped with a 12-inch diameter rotary drill-bit. The borings will be advanced to a depth of approximately 55 feet bgs. Upon completion of the boring a 10-inch diameter conductor casing will be installed into the borehole and pushed an additional two feet into the fine-grained material to a depth of approximately 57 feet bgs. The annular space will be filled with neat cement to just below existing ground level.

Subsequent to the installation of the conductor casing the borings for the proposed monitoring wells will be advanced to a depth of approximately 75 feet bgs using a truck mounted 8-inch hollow stem auger.

The borehole will be logged continuously for lithologic interpretation beginning at a depth of approximately 55 feet bgs to the total depth of the borehole. The screen intervals for the monitoring wells will be determined based upon the lithology observed during the continuous logging in each borehole.

The borings will be converted to a groundwater monitoring wells by installing a 4-inch diameter schedule 40 PVC well casing with a screened interval based on the lithology encountered during well installation. The screen interval is anticipated to be between 65 and 75 feet bgs, to correspond with the anticipate depth of the lower water bearing zone. The perforation size in the screen interval will be 0.020-inch. A sand pack of RMC Lonestar Sand #3 or equivalent will be installed into the annular space and extend approximately two (2) feet above the top of the screen interval.

A two (2) foot thick bentonite seal will be placed on top of the sand pack. The well will be surged prior to the placement of the bentonite seal to promote settling of the sand pack. The remainder of the annular space will be filled with neat cement and the well will be fitted with a locking cap and encased in a traffic-rated protective vault placed at existing ground level. A diagram detailing the proposed lower water bearing zone monitoring well construction is included as Figure 6.

Well Development, Monitoring, and Sampling

The monitoring wells will be developed a minimum of 72 hours after they have been constructed. A minimum of 10 casing volumes of groundwater will be removed from the monitoring wells during the development process.

Subsequent to installation and development the newly installed monitoring wells, will be incorporated into a quarterly sampling schedule with the existing site monitoring wells and will be monitored and sampled during the next scheduled quarterly sampling event.

Groundwater samples collected for analysis from the newly installed monitoring wells will be analyzed for TPPH, BTEX, and the 8 fuel oxygenates by EPA Method 8260.

Wellhead Survey

Following the completion of the new monitoring wells, a California licensed surveyor will survey the northing and easting of the monitoring well using Datum NGVD29 or NAD

88. The monitoring well elevations will be surveyed relative to mean sea level, with an accuracy of +/- 0.01 foot. A global positioning system (GPS) will also be used to survey in the latitude and longitude of the wells to be uploaded into California's Geo Tracker database system. The survey of the well locations will be to sub-meter accuracy.

DISPOSAL OF DRILL CUTTINGS AND WASTEWATER

Drill cuttings and any wastewater generated during field activities will be placed into properly labeled 55-gallon Department of Transportation (DOT)-approved steel drums and stored on-site. Samples of the drill cuttings will be collected and submitted to a California-certified laboratory where they will be analyzed for TPPH, BTEX, and MTBE by EPA Test Method 8260; and total lead by EPA Method 6010B. Pending laboratory analytical results, the drummed drill cuttings and wastewater will be profiled, transported, and disposed at a COP-approved facility. A copy of the waste disposal manifest(s) will be included in the investigation report.

DISCUSSION

The groundwater elevation in the upper water bearing zone monitoring wells will be monitored on a monthly basis by the O&M contractor. If the groundwater elevation in these monitoring wells falls below the depth of the injection point in the upper ozone injection wells, ozone injection using these wells will be terminated. If the groundwater elevation rises above the injection point in the upper ozone injection wells, ozone injection using these wells will be restarted.

REPORT

Delta will prepare and submit a Well Installation Report once all field activities have been completed and all laboratory results have been received. The report will contain a description of the activities performed, and will include a site plan showing the boring locations, and copies of the boring logs and well construction diagrams, laboratory analytical reports, and waste manifests.

REMARKS/SIGNATURES

The recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. This report is based upon a specific scope of work requested by the client. The Contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Delta's Client and anyone else specifically listed on this report. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.

If you have questions regarding this work plan, please call Dennis Dettloff at (916) 503-1261.

Sincerely,
DELTA CONSULTANTS, INC.

Dennis S. Dettloff, P.G.
Senior Project Manager
California Registered Professional Geologist No. 7480

cc: Mr. William Borgh – ConocoPhillips (1 electronic copy)

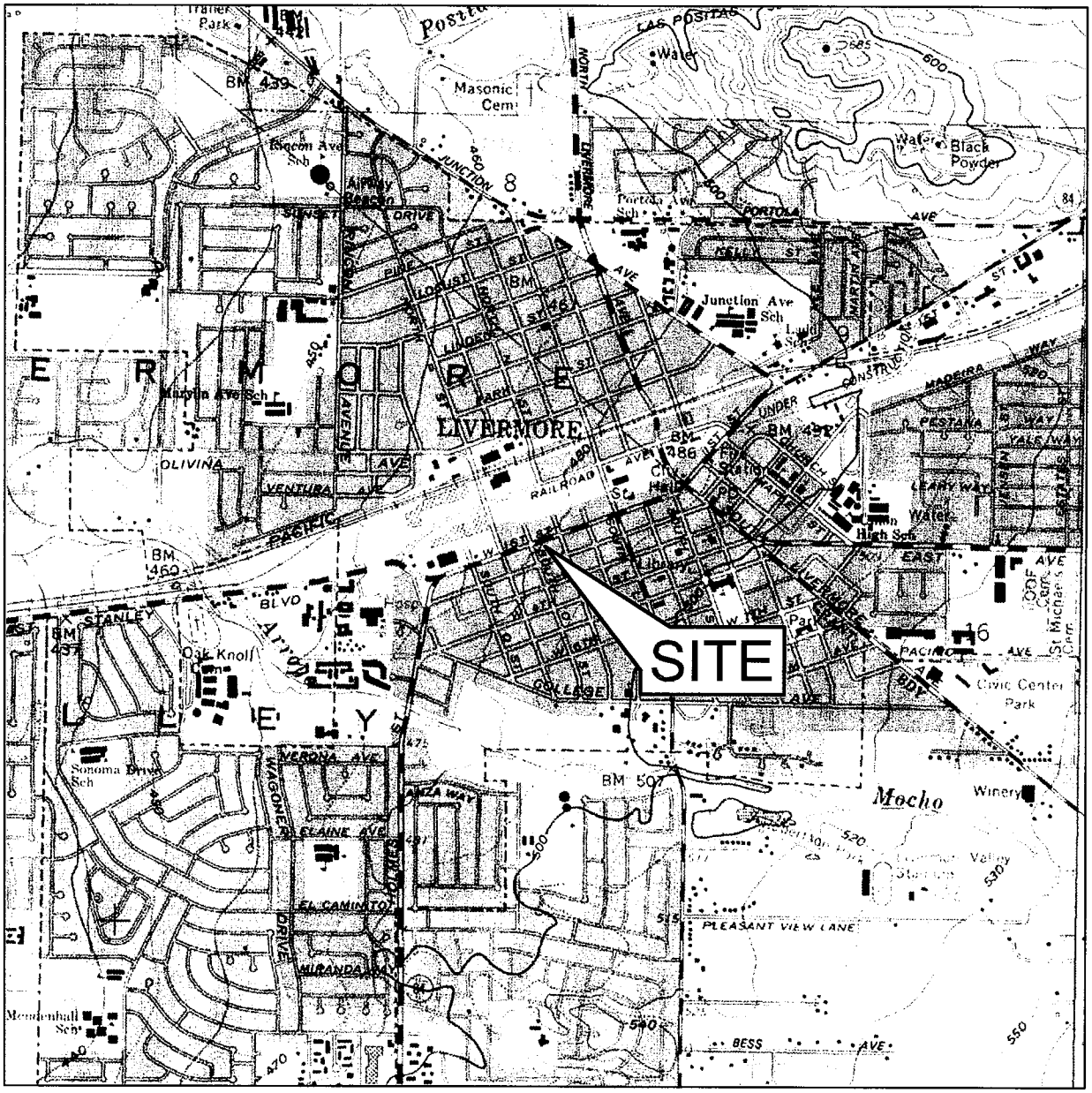
Figures:

Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 – Upper Zone Ozone Injection Well Construction Diagram
Figure 4 – Middle Zone Ozone Injection Well Construction Diagram
Figure 5 – Proposed Middle Zone Monitoring Well Construction Diagram
Figure 6 – Proposed Lower Zone Monitoring Well Construction Diagram

Attachments:

Attachment A – ACHA Work Plan request letter dated August 29, 2007

Figures



North

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, CALABASAS QUADRANGLE, 1967

FIGURE 1

SITE LOCATION MAP

76 STATION NO. 4186
1771 FIRST STREET
LIVERMORE, CA

PROJECT NO. C104-186	DRAWN BY MC 12/28/05
FILE NO. Site Locator 4186	PREPARED BY MC
REVISION NO. 1	REVIEWED BY

DELTA

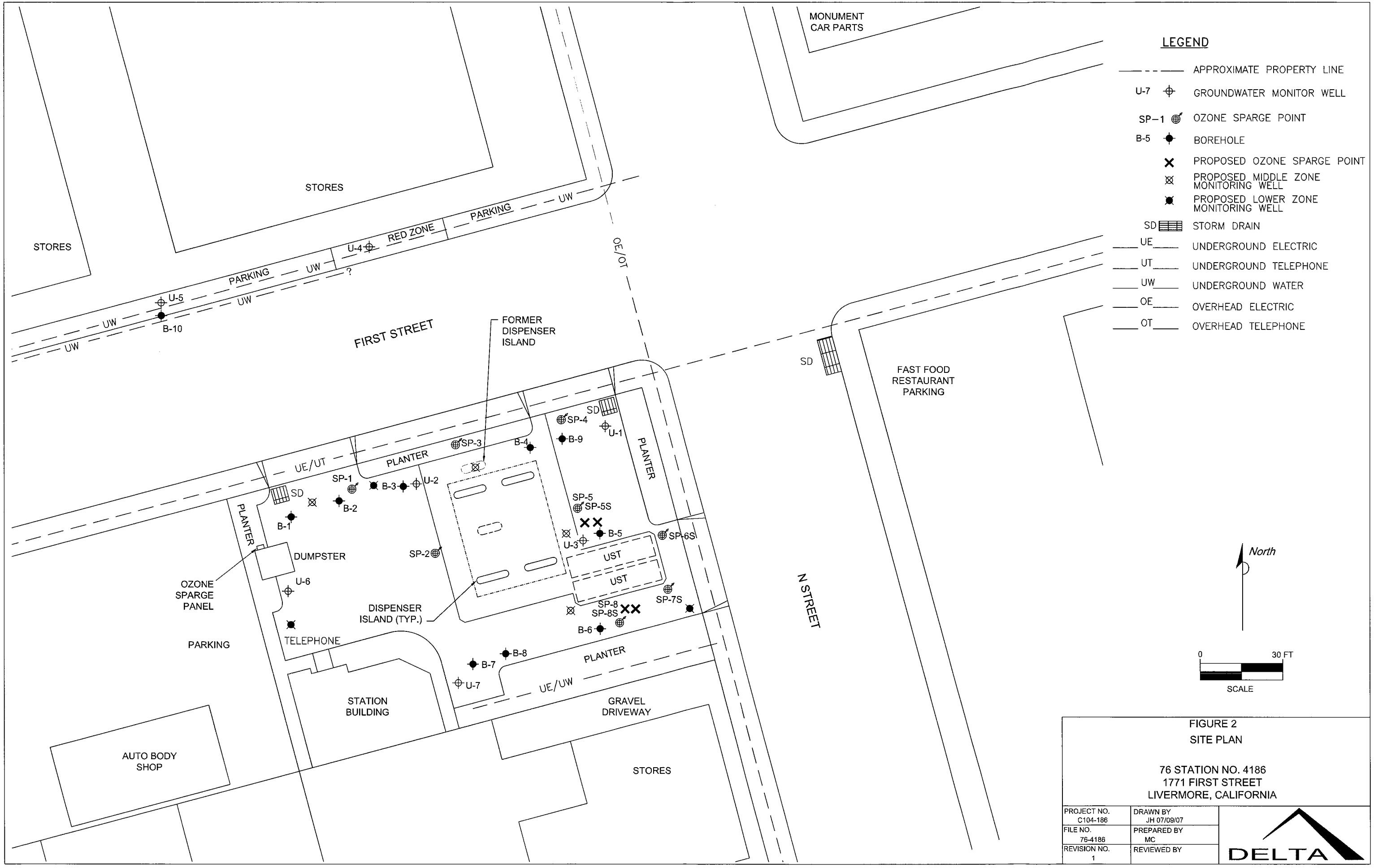
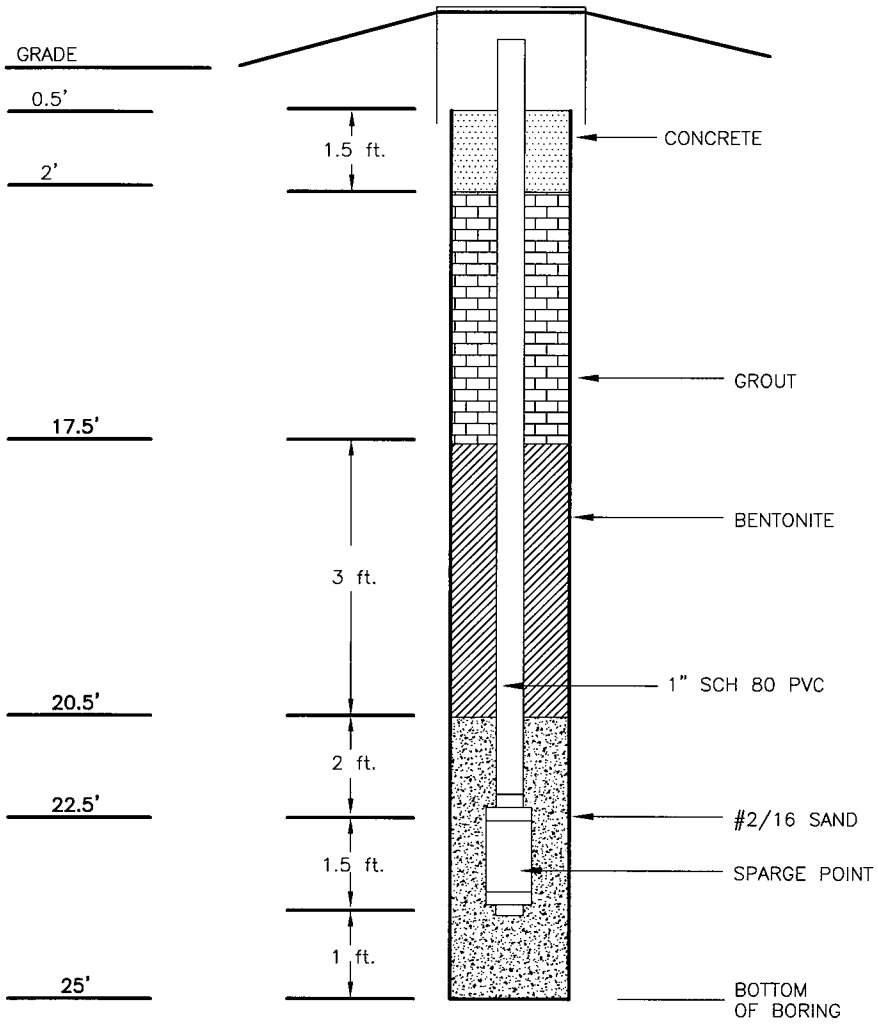


FIGURE 2
SITE PLAN

76 STATION NO. 4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. C104-186	DRAWN BY JH 07/09/07
FILE NO. 76-4186	PREPARED BY MC
REVISION NO. 1	REVIEWED BY

DELTA



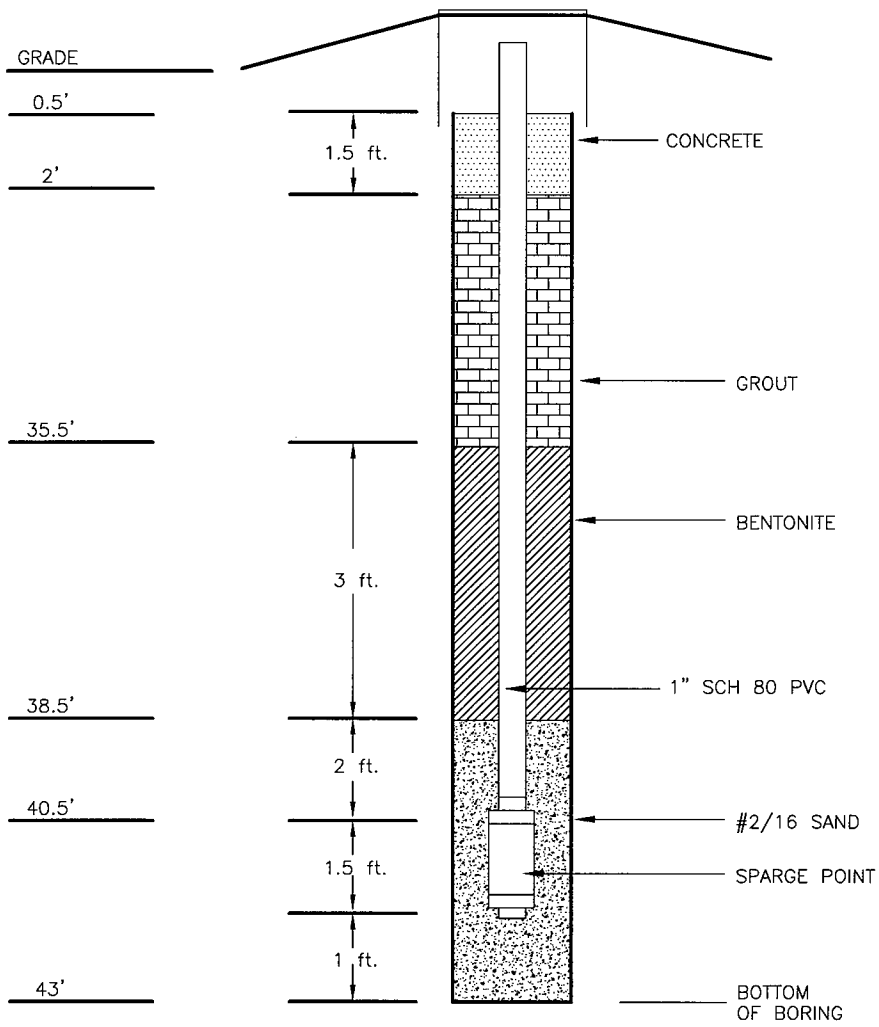
NOTES:

1. NOT DRAWN TO SCALE
2. DEPTH MEASUREMENTS AND INTERVALS ARE APPROXIMATE. ACTUAL WELL DESIGN WILL BE BASED ON EXPLORATORY BORING AND SITE CONDITIONS

FIGURE 3
UPPER ZONE OZONE INJECTION WELL CONSTRUCTION DIAGRAM
76 SERVICE STATION 4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
C104186171	DD	JH
DATE	REVIEWED BY	FILE NAME
10/29/07		4186-PropW

DELTA



NOTES:

1. NOT DRAWN TO SCALE
2. DEPTH MEASUREMENTS AND INTERVALS ARE APPROXIMATE. ACTUAL WELL DESIGN WILL BE BASED ON EXPLORATORY BORING AND SITE CONDITIONS

FIGURE 4
MIDDLE ZONE OZONE INJECTION
WELL CONSTRUCTION DIAGRAM
76 SERVICE STATION 4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
C104186171	DD	JH
DATE	REVIEWED BY	FILE NAME
10/29/07		4186-PropW

DELTA

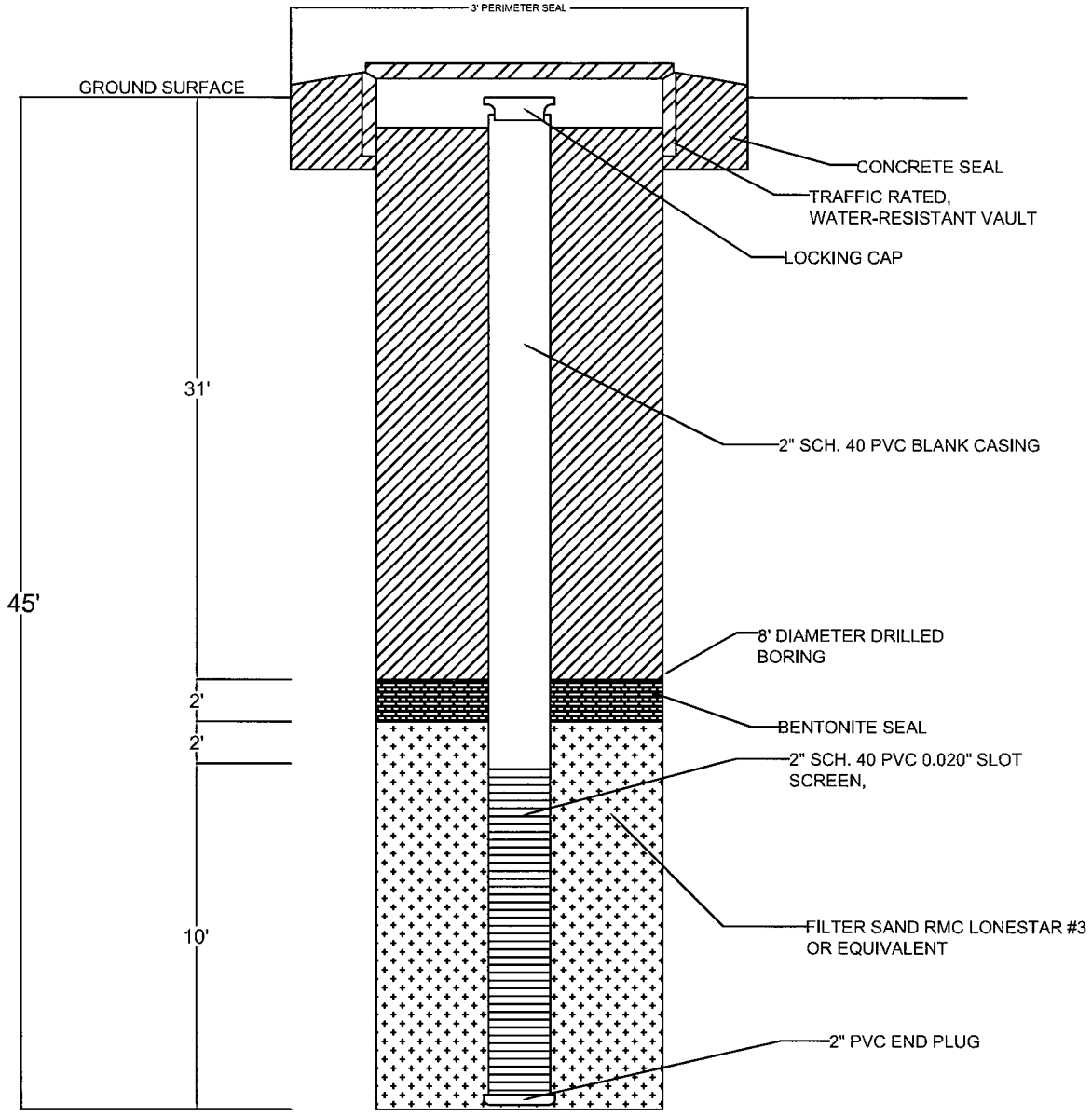


FIGURE 5

PROPOSED MIDDLE ZONE MONITORING
WELL CONSTRUCTION DETAIL

76 SERVICE STATION NO. 4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. C104-186	DRAWN BY JH 10/29/07
FILE NO. 4186-PropOZ	PREPARED BY DD
REVISION NO.	REVIEWED BY

DELTA

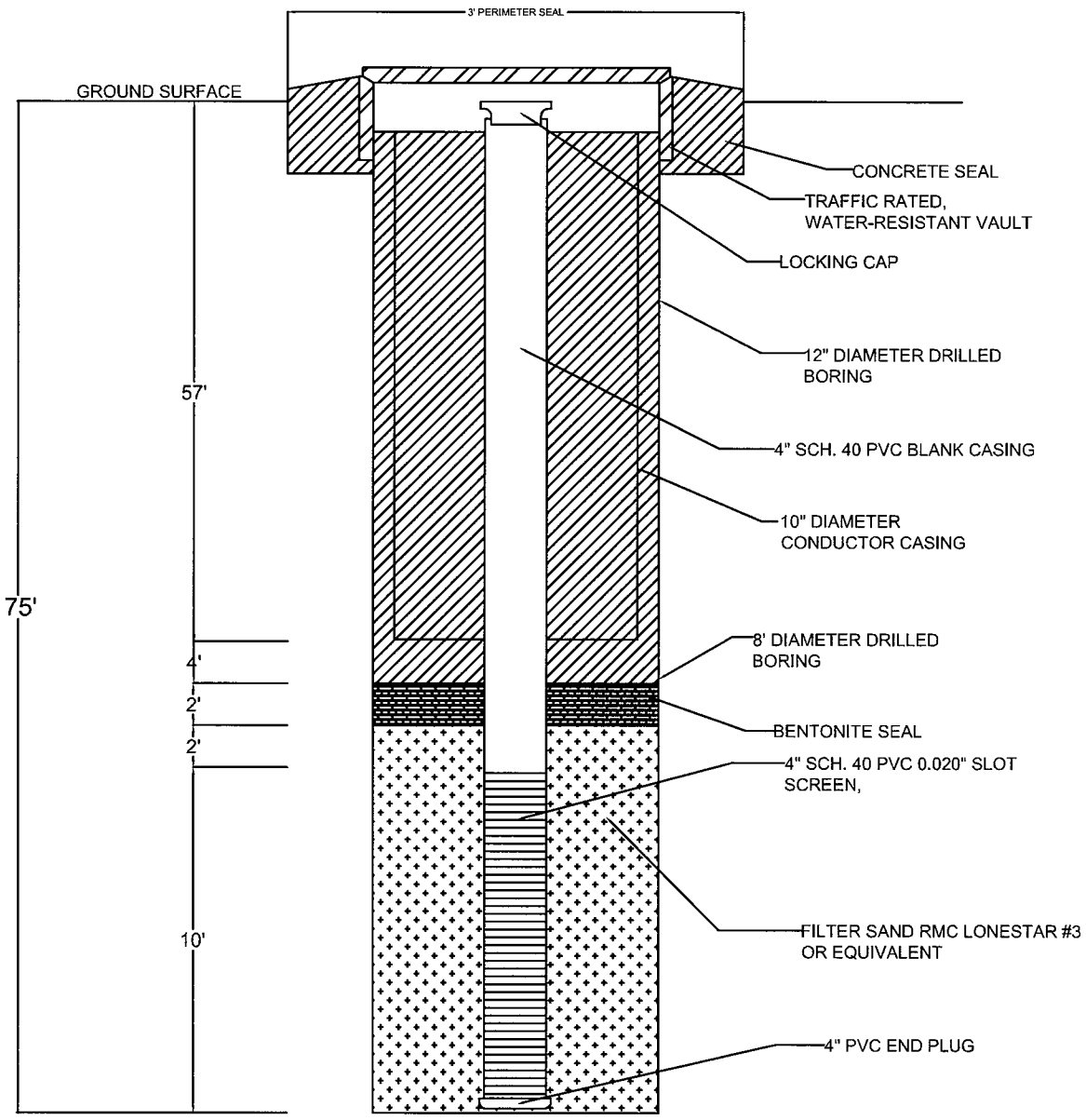


FIGURE 6

PROPOSED LOWER ZONE MONITORING
WELL CONSTRUCTION DETAIL

76 SERVICE STATION NO. 4186
1771 FIRST STREET
LIVERMORE, CALIFORNIA

PROJECT NO. C104-186	DRAWN BY JH 10/29/07
FILE NO. 4186-PropOZ	PREPARED BY DD
REVISION NO.	REVIEWED BY

DELTA

Attachment A

ACHA Work Plan request letter dated August 29, 2007

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

August 29, 2007

William Borgh
ConocoPhillips
76 Broadway
Sacramento, CA 95818

Thomas and Celine Vadakkekunnel
4481 Peacock Court
Dublin, CA 94568

Subject: Fuel Leak Case No. RO0000436 and Geotracker Global ID T0600101777, Unocal #4186, 1771 First Street, Livermore, CA 94550

Dear Mr. Borgh and Mr. and Ms. Vadakkekunnel:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site including the recently submitted reports entitled, "Work Plan for Additional Ozone Injection Well Installation," dated July 3, 2007 and received by ACEH on August 2, 2007 and "Quarterly Report – Second Quarter 2007," dated July 31, 2007. The "Work Plan for Additional Ozone Injection Well Installation," proposes the installation of 7 additional ozone injection wells. We concur that additional ozone injection wells are needed at the site to improve the ability of the system to address residual contamination. However, we have several comments regarding the proposal to install additional ozone injection wells at a generally uniform depth across the site. In addition, the groundwater monitoring network appears to be largely limited to shallow groundwater above the zones where groundwater cleanup is proposed. Therefore, we request that you prepare and **submit a revised Work Plan by October 30, 2007** that addresses the technical comments below.

TECHNICAL COMMENTS

1. **Groundwater Monitoring of Water-Bearing Sand and Gravel Units.** The April 2006 cone penetrometer borings and depth discrete groundwater sampling along with previous investigations at the site, have shown that there are three coarse-grained water-bearing layers at the site. Dissolved phase hydrocarbons have been detected in each of the three water-bearing layers. Wells U-1, U-2, and U-3 monitor an upper silty sand with gravel layer that extends from ground surface to depths of approximately 20 to 25 feet bgs. The lower portions of the well screens for monitoring wells U-1, U-2, and U-3 are within a fine-grained unit that typically extends from the base of the silty sand with gravel to a depth of approximately 35 feet bgs.

   A silty sand to sand layer, typically extending from approximately 35 to 44 feet bgs, was encountered in all cone penetrometer borings at the site. Wells U-4, U-5, U-6, and U-7 are screened across this middle sand layer. Wells U-4 and U-5 are off-site wells and U-6 and U-

7 are cross gradient wells. No source area wells or on-site downgradient wells currently monitor this middle sand layer. Grab groundwater samples from this middle sand layer detected TPHg at concentrations up to 23,000 micrograms per liter (µg/L), MTBE at concentrations up to 1,100 µg/L, and TBA at concentrations up to 250 µg/L. Please note that the proposed additional ozone injection wells are targeting the middle sand layer. Please propose additional source area and downgradient groundwater monitoring wells within the middle sand layer.

The lowermost sand and gravel layer extends from approximately 60 feet bgs to more than 80 feet bgs. Grab groundwater samples from this lowermost sand and gravel layer detected TPHg at concentrations up to 26,000 µg/L, MTBE at concentrations up to 630 µg/L, and TBA at concentrations up to 290 µg/L. No groundwater monitoring or remediation is currently conducted within this layer. We request that you propose additional groundwater monitoring wells and evaluate the need to install additional ozone injection wells within this lower sand and gravel layer. Please present these plans in the Revised Work Plan requested below.

2. **Proposed Additional Injection Wells.** The July 3, 2007 Work Plan proposes installation of additional ozone injection wells at seven locations that are adjacent to existing sparge wells and/or CPT borings. We concur that additional injection wells are necessary because it appears that many of the injection wells are screened within fine-grained soils that may be retarding the distribution of the ozone. However, based on our review of CPT boring results, existing sparge wells SP-4 and SP-5 may be screened within the middle sand and gravel layer; replacement of these sparge wells may not be necessary. There appears to be an inconsistency between soil types and depths to lithologic contacts reported in the CPT borings and boring logs from adjacent sparge wells. It appears that the boring logs for the sparge wells that are presented in the report entitled, "Groundwater Monitoring Well and Ozone Microsparge System Installation Report," dated February 6, 2002, are not accurate. The sparge well borings were apparently drilled without sampling. The depths of lithologic changes could not be accurately determined from the sparge well borings. Nearby CPT borings indicate that the middle sand and gravel layer is deeper in the eastern portion of the site; therefore, ozone injection wells SP-4 and SP-5 are likely screened within the middle sand and gravel layer. Please revise the plans for additional ozone injection wells accordingly in the Revised Work Plan requested below. We have no objection to the remaining five proposed additional ozone injection wells. Please see technical comment 1 above regarding the need for additional ozone injection wells within the lower sand and gravel unit that is typically more than 60 feet bgs.

3. **Proposed Depth of Additional Ozone Injection Wells.** The proposed methods for installation of the additional injection wells are acceptable. Continuous sampling below 35 feet bgs is required to assure that the screen and filter pack for the additional injection wells are installed within the targeted coarse-grained layer. Please review existing cross sections to assure that the selected intervals are consistent with previous results.

4. **Future Status of Existing Ozone Injection Wells.** In the Revised Work Plan requested below, please clarify whether each of the existing ozone injection wells will be decommissioned or will continue to be used in the system.

5. **Shallow Ozone Injection Wells.** In the most recent groundwater monitoring report, the reported depth to water ranged from 27 to 38 feet bgs. The total depths of the shallow ozone injection wells are 25 to 26 feet bgs. Please describe whether the shallow ozone injection wells are currently used and how the system shuts down ozone injection during periods when water levels are below the sparge wells.

6. **Upgrade of Ozone System.** We have no objection to the recommendation to upgrade the existing ozone injection system to a more reliable system.

7. **Quarterly Groundwater Monitoring.** Please continue quarterly groundwater monitoring and present the results in the Quarterly Reports requested below. We wish to correct one statement made in the "Quarterly Report – Second Quarter 2007," dated July 31, 2007. In the section entitled, Recent Correspondence, the text should have read, "ACHA submitted a letter to COP requesting a work plan for installation of additional ozone injections wells," rather than oxygen injection wells.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **October 30, 2007** – Revised Work Plan for Additional Injection Wells and Monitoring Wells

- **45 days following end of each quarter** – Quarterly Report (To include summary report, remedial performance summary, and quarterly monitoring report)

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater

cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "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." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Colleen Winey, QIC 80201
Zone 7 Water Agency
100 North Canyons Parkway
Livermore, CA 94551

Danielle Stefani
Livermore-Pleasanton Fire Department
3560 Nevada Street
Pleasanton, CA 94566

Dennis Dettloff
Delta Environmental Consultants, Inc.
3164 Gold Camp Drive, Suite 200
Rancho Cordova, CA 95670

Donna Drogos, ACEH
Jerry Wickham, ACEH
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