CAMBRIA

November 15, 1999

Mr. Scott Seery
Groundwater Protection Program
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Re: **Groundwater Investigation Work Plan**
Shell-branded Service Station
4226 First Street
Pleasanton, California
Incident #98995840
SAP #135782
Cambria Project #241-0523

Dear Mr. Seery:

In response to the Alameda County Health Care Services Agency (ACHCSA) September 14, 1999 correspondence, Cambria Environmental Technology, Inc. (Cambria) is submitting this *Groundwater Investigation Work Plan* on behalf of Equiva Services LLC. The site background, previous investigations and proposed scope of work are presented below.

BACKGROUND

Site Description: This Shell-branded station is located at the intersection of First Street and Vineyard Avenue, in Pleasanton, California. Three 10,000-gallon gasoline underground storage tanks (USTs) and one 550-gallon waste oil UST are located at the site. A site plan is presented in Figure 1.

Subsurface Investigation: In 1985 Emcon Associates of San Jose, California installed five soil borings between 20 and 30 feet below grade (fbg) adjacent to the gasoline USTs and collected soil samples. One soil boring was converted into a monitoring well of 30 ft depth. The maximum concentration of volatile fuel hydrocarbons detected was 1,300 parts per million (ppm) in SB-4 at 15 fbg. No benzene was detected in the soil samples collected during this investigation. No groundwater was ever encountered in the monitoring well.

Underground Storage Tank Removal: In 1986 Blaine Technologies of San Jose, California (Blaine) collected soil samples beneath the four gasoline underground storage tanks when they were removed. Blaine collected soil samples from the excavation at each end of each tank and

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analyzed the samples for total petroleum hydrocarbons as gasoline (TPHg) and for benzene, toluene, ethylbenzene, and xylenes (BTEX). The concentrations of TPHg in the samples ranged from 240 ppm to below detection limits. Three 10,000-gallon double-walled fiberglass tanks were installed at a location closer to the dispenser islands. A soil sample was also collected from the waste oil tank excavation; no oil was detected in this sample.

1990 Subsurface Investigation: In March 1990, Hart Crowser, Inc. of San Francisco, California (Hart) drilled three soil borings between 30 and 50 ft deep in the vicinity of the former gasoline tanks and collected soil samples. They also abandoned monitoring well S-1 by drilling it out, and they continued drilling past the depth of the monitoring well to a total depth of 45 fbg. Soil samples were collected from the well abandonment boring beginning at 30 fbg. The soil samples from all four borings were analyzed for TPHg and BTEX. TPHg was detected in the soil samples at concentrations of 380 ppm and 290 ppm from S-1 at depths of 30 and 35 fbg, respectively. The maximum concentration of TPHg in the other soil samples was 18 ppm. In April 1990, Hart drilled two more soil borings at the site to a total depth of 51.5 fbg and collected soil samples. A maximum concentration of 820 ppm TPHg was detected at a depth of 35 fbg in one boring. No TPHg was detected in the other soil boring. A small amount of groundwater was present at 49.5 fbg in one boring.

1995 Dispenser and Piping Replacement: On September 8 and 11, 1995, Weiss Associates of Emeryville, California collected soil samples from beneath the gasoline product piping and dispensers. Paradiso Mechanical of San Leandro, California removed the product lines and replaced the dispensers and piping. A maximum concentration of 120 ppm TPHg was detected in soil samples collected at the southernmost former dispenser. Approximately 40 cubic yards of soil were overexcavated at the direction of the Pleasanton Fire Department.

1998 Upgrade: In July 1998, Cambria inspected the waste oil tank remote fill piping during its removal by Gettler-Ryan of Dublin, California. No field indications of hydrocarbons were observed during the site visit. Therefore, no further investigation was required. A sample was collected from the pea gravel. A concentration of 27 ppm of total extractable petroleum hydrocarbons as diesel was detected in this sample.

1999 Subsurface Investigation: In April 1999, Cambria advanced two soil borings (SB-6 and SB-7) to depths of 58 and 100 fbg, respectively. Soil and groundwater samples were collected from both borings. TPHg was detected in only one soil sample (SB-7) at 83 ppm at a depth of 45 fbg. Benzene was detected in one soil sample (SB-6) at 0.1 ppm at a depth of 45 fbg. The maximum concentrations of TPHg and benzene in groundwater were detected in boring SB-6 at concentrations of 10,000 and 4,500 ppb, respectively. SB-6 was converted to groundwater

monitoring well MW-1. No MTBE (EPA Method 8020) was detected in any either groundwater or soil samples collected during this investigation.

Groundwater Depth and Flow Direction: Based on quarterly monitoring from the 2nd and 3rd quarters of 1999, depth to groundwater ranges between 33.65 and 37.81 fbg. Based on a conversation with Scott Seery of ACHCSA on November 3, 1999, groundwater flow direction is to the north toward Arroyo Valle.

PROPOSED SCOPE OF WORK

To determine groundwater flow and contamination distribution at the site, Cambria proposes advancing two soil borings and converting them to groundwater monitoring wells. Proposed locations are presented in Figure 1. Cambria has prepared a geologic cross-section showing soil types based on estimated permeability using the boring logs from this investigation and previous investigations (Figure 2).

X-section is of limited use

Cambria believes that much of the difference in soil types seen in the soil boring logs stems from two causes. First, different people logged the borings and none of the samples were sent for sieve analysis to determine the exact soil type. Second, since soil samples are collected at five-foot intervals, lenses and dipping beds can be missed or present at different depths. Slight differences may arise depending on the angle of the beds and the depth of the samples. Each of the relative permeable units probably acts as a homogeneous unit for groundwater and contaminant transport.

yes!

Since MTBE ~~is~~ appears not present at the site and the spill probably predates the new tanks, Cambria proposes performing a well survey to determine if there are nearby potential receptors.

Upon ACHCSA approval of this work plan, Cambria will complete the following tasks:

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will have the utilities in the vicinity identified.

Site Health and Safety Plan: We will prepare a comprehensive site safety plan to protect site workers. The plan will be kept onsite during field activities and signed by each site worker.

Permits: We will obtain necessary permits for installation of soil borings and monitoring wells.

Well Installation and Sampling Activities: Using a hollow-stem auger rig, Cambria will advance two soil borings and complete them as 4-inch diameter groundwater monitoring wells. Our standard field procedures for monitoring well installation are presented as Attachment A. During

field activities, we will collect soil samples at five-foot intervals for lithologic description. We will select soil samples for chemical analysis from the unsaturated zone based on observations of staining and odor or on the results of field screening with a volatile vapor analyzer.

Well Development and Top of Casing Survey: Blaine Tech Services, Inc. of San Jose, California will develop and sample the monitoring wells. Virgil Chavez Land Surveying of Vallejo, California will survey the top of casing elevations to mean sea level.

1/2 Mile-Radius Well Survey: Cambria will conduct a ½ mile-radius well survey at the site to identify any potential receptors. These data will be presented in a separate potential receptor survey report.

Laboratory Analyses: Selected soil samples and groundwater samples will be analyzed for:

- TPHg by EPA Method 8015,
- BTEX and MTBE by EPA Method 8020, and
- The highest MTBE detection in soil and groundwater will be confirmed using EPA Method 8260.

Subsurface Investigation Report: After the analytical results are received, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history,
- Descriptions of drilling and sampling activities,
- Soil boring and monitoring well logs,
- Tabulated analytical results,
- Analytical reports and chain-of-custody forms, and
- A discussion of the hydrocarbon distribution.

CLOSING

Please call Barbara Jakub at (510) 420-3309 if you have any questions or comments. Thank you for your assistance.

Sincerely,
Cambria Environmental Technology, Inc.

Barbara J. Jakub
Project Geologist

REGISTERED GEOLOGIST
AILSA S. LE MAY
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expires?

Ailsa Le May, R.G.
Senior Geologist

Attachment: A - Standard Field Procedures for Monitoring Wells

cc: Karen Petryna, Equiva Services LLC, P.O. Box 6249, Carson, CA 90749-6249

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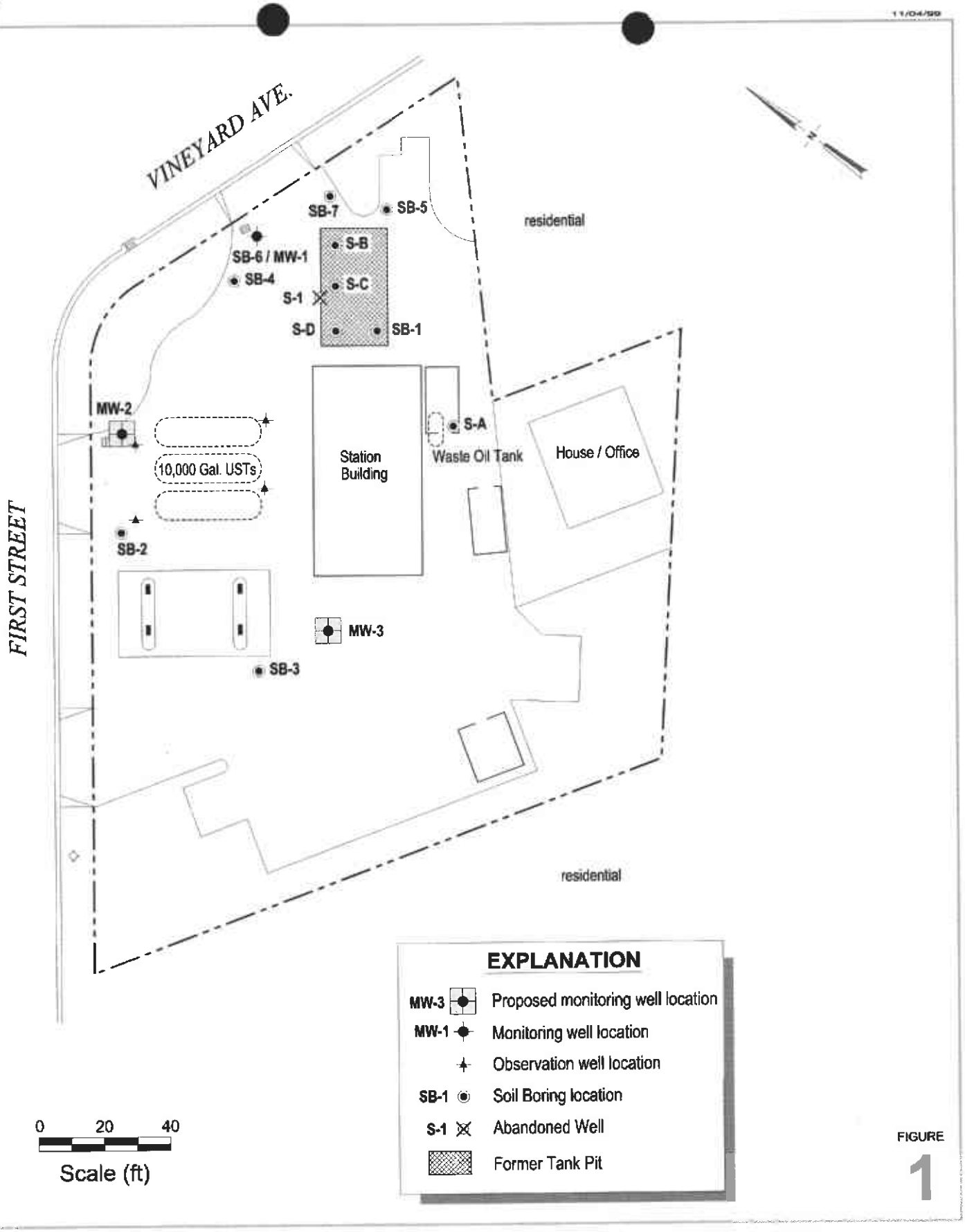

FIGURE 1

Shell-branded Service Station
4226 First Street
Pleasanton, California
Incident #98995840

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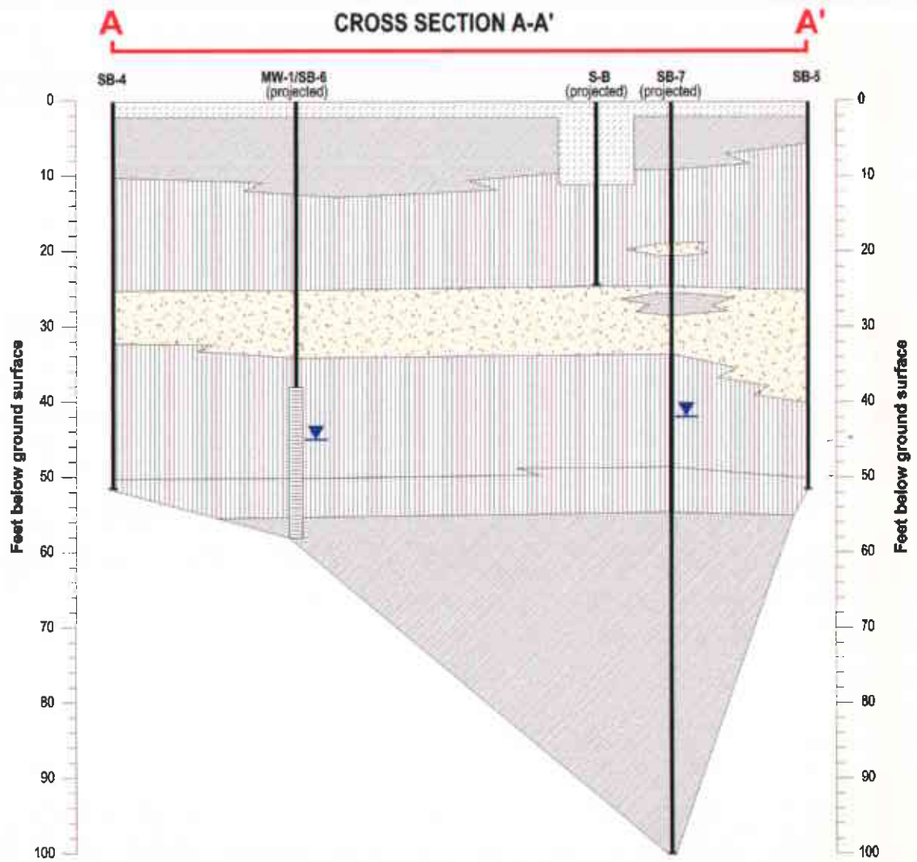
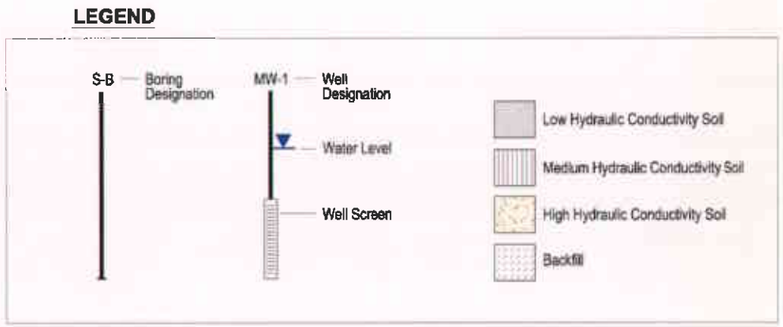
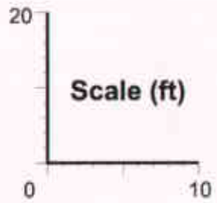
Proposed Monitoring Well Locations







11/04/99

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Shell-branded Service Station

4226 First Street

Pleasanton, California

Designed By:	Drawn By:	Approved By:
B. Jakub	G. Glasser	B. Jakub
Revisions By:		Date:
Description:		

Geologic Cross Section

Incident #98995840

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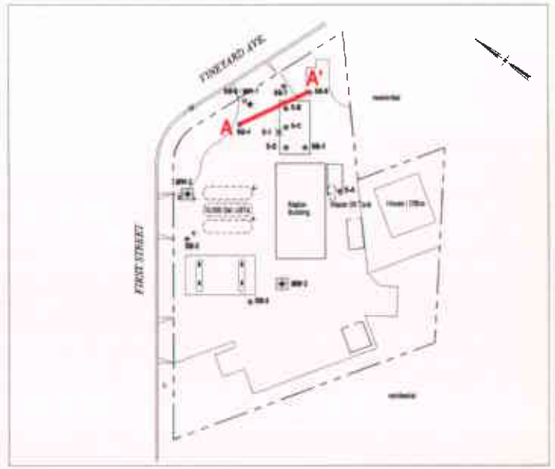

FIGURE 2

ATTACHMENT A

Standard Field Procedures for Monitoring Wells

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STANDARD FIELD PROCEDURES FOR MONITORING WELLS

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

SOIL BORINGS

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®. 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 4° 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 ground water 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 ground water 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 4°C, 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.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Ground water monitoring wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft 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 ft 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 ft above the well screen. A two ft 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 ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water 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 ground water are extracted and the sediment volume in the ground water 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.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water 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 4°C, 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.

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