Environmental Management Company
6001 Bollinger Canyon Rd, K2256
P.O. Box 6012
San Ramon, CA 94583-2324
Tel 925-842-1589
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Karen Streich
Project Manager

R0405 ✓

ChevronTexaco

September 16, 2004
(date)

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Chevron Service Station # 9-8341

Address: 3530 MacArthur Boulevard, Oakland, CA

I have reviewed the attached report titled *Investigation Workplan* and dated September 16, 2004.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Cambria Environmental Technology, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Karen Streich
Project Manager

Enclosure: Report

CAMBRIA

September 16, 2004

Mr. Barney Chan
Alameda County Health Care Services Agency (ACHCS)
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Investigation Workplan**
Former Chevron # 9-8341
3530 MacArthur Blvd, Oakland, CA

Dear Mr. Chan:

Cambria Environmental Technology, Inc. (Cambria) has prepared this workplan on behalf of Chevron Environmental Management Company (ChevronTexaco) in response to ACHCS's December 4, 2002 letter requesting full horizontal and vertical definition of the hydrocarbon and MTBE plume at the above referenced site. The site background and Cambria's proposed scope of work are presented below.

SITE DESCRIPTION AND BACKGROUND

The site is an active United Gasoline service station located on the northern corner of the intersection of MacArthur Boulevard and Magee Avenue in Oakland, California. The site is approximately 210 feet above sea level and local topography slopes gently toward the southwest. The site is surrounded by small commercial properties, with residential properties located upslope to the northeast. A USGS topographic map with the site centered on the map is presented in Figure 1. A map illustrating the site is shown in Figure 2.

The site was occupied by a Chevron station, and was debranded in February 2004. ChevronTexaco renovated the site in 1994. As part of renovation activities, a 1,000-gallon single-walled fiberglass used-oil underground storage tank (UST) with associated product lines, was removed and replaced from the site. Currently, facilities consist of a station building with two dispenser islands beneath a common canopy. Three gasoline USTs, in a common pit, are located directly north of dispenser islands (Figure 2).

Site Geology: Sediments beneath the site are characterized as alluvial deposits, consisting primarily of sand, sandy clay, silty clay, silty sand, silt and gravel with silt and sand to the total depth explored of 45 feet below grade (fbg). The nearest surface water to the site is Peralta Creek located approximately 400

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feet north northwest of the site and a small ephemeral creek located approximately 1,200 feet west of the site.

Groundwater Direction, Depth Trends, and Gradient Trend: Historically, depth to groundwater has varied from approximately 2.5 fbg to 10 fbg. Groundwater flow has been predominantly south to southeast at a gradient ranging from 0.02 to 0.08. A rose diagram showing the flow direction and gradient since 1999 is presented in Figure 2.

PROPOSED SCOPE OF WORK

To evaluate the lateral extent of hydrocarbons in soil and groundwater down-gradient of the site, Cambria proposes one monitoring well, MW-4. The groundwater monitoring well is proposed down-gradient from B-7, B-8 and MW-2 (Figure 2). One soil boring, B-10 will be advanced north of the USTs for a grab-groundwater sample and definition in the up-gradient direction. The specific scope of work is discussed below.

Underground Utility Location: Cambria will review the new owner's as-built site plans and piping diagrams to assist in well placement. We will also contact an underground utility locator to clear the well locations prior to drilling. The borings will be cleared to 8 fbg before drilling begins.

Site Health and Safety Plan: Cambria will prepare a site safety plan to inform site workers of known hazards and to provide health and safety guidance. The plan will be kept on site at all times and signed by all site workers.

Permits: Cambria will obtain boring/well installation permits from the ACHCS and an encroachment permit from the City of Oakland prior to beginning field operations. A minimum of 72-hours notice will be given to the ACHCS prior to field work.

Monitoring Well Installation: One groundwater monitoring well (MW-4) will be installed to evaluate groundwater conditions down-gradient of the site. The boring will be advanced to approximately 20 fbg using 8-inch diameter hollow-stem augers and converted to a 2-inch diameter groundwater monitoring well, MW-4. The screened interval of the well casing will be constructed from approximately 5 to 20 fbg, using 0.020-inch slotted screen and number 2/12 filter sand. Actual well construction will be based on boring lithology and groundwater elevations. Cambria's standard field procedures for well installation are presented in Attachment A.

Soil Boring: One soil boring (B-10) will be advanced up-gradient from the location of the USTs to evaluate groundwater conditions. The boring will be advanced to approximately 20 fbg using 8-inch diameter hollow-stem augers. The boring will then be grouted and finished to match existing grade. Cambria's standard field procedures for well installation are presented in Attachment A. Proposed locations are shown on Figure 2.

Soil Sampling: At a minimum, soil samples will be collected at five foot intervals beginning at 5 fbg, at obvious lithologic changes, and immediately above the water table. Samples will be collected using split-barrel samplers lined with clean brass sampling tubes driven into undisturbed sediments ahead of the drill bit. Sediments encountered will be recorded in a boring/well log. A grab-groundwater sample will be collected from soil boring B-10, after total depth is reached, using dedicated disposable polyethylene bailers.

Soil Screening: Soil samples will be screened using a photoionization detector (PID). PID readings, evidence of discoloration, stratigraphic location, the depth to groundwater, and the collection depth of previous samples containing hydrocarbons will be used to select soil samples for laboratory analysis.

Well Development and Groundwater Sampling: MW-4 will be developed using surge block agitation and evacuation. Gettler-Ryan (GR) will include the well in the routine quarterly monitoring and sampling program for this site. Groundwater analytical results will be presented under separate cover in the routine quarterly report.

Chemical Analysis: The grab-groundwater and select soil samples will be analyzed for:

- TPHg by EPA Method 8015M, and
- Benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl ethyl ether (TAME), tertiary-butyl alcohol (TBA), and lead scavangers 1,2-dichloroethane (1,2-DCA), and ethyl dibromide (EDB) by EPA Method 8260B.

Well Elevation Survey: The top of casing elevation will be surveyed to mean sea level datum by a California licensed land surveyor. Horizontal well coordinates will be measured in compliance with AB2886 (GeoTracker), and uploaded into Geotracker. The results of the survey and depth to groundwater measurements will be used to estimate the groundwater gradient and flow direction.

Soil and Water Disposal: Soil cuttings will be temporarily stockpiled and covered with plastic or placed in sealed DOT-approved drums on-site. Rinsate water will be stored in drums pending proper disposal. These wastes will be transported to an appropriate Chevron-approved disposal facility following receipt of sample analytical results.

Reporting: Upon completion, Cambria will document all field activities and analytical results in a report that, at a minimum, will contain:

- A brief summary of the site background and history,
- A description of the drilling technique,
- Sampling methodology and well locations,
- Boring logs,
- Tabulated soil sample analytic results,
- A figure illustrating the location of the boring and well, and former site features,
- Analytic reports and chain-of-custody forms,
- Soil/water disposal methods,
- A discussion of hydrocarbon and MTBE distribution at the site, and
- Conclusions and recommendations.

CLOSING

Cambria will coordinate and perform the above activities after receiving written approval of this work plan from the ACHCS. We will submit our investigation report approximately six to eight weeks after completion of field activities. Please contact Ms. Sara Giorgi, ext. 103, or Mr. Bruce Eppler, ext.102, at (916) 630-1855, if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Sara Giorgi
Senior Staff Geologist

Roger Nommensen, R.G.
Project Geologist

cc: Ms. Karen Streich, Chevron Environmental Management Company, P.O. Box 6012, San Ramon, CA 94583

Figures: Figure 1 – Vicinity Map
Figure 2 – Site Plan

Attachments: A - Standard Field Procedures for Soil Borings and Monitoring Well Installations

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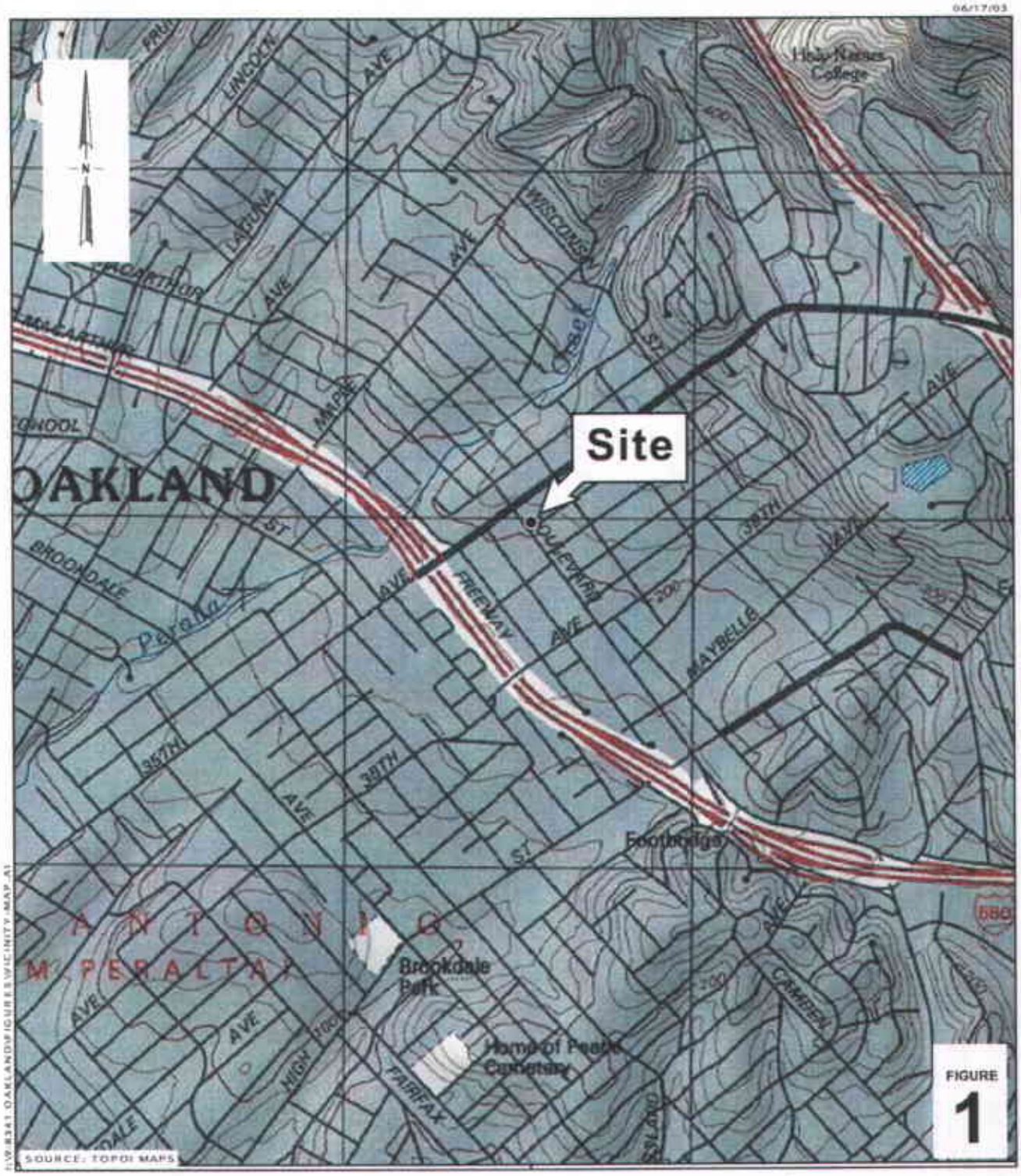


0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

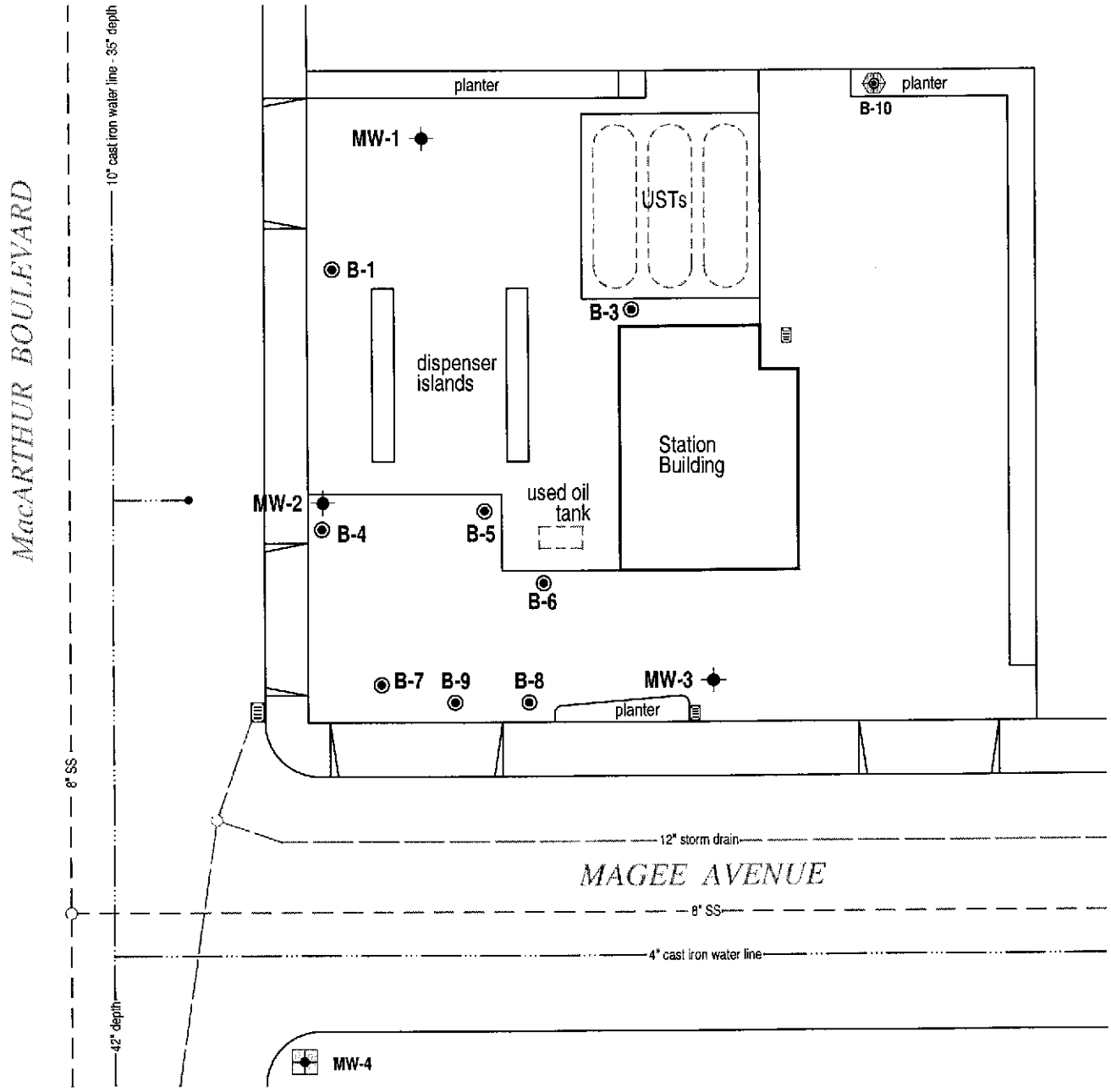
Chevron Service Station 9-8341

3530 Mac Arthur Boulevard

Oakland, California

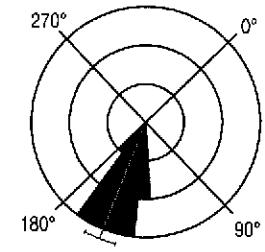
CAMBRIA

Vicinity Map

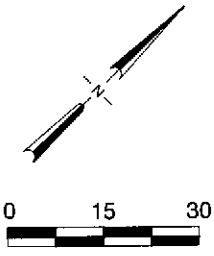


EXPLANATION

- Proposed monitoring well location
- Proposed soil boring location
- MW-1 Monitoring well location
- B-7 Soil boring location
- Storm Drain line
- Sanitary Sewer line
- Water line



Historical Groundwater Flow Direction



Scale (ft)

FIGURE

2

H:\9-8341 OAKLAND\FIGURES\boring.DWG

Former Chevron Service Station 9-8341

Active United Gasoline Service Station

3530 MacArthur Boulevard, Oakland, California

CAMBRIA

Site Plan with Proposed Soil Boring and Well Locations

ATTACHMENT A

Standard Field Procedures for Soil Borings and Monitoring Well Installations

STANDARD FIELD PROCEDURES FOR MONITORING WELL INSTALLATION

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

DRILLING AND SAMPLING

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Prior to drilling, the first 8 ft of the boring are cleared using an air or water knife and vacuum extraction. This minimizes the potential for impacting utilities.

Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

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

Sample Analysis

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

Field Screening

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

Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4oC, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

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

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

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

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

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

Groundwater Sampling

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

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Groundwater removed during development and sampling is typically stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Upon receipt of analytic results, the water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.