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3:10 pm, Dec 16, 2010

Alameda County
Environmental Health

Mr. Paresh Khatri
Alameda County
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Foothill Mini Mart, 6600 Foothill Boulevard, Oakland, California
(ACEHS Case No. RO0000175)

Dear Mr. Khatri:

Stratus Environmental, Inc. (Stratus) has recently prepared a *Feasibility Study Work Plan* on my behalf. The report was prepared in regards to Alameda County Fuel Leak Case No. RO0000175, located at 6600 Foothill Boulevard, Oakland, California.

I have reviewed a copy of this report, sent to me by representatives of Stratus, and "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,

Ravi Sekhon

STRATUS
ENVIRONMENTAL, INC.

3330 Cameron Park Drive, Ste 550
Cameron Park, California 95682
(530) 676-6004 ~ Fax: (530) 676-6005

December 13, 2010
Project No. 2087-6600-01

Mr. Paresh Khatri
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: Feasibility Study Work Plan
Foothill Mini Mart
6600 Foothill Boulevard
Oakland, California

Dear Mr. Khatri:

Stratus Environmental, Inc. (Stratus) has prepared this *Feasibility Study Work Plan* (*Work Plan*), on behalf of Mr. Ravi Sekhon, for the Foothill Mini Mart (the Site), located at 6600 Foothill Boulevard, Oakland, California (see Figures 1 and 2). Subsurface petroleum hydrocarbon impact to soil and groundwater has previously been identified in the vicinity of the site. At the request of Alameda County Environmental Health Department (ACEHD), Stratus prepared and submitted a document, on behalf of Mr. Sekhon, titled *Feasibility Study/Corrective Action Plan* (*FS/CAP*), on August 3, 2010. The *FS/CAP* evaluated the cost effectiveness and applicability of remediating the petroleum hydrocarbons in the subsurface using several remedial technologies. This evaluation was based on our understanding of subsurface geological conditions and information regarding the distribution of the hydrocarbons in the subsurface. Stratus noted, in the August 3, 2010 report, that none of the remedial technologies evaluated for possible use at the subject site had been pilot tested. Stratus recommended that two remedial approaches (dual phase extraction [DPE] and in-situ chemical oxidation [ISCO]) be field tested for possible use at the subject site. In a letter dated October 14, 2010, ACEHD concurred with Stratus' recommendation to conduct these pilot tests, and requested that a work plan, proposing a scope of work to evaluate the feasibility of using ISCO and DPE remediation at the site, be submitted for agency review.

This *Work Plan* proposes to conduct a three-day DPE pilot test and a 30-day ISCO test. In order to implement these tests, the installation of specially designed extraction and injection well(s) are necessary. Stratus has included a scope of work to install two nested ozone/hydrogen peroxide injection wells, and one extraction well, in an area of the site where petroleum hydrocarbon impact to soil and groundwater has previously been identified. Details associated with the proposed well installation and remediation pilot test work are provided in the following subsections of this report.

SITE DESCRIPTION

The subject site is an active retail fueling station located at the northeast corner of the intersection of Havenscourt Boulevard and Foothill Boulevard in the city of Oakland. The property is situated in a mixed residential and commercial neighborhood. The station (now Golden Gasoline) dispenses fuel from two pump islands which contain two dispensers on each island. The general layout of the site is depicted on Figure 2. Service stations have operated on the subject property since approximately 1959, under Beacon, ARCO, and Shell branding. Mr. Sekhon purchased the service station from Beacon in 1998.

The property is situated on the East Bay Plain, immediately west of the Oakland Hills and approximately 2 miles east of San Francisco/San Leandro Bay. The service station is located roughly 60 feet above mean sea level (MSL). Residential buildings are located north of the site, a vacant building occupies the property to the east, and a vacant lot is present south of the site.

A service station formerly operated on the vacant lot situated south of the site, across Foothill Boulevard (6601 Foothill Boulevard). This property is not currently in the ACEHD oversight program; however, analytical data from a soil sample collected in the western portion of this property suggest that a fuel leak could have historically occurred on this property. Additional data would be needed to confirm or deny that a fuel leak occurred at 6601 Foothill Boulevard.

PROJECT APPROACH

The purpose of the proposed pilot testing work is to assess the feasibility of utilizing DPE and/or ISCO to remediate petroleum hydrocarbon contaminants originating from the site. In the event that one or both of these technologies are deemed appropriate for use at the site, the pilot testing data collected would be used to assist in development of a Corrective Action Plan (CAP) and to design of an appropriate full-time treatment system.

Stratus is proposing to complete injection of ozone and hydrogen peroxide (H_2O_2) into the saturated zone, and DPE, from wells located onsite near the former and current underground storage tank (UST) complex (see Figure 2 for proposed locations). These locations were selected due to their proximity to previously documented soil and groundwater impact (see Figures 3 through 6 for distribution of select groundwater contaminants), the availability of nearby monitoring wells that can be used as observation points during testing, and the ability to complete the necessary remediation well installations without re-negotiating offsite property access agreements. Any remediation well installations on offsite property, or the city right-of-way, would only be completed once the pilot testing has confirmed that a remedial technology will be effective in mitigating contaminant impact and a full-scale treatment system, with associated remediation well network, is designed.

The ISCO test will be used to evaluate whether injection of an oxidant into the saturated zone, such as ozone, will be an effective in-situ method of reducing concentrations of petroleum hydrocarbons. During the proposed test period, data will be collected to estimate the radius of influence (ROI) around the injection wells, to evaluate potential geo-chemical changes that occur due to ozone and hydrogen peroxide injection (mobilization of metals from soil), and to identify optimum injection flow rates and injection well spacing that could be used for design/installation/operation of a full-scale ISCO system, should it be deemed cost-effective and technically appropriate for future site remediation. During the 30-day pilot test, Stratus will also collect field measurements, and water samples for laboratory analysis, to assess possible changes in metals concentrations that could be attributed to ISCO.

The DPE test will be used to assess the ability to simultaneously extract petroleum hydrocarbons from the subsurface in the vapor and dissolved phases under applied vacuum. During the test, Stratus will collect depth to groundwater measurements in nearby observation wells to evaluate the ability of the DPE system to draw down the water table to allow for potential recovery of contaminants that may be situated near the water table interface. Stratus will also measure induced vacuum in nearby observation wells to assess ROI and subsurface airflow. Stratus will collect samples of the extracted soil vapor and groundwater, and submit these samples for chemical analysis, in order to evaluate concentrations of contaminants removed from the subsurface during testing work.

SCOPE OF WORK

Stratus has prepared the following scope of work to accomplish the objectives described above. The scope of work has been subdivided into tasks 1 through 6, discussed below. All work will be conducted under the direct supervision of a State of California Registered Geologist or Engineer, and will be conducted in accordance with standards established by the Tri-Regional Board document titled *Appendix A-Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites* (April 16, 2004) and Regional Water Quality Control Board (RWQCB) guidelines. A California-licensed C-57 drilling contractor will perform all drilling and well construction activities. Stratus' Field Practices and Procedures which will be utilized during the proposed drilling work are included in Appendix A.

Task 1: Pre-field Activities

Following approval of this *Work Plan* by the ACEHD, the following activities will be completed:

- Obtain well installation permits from Alameda County Public Works Department (ACPWD),
- Retain and schedule a licensed C-57 drilling contactor,
- Prepare a health and safety plan for the site,
- Mark the boring locations and contact Underground Service Alert to locate underground utilities in the vicinity of the work site, and
- Notify ACPWD, ACEHD, Mr. Sekhon, and the current service station operator of the scheduled field activities.

Task 2: Remediation Well Installation

Task 2A: Soil Borings

A licensed well driller will advance the well borings to approximately 27 feet below ground surface (bgs) (IW-1 and IW-2) or 30 feet bgs (EX-1) using a truck mounted or limited access drill rig equipped with appropriately sized hollow stem augers. Based on the soil types encountered during installation, the depth of each boring may be modified. The borings will be converted to ozone injection wells, or an extraction well, as described below. The initial 5 feet of the borings will be advanced with a hand auger and/or posthole digger to reduce the possibility of damaging underground utilities.

Soil samples will generally be collected at 5-foot intervals using a California-type, split-spoon sampler equipped with clean brass tubes. Soil samples will be collected at 2.5-foot intervals, beginning at 17.5 feet bgs, in well borings IW-1 and IW-2 in order to collect additional data to assist in determining the depth for these injection wells. Soil from each sampled interval will be screened in the field with a portable photoionization detector (PID). Stratus will record PID readings, soil types, and other pertinent geologic data on the borehole logs. Additional samples may be selected for chemical analysis based on conditions observed in the field at the time of drilling. The sample ends will be covered with Teflon™ sheets and tight fitting plastic caps. Each sample will then be labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. The samples will remain chilled until relinquished to a state-certified analytical laboratory. Strict chain-of-custody procedures will be followed from the time the samples are collected until the time the samples are relinquished to the laboratory. A minimum of two soil samples will be submitted for chemical analysis from each boring.

Task 2B: Injection Well Installation

Wells IW-1A/B and IW-2A/B will be constructed through 8-inch diameter hollow stem augers using 0.75 or 1-inch diameter blank Schedule 80 PVC casing connected to a gas diffusor (for ozone sparging) and a stainless steel well casing/tubing (1-inch diameter or less, for injection of hydrogen peroxide). The ozone injection gas diffusor will be situated from approximately 24 to 26 feet bgs and the stainless steel well screen will be situated from approximately 20.5 to 21.5 feet bgs. A filter pack of Lonestar™ #2/12 sand will be placed from the base of the boring to approximately one foot above the top of the sparge point (about 23 to 27 feet bgs). Coated bentonite pellets will be placed from approximately 22 to 23 feet bgs. Additional filter pack sand will be placed from approximately 19 to 22 feet bgs. Bentonite chips or pellets will then be placed from about 16 to 19 feet bgs, around the 1-foot length slotted stainless steel well casing. Neat cement containing a maximum of 5% bentonite powder will be used to backfill the remaining annular space around the well casing to surface grade, around the riser pipes of both the PVC ozone injection well and stainless steel hydrogen peroxide injection well. A watertight locking cap will be placed over the top of the well casing, and a traffic-rated vault box will be installed around the top of the well. Actual well construction may be modified in the field based on soil conditions encountered at the time of the investigation, and based on the vendor selected to provide the injection well materials.

Task 2C: Extraction Well Installation

Extraction well EX-1 will be installed through 10-inch diameter hollow stem augers using 4-inch diameter schedule 40 PVC well casing, and 20 feet of 0.02-inch diameter factory slotted well screen, situated from approximately 10 to 30 feet bgs. A filter pack of #3 Lonestar™ sand will be placed in the annular space around the well casing from the bottom of the well screen to approximately 2 feet above the top of the well screen. Prior to installing the well seal, each well will be surged with a surge block to "seat" the filter pack around the well screen. Approximately 3 feet of bentonite chips will be placed on top of the filter pack to provide a transition seal for the well. Neat cement will be used to backfill the remaining annular space around the well casing. A watertight locking cap will be placed over the top of the well casing, and a traffic rated vault box will be installed around the top of the well. The actual well construction may be modified in the field based on conditions encountered at the time of the investigation.

Task 2D: Extraction Well Development

Well EX-1 will be allowed to stand a minimum of 72 hours before being developed. Well development will consist of surging with a bailer followed by groundwater pumping. Development will continue, to the extent practical, until the discharged water runs clear and pH and conductivity measurements stabilize. Water levels, water-quality parameters (pH, temperature, conductivity), and discharged quantities will be recorded for the water removed from the well.

Task 2E: Waste Management

Drill cuttings and wastewater generated during the field activities will be contained in DOT-approved 55-gallon steel drums. The drums will be appropriately labeled and stored at the site pending proper disposal. A licensed contractor will transport the soil and wastewater to an appropriate facility for disposal.

Task 2F: Laboratory Analysis

Soil samples collected during the well boring activities will be submitted to a state-certified analytical laboratory and analyzed for gasoline range organics (GRO) using USEPA Method 8015B/DHS LUFT, and for benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), and tertiary butyl alcohol (TBA) using USEPA Method 8260B.

Task 3: Well Installation Report

A well installation report will be prepared documenting findings of the drilling activities, and will include, but not be limited to, a scaled site plan, boring logs, and well construction details, and will document any modifications from this document. The report will be submitted within approximately six weeks of receiving all analytical results.

Task 4: ISCO Feasibility Testing

As discussed earlier, a combined ozone injection/hydrogen peroxide pilot test will be conducted to evaluate the technical feasibility of utilizing ISCO in mitigating the subsurface petroleum hydrocarbon impact. In addition, data collected during this test will be evaluated to identify any geo-chemical changes that may occur in the subsurface due to ISCO. The extended duration of the proposed testing will also aid in reducing the petroleum hydrocarbon mass near the UST system.

The proposed pilot study will be conducted using an H_2O Engineering Inc. system model OSU10-26, or similar, for injection of ozone and hydrogen peroxide at newly installed nested wells IW-1A/B and IW-2A/B. The system consists of a self-contained cabinet housing an O_2 concentrator, ozone generation system, compressors to inject air and ozone, hydrogen peroxide injection/distribution system, and associated instrumentation. The ozone injection system is capable of generating up to 1.4 lbs/day of ozone at a concentration of 6%, which can be injected at flow rates of up to 24 standard cubic feet per hour (scfh) at 20 pounds per square inch (psi) pressure. The system also incorporates a booster compressor rated at approximately 225 cubic feet per hour (cfh) (equivalent to 3.75 cubic feet per minute [cfm]) to deliver air enriched with ozone to the injection wells. Hydrogen peroxide will be delivered using a chemical pump designed to handle hydrogen peroxide at a pressure slightly over breakthrough pressure. Stratus will erect temporary fencing around the injection system for security purposes. Protective covers (modified manhole covers, portable speed bumps, etc.) will be placed around the wellheads and associated piping in order to prevent damage (primarily from automobiles).

Injection of ozone and hydrogen peroxide into wells IW-1A/B and IW-2A/B will be conducted for a period of about 30 days. During the test, ozone will be injected into wells IW-1B and IW-2B for a period of approximately 20 minutes for each well, to complete a 40-minute cycle. Stratus proposes to constantly meter into each shallow-set well a stream of 10% H_2O_2 solution at a rate of approximately 5 milliliters per minute (ml/min), while ozone injection continues at the deeper-set wells on a cycled basis throughout the duration of the test. Over the entire 30-day pilot test, it is estimated that a total of about 42 pounds of ozone and approximately 114 gallons of hydrogen peroxide will be injected into the groundwater beneath the site. Based on results and field data gathered during the test, the ozone/hydrogen peroxide injection system operating parameters may be modified, at the discretion of the supervising Professional. Field data and groundwater samples will be collected in accordance with the protocol discussed below:

Monitoring Protocol

In order to establish baseline conditions for secondary water quality parameters, Stratus proposes to collect groundwater samples from wells EX-1, MW-2, MW-4, MW-5, MW-6, and MW-10 prior to initiating ozone injection. This baseline sampling event would be conducted immediately prior to injecting ozone into the subsurface (day 1 of the pilot study). In addition, data collected in December 2010, at the time of the fourth quarter 2010 well sampling event, will provide a second baseline data set. Approximately three well volumes of groundwater will be purged and a sample will be collected from each of these six wells. These groundwater samples will be forwarded to a state-certified laboratory, with appropriate chain-of-custody documentation, for chemical analyses.

During the pilot test, groundwater monitoring wells EX-1, MW-2, MW-4, MW-5, and MW-6, (see Figure 2) will be used as observation wells to gauge effectiveness of the injection on the potential reduction of contaminant concentration in these wells, and to monitor potential changes in groundwater geochemistry that could be attributed to ozone injection. Well MW-10 will be used as a background monitoring well to monitor the natural changes in groundwater geochemistry.

During the first week of the pilot study, Stratus will visit the site every other day to collect field parameters (discussed below) and to optimize the performance of the ozone injection system. Thereafter, Stratus will conduct two visits per week to verify system operation, optimize system performance, conduct maintenance if warranted, and collect field parameter measurements. In addition to collecting groundwater samples immediately prior to initiating ISCO, Stratus will sample the six wells approximately 2 weeks into the test, and about 2 weeks following termination of ISCO.

Field Parameters: Field parameter measurements, such as depth to water, dissolved oxygen (DO), oxidation-reduction potential (ORP), temperature, and pH, will be collected from the monitoring wells using field instruments. Field parameter measurements will be collected twice a week.

Laboratory Parameters: Stratus proposes to collect groundwater samples and analyze them for GRO (by EPA Method 8015), BTEX, MTBE, and TBA (by EPA Method 8260), nitrites and nitrates (by EPA Method 300.0), sulfides (by EPA Method 376.2), sulfates (by EPA Method 300.0), and metals (by EPA Method SW6020) such as magnesium, manganese, nickel, copper, potassium, calcium, arsenic, total chromium, hexavalent chromium, aluminum, barium, bromide, and bromate.

The field and analytical parameters collected during operation of the ozone injection system will be compared with the data collected prior to startup and after shutdown of the ozone injection system to evaluate performance of the ozone injection system.

Task 5: DPE Pilot Testing

Prior to beginning work, Stratus will notify the Bay Area Air Quality Management District (BAAQMD), ACEHD, and the property owners of the DPE test schedule. Stratus will use a thermal oxidizer DPE system, capable of processing a minimum of 250 cfm of airflow, to complete the test. A portable propane tank will be mobilized to the site and propane will be used to maintain combustion temperature in the thermal oxidizer. The DPE system will utilize a liquid ring extraction pump capable of up to approximately 23 inches of mercury vacuum. Temporary fencing will be placed around the equipment following set-up in order to prevent access by the general public.

Stratus proposes to use the drop-tube entrainment method of DPE. The drop-tube system is constructed by inserting a suction tube (pipe) into a sealed wellhead of each extraction well. Soil vapor and groundwater will then be transported through the drop-tube to an air-water separator (knockout tank) from which the vapors are routed to the thermal oxidizer for abatement and discharge to the atmosphere. Groundwater will be piped into a portable storage tank (21,000-gallon Baker™, or similar) for temporary storage.

DPE will be initiated by setting the drop tube approximately 1-foot below groundwater and then slowly lowering the drop tube to approximately 5 to 10 feet below static groundwater elevation. Following insertion of the drop tube, the EX-1 wellhead will be temporarily modified to allow for extraction of soil vapors and groundwater. Protective covers (modified manhole covers, portable speed bumps, etc.) will be placed around the wellheads and associated piping in order to prevent damage (primarily from automobiles).

At the beginning of the test, the applied vacuum to well EX-1 will be adjusted in order to achieve the most energy-efficient vacuum, beyond which excess vacuum would result in a diminishing rate of return (groundwater extraction and airflow rate). Applied vacuum to the drop tube will be increased gradually in order to identify an optimum vacuum for groundwater drawdown and soil vapor extraction.

Stratus personnel will be onsite during the entire test period in order to collect measurements from observation points and to maintain/operate the DPE system. Groundwater flow, soil vapor flow rates, and applied vacuum observations will be periodically recorded on field data sheets. A PID will also be used to monitor the concentration of volatile organic compounds (VOCs) in the extracted soil vapors.

Monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-6 will be used as observation wells during the DPE event. These wellheads will be temporarily modified to monitor depth to water and induced vacuum. Dedicated magnahelic gauges will be placed on the wellheads to monitor induced vacuum during DPE. Changes in groundwater elevation will be monitored using a hand held water level indicator. The following parameters will be monitored during the test and recorded on field data sheets:

- Induced vacuum in observation wells,
- Groundwater elevation in observation wells,
- Wellhead vacuum,
- Vapor extraction rates, and
- Groundwater extraction rates.

Influent soil vapor and groundwater samples will be collected four times during the test (startup, 24-hours, 48-hours, and immediately before shutdown). One effluent sample will be collected in order to verify compliance with BAAQMD requirements for discharge of abated soil vapors to the atmosphere. Soil vapor samples will be collected in laboratory-supplied tedlar bags, placed in a protective container, and stored at ambient air temperature. Groundwater samples will be placed in laboratory supplied, properly preserved, glass vials (voas) and stored in an ice-chilled cooler. Each sample will be identified on a chain-of-custody form and proper chain-of-custody procedures will be followed until the samples can be delivered to a state-certified analytical laboratory. Groundwater and air samples will be analyzed for GRO using USEPA Method 8015, and for BTEX, MTBE, and TBA using USEPA Method 8260.

After analytical results for the groundwater samples have been received, Stratus will arrange for the transport and offsite disposal of wastewater generated during the test.

Task 6: Reporting

Stratus will prepare and submit a report within approximately 60 days following receipt of all analytical results, which incorporates the findings of both the ISCO and the DPE pilot testing. The report will include a description of test procedures, tabulated field and laboratory data, certified analytical results, and an evaluation of the effectiveness and applicability of each technology for mitigating site contaminants based on the findings of the test.

LIMITATIONS

This *Work Plan* was prepared in general accordance with accepted standards of care that existed at the time this work was performed. No other warranty, expressed or implied, is made. Conclusions and recommendations are based on field observations and data obtained from this work and previous investigations. It should be recognized that definition and evaluation of geologic conditions is a difficult and somewhat inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface conditions present. More extensive studies may be performed to reduce uncertainties. This *Work Plan* is solely for the use and information of our client unless otherwise noted.

If you have any questions or comments concerning this report, please contact Scott Bittinger at (530) 676-2062 or Gowri Kowtha at (530) 676-6001.

Sincerely,

STRATUS ENVIRONMENTAL, INC.

PROFESSIONAL GEOLOGIST
Scott G. Bittinger
No. 7477
STATE OF CALIFORNIA

Scott G. Bittinger, P.G.
Project Manager

Gowri S. Kowtha, P.E.
Principal Engineer

Attachments:

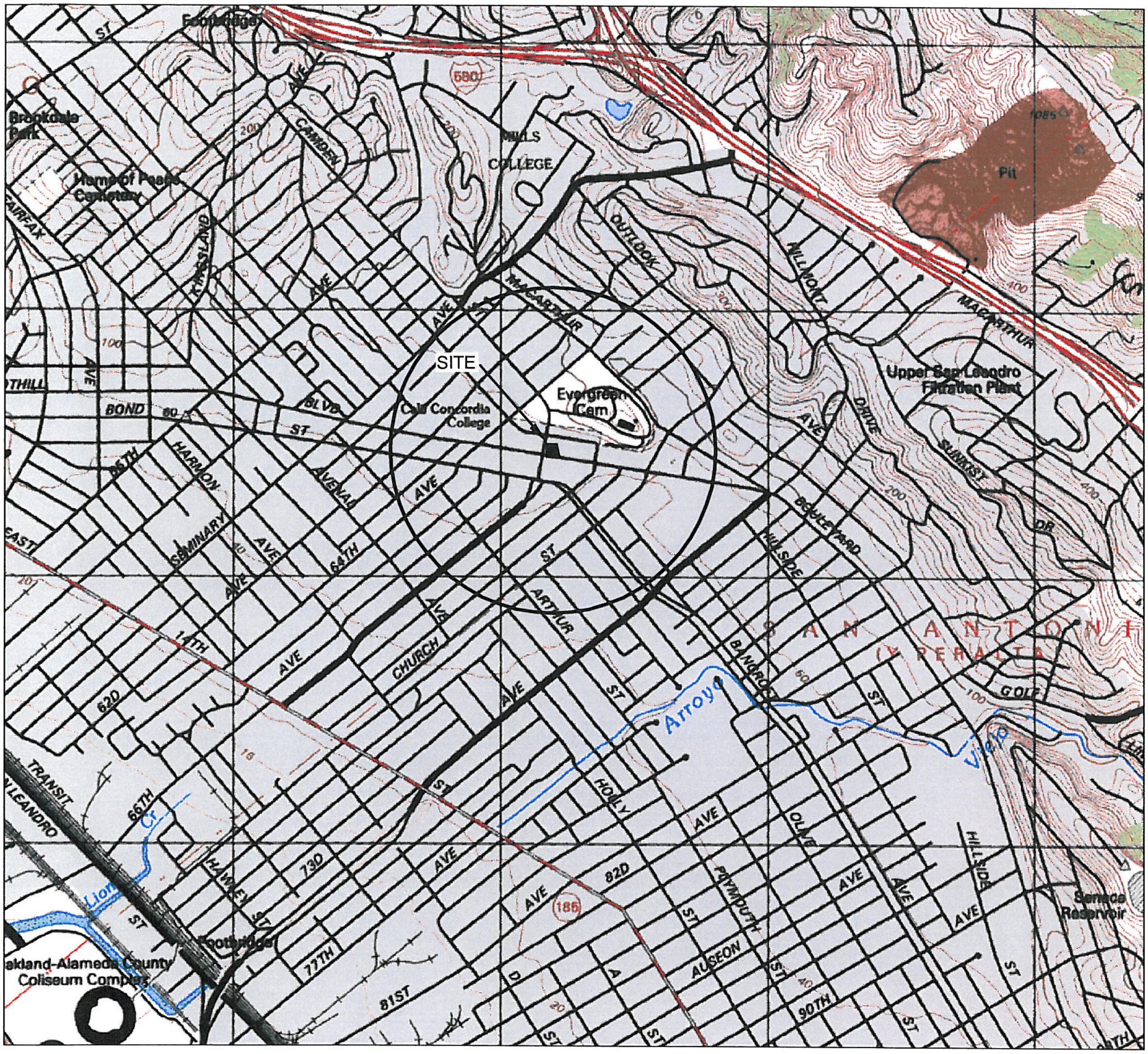
Table 1	Well Construction Detail Summary
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	GRO Iso-Concentration Contour Map, Shallow Screened Wells, Second Quarter 2010
Figure 4	Benzene Iso-Concentration Contour Map, Shallow Screened Wells, Second Quarter 2010
Figure 5	MTBE Iso-Concentration Contour Map, Shallow Screened Wells, Second Quarter 2010
Figure 6	TBA Iso-Concentration Contour Map, Shallow Screened Wells, Second Quarter 2010
Appendix A	Field Practices and Procedures

cc: Mr. Ravi Sekhon, Former Property Owner
Mr. Joseph LeBlanc, Property Owner, 6620 Foothill Boulevard

TABLE 1
WELL CONSTRUCTION DETAIL SUMMARY
Foothill Mini Mart, 6600 Foothill Boulevard, Oakland, California

Boring/Well I.D.	Date Installed	Boring Depth (feet)	Boring Diameter (inches)	Well Diameter (inches)	Well Depth (feet)	Screen Interval (feet bgs)	Slot Size (inches)	Drilling Method
Shallow Groundwater Monitoring Wells								
MW-1	06/04/01	25	8	2	25	10-25	0.01	HSA
MW-2	06/04/01	25	8	2	25	10-25	0.01	HSA
MW-3	06/04/01	25	8	2	25	10-25	0.01	HSA
MW-4	06/26/02	20	8	2	20	7.5-20	0.01	HSA
MW-5	06/26/02	20	8	2	20	7.5-20	0.01	HSA
MW-6	06/26/02	20	8	2	20	7.5-20	0.01	HSA
MW-7	09/23/09	25	8	2	25	10-25	0.01	HSA
MW-10	09/22/09	25	8	2	25	15-25	0.01	HSA
MW-11	09/23/09	25	8	2	25	10-25	0.01	HSA
MW-12A	09/22/09	25	8	2	25	10-25	0.01	HSA
MW-13A	09/24/09	25	8	2	25	5--25	0.01	HSA
Deeper Groundwater Monitoring Wells								
MW-5B	09/23/09	45	8	2	45	35-45	0.01	HSA
MW-6B	09/24/09	50	8	2	50	35-50	0.01	HSA
MW-12B	09/22/09	43	8	2	43	33-43	0.01	HSA

Notes:
HSA = hollow stem auger



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
OAKLAND EAST, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

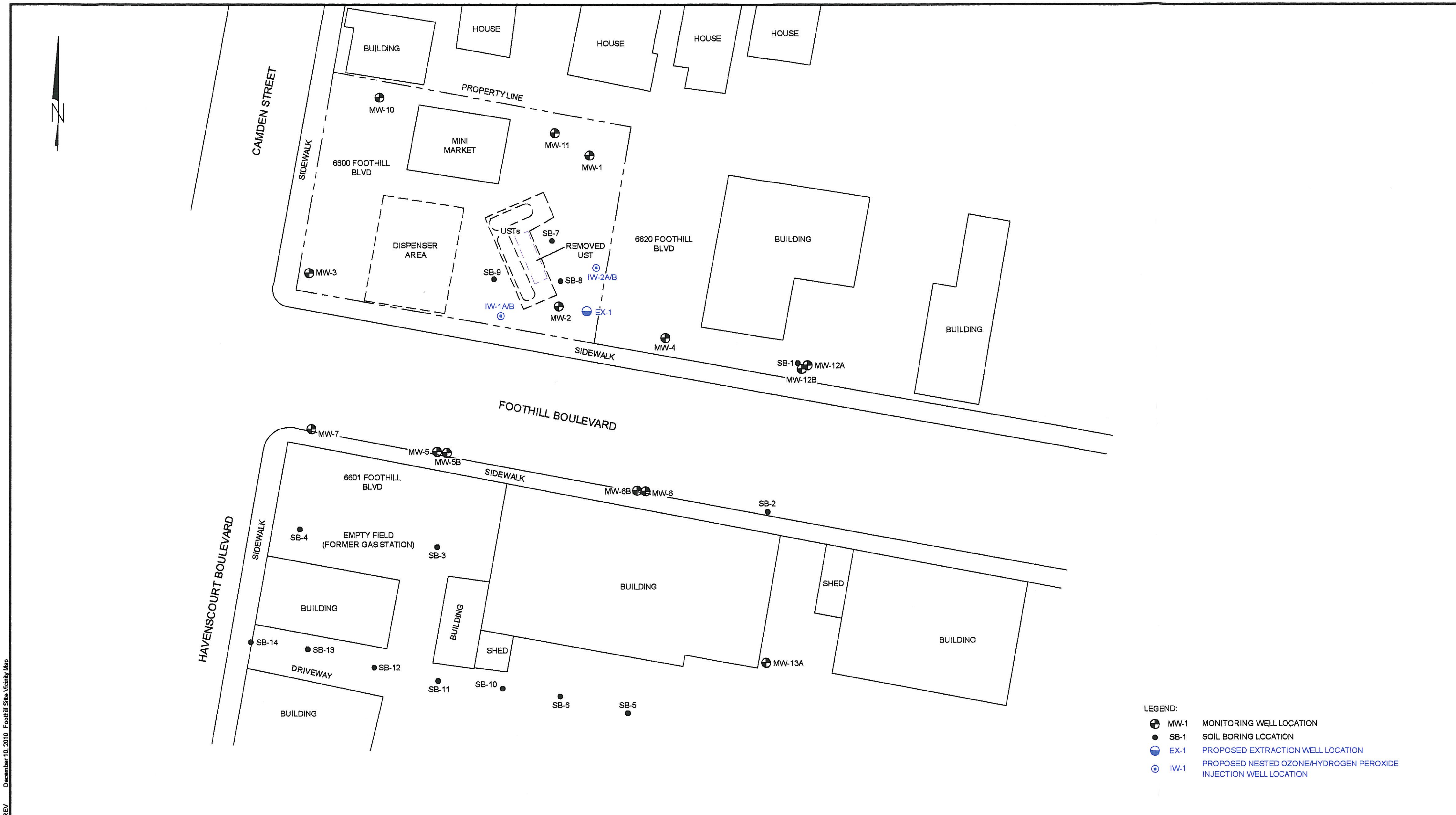
N

QUADRANGLE LOCATION

0 2000 FT

SCALE 1:24,000

STRATUS ENVIRONMENTAL, INC.	FOOTHILL MINI MART 6600 FOOTHILL BOULEVARD OAKLAND, CALIFORNIA SITE LOCATION MAP	FIGURE 1 PROJECT NO. 2087-6600-01



NOTE: LOCATIONS OF SITE FEATURES, WELLS, & BORINGS ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

0 40 FT

SCALE

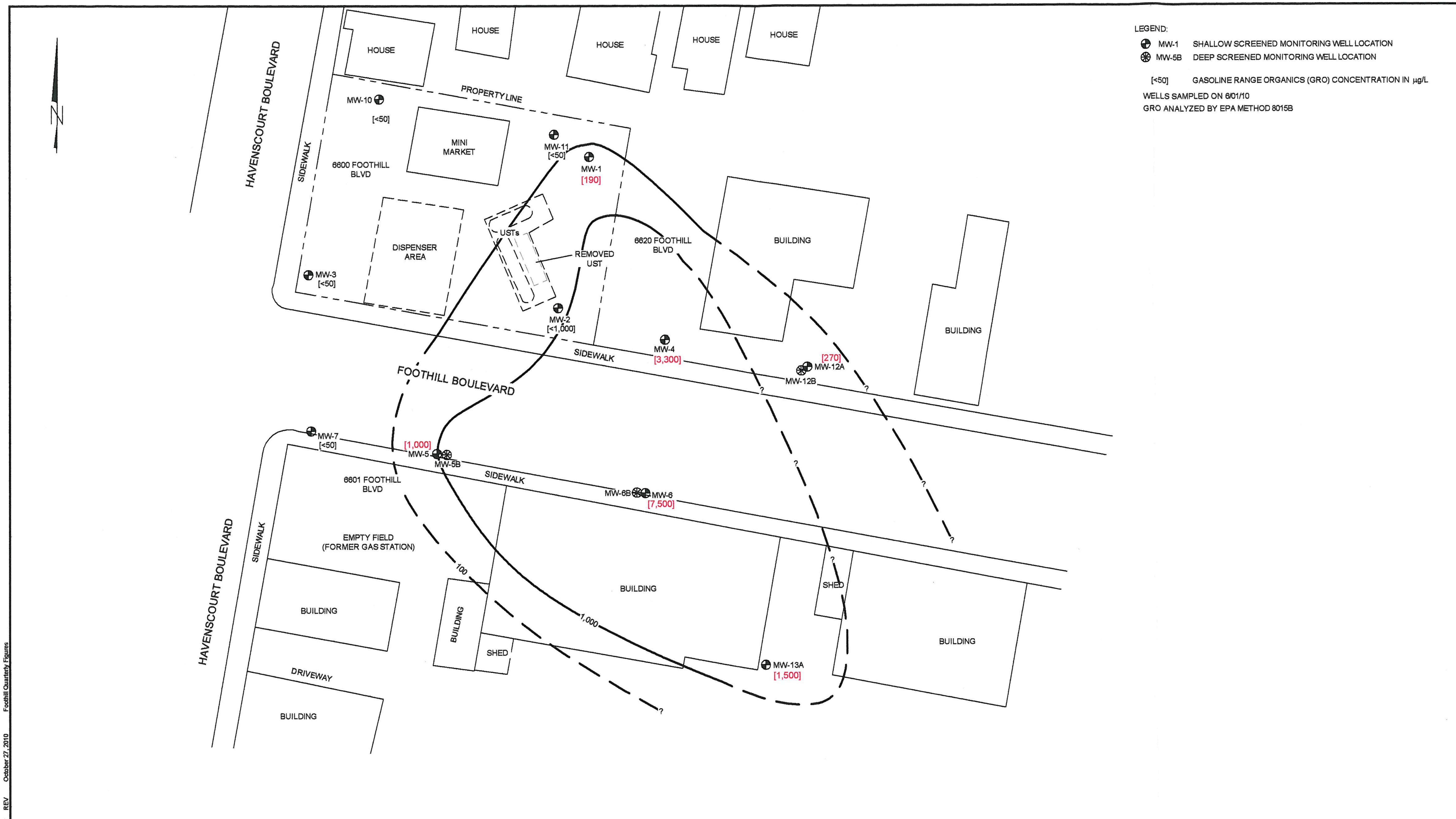
FOOTHILL MINI MART
6600 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

SITE PLAN

FIGURE
2

PROJECT NO.
2087-6600-01

Foothill Mini Mart JMP REV December 10, 2010 Foothill Site Vicinity Map



NOTE: LOCATIONS OF SITE FEATURES, WELLS, & BORINGS ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

0 40 FT
SCALE

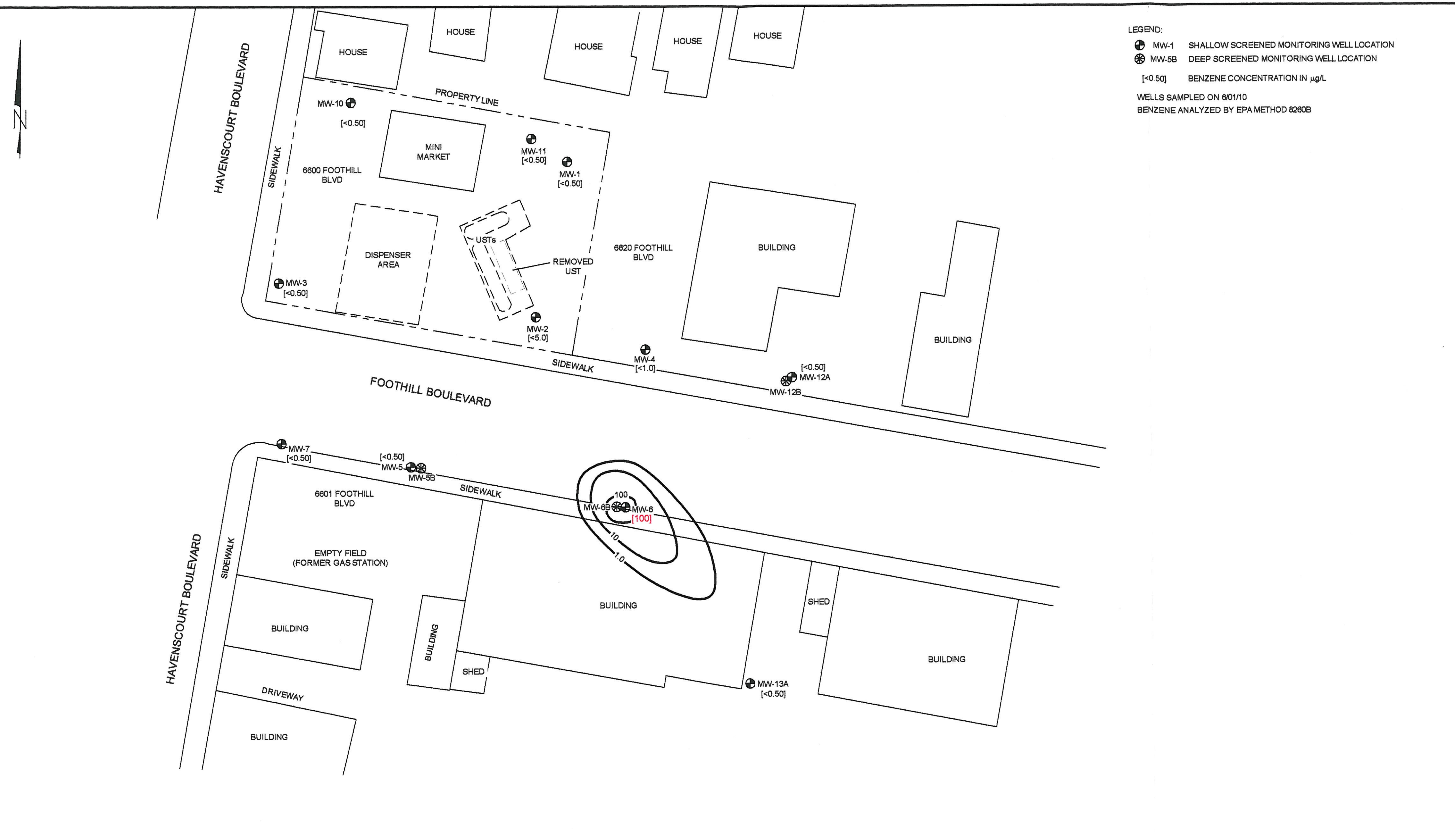
FOOTHILL MINI MART
6600 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

GRO ISO-CONCENTRATION CONTOUR MAP
SHALLOW SCREENED WELLS
2nd QUARTER 2010

FIGURE 3

PROJECT NO. 2087-6600-01

Foothill Mini Mart\Quarterly JMP REV October 27, 2010 Foothill Quarterly Figures



NOTE: LOCATIONS OF SITE FEATURES, WELLS, & BORINGS ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

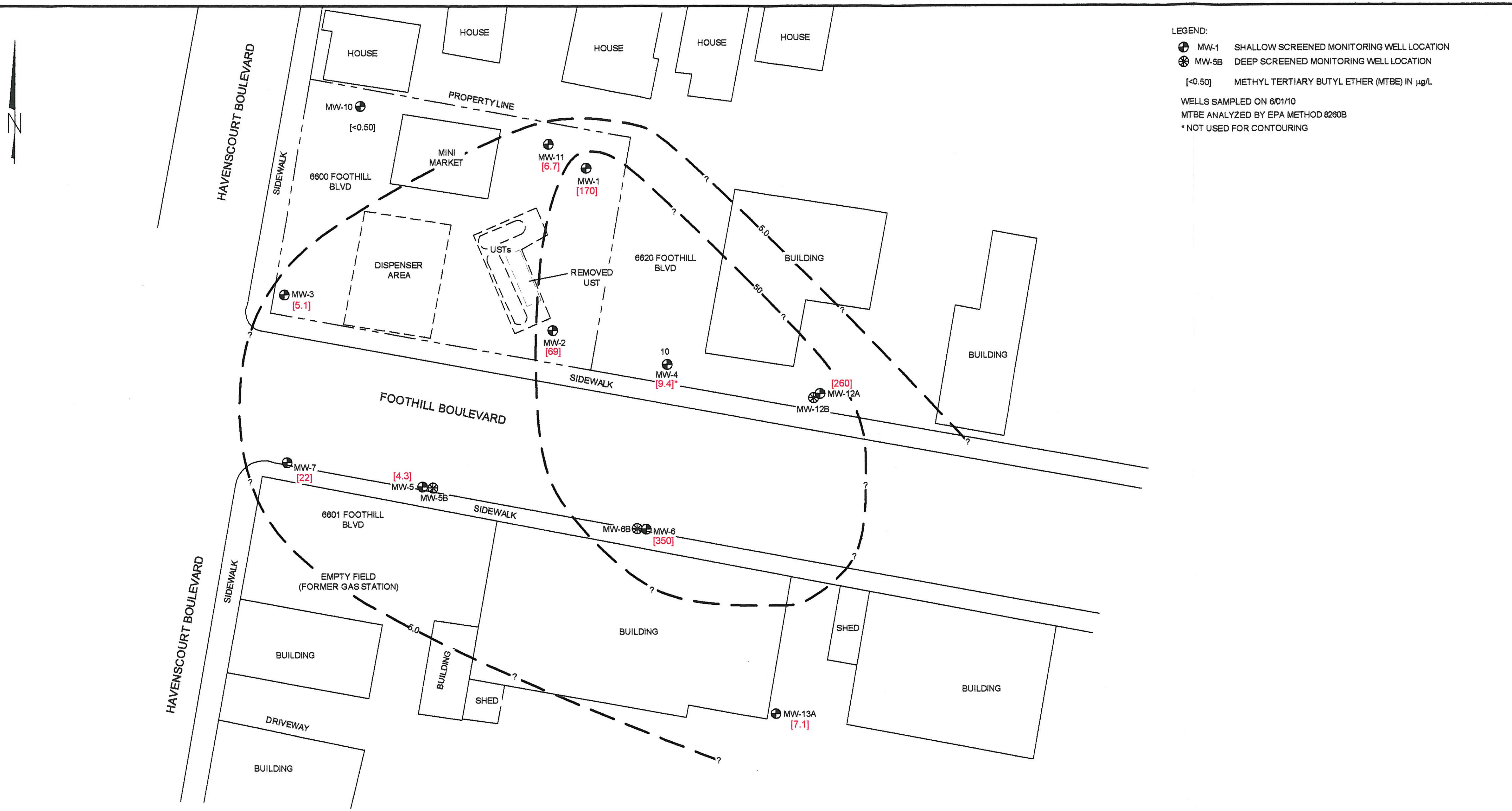
FOOTHILL MINI MART
6600 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

BENZENE ISO-CONCENTRATION CONTOUR MAP
SHALLOW SCREENED WELLS
2nd QUARTER 2010

FIGURE 4

PROJECT NO. 2087-6600-01

Foothill Mini Mart\Quarterly JMP REV October 27, 2010 Foothill Quarterly Figures



NOTE: LOCATIONS OF SITE FEATURES, WELLS, & BORINGS ARE APPROXIMATE

Foothill Mini MartQuarterly JMP REV October 27, 2010 Foothill Quarterly Figures

STRATUS ENVIRONMENTAL, INC.

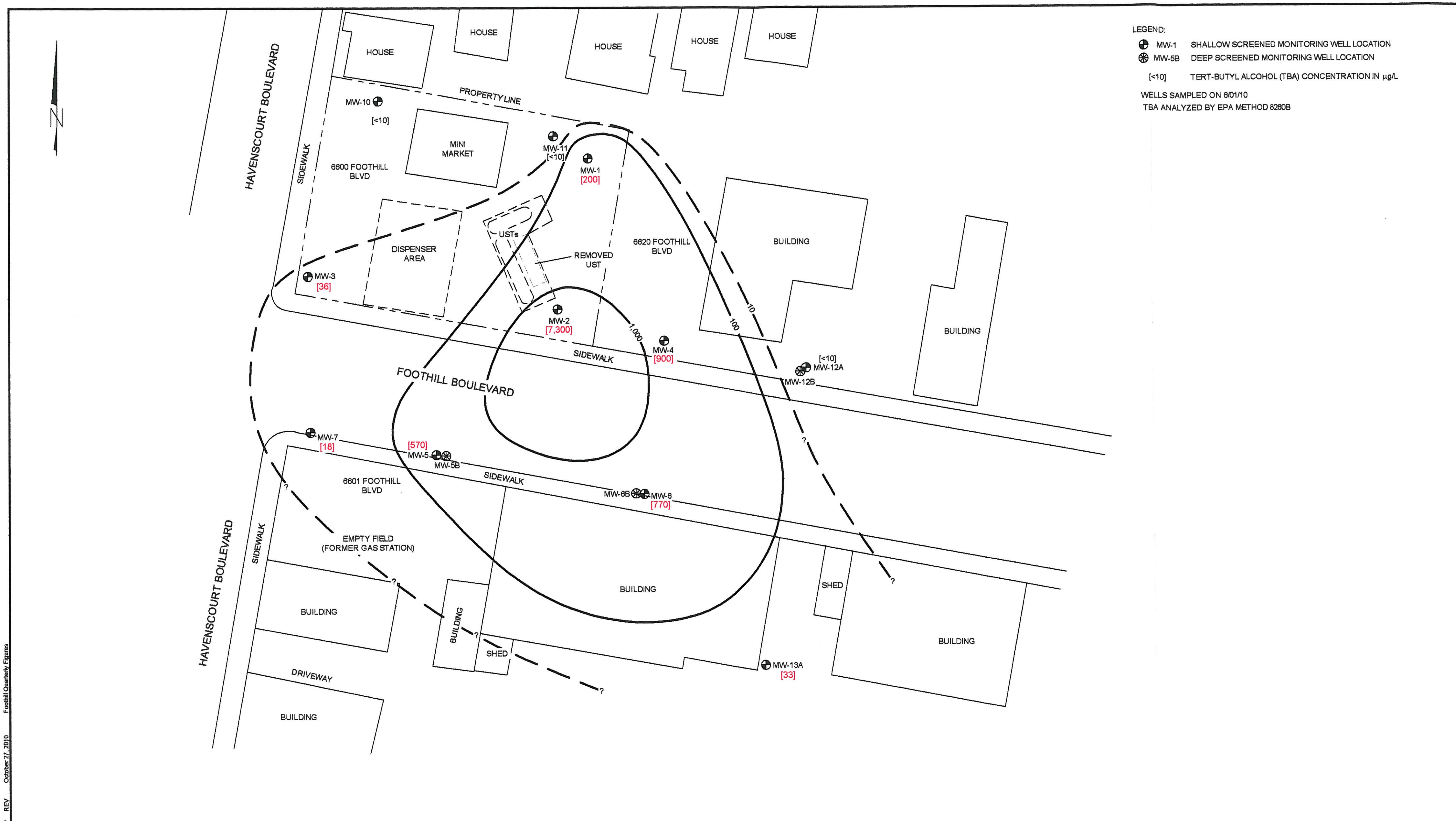
0 40 FT
SCALE

FOOTHILL MINI MART
6600 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

MTBE ISO-CONCENTRATION CONTOUR MAP
SHALLOW SCREENED WELLS
2nd QUARTER 2010

FIGURE 5

PROJECT NO. 2087-6600-01



NOTE: LOCATIONS OF SITE FEATURES, WELLS, & BORINGS ARE APPROXIMATE

STRATUS ENVIRONMENTAL, INC.

0 40 FT
SCALE

FOOTHILL MINI MART
6600 FOOTHILL BOULEVARD
OAKLAND, CALIFORNIA

TBA ISO-CONCENTRATION CONTOUR MAP
SHALLOW SCREENED WELLS
2nd QUARTER 2010

FIGURE
6

PROJECT NO.
2087-6600-01

Foothill Mini Mart\Quarterly JMP REV October 27, 2010 Foothill Quarterly Figures

APPENDIX A

FIELD PRACTICES AND PROCEDURES

FIELD PRACTICES AND PROCEDURES

General procedures used by Stratus in site assessments for drilling exploratory borings, collecting samples, and installing monitoring wells are described herein. These general procedures are used to provide consistent and reproducible results; however, some procedure may be modified based on site conditions. A California state-registered geologist supervises the following procedures.

PRE-FIELD WORK ACTIVITIES

Health and Safety Plan

Field work performed by Stratus at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

Locating Underground Utilities

Prior to commencement of any work that is to be below surface grade, the location of the excavation, boring, etc., is marked with white paint as required by law. An underground locating service such as Underground Service Alert (USA) is contacted. The locating company contacts the owners of the various utilities in the vicinity of the site to mark the locations of their underground utilities. Any invasive work is preceded by hand augering to a minimum depth of five feet below surface grade to avoid contact with underground utilities.

FIELD METHODS AND PROCEDURES

Exploratory Soil Borings

Soil borings will be drilled using a truck-mounted, hollow stem auger drill rig. Soil samples for logging will be obtained from auger-return materials and by advancing a modified California split-spoon sampler equipped with brass or stainless steel liners into undisturbed soil beyond the tip of the auger. Soils will be logged by a geologist according to the Unified Soil Classification System and standard geological techniques. Drill cuttings well be screened using a portable photoionization detector (PID) or a flame ionization detector (FID). Exploratory soil borings not used for monitoring well installation will be backfilled to the surface with a bentonite-cement slurry pumped into the boring through a tremie pipe.

Soil sampling equipment will be cleaned with a detergent water solution, rinsed with clean water, and equipped with clean liners between sampling intervals. Augers and samplers will be steam cleaned between each boring to reduce the possibility of cross contamination. Steam cleaning effluent will be contained in 55-gallon drums and temporarily stored on site. The disposal of the effluent will be the responsibility of the client.

Drill cuttings generated during the drilling procedure will be stockpiled on site. Stockpiled drill cuttings will be placed on and covered with plastic sheeting. The stockpiled soil is typically characterized by collecting and analyzing composite samples from the stockpile. Stratus Environmental will recommend an appropriate method for disposition of the cuttings based on the analytical results. The client will be responsible for disposal of the drill cuttings.

Soil Sample Collection

During drilling, soil samples will be collected in cleaned brass, two by six inch tubes. The tubes will be set in an 18-inch-long split-barrel sampler. The sampler will be conveyed to bottom of the borehole attached to a wire-line hammer device on the drill rig. When possible, the split-barrel sampler will be driven its entire length, either hydraulically or by repeated pounding a 140-pound hammer using a 30-inch drop. The number of drops (blows) used to drive the sampler will be recorded on the boring log. The sampler will be extracted from the borehole, and the tubes containing the soil samples will be removed. Upon removal, the ends of the lowermost tube will be sealed with Teflon sheets and plastic caps. Soil samples for chemical analysis will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

Soil Classification

As the samples are obtained in the field, they will be classified by the field geologist in accordance with the Unified Soil Classification System. Representative portions of the samples will be retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata and pertinent information regarding the method of maintaining and advancing the borehole will be prepared.

Soil Sample Screening

Soil samples selected for chemical analysis will be determined from a head-space analysis using a PID or an FID. The soil will be placed in a Ziploc® bag, sealed, and allowed to reach ambient temperature, at which time the PID probe will be inserted into the Ziploc® bag. The total volatile hydrocarbons present are detected by the PID and reported in parts per million by volume (ppmv). The PID will be calibrated to an isobutylene standard.

Generally two soil samples from each soil boring will be submitted for chemical analysis unless otherwise specified in the scope of work. Soil samples selected for analysis typically represent the highest PID reading recorded for each soil boring and the sample just above first-encountered groundwater.

Stockpiled Drill Cuttings and Soil Sampling

Soil generated during drilling operations will be stockpiled on-site. The stockpile will be set on and covered by plastic sheeting in a manner to prevent rain water from coming in contact with the soil. Prior to collecting soil samples, Stratus personnel will calculate the approximate volume of soil in the stockpile. The stockpile will then divided into sections, if warranted, containing the predetermined volume sampling interval. Soil samples will be collected at 0.5 to 2 feet below the surface of the stockpile. Four soil samples will be collected from the stockpile and composited into one sample by the laboratory prior to analysis. The soil samples will be collected in cleaned brass, two by six inch tubes using a hand driven sampling device. To reduce the potential for cross-contamination between samples, the sampler will be cleaned between each sampling event. Upon recovery, the sample container will be sealed at each end with Teflon sheeting and plastic caps to minimize the potential of volatilization and cross-contamination prior to chemical analysis. The soil sample will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

Direct Push Technology, Water Sampling

A well known example of direct push technology for water sampling is the Hydropunch®. For the purpose of this field method the term hydropunch will be used instead of direct push technology for water sampling.

The hydropunch is typically used with a drill rig. A boring is drilled with hollow stem-augers to just above the sampling zone. In some soil conditions the drill rig can push directly from the surface to the sampling interval. The hydropunch is conveyed to the bottom of the boring using drill rods. Once on bottom the hydropunch is driven a maximum of five feet. The tool is then opened by lifting up the drill rod no more than four feet. Once the tool is opened, water enters and a sample can be collected with a bailer or tubing utilizing a peristaltic pump. Soil particles larger than silt are prevented from entering the tool by a screen within the tool. The water sample is collected, labeled, and handled according to the Quality Assurance Plan.

Monitoring Well Installation

Monitoring wells will be completed by installing 2 to 6 inch-diameter Schedule 40 polyvinyl chloride (PVC) casing. The borehole diameter for a monitoring well will be a minimum of four inches larger than the outside diameter of the casing. The

2-inch-diameter flush-threaded casing is generally used for wells dedicated for groundwater monitoring purposes.

A monitoring well is typically cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.01 or 0.02 inch-wide by 1.5-inch-long slots, with 42 slots per foot. The screened sections of casing are factory machine slotted and will be installed approximately 5 feet above and 10 feet below first-encountered water level. The screened interval will allow for seasonal fluctuation in water level and for monitoring floating product. A threaded or slip PVC cap is secured to the bottom of the casing. The slip cap can be secured with stainless steel screws or friction; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to completion.

A filter pack of graded sand will be placed in the annular space between the PVC casing and the borehole wall. Sand will be added to the borehole through the hollow stem of the augers to provide a uniform filter pack around the casing and to stabilize the borehole. The sand pack will be placed to a maximum of 2 feet above the screens, followed by a minimum 1-foot seal consisting of bentonite pellets.

Cement grout containing 5 percent bentonite or concrete will be placed above the bentonite seal to the ground surface. A concrete traffic-rated vault box will be installed over the monitoring well(s). A watertight locking cap will be installed over the top of the well casing. Reference elevations for each monitoring well will be surveyed when more than two wells will be located on site. Monitoring well elevations will be surveyed by a California licensed surveyor to the nearest 0.01-foot relative to mean sea level (MSL). Horizontal coordinates of the wells will be measured at the same time.

Exploratory boring logs and well construction details will be prepared for the final written report.