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Alameda County
Environmental Health

Fiesta Beverages
7150 Island Queen Dr.
Sparks, NV 89436

12/17, 2008

Ms. Barbara Jakub
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Perjury Statement
Former Fiesta Beverages Facility
966 89th Avenue
Oakland, California
ACDEH Fuel Leak Site # RO0000314

Dear Ms. Jakub,

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

Ted Walbey

Ted Walbey, Owner

Fourth Quarter 2008 Groundwater Monitoring Event

Former Fiesta Beverages Facility
966 89th Avenue
Oakland, California 94621
ACHCSA Fuel Leak Site # RO0000314

December 15, 2008
BEI Job No. 203004

Prepared for:

Mr. Ted Walbey
Fiesta Beverages
7150 Island Queen Dr.
Sparks, NV 89436

Prepared by:

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Limitations

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Blymyer Engineers, Inc.

By:
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Table of Contents

Tables

Figures

Appendix

1.0 Introduction and Background

In August 1990, one 500-gallon and one 1,000-gallon gasoline underground storage tanks (USTs) were removed from the subject site (Figures 1 and 2). Soil and groundwater were reported to be impacted from releases from one or both USTs. Overexcavation of the former UST basins occurred in January 1991. The excavations were reported to have reached approximately 15 feet by 8 feet by 14 feet deep and 12 feet by 7 feet by 14 feet deep, respectively, on January 14, 1991. Beginning in April 1991, aeration of the soil occurred onsite. In April 1993, 74.28 tons of soil were transported to the Remco recycling facility.

In June 1993, groundwater monitoring wells MW-1, MW-2, and MW-3 were installed. In general, the wells encountered black to grey to light brown clay to a depth of approximately 15 below grade surface (bgs). At 15 feet bgs, the three bores encountered a 0.5- to 2.0-foot-thick clayey sand. Below this unit a light brown to grey clay was present to a depth of 18 to 21 feet bgs. Underneath this unit, a 1- to 3-foot-thick sand was encountered in bores MW-1 and MW-2, while a clayey silt was encountered in bore MW-3. Below approximately 21 feet bgs, a green-grey or black clay was encountered to the full explored depth of 26.5 feet bgs in bore MW-1 and to 25 feet bgs in bores MW-2 and MW-3. Saturated soil was encountered below a depth of approximately 13 feet bgs (in clay overlaying the uppermost sand unit). The wells were installed with a screened interval between 10 and 25 feet bgs. Groundwater from the three wells was sampled six times between August 1993 and December 1998.

In November 1999, after obtaining appropriate permits, AllCal Property Services, Inc. (AllCal) installed four Geoprobe[7] soil bores downgradient from the former location of the two USTs. The bores were installed in the public right-of-way across 89th Avenue from the subject site, in an unpaved portion of the roadway. Soil bores SB-1 and SB-2 were logged to a depth of 16 feet bgs. Silty clay was encountered to a depth of approximately 13 to 14 feet bgs. Below that depth, soil consisted of clayey silt that alternated between moist and saturated for several vertical feet. Bore SB-1 also encountered a poorly graded sand at 16 feet bgs. Hydrocarbon odors were present in both bores at a depth of approximately 6 feet bgs and green discolored soil was present at 10 feet bgs in bore SB-1. Discolored soil and gasoline odors were noted in both bores throughout the clayey silt, while brownish colored clay was present in both bores just above the silt. The groundwater interface appears to have been encountered at an approximate depth of 16 feet bgs in the sand. A sheen was noted at that depth in SB-1. Groundwater samples were obtained from bores SB-1 and SB-2 after pushing the Geoprobe^7 system to a total depth of 18 feet bgs. Soil bores SB-3 and SB-4 were directly pushed to a total depth of 18 feet bgs in order to obtain grab groundwater samples. Groundwater samples from bores SB-1 and SB-2 contained elevated concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline, and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Significantly lower concentrations of TPH as gasoline and total xylenes were encountered in the groundwater sample from soil bore SB-3, while all analytes were nondetectable in groundwater collected from soil bore SB-4. No soil samples were submitted for laboratory analysis from the four Geoprobe^7 bores.

After the review of the January 2001 groundwater monitoring report, the Alameda County Health Care Services Agency (ACHCSA) approved the application of a 7% solution of hydrogen peroxide to the wells in an attempt to remediate dissolved constituents. On March 7, 2001, the solution was applied by AllCal and on April 25, 2001, a groundwater monitoring event was conducted to determine if a reduction in dissolved constituents had occurred. Based on the analytical data, a reduction was seen in wells MW-1 and MW-2, with some reductions also seen in well MW-3. This sampling event and subsequent interpretation was complicated by the presumed mis-marking of samples from wells MW-1 and MW-3. No further work at the site is known to have occurred between April 2001 and the March 2003 groundwater monitoring event.

On January 16, 2003, a new case manager, Mr. Amir Gholami, was appointed by the ACHCSA. On September 17, 2003, a workplan for a Geoprobe^7 investigation of the site was submitted to the ACHCSA. The intent was to attempt to determine the lateral and vertical extent of impacted soil and groundwater in order to better target the residual contamination in future remedial actions to be determined. Due to the lack of a response from the ACHCSA, on February 17, 2004, Blymyer Engineers issued a *Letter of Intent to Proceed: Geoprobe^7 Investigation*.

The *Fourth Quarter 2003 Groundwater Monitoring Event* report, dated January 6, 2004, recommended that analysis for fuel oxygenates by EPA Method 8260B be eliminated from the analytical program. It was reasoned that the data generated to date had been very consistent, and further quantification would not significantly add to the level of understanding at the site.

Additionally, the concentration of methyl *tert*-butyl ether (MTBE) can be monitored using EPA Method 8021B for no additional cost, and the resultant concentration of MTBE can be used as a proxy for the approximate concentration of the remaining fuel oxygenates. Based on the lack of response from the ACHCSA, it has been presumed that this was found reasonable and acceptable.

On March 15, 2004, Blymyer Engineers issued a letter entitled *Recommendation for Reduction of Groundwater Monitoring* that provided additional rationale for decreasing the groundwater sampling interval from quarterly to semi-annually. It argued that generation of quarterly analytical data would not significantly improve the level of understanding of impacts to the subsurface at the site, and recommended a reduction of the sampling interval to semi-annual. Based on the lack of response from the ACHCSA, it has been presumed that this was found reasonable and acceptable.

On December 14, 2004, Blymyer Engineers issued to the ACHCSA the *Report on a Geoprobe® Subsurface Investigation* which documented the installation of nine Geoprobe® soil bores at the site. The work further refined the known lateral and vertical extent of soil impacted by the petroleum release at the site. Grab groundwater samples in the upgradient and the eastern cross-gradient directions defined all petroleum compounds in groundwater to concentrations below the San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs). Grab groundwater samples in the downgradient and western cross-gradient directions were unable to define most petroleum compounds to concentrations below the RWQCB ESLs. The installation of additional permanent groundwater monitoring wells was recommended as appropriate at the site in order to allow for groundwater sampling from a "repeatedly accessed location". It was reasoned that data generated from these locations will assist in determining appropriate remedial actions, and in monitoring remedial progress.

On July 6, 2005, the new case manager for the ACHCSA, Mr. Barney Chan, issued the letter *Fuel Leak Case RO0000314* commenting on the December 14, 2004 report. The ACHCSA determined that the collection of additional data is needed to progress the site towards closure. The letter requested a workplan to clear well MW-1 of several feet of sediment due to the potential for groundwater gradient biasing, requested further definition of the groundwater and soil plumes through the installation of additional wells and soil bores, requested a conduit study, and requested a Feasibility Study and Remedial Action Plan.

Blymyer Engineers submitted the *Workplan for Remedial Investigation / Feasibility Study*, on October 10, 2005. The Workplan detailed the procedures for the collection of Remediation by Natural Attenuation (RNA) analytical parameters from existing wells as an initial phase of a Remedial Investigation / Feasibility Study (RI/FS), as well as the installation of four additional groundwater monitoring wells, and the destruction and reinstallation of groundwater monitoring well MW-1. On November 18, 2005, the ACHCSA issued the letter *Fuel Leak Case RO0000314* commenting on the Workplan. The ACHCSA requested the following:

- The addition of two wells at specified locations for further plume characterization,
- Use of a maximum of 10 feet of screen in the wells,
- Confirmation of the presence of MTBE by EPA Method 8260 if MTBE concentrations rose significantly, and
- Collection of the RNA parameters.

The ACHCSA requested confirmation that the additional wells would be added by December 19, 2005, and that a RI/FS report would be submitted by February 19, 2006. Confirmation that the additional wells would be included was provided by telephone in December 2005; however, permitting issues delayed installation of the wells. The *Remedial Investigation / Feasibility Study Report* (RI/FS Report), dated September 8, 2006, was submitted to ACHCSA on October 6, 2006.

The RI/FS Report documented the destruction of well MW-1, the installation of replacement well MW-1R, and the installation of wells MW-4 through MW-9. The soil and groundwater data collected in the effort achieved vertical delineation, as well as upgradient, lateral, and downgradient delineation of all hydrocarbon compounds in soil and groundwater, with the exception of MTBE in groundwater. MTBE was delineated to below the Maximum Contaminant Level (MCL) and the *non-drinking water* ESL goal for the compound, but was slightly above the *drinking water* goal. Because the site is in an area that is not known to extensively use groundwater as a drinking water source, the numeric remedial goals were predominantly compared to the *non-drinking water* ESL goals; however, the ACHCSA may ultimately apply *drinking water* ESL goals to remedial efforts at the site.

Higher concentrations of TPH as gasoline appear to be relatively isolated near the former source (MW-1, MW-1R, GP-5, and GP-2; the latter based on PID results only). The presence of slightly higher concentrations at GP-6 or GP-8 likely indicates lateral migration through the clay units in the vadose zone in very thin, interbedded coarser grained deposits with more permeability and porosity. A conduit survey indicated that, due to depth of burial, the utility corridors do not appear to be acting as significant conduits in the site vicinity for groundwater movement and therefore contaminant migration. A notable decrease in analyte concentrations in soil is apparent with increasing depth. Generic *non-drinking water* ESL goals for soil were not exceeded for any compound beneath approximately 12 feet bgs.

The distribution of nitrate, methane and dissolved oxygen indicate that the TPH as gasoline groundwater plume is undergoing anaerobic degradation. Specifically, the elevated concentrations of nitrate observed in perimeter wells MW-4 through MW-9, in comparison to the concentration of nitrate in plume core wells MW-1/1R, MW-2 and MW-3, where the concentration is reduced to essentially one-half of its perimeter levels, and the correspondingly high methane concentrations in the plume core area suggest that active anaerobic degradation is occurring. The source of nitrate is likely leaking sewer lines located along 89th Avenue.

For the site as a whole, the limited area of hydrocarbon degradation suggested by the RNA data, collectively with the laboratory notes indicating relatively unmodified gasoline range hydrocarbons are present in soil and groundwater samples, and the continued recontamination of groundwater documented by graphs depicted on Figures 10 through 13 of the RI/FS Report, appear to document a release that is undergoing anaerobic microbial degradation, that RNA is oxygen limited, has reached stability with the surrounding area, and will not progress significantly further without remedial efforts.

Six potential remedial options were evaluated for appropriateness at the site; monitored natural attenuation (MNA), groundwater pump and treat, enhanced insitu bioremediation (EIB), air sparging-vapor recovery (ASVR), dual phase extraction, and insitu chemical oxidation (ISCO). A combination of EIB and ISCO was selected as the most appropriate remedial technology for the site due to multiple factors. ISCO was selected for the vicinity of the former tank excavation and would consist of the injection of the commercial oxidation product RegenOx. Chemical oxidation of residual source soil and groundwater containing higher hydrocarbon concentrations is anticipated to eliminate potential residual free-phase hydrocarbons in the tank vicinity. EIB using Oxygen Releasing Compound Advanced (ORC Advanced) was selected for the larger area around and downgradient of the former tank location. Petroleum hydrocarbon compounds are recognized to degrade favorably and rapidly under aerobic (oxygen rich) conditions. To stimulate aerobic bacterial activity and increase the rate of biodegradation within the hydrocarbon plume, non-toxic inorganic chemicals (bionutrients) can be added to the groundwater that release oxygen, nitrogen and phosphate, such as ORC Advanced and bionutrient compounds (typically, nitrogen/phosphorus/potassium (NPK) fertilizer). At sites where stagnant hydrocarbon plumes are present, one or more of the essential bio-nutrient elements is commonly depleted, and natural attenuation of the hydrocarbon plume due to microbial activity ceases. By determining a site's "bio-needs," the missing elements can be injected into the hydrocarbon plume to boost bioactivity.

At the site, dissolved oxygen in groundwater is depleted to less than 1 mg/L, and based on available information the lack of dissolved oxygen is the limiting factor retarding current biological activity. For EIB, the supply of bio-nutrients is assessed prior to and during remediation. During the course of remediation, if nutrient concentrations are found to be inadequate, then further nutrient addition is performed.

On December 18, 2006, the ACHCSA issued a letter indicating that it was in agreement with the proposed plan of action, namely EIB with localized ISCO, using a combination of ORC Advanced and RegenOx, respectively. The December 18, 2006 letter requested an interim corrective action plan (ICAP) by January 19, 2007, and quarterly monitoring reports by January 30, and April 30, 2007. A request for deadline extension was later submitted to, and approved by, the ACHCSA. The *Interim Corrective Action Plan* was submitted on February 7, 2007, and was approved by the ACHCSA on May 4, 2007. A pre-remedial groundwater sampling event to determine pre-remedial bacterial populations in groundwater, in the event of a bacterial die-off related to remedial injections, occurred on April 27, 2007. Remedial activities began on May 22, 2007 with a volume test injection. The first injection of RegenOx occurred between June 4 and June 7, 2007, and the second event occurred on June 26 and 27, 2007. It was not possible to inject the entire volume of RegenOx specified by Regenesis due to resurfacing of the injected material. On August 9, 2007, an abbreviated interim round of sampling occurred on selected wells (MW-1R, MW-2, MW-3, and MW-5) to help determine the progress of the remedial actions at the site. Elevated concentrations of hydrocarbons were detected in plume core wells MW-1R and MW-3. As a consequence, an additional round of RegenOx injection occurred on September 12 and 13, 2007. These events were reported under separate cover.

On August 28, 2007, twenty-three 55-gallon drums of soil and fifteen 55-gallon drums of purge water, development water, and groundwater were removed from the subject site. The drums were transported by NRC Environmental to Crosby and Overton in Long Beach, California. The drums of soil represented soil cuttings from the installation of all soil bores and wells since 1993. The drums of water had accumulated since the installation of wells MW-1R, and MW-4 through MW-9, and as a result of fluid return flow to the surface during remedial injection activities.

On March 28, 2008, Blymyer Engineers was notified that a new case worker, Ms. Barbara Jakub, had been assigned to the project by the ACHCSA. On March 11, June 10, and September 18, 2008, quarterly groundwater monitoring reports for the first, second, and third quarters of 2008 were finalized and subsequently released. Case closure was recommended in the report for the previous quarterly event if groundwater concentrations continued to decrease.

2.0 Groundwater Sample Collection and Analytical Methods

This report documents the interim sampling of groundwater conducted for the Fourth Quarter 2008 groundwater monitoring event at the site. Quarterly groundwater samples were collected from monitoring wells MW-1R and MW-2 through MW-9 on November 25, 2008. The groundwater samples were collected by Blaine Tech Services, Inc. (Blaine) in accordance with Blaine *Standard Operating Procedures* for groundwater gauging, purging, and sampling. A copy is included as Appendix A. Depth to groundwater was measured in all wells during the sampling event. Temperature, pH, conductivity, and turbidity were measured initially, and then after removal of each of three well casing volumes for each well. Dissolved Oxygen (DO), Oxygen-Reduction Potential (ORP), and Ferrous Iron were measured post-purge and were collected near the total depth of each well, within the screened portion of the well, in order to minimize the effects of standard purging and sampling near the surface of the water column. These measurements are generally useful in determining if an adequate supply of oxygen is present in groundwater to allow microbial growth. The groundwater depth measurements and details of the monitoring well purging and sampling for each event are presented on the *Well Monitoring Data Sheets* and *Well Gauging Data Sheets* generated by Blaine and included as Appendix B. Depth-to-groundwater measurements are presented in Table I. All purge and decontamination water was temporarily stored in a Department of Transportation-approved 55-gallon drum for future disposal by the owner.

The groundwater samples were analyzed by McCampbell Analytical, Inc., a California-certified laboratory, on a 5-day turnaround time. Groundwater samples from all wells were analyzed for TPH as gasoline by Modified EPA Method 8015; and BTEX and MTBE by EPA Method 8021B. Tables II to V summarize current and previous analytical results for groundwater samples. The laboratory analytical report is included as Appendix C.

3.0 Groundwater Flow Data and Groundwater Sample Analytical Results

Previously surveyed top-of-casing (TOC) elevations were used to construct a groundwater gradient map (Figure 2). Groundwater depths during this monitoring event ranged between 8.54 to 9.03 feet below the top of the casings. Depth to groundwater in general has decreased an average of 0.29 feet since the August 2008 sampling event; however, there were divergences from the norm. Groundwater in well MW-6 rose 0.72 feet, while in well MW-7 it rose only 0.02 feet. In the First Quarter 2008 groundwater event, mounding in the vicinity of wells MW-2 and MW-3 suggested the infiltration of rainwater in the vicinity well MW-2. The integrity of the pavement in the area of the well appears to have been compromised by the vigorous remedial chemical oxidation reactions. During the May 2008 quarterly event, the dry spring appears to have returned the groundwater flow direction towards the west, generally the typical flow direction for the site. During the previous event in August 2008, groundwater flow remained towards the west; however, a slight mound was present around wells MW-1R and MW-2. Surface water infiltration may have been responsible for the slight mound as ponded surface water can be present near these two wells during the dry season. For the current event, and the majority of historic measurements, groundwater flow is towards the west. The average gradient across the full site area was calculated at approximately 0.001 feet/foot.

Between the August and November quarterly sampling events, the concentration of TPH as gasoline in well MW-1R decreased while the concentration of BTEX remained very similar (slight increases, slight decreases, or no change). In well MW-2, only benzene was encountered, essentially at the same concentration as the previous event. In well MW-3, all concentrations rose very slightly, and except for benzene, most rising to just over the limits of detection.

All other wells (upgradient, downgradient, and lateral) were non-detectable for TPH as gasoline, BTEX, and MTBE. Except for erratic detections of MTBE in several of these wells at trace concentrations, all of these wells have been nondetectable for all compounds since first sampled in June 2006 (eight consecutive sampling events over 2.5 years). All utility lines in the vicinity have previously been reviewed and are not considered to be conduits or preferential pathways for groundwater flow (*Remedial Investigation / Feasibility Study Report*; Blymyer Engineers; September 8, 2006).

Because vicinity groundwater is not generally considered to be of drinking water quality, but remains of potential beneficial use, groundwater concentrations have generally been compared to non-drinking water ESL standards at the site. In well MW-1R, concentrations of TPH as gasoline and benzene remained below the generic non-drinking water ESLs, but are over generic drinking water ESLs. All other compounds in well MW-1R were below generic drinking water ESL values as well as their respective MCLs. In wells MW-2 and MW-3, only benzene was over the drinking water ESL and the MCL for drinking water; all compounds were below their respective non-drinking water ESLs.

During 2008, only the concentration of TPH as gasoline in well MW-1R in one quarter (May 2008) was over the generic non-drinking water ESL at the site. All other compounds in all other wells were below their respective non-drinking water ESLs in 2008. Higher concentrations seen in 2007 in the wells immediately adjacent to the former tank basin are generally presumed to have been the result of the mobilization of hydrocarbons from soil to groundwater as a result of the injection of RegenOx between June and September 2007.

Concentrations of MTBE were not detected any of the wells sampled during the current sampling event. MTBE has not been detected in all wells for five consecutive quarters. When last detected (June 2007), it was only slightly above the limit of detection of 5.0 µg/L (a maximum of 5.6 µg/L; in upgradient well MW-5 and downgradient well MW-9).

Groundwater samples were analyzed for four consecutive quarters for fuel oxygenates di-isopropyl ether (DIPE), ethyl *tert*-butyl ether (ETBE), MTBE, *tert*-amyl methyl ether (TAME), and *tert*-butyl alcohol (TBA) by EPA Method 8260B. Only MTBE and TAME have been detected in groundwater (June 2003; Table III). Only MTBE has a listed MCL of 13 Fg/L. Ethanol and methanol have also been analyzed and were nondetectable. Due to the consistency of the data, fuel oxygenate analysis was eliminated.

A graphical analysis of groundwater elevations and concentrations through time indicate that at well MW-3 prior to remedial injections, a rise in the groundwater elevation generally resulted in an increase in groundwater concentrations; likely indicating that rising groundwater was encountering impacted soil at a higher level (Figures 3 and 4). The analysis is less straight forward in well MW-1

/ MW-1R, but the graphs tend to suggest that as groundwater drops in elevation groundwater concentrations rise; possibly indicating drainage from soil to groundwater after a drop (Figures 5 and 6). For consistency all groundwater elevations in Figures 3 to 6 utilized the GeoTracker wellhead survey elevations to determine the groundwater elevation.

Data from well MW-3 for the current quarter are consistent with the historical trend, and with the exception of benzene, at concentrations below all regulatory goals. An analysis of Figures 3 and 4 indicates that generally TPH as gasoline and benzene concentrations in well MW-3 can be divided into three broad time periods; higher concentrations prior to the introduction of hydrogen peroxide in March 2001 (with likely mobilization of contamination from soil to groundwater documented in the April 2001 sampling event), followed by generally lower concentrations from April 2001 to roughly February 2007, a rapid rise in groundwater concentrations during the period of RegenOx injection (through August 2007), and a subsequent and substantial decline of concentrations to levels below, or marginally over, the limits of detection for three quarters (since the May 2008 sampling event).

This quarter data from well MW-1 / MW-1R is also consistent with historical trends; a rise in groundwater elevation is accompanied by a decrease in groundwater concentrations. As with well MW-3, a similar time division of contaminant concentrations in well MW-1 / MW-1R can also be observed; however, with a complication, which results in a less clear picture. Higher concentrations are present prior to the introduction of hydrogen peroxide in March 2001 (without the clear mobilization of contamination from soil to groundwater in the April 2001 sampling event), followed by generally lower concentrations from April 2001 to roughly June 2005. Since May 2006, due to a break in the well casing, well MW-1 was destroyed and was replaced with well MW-1R (the placement of well MW-1R was severely limited). Concentrations in well MW-1R decreased relative to well MW-1 (first sampled June 2006), and have remained lower, except for a sharp spike between August and November 2007, perhaps associated with the injection of RegenOx. Concentrations of TPH as gasoline and benzene have decreased substantially since the injections. A sharp decline in groundwater levels last quarter is notable as it was accompanied with lower contaminant concentrations and suggests decreasing residual soil concentrations.

Recent data from MW-1R suggest that granular backfill and soil predominately in the vadose zone and in proximity to the 6-inch-diameter gas main located approximately 5 feet to the north of well MW-1R and former MW-1 may be creating a reservoir for hydrocarbons not easily reached.

4.0 Intrinsic Bioremediation Groundwater Sample Analytical Results

Intrinsic bioremediation laboratory analytical parameters were not collected during the current sampling event; however, post-purge field parameters were collected. RNA parameters were collected near the bottom of the well, within the screened interval, to collect representative values of vicinity groundwater and to minimize the effect of standard purging on the parameters. Tables IV and V present the analytical results of current and previous RNA indicator parameters. Microbial use of petroleum hydrocarbons as a food source is affected by the concentration of a number of chemical compounds dissolved in groundwater at a site. RNA monitoring parameters were established by research conducted by the Air Force Center for Environmental Excellence. The research results were used to develop a technical protocol for documenting RNA in groundwater at petroleum hydrocarbon release sites (Wiedemeier, Wilson, Kampbell, Miller and Hansen, 1995, *Technical Protocol for Implementing the Intrinsic Remediation with Long Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater, Volumes I and II,* U.S. Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas). The protocol focuses on documenting both aerobic and anaerobic degradation processes whereby indigenous subsurface bacteria use various dissolved electron acceptors to degrade dissolved petroleum hydrocarbons.

In the order of preference, the following electron acceptors and metabolic by-products are used and generated, respectively, by the subsurface microbes (aerobes, Mn – Fe reducers, and methanogens) to degrade petroleum hydrocarbons: oxygen to carbon dioxide, nitrate to nitrogen, insoluble manganese (Mn^{4+}) to soluble manganese (Mn^{2+}), insoluble ferric iron (Fe^{3+}) to soluble ferrous iron (Fe^{2+}), sulfate to hydrogen sulfide, and carbon dioxide to methane. With the exception of oxygen, the use of all other electron acceptor pathways by microbes indicates increasingly anaerobic degradation. Aerobic degradation takes place first, and oxygen inhibits anaerobic degradation. As oxygen is consumed and an anoxic zone develops, the Mn – Fe reducers and methanogens begin to grow and release dissolved Mn, dissolved Fe, and methane (Commission on Geosciences, Environment and Resources, *Natural Attenuation for Groundwater Remediation*, 2000). Investigation of each of these electron acceptor pathways was conducted in selected wells at the site as part of the evaluation of RNA chemical parameters. Previous analytical results appear to have documented oxygen and nutrient (nitrate) limited natural biodegradation at the site.

Microbial use of petroleum hydrocarbons as a food source is principally affected by the concentration of dissolved oxygen (DO) in the groundwater present at a site. As with the previous quarter, DO was present in a very tight range of concentrations in post-purge groundwater, ranging from 0.07 milligrams per liter (mg/L) to 0.24 mg/L. Except for well MW-6, current concentrations have decreased further from concentrations that have previously been characterized as markedly lower than recent data. The data trend continues to indicate that recent higher concentrations of DO were related to RegenOx injection or infiltration of rainwater into the subsurface as opposed to overly vigorous purging. As seen previously at the site, the lower concentrations of DO have been identified as a limiting factor retarding biological activity.

ORP is another measure of the supply and use of oxygen at a site. The higher the reading in millivolts (mV), the more oxygenated the subsurface environment is, and the lower the readings, the more anaerobic or reducing the subsurface environment is. As in the previous quarter, and in general, plume core wells MW-1R, MW-2, and MW-3 contained lower ORP concentrations than the remaining wells. Except wells MW-7 and MW-8, with marginally higher ORP values, all wells yielded lower ORP values that range between -40 to 212 mV. In general, recent previous observations suggest that oxygenation from the RegenOx product or from rainwater were migrating across the area of study. Current observations indicate a decrease in the oxidation potential across the site and that the higher apparent demand for oxygen in the plume core remains. Higher ORP values have generally been located outside the plume core, suggesting that the strongest demand for oxygen is located in the plume core, and that any residual benefit from the injection of the RegenOx remedial product has dissipated.

Ferrous iron was also investigated during the current sampling event and was present in wells MW-1R, MW-4, MW-6, and MW-9. During the May 2008 monitoring event detectable ferrous iron returned to wells MW-1R and MW-3 for the first time since the remedial injections. The presence of ferrous iron in lateral wells MW-4 and MW-6, and downgradient well MW-9 (in addition to well MW-1R) again suggests that the supply of DO from the injection of the RegenOx or rainwater has ceased. In general, the presence of ferrous iron in wells indicates that Mn – Fe degrading microbial colonies near the wells have resumed microbial degradation of the contaminants (at a significantly slower rate) due to the relative lack of DO in the vicinity of the well.

5.0 Conclusions and Recommendations

The following summary and conclusions were generated from the available data discussed above:

- Depth to groundwater in general has decreased an average of 0.29 feet since the August 2008 sampling event. During recent quarterly events, surface water infiltration may have produced groundwater mounding in the vicinity of the former tank basins (MW-2); however, evidence of mounding was not present during the current event. Groundwater was found to flow across the entire site towards the west at an average gradient of approximately 0.001 feet/foot.

- Between the August and November quarterly sampling events the concentration of TPH as gasoline in well MW-1R decreased while the concentration of BTEX remained very similar. The concentrations of TPH as gasoline and benzene in well MW-1R remain below the generic non-drinking water ESLs, but over generic drinking water ESLs. All other concentrations in well MW-1R were below generic drinking water ESL values and their respective MCLs.

- Only benzene was encountered in well MW-2, at essentially the same concentration as the last quarterly event, while all concentrations in well MW-3 rose very slightly, generally returning to slightly over the limits of detection. In wells MW-2 and MW-3, only benzene was over the drinking water ESL and the MCL for drinking water and all compounds were below the non-drinking water ESLs.

- All other wells (upgradient, downgradient, and lateral) were non-detectable for TPH as gasoline and BTEX. Except for erratic detections of MTBE in several of these wells at trace concentrations, all of these wells have been nondetectable for all compounds since first sampled in June 2006 (eight consecutive sampling events over 2.5 years).

- MTBE was not detected in any of the wells during the current sampling event. MTBE has not been detected in all wells for five consecutive quarters. When present previously it was present marginally above the limit of detection of 5.0 µg/L.

- Except for well MW-6, the current concentration of DO in wells has decreased further from concentrations previously characterized as markedly lower than recent data. The data trend continues to indicate that recent higher concentrations of DO related to RegenOx injection or infiltration of rainwater into the subsurface has dissipated. Lower concentrations of DO have typically been identified as a limiting factor at the site.

- Current observations indicate a decrease in the oxidation potential across the site. Higher ORP values have generally been located outside the plume core, suggesting that the strongest demand for oxygen is located in the plume core, and that any residual benefit from the injection of the RegenOx remedial product has dissipated.
- Ferrous iron was present in wells MW-1R, MW-4, MW-6, and MW-9. During the May 2008 monitoring event detectable ferrous iron returned to wells MW-1R and MW-3 for the first time since the remedial injections. The additional presence of ferrous iron in lateral wells MW-4 and MW-6, and downgradient well MW-9 indicates that the supply of DO from the injection of the RegenOx or rainwater has ceased.
- Graphical analysis of groundwater elevations and concentrations through time indicate that TPH as gasoline and benzene concentrations can be divided into three broad time periods: prior to introduction of hydrogen peroxide in March 2001 (with a concentration spike April 2001), followed by generally lower concentrations between April 2001 to roughly February 2007, followed by another concentration spike due to RegenOx injection (through August 2007), and finally a substantial decline of most contaminants (excluding benzene, or THP as gasoline in one well) to levels below regulatory concern since the May 2008 sampling event.
- Groundwater contamination at this location appears to be localized and the data indicates that it is principally associated with impacted material predominately in the vadose zone adjacent to the gas main. There is no significant downgradient expression of groundwater contamination in a very mature plume. It is highly unlikely that impacted vadose zone materials adjacent to the gas main can be fully remediated in-place without potential damage to the high pressure main.
- All utility lines in the vicinity have previously been reviewed and are not considered to be conduits or preferential pathways for groundwater flow.
- Abundant underground utility lines and building envelopes tightly constrain access to residual soil contamination beneath the site.

The following recommendations were generated from the available data discussed above:

- The site should be recommended for closure.
- A Soil Management Plan (SMP) should be formulated for the management of residual soil contamination beneath the site should subsurface work be required in the future (building improvements, utility repairs, etc.).
- All groundwater wells should be destroyed after agency approval of the SMP and acceptance of a case closure report by the RWQCB.
- A copy of this report will be forwarded to:

  Ms. Barbara Jakub
  Alameda County Environmental Health Department
  Environmental Protection Division
  1131 Harbor Bay Parkway, Suite 250
  Alameda, CA 94502-6577

Tables

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-1	8/6/1993	18.72	8.96	9.76
	1/12/1996		8.55	10.17
	4/16/1996		7.65	11.07
	7/15/1996		8.76	9.96
	10/16/1996		9.04	9.68
	12/15/1998		8.38	10.34
	1/18/2001		8.49	10.23
	4/25/2001		8.24	10.48
	3/17/03*		8.08	10.64
	6/23/2003		8.63	10.09
	9/18/2003		8.90	9.82
	12/15/2003		8.15	10.57
	6/15/2004		8.67	10.05
	12/15/2004		7.99	10.73
	6/29/2005		7.88	10.84
	5/8/2006	21.70	Destroyed	Destroyed
	2/19/2007		Destroyed	Destroyed
	6/21/2007		Destroyed	Destroyed
	11/8/2007		Destroyed	Destroyed
	2/28/2008		Destroyed	Destroyed
	5/29/2008		Destroyed	Destroyed
	8/27/2008		Destroyed	Destroyed
	11/25/2008		Destroyed	Destroyed
MW-1R	6/12/2006	21.73	8.49	13.24
	2/19/2007		7.94	13.79
	6/21/2007		8.71	13.02
	8/9/2007		8.83	12.90
	11/8/2007		9.80	11.93
	2/28/2008		8.74	12.99
	5/29/2008		8.76	12.97
	8/27/2008		9.02	12.71
	11/25/2008		8.73	13.00

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-2	8/6/1993	18.44	8.68	9.76
	1/12/1996		8.24	10.20
	4/16/1996		7.41	11.03
	7/15/1996		8.45	9.99
	10/16/1996		8.73	9.71
	12/15/1998		8.05	10.39
	1/18/2001		8.24	10.20
	4/25/2001		7.88	10.56
	3/17/03*		7.08	11.36
	6/23/2003		8.90	9.54
	9/18/2003		8.61	9.83
	12/15/2003		7.97	10.47
	6/15/2004		8.42	10.02
	12/15/2004		8.00	10.44
	6/29/2005		9.51	8.93
	6/12/2006	21.45	8.25	13.20
	2/19/2007		8.12	13.33
	6/21/2007		9.00	12.45
	8/9/2007		8.62	12.83
	11/8/2007		8.60	12.85
	2/28/2008		7.20	14.25
	5/29/2008		8.55	12.90
	8/27/2008		8.76	12.69
	11/25/2008		8.63	12.82

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-3	8/6/1993	19.01	9.07	9.94
	1/12/1996		8.65	10.36
	4/16/1996		7.82	11.19
	7/15/1996		8.88	10.13
	10/16/1996		9.16	9.85
	12/15/1998		8.45	10.56
	1/18/2001		8.57	10.44
	4/25/2001		8.29	10.72
	3/17/03*		8.50	10.51
	6/23/2003		9.05	9.96
	9/18/2003		9.11	9.90
	12/15/2003		8.03	10.98
	6/15/2004		8.85	10.16
	12/15/2004		8.84	10.17
	6/29/2005		9.00	10.01
	6/12/2006	22.02	8.62	13.40
	2/19/2007		8.12	13.90
	6/21/2007		9.86	12.16
	8/9/2007		9.60	12.42
	11/8/2007		8.83	13.19
	2/28/2008		7.99	14.03
	5/29/2008		8.57	13.45
	8/27/2008		9.60	12.42
	11/25/2008		9.02	13.00
MW-4	6/12/2006	21.34	8.37	12.97
	2/19/2007		7.77	13.57
	6/21/2007		8.48	12.86
	11/8/2007		8.61	12.73
	2/28/2008		7.73	13.61
	5/29/2008		8.39	12.95
	8/27/2008		8.76	12.58
	11/25/2008		8.54	12.80

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-5	6/12/2006	22.53	8.75	13.78
	2/19/2007		8.61	13.92
	6/21/2007		9.05	13.48
	8/9/2007		9.17	13.36
	11/8/2007		9.11	13.42
	2/28/2008		8.18	14.35
	5/29/2008		9.06	13.47
	8/27/2008		9.31	13.22
	11/25/2008		9.03	13.50
MW-6	6/12/2006	21.97	8.59	13.38
	2/19/2007		7.93	14.04
	6/21/2007		9.83	12.14
	11/8/2007		9.58	12.39
	2/28/2008		9.90	12.07
	5/29/2008		8.50	13.47
	8/27/2008		9.52	12.45
	11/25/2008		8.80	13.17
MW-7	6/12/2006	21.21	8.31	12.90
	2/19/2007		7.85	13.36
	6/21/2007		8.51	12.70
	11/8/2007		8.68	12.53
	2/28/2008		7.81	13.40
	5/29/2008		8.60	12.61
	8/27/2008		8.72	12.49
	11/25/2008		8.70	12.51
MW-8	6/12/2006	20.97	8.37	12.60
	2/19/2007		7.99	12.98
	6/21/2007		8.53	12.44
	11/8/2007		8.61	12.36
	2/28/2008		7.79	13.18
	5/29/2008		8.61	12.36
	8/27/2008		8.76	12.21
	11/25/2008		8.56	12.41

Table I, Summary of Groundwater Elevation Measurements
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Water Surface Elevation (feet)
MW-9	6/12/2006	20.98	8.50	12.48
	2/19/2007		8.08	12.90
	6/21/2007		8.55	12.43
	11/8/2007		8.67	12.31
	2/28/2008		8.02	12.96
	5/29/2008		8.51	12.47
	8/27/2008		8.81	12.17
	11/25/2008		8.64	12.34

Notes:

TOC = Top of Casing
* = Initial data set collected under direction of Blymyer Engineers, Inc.
NM = Not measured
[1] = Resurveyed on February 7, or June 22, 2006 by CSS Environmental Services, Ir

Elevations in feet above mean sea level

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-1	8/6/1993	**17,000**	**7.1**	**8.4**	**9.2**	**53**	NA
	1/12/1996	**12,000**	**1,900**	**840**	**370**	**1,100**	NA
	4/16/1996	**3,500**	**700**	**55**	**100**	**180**	NA
	7/15/1996	**11,000**	**2,300**	**450**	**350**	**910**	NA
	10/16/1996	**21,000**	**4,200**	**2,200**	**650**	**2,600**	NA
	12/15/1998	**10,000**	**1,800**	**520**	**270**	**1,100**	<350
	1/18/2001	**11,000** [a]	**2,000**	**320**	**320**	**1,100**	<120
	4/25/2001	**2,100** [a, c]	**270**	**46**	**59**	**130**	<5.0
	3/17/2003*	**2,200** [a]	**260**	**19**	**36**	**54**	NA [d]
	6/23/2003	**6,100** [a]	**930**	**53**	**99**	**200**	NA
	9/18/2003	**3,800** [a]	**660**	**13**	**24**	**34**	NA
	12/15/2003	**260** [a]	**19**	**1.1**	<0.5	**1.5**	NA
	6/15/2004	**5,200** [a]	**520**	**13**	**38**	**39**	<50
	12/15/2004	**2,400** [a]	**370**	**8.2**	**13**	**14**	<15
	6/29/2005	**5,500** [a]	**750**	**27**	**94**	**140**	<100
	5/8/2006	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	2/19/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	6/21/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	11/8/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	2/28/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	5/29/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	8/27/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	11/25/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-1R	6/13/2006	**90** [a]	**24**	<0.5	<0.5	**1.9**	**7.0**
	2/19/2007	**200** [a]	**8**	**0.80**	**12**	**8.7**	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/9/2007	**870** [a]	**140**	**6.30**	**23**	**22**	<10
	11/8/2007	**3,800** [a]	**330**	**22**	**140**	**130**	<30
	2/28/2008	**150** [a]	**5.5**	<0.5	**3.9**	**2.2**	<5.0
	5/29/2008	**690** [a]	**44**	**2**	**35**	**7.8**	<5.0
	8/27/2008	**190** [a]	**14**	<0.5	**8.1**	**1.5**	<5.0
	11/25/2008	**130** [a]	**11**	<0.5	**10**	**1.5**	<5.0

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-2	8/6/1993	**2,700**	**1.3**	**1.7**	**2.0**	**8.1**	NA
	1/12/1996	**2,700**	**600**	**310**	**94**	**220**	NA
	4/16/1996	**190**	**39**	**11**	**10**	**14**	NA
	7/15/1996	**700**	**160**	**33**	**34**	**48**	NA
	10/16/1996	**190**	**48**	**8.2**	**10**	**13**	NA
	12/15/1998	**200**	**62**	**17**	**4.9**	**14**	**4.4**[b]
	1/18/2001	**300**[a]	**74**	**26**	**7.3**	**21**	**7.3**
	4/25/2001	<50[c]	**4.5**	**2.2**	**0.6**	**1.9**	<5.0
	3/17/2003*	**78**[a]	**26**	**3.3**	**1.5**	**3.5**	NA[d]
	6/23/2003	**160**[a]	**51**	**1.6**	**1.2**	**1.8**	NA
	9/18/2003	<50	**2.1**	**<0.5**	**<0.5**	**<0.5**	NA
	12/15/2003	<50	**12**	<0.5	**<0.5**	**<0.5**	NA
	6/15/2004	**95**[a]	**15**	**1.3**	**1.8**	**1.2**	<30
	12/15/2004	**<50**	**11**	**0.97**	**0.6**	**0.9**	**7.8**
	6/29/2005	**130**	**29**	**2.000**	**3.3**	**3.4**	**6.7**
	6/13/2006	**150**[a]	**59**	**3.0**	**3.4**	**2.7**	**11**
	2/19/2007	**51**[a]	**8**	**1.6**	**1.0**	**2.8**	**7.1**
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/9/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/8/2007	**160**[a]	**23**	**5.0**	**5.3**	**14**	<10
	2/28/2008	<50	**1.3**	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	**1.1**	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	**1.2**	<0.5	<0.5	<0.5	<5.0

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-3	8/6/1993	**5,200**	**2.1**	**2.9**	**3.6**	**17**	NA
	1/12/1996	**4,500**	**280**	**180**	**120**	**470**	NA
	4/16/1996	**5,400**	**370**	**340**	**160**	**580**	NA
	7/15/1996	**1,800**	**200**	**220**	**66**	**250**	NA
	10/16/1996	**2,000**	**340**	**140**	**100**	**300**	NA
	12/15/1998	**1,400**	**200**	**39**	**72**	**150**	<22
	1/18/2001	**1,800** [a]	**240**	**41**	**86**	**120**	<10
	4/25/2001	**8,300** [a, c]	**300**	**330**	**200**	**1,100**	<20
	3/17/2003*	**2,100** [a]	**240**	**78**	**10**	**280**	NA [d]
	6/23/2003	<50	**2.5**	**0.6**	**0.69**	**1.4**	NA
	9/18/2003	<50	<0.5	<0.5	<0.5	<0.5	NA
	12/15/2003	**2,400**	**300**	**120**	**140**	**260**	NA
	6/15/2004	<50	**1.1**	<0.5	<0.5	<0.5	**6.2**
	12/15/2004	**1,600** [a]	**140**	**83**	**83**	**230**	<15
	6/29/2005	**230** [a]	**27**	**6.1**	**7.2**	**15**	<15
	6/13/2006	**68** [a]	**3.1**	**1.8**	<0.5	<0.5	<5.0
	2/19/2007	**280** [a]	**49**	**11**	**18**	**23**	<5.0
	6/21/2007	**1,500** [a]	**120**	**64**	**62**	**250**	<50
	8/9/2007	**2,400** [a]	**140**	**19**	**100**	**110**	<65
	11/8/2007	**440** [a]	**7.2**	**3.3**	**8.6**	**26**	<15
	2/28/2008	**320** [a]	**10**	**5.8**	**9.6**	**32**	<12
	5/29/2008	<50	**1.0**	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	**1.3**	<0.5	<0.5	<0.5	<5.0
	11/25/2008	**61** [a]	**4.8**	**0.56**	**1.1**	**1.5**	<5.0

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-4	6/12/2006	<50	<0.5	<0.5	<0.5	<0.5	**5.7**
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	**5.9**
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
MW-5	6/12/2006	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	**5.6**
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	**5.4**
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
MW-6	6/13/2006	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800
MW-7	6/12/2006	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
MW-8	6/12/2006	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
MW-9	6/12/2006	<50	<0.5	<0.5	<0.5	<0.5	**5.6**
	2/19/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	6/21/2007	<50	<0.5	<0.5	<0.5	<0.5	**5.6**
	11/8/2007	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	2/28/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	5/29/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	8/27/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0
	11/25/2008	<50	<0.5	<0.5	<0.5	<0.5	<5.0

Table II, Summary of Groundwater Sample Hydrocarbon Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Modified EPA Method 8015 (µg/L)	EPA Method 8020 or 8021B (µg/L)				
		TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
MCL		N/A	1	150	700	1,750	13
Drinking Water Source [1]		100	1	40	30	20	5
Non-Drinking Water Source [2]		500	46	130	290	100	1,800

Notes:
ug/L = micrograms per liter
TPH = Total Petroleum Hydrocarbons
EPA = Environmental Protection Agency
MTBE = Methyl *tert* -Butyl Ether
[1] = From Table A; RWQCB Environmental Screening Levels (ESLs); Groundwater IS a Current or Potential Source of Drinking Water
[2] = From Table B; RWQCB Environmental Screening Levels (ESLs); Groundwater IS NOT a Current or Potential Source of Drinking Water
RWQCB = California Regional Water Quality Control Board, San Francisco Bay Region
ESL = Environmental Screening Level
N/A = Not applicable
NA = Not analyzed
RBSL = Risk Based Screening Level
<*x* = Analyte not detected at reporting limit *x*
* = Initial data set collected under direction of Blymyer Engineers, Inc.
[a] = Laboratory note indicates the unmodified or weakly modified gasoline is significant.
[b] = Confirmed with EPA Method 8260.
[c] = Groundwater samples for MW-1 and MW-3 suspected to have been switched (mismarked) in field. First collection of groundwater samples after application of Hydrogen Peroxide on March 7, 2001.
[d] = Analysis conducted by EPA Method 8260. See Table III.

Bold results indicate detectable analyte concentrations.

▨ Note: Shaded cell indicates that detected concentration exceeds *Non-Drinking Water* ESL

Table III, Summary of Groundwater Sample Fuel Oxygenate Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	EPA Method 8260B (ug/L)								
		TAME	TBA	EBD	1,2-DCA	DIPE	Ethanol	ETBE	Methanol	MTBE
Drinking Water Source [1]		NV	12	0.05	0.5	NV	50,000	NV	NV	5
Non-Drinking Water Source [2]		NV	18,000	152	204	NV	50,000	NV	NV	1,800
MW-1	3/17/2003	**8.3**	<5.0	NA	NA	<0.50	NA	<0.50	NA	**10.0**
	6/23/2003	**6.4**	<25	NA	NA	<2.5	NA	<2.5	NA	**8.0**
	9/18/2003	**5.3**	<25	NA	NA	<2.5	NA	<2.5	NA	**8.5**
	12/15/03[3]	**9.0**	<5.0	NA	NA	<0.5	NA	<0.5	NA	**12.0**
MW-2	3/17/2003	**2.1**	**6.0**	NA	NA	<0.50	NA	<0.50	NA	**13.0**
	6/23/2003	**4.5**	<5.0	NA	NA	<0.50	NA	<0.50	NA	**11.0**
	9/18/2003	**0.7**	<25	NA	NA	<2.5	NA	<2.5	NA	**5.0**
	12/15/03[3]	**3.2**	**5.2**	NA	NA	<0.5	NA	<0.5	NA	**13.0**
	6/13/2006	**4.5**	**6.5**	<5.0	<5.0	<5.0	<50	<0.5	<500	**7.6**
MW-3	3/17/2003	**4.3**	**8.6**	NA	NA	<0.50	NA	<0.50	NA	**10.0**
	6/23/2003	**2.6**	<5.0	NA	NA	<0.50	NA	<0.50	NA	**5.6**
	9/18/2003	**3.6**	<25	NA	NA	<2.5	NA	<2.5	NA	**10.0**
	12/15/03[3]	**2.7**	<5.0	NA	NA	<0.5	NA	<0.5	NA	**13.0**
MW-4	6/12/2006	NA	NA	NA	NA	NA	NA	NA	NA	**6.1**

Table III, Summary of Groundwater Sample Fuel Oxygenate Analytical Results BEI Job No. 203004, Former Fiesta Beverage 966 89th Avenue, Oakland, California										
Well ID	Sample Date	EPA Method 8260B (ug/L)								
		TAME	TBA	EBD	1,2-DCA	DIPE	Ethanol	ETBE	Methanol	MTBE
Drinking Water Source [1]		NV	12	0.05	0.5	NV	50,000	NV	NV	5
Non-Drinking Water Source [2]		NV	18,000	152	204	NV	50,000	NV	NV	1,800

Notes:
TAME = Methyl tert-Amyl Ether
TBA = tert-Butyl Alcohol
EDB = 1,2-Dibromoethane
1,2-DCA = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
MTBE = Methly tert-butyl ether
(µg/L) = Micrograms per liter
NV = No value
NA = Not analyzed
[1] = From Table A; Environmental Screening Levels (ESLs); Groundwater IS a Current or Potential Source of Drinking Water
[2] = From Table B; RWQCB Environmental Screening Levels (ESLs); Groundwater IS NOT a Current or Potential Source of Drinking Water
[3] = In general after this date, fuel oxygenates were monitored using MTBE detected by EPA Method 8020B, as a proxy for the approximate concentration of the remaining fuel oxygenates.

Bold results indicate detectable analyte concentrations.
Note: Shaded cell indicates that detected concentration exceeds ESL

Table IV, Summary of Groundwater Intrinsic Bioremediation Field Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Field Meter	Field Meter	Field Test Kit	Field Meter	Field Meter
		Dissoved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Ferrous Iron (Fe 2+)	Field Temperature (o F / o C)	Field pH pH units
MW-1	3/17/2003	NA	NA	NA	60.4 / 60.0 *	7.1 / 7.3
	6/23/2003	0.4	NA	NA	61.0 / 61.0 *	6.9 / 6.9
	9/18/2003	0.4	NA	NA	65.1 / 62.9 *	7.1 / 6.9
	12/15/2003	1.1	NA	NA	13.1 / 13.4	6.8 / 6.7
	6/15/2004	0.1	NA	NA	64.5 / 63.4 *	6.9 / 7.0
	12/15/2004	NA	NA	NA	15.4 / 17.5	7.0 / 6.9
	6/29/2005	0.24 / 0.17	1.0	4.5	19.78 / 21.63	7.15 / 7.08
	5/8/2006	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	2/19/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	6/21/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	11/8/2007	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	2/28/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	5/29/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	8/27/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
	11/25/2008	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
MW-1R	6/13/2006	0.87 / 0.37	172.9 / 172.9	0 / 0	17.31 / 17.36	6.90 / 6.92
	2/19/2007	0.48	8.0	NA	12.2 / 15.8	6.95 / 6.86
	6/21/2007	0.62	22.0	NA	19.6	7.1
	11/8/2007	0.3	-60	NA	64.4	6.9
	2/28/2008	0.28	156	0.0	63.2	6.98
	5/29/2008	0.72	97	0.6	17.3	7.12
	8/27/2008	0.18	65	0.0	66.2	6.8
	11/25/2008	0.17	-38	0.4	18.3	7.05

Table IV, Summary of Groundwater Intrinsic Bioremediation Field Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Field Meter	Field Meter	Field Test Kit	Field Meter	Field Meter
		Dissoved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Ferrous Iron (Fe 2+)	Field Temperature (o F / o C)	Field pH pH units
MW-2	3/17/2003	NA	NA	NA	66.0 / 64.2 *	7.4 / 7.9
	6/23/2003	0.6	NA	NA	62.1 / 61.8 *	6.8 / 7.1
	9/18/2003	1.3	NA	NA	66.7 / 63.7 *	6.7 / 6.9
	12/15/2003	1.6	NA	NA	13.2 / 13.4	6.6 / 6.6
	6/15/2004	0.1	NA	NA	64.5 / 65.0 *	6.3 / 7.1
	12/15/2004	NA	NA	NA	16.9 / 17.0	7.1 / 7.1
	6/29/2005	0.19 / 0.24	0.7	0.7	18.58 / 21.18	7.12 / 7.13
	6/13/2006	0.80 / 0.42	168.0 / 168.0	0 / 0	17.49 / 17.70	6.97 / 6.98
	2/19/2007	0.2	80	NA	13.6 / 16.3	7.24 / 7.06
	6/21/2007	0.18	46	NA	18.3	7.1
	11/8/2007	0.4	209	NA	64.0	7.07
	2/28/2008	0.29	191	0.0	63.1	6.98
	5/29/2008	1.53	212	0.0	17.8	7.18
	8/27/2008	0.14	202	0.0	72.1	6.56
	11/25/2008	0.12	96	0.0	18.4	7.03
MW-3	3/17/2003	NA	NA	NA	63.3 / 60.9 *	7.4 / 7.6
	6/23/2003	0.7	NA	NA	66.4 / 66.9 *	7.3 / 7.2
	9/18/2003	0.4	NA	NA	63.7 / 62.6 *	7.1 / 7.1
	12/15/2003	1.6	NA	NA	14.7 / 15.1	6.5 / 6.4
	6/15/2004	0.0	NA	NA	63.1 / 62.3 *	7.5 / 7.1
	12/15/2004	NA	NA	NA	15.4 / 16.7	7.2 / 7.0
	6/29/2005	0.72 / 0.78	141.7 / -67.6	0.9	17.65 / 18.79	6.94 / 7.02
	6/13/2006	1.01 / 0.41	170.0 / 168.5	0 / 0	17.30 / 17.15	7.02 / 6.98
	2/19/2007	0.08	81	NA	13.7 / 15.6	7.10 / 6.95
	6/21/2007	0.10	39	NA	18.1	7.2
	11/8/2007	0.30	-30	NA	62.5	7.04
	2/28/2008	0.32	132	0.0	61.2	5.45
	5/29/2008	0.77	186	0.6	16.3	7.19
	8/27/2008	0.15	128	0.0	65.7	7.08
	11/25/2008	0.11	-40	0.0	17.8	7.05

Table IV, Summary of Groundwater Intrinsic Bioremediation Field Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Field Meter	Field Meter	Field Test Kit	Field Meter	Field Meter
		Dissoved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Ferrous Iron (Fe 2+)	Field Temperature (o F / o C)	Field pH pH units
MW-4	6/12/2006	0.67 / 0.33	164.3 / 161.0	0.5 / 0	16.90 / 16.79	6.82 / 6.79
	2/19/2007	0.21	98	NA	13.7 / 15.0	7.14 / 7.03
	6/21/2007	0.31	118	NA	16.4	7.0
	11/8/2007	0.30	222	NA	62.7	6.96
	2/28/2008	0.28	173	0.0	61.6	7.01
	5/29/2008	1.07	228	0.0	16.2	6.81
	8/27/2008	0.20	217	0.0	72.7	6.83
	11/25/2008	0.11	153	0.1	17.6	6.95
MW-5	6/12/2006	0.61 / 0.31	175.2 / 169.0	0 / 0	18.40 / 18.01	7.01 / 6.94
	2/19/2007	1.98	-114	NA	12.7 / 14.1	6.93 / 6.73
	6/21/2007	1.23	99	NA	16.8	7.1
	11/8/2007	0.30	211	NA	63.9	6.85
	2/28/2008	0.26	213	0.0	62.6	7.14
	5/29/2008	0.80	249	0.0	16.5	7.18
	8/27/2008	0.11	265	0.0	64.7	6.46
	11/25/2008	0.07	175	0.0	17.8	6.99
MW-6	6/13/2006	3.10 / 0.81	181.2 / 174.8	0 / 0	17.25 / 17.32	6.94 / 6.83
	2/19/2007	0.21	-30	NA	14.6 / 15.6	6.58 / 6.74
	6/21/2007	0.26	102	NA	16.2	7.1
	11/8/2007	0.60	-8	NA	63.5	6.99
	2/28/2008	0.37	212	0.0	60.8	6.93
	5/29/2008	1.75	194	0.0	16.3	7.22
	8/27/2008	0.14	241	0.0	65.0	6.83
	11/25/2008	0.24	220	0.3	17.9	6.90

Table IV, Summary of Groundwater Intrinsic Bioremediation Field Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Field Meter Dissoved Oxygen (mg/L)	Field Meter Oxidation Reduction Potential (mV)	Field Test Kit Ferrous Iron (Fe 2+)	Field Meter Field Temperature (o F / o C)	Field Meter Field pH pH units
MW-7	6/12/2006	0.59 / 0.27	172.5 / 171.8	0.5 / 0.2	18.14 / 18.00	6.90 / 6.87
	2/19/2007	0.10	110	NA	16.2 / 17.2	7.69 / 7.21
	6/21/2007	0.14	123	NA	17.3	7.0
	11/8/2007	0.30	227	NA	64.5	6.90
	2/28/2008	0.27	142	0.0	64.2	7.00
	5/29/2008	1.47	83	0.0	17.8	7.17
	8/27/2008	0.21	196	0.0	76.1	6.83
	11/25/2008	0.19	206	0.0	18.4	7.07
MW-8	6/12/2006	0.37 / 0.33	186.1 / 180.4	0 / 0	18.55 / 18.39	6.85 / 6.85
	2/19/2007	0.11	102	NA	15.2 / 16.6	7.23 / 7.07
	6/21/2007	0.12	111	NA	17.2	7.1
	11/8/2007	0.30	232	NA	64.3	7.01
	2/28/2008	0.26	206	0.0	63.1	7.08
	5/29/2008	1.23	72	0.0	17.5	7.22
	8/27/2008	0.26	190	0.0	74.8	6.29
	11/25/2008	0.13	212	0.0	19.0	7.03
MW-9	6/12/2006	2.01 / 1.87	206.0 / 191.0	0 / 0	16.88 / 16.91	6.63 / 6.66
	2/19/2007	0.08	101	NA	15.8 / 16.3	7.56 / 7.23
	6/21/2007	0.12	112	NA	16.5	7.1
	11/8/2007	0.40	230	NA	65.1	6.94
	2/28/2008	0.26	208	0.0	62.1	7.01
	5/29/2008	1.44	94	0.0	17.1	7.33
	8/27/2008	0.28	203	0.0	72.2	7.69
	11/25/2008	0.12	123	0.1	18.7	7.01

Notes:
mV = Millivolts
mg/L = Milligrams per liter
^{o} F / ^{o} C = degrees Fahrenheit / degrees Centigrade
* = degrees Fahrenheit
2.6 / 2.2 = Initial reading (pre-purge) / Final reading (post-purge)
NA = Not analyzed

Table V, Summary of Groundwater Intrinsic Bioremediation Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Method SM 5310B	Method E300.1		Method RSK 174
		CO_2	Nitrate (as N)	Sulfate	Methane
		mg/L			µg/L
MW-1	6/29/2005	490	<0.1	5	5,900
	5/8/2006	Destroyed	Destroyed	Destroyed	Destroyed
MW-1R	6/13/2006	290	4.3	46	24
MW-2	6/29/2005	250	4.1	42	68
	6/13/2006	290	3.2	44	45
MW-3	6/29/2005	230	3.5	33	370
	6/13/2006	220	3.5	33	55
MW-4	6/12/2006	260	8.6	44	1.1
MW-5	6/12/2006	240	6.8	45	1.5
MW-6	6/13/2006	290	7.2	50	<0.5
MW-7	6/12/2006	260	6	51	<0.5
MW-8	6/12/2006	330	7.3	46	<0.5
MW-9	6/12/2006	240	8.3	44	1.1

Notes:
SM = Standard Method
mg/L = Milligrams per liter
µg/L = Micrograms per liter
CO_2 = Carbon Dioxide

Table VI, Summary of Groundwater Bacteria Enumeration Analytical Results
BEI Job No. 203004, Former Fiesta Beverage
966 89th Avenue, Oakland, California

Well ID	Sample Date	Aerobic Bacteria		
		Method 9215A (HPC) / SM 9215 B Modified		
		Hydrocarbon Degraders	Total Heterotrophs	Target Hydrocarbons Tested
		cfu/ml		
MW-1R	4/27/2007	1,000	1,000	Gasoline/Diesel
	8/9/2007	2,000	10,000	Gasoline/Diesel
MW-2	4/27/2007	1,000	3,000	Gasoline/Diesel
MW-5	8/9/2007	300	3,000	Gasoline/Diesel
MW-6	4/27/2007	600	1,000	Gasoline/Diesel
MW-9	4/27/2007	200	300	Gasoline/Diesel

Notes:
SM = Standard Method
cfu/ml = Colony forming units per milliliter

Figures

UNITED STATES GEOLOGICAL SURVEY 7.5' QUADS. "OAKLAND EAST, CA & SAN LEANDRO, CA", BOTH PHOTOREVISED 1981.

QUADRANGLE LOCATION

BLYMYER ENGINEERS, INC.

BEI JOB NO. 203004

DATE 3-19-03

0 1000 2000

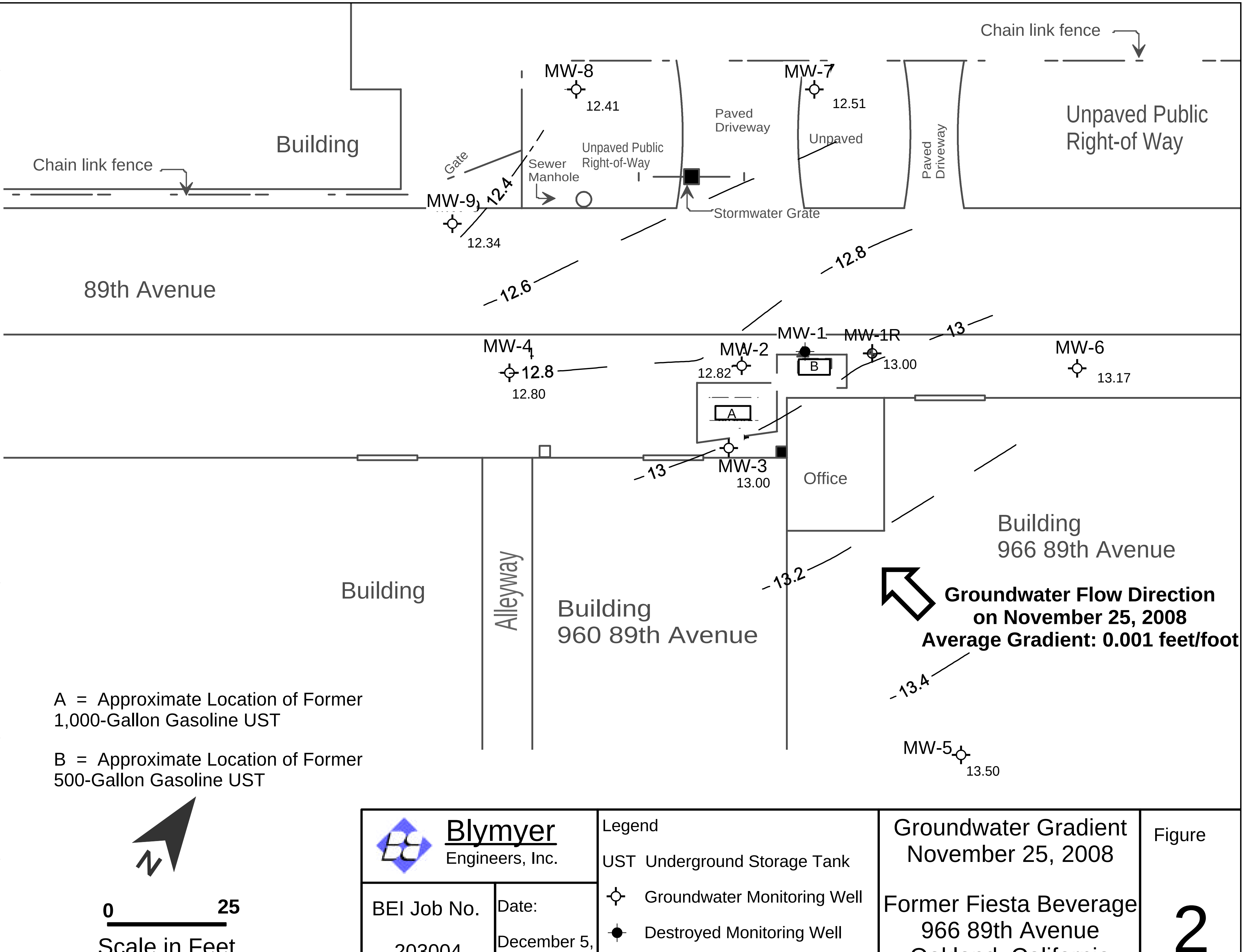
SCALE IN FEET

N

SITE LOCATION MAP

FORMER FIESTA BEVERAGE
966 89TH AVE.
OAKLAND, CA

FIGURE 1



Groundwater Flow Direction on November 25, 2008
Average Gradient: 0.001 feet/foot

A = Approximate Location of Former 1,000-Gallon Gasoline UST

B = Approximate Location of Former 500-Gallon Gasoline UST

Blymyer
Engineers, Inc.

BEI Job No.
203004

Date:
December 5, 2008

Legend

UST Underground Storage Tank

⌖ Groundwater Monitoring Well

● Destroyed Monitoring Well

Groundwater Gradient
November 25, 2008

Former Fiesta Beverage
966 89th Avenue
Oakland, California

Figure
2

Figure 3: Concentration of TPHG vs. Time in Well MW-3

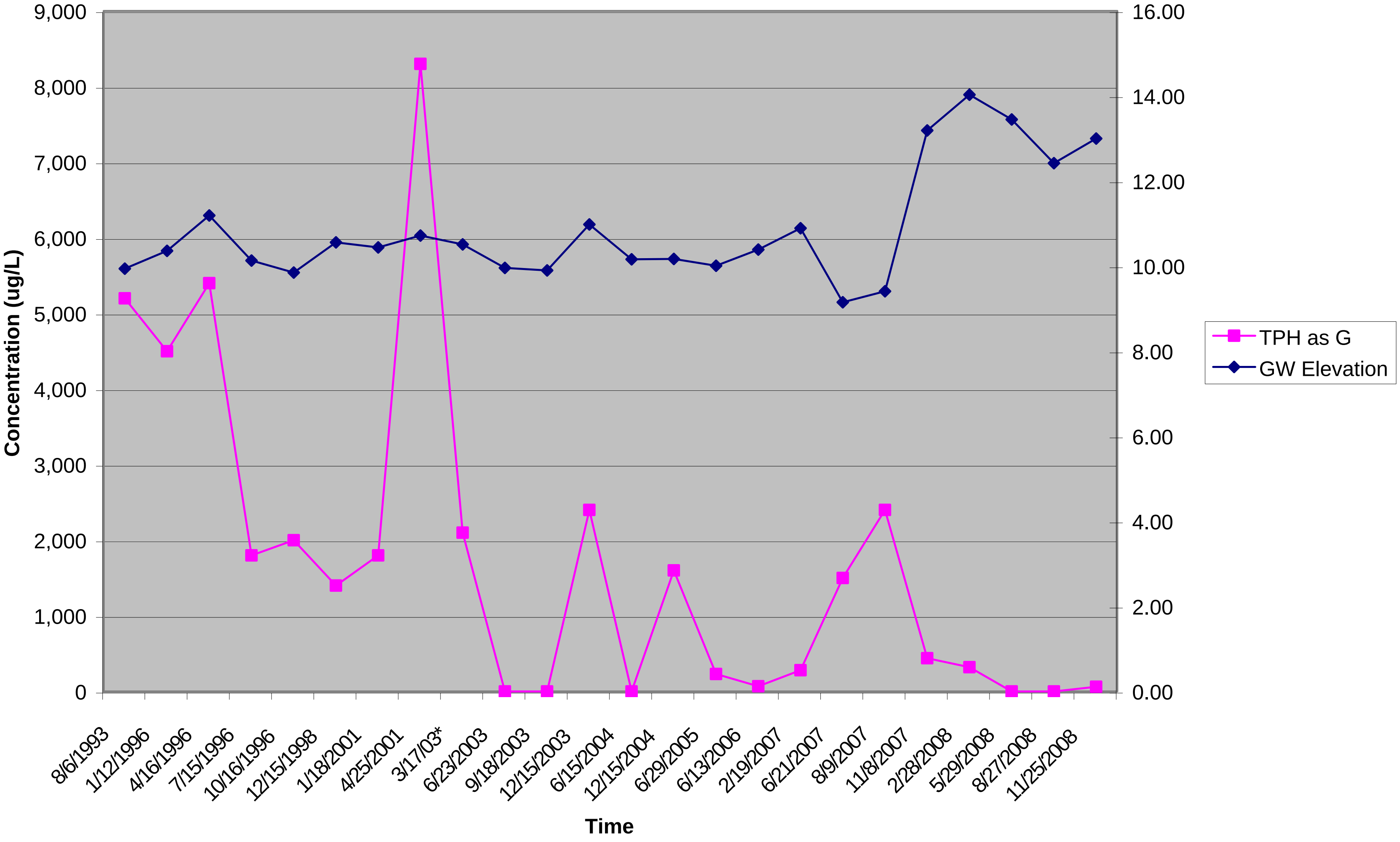


Figure 4: Concentration of Benzene vs. Time in Well MW-3

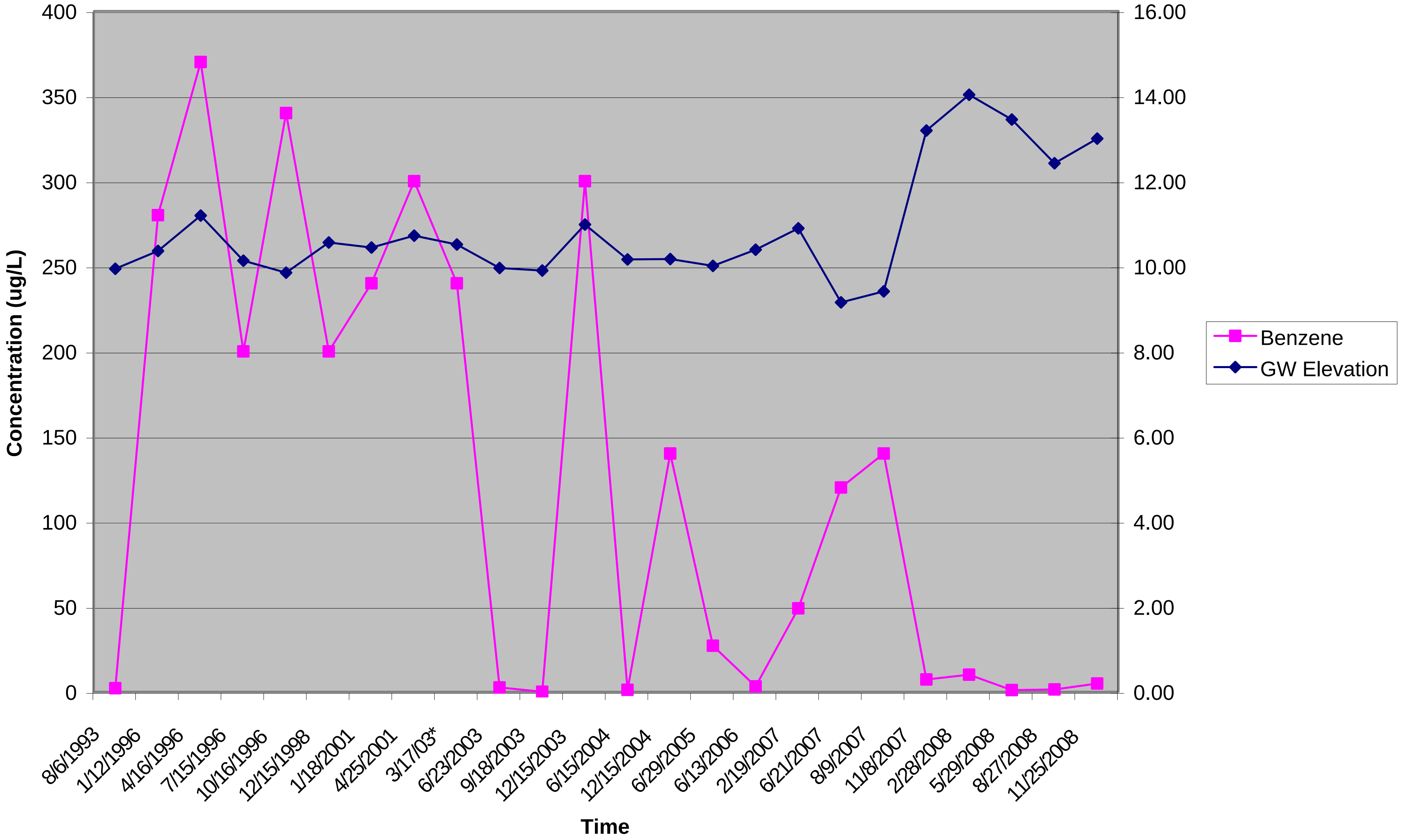


Figure 5: Concentration of TPHG vs. Time in Well MW-1 / MW-1R

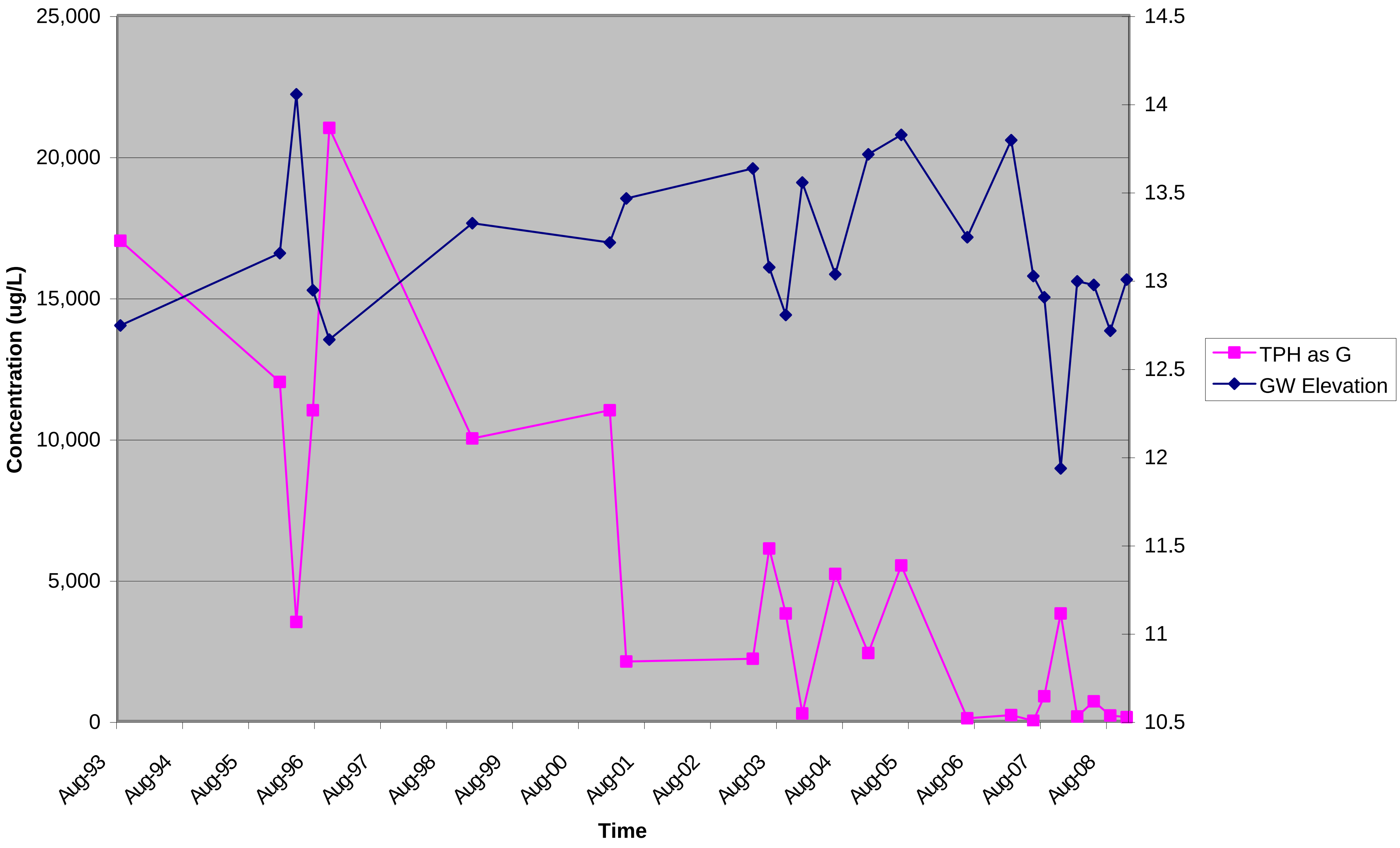
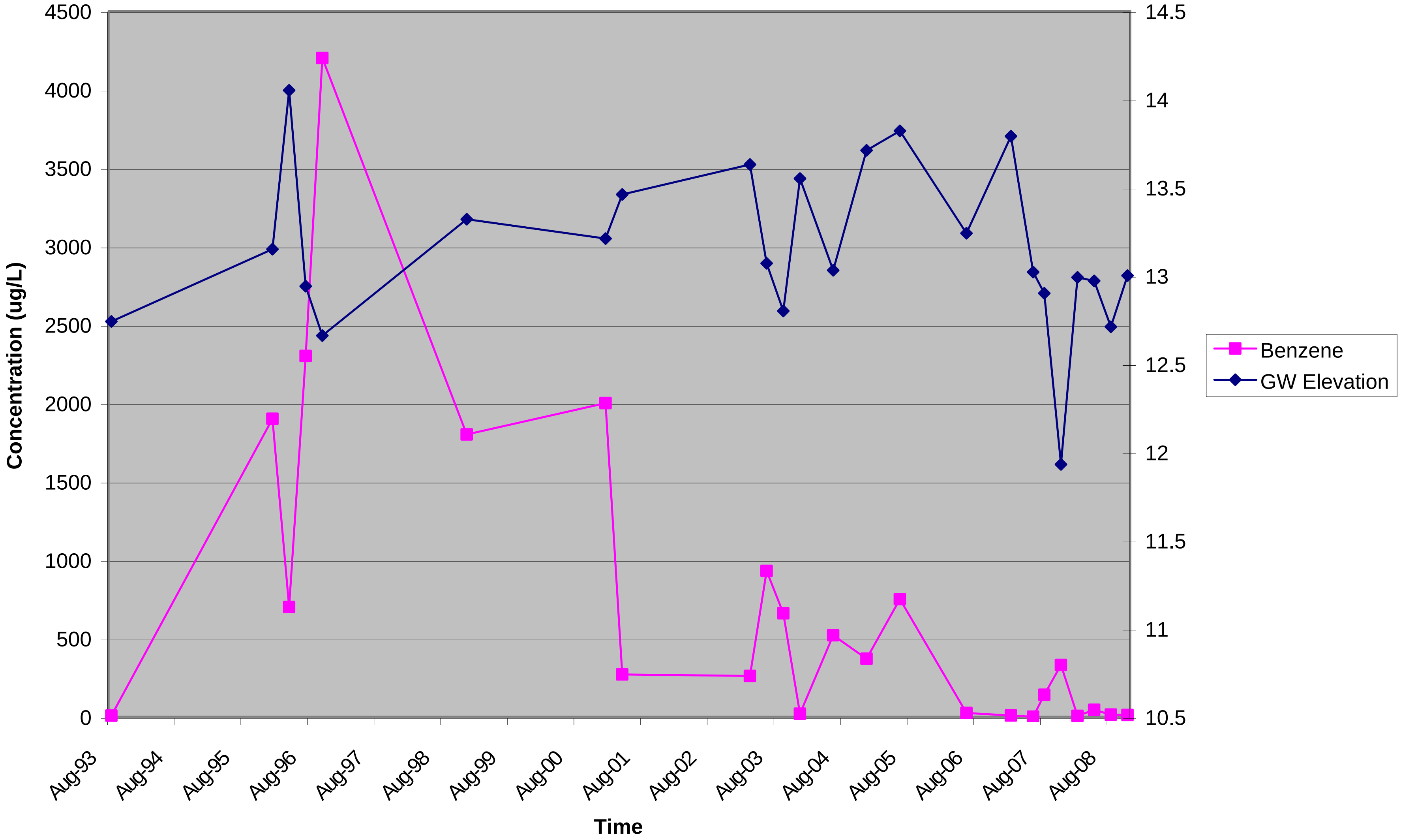


Figure 6: Concentration of Benzene vs. TIme in Well MW-1 / MW-1R



Appendix A

Standard Operating Procedures

Blaine Tech Services, Inc.

Blaine Tech Services, Inc.
Standard Operating Procedure

WATER LEVEL, SEPARATE PHASE LEVEL AND TOTAL WELL DEPTH MEASUREMENTS (GAUGING)

Routine Water Level Measurements

1. Establish that water or debris will not enter the well box upon removal of the cover.
2. Remove the cover using the appropriate tools.
3. Inspect the wellhead (see Wellhead Inspections).
4. Establish that water or debris will not enter the well upon removal of the well cap.
5. Unlock and remove the well cap lock (if applicable). If lock is not functional cut it off.
6. Loosen and remove the well cap. CAUTION: DO NOT PLACE YOUR FACE OR HEAD DIRECTLY OVER WELLHEAD WHEN REMOVING THE WELL CAP. WELL CAP MAY BE UNDER PRESSURE AND/OR MAY RELEASE ACCUMULATED AND POTENTIALLY HARMFULL VAPORS.
7. Verify and identify survey point as written on S.O.W.
   TOC: If survey point is listed as Top of Casing (TOC), look for the exact survey point in the form of a notch or mark on the top of the casing. If no mark is present, use the north side of the casing as the measuring point.
   TOB: If survey point is listed as Top of Box (TOB), the measuring point will be established manually. Place the inverted wellbox lid halfway across the wellbox opening and directly over the casing. The lower edge of the inverted cover directly over the casing will be the measuring point.
8. Put new Latex or Nitrile gloves on your hands.
9. Slowly lower the Water Level Meter probe into the well until it signals contact with water with a tone and/or flashing a light.
10. Gently raise the probe tip slightly above the water and hold it there. Wait momentarily to see if the meter emits a tone, signaling rising water in the casing. Gently lower the probe tip slightly below the water. Wait momentarily to see if the meter stops emitting a tone, signaling dropping water in the casing. Continue process until water level stabilizes indicating that the well has equilibrated.
11. While holding the probe at first contact with water and the tape against the measuring point, note depth. Repeat twice to verify accuracy. Write down measurement on Well Gauging Sheet under Depth to Water column.
12. Recover probe, replace and tighten well cap, replace lock (if applicable), replace well box cover and tighten hardware (if applicable)

Water Level and Separate Phase Thickness Measurements in Wells Suspected of Containing Separate Phase

1. Establish that water or debris will not enter the well box upon removal of the cover.
2. Remove the cover using the appropriate tools.
3. Inspect the wellhead (see Wellhead Inspections).
4. Establish that water or debris will not enter the well upon removal of the well cap.

5. Unlock and remove the well cap lock (if applicable). If lock is not functional cut it off.
6. Loosen and remove the well cap. CAUTION: DO NOT PLACE YOUR FACE OR HEAD DIRECTLY OVER WELLHEAD WHEN REMOVING THE WELL CAP. WELL CAP MAY BE UNDER PRESSURE AND/OR MAY RELEASE ACCUMULATED AND POTENTIALLY HARMFULL VAPORS.
7. Verify and identify survey point as written on S.O.W.
   TOC: If survey point is listed as Top of Casing (TOC), look for the exact survey point in the form of a notch or mark on the top of the casing. If no mark is present, use the north side of the casing as the measuring point.
   TOB: If survey point is listed as Top of Box (TOB), the measuring point will be established manually. Place the inverted well box lid halfway across the well box opening and directly over the casing. The lower edge of the inverted cover directly over the casing will be the measuring point.
8. Put new Nitrile gloves on your hands.
9. Slowly lower the tip of the Interface Probe into the well until it emits either a solid or broken tone.
   BROKEN TONE: Separate phase layer is not present. Go to Step 8 of Routine Water Level Measurements shown above to complete gauging process using the Interface probe as you would a Water Level Meter.
   SOLID TONE: Separate phase layer is present. Go to the next step.
10. Gently raise the probe tip slightly above the separate phase layer and hold it there. Wait momentarily to see if the meter emits a tone, signaling rising water in the casing. Gently lower the probe tip slightly below the separate phase layer. Wait momentarily to see if the meter stops emitting a tone, signaling dropping water in the casing. Continue process until water level stabilizes indicating that the well has equilibrated.
11. While holding the probe at first contact with the separate phase layer and the tape against the measuring point, note depth. Repeat twice to verify accuracy. Write down measurement on Well Gauging Sheet under Depth to Product column.
12. Gently lower the probe tip until it emits a broken tone signifying contact with water. While holding the probe at first contact with water and the tape against the measuring point, note depth. Repeat twice to verify accuracy. Write down measurement on Well Gauging Sheet under Depth to Water column.
13. Recover probe, replace and tighten well cap, replace lock (if applicable), replace well box cover and tighten hardware (if applicable).

Routine Total Well Depth Measurements

1. Lower the Water Level Meter probe into the well until it lightens in your hands, indicating that the probe is resting at the bottom of well.
2. Gently raise the tape until the weight of the probe increases, indicating that the probe has lifted off the well bottom.
3. While holding the probe at first contact with the well bottom and the tape against the well measuring point, note depth. Repeat twice to verify accuracy. Write down measurement on Well Gauging Sheet under Total Well Depth column.

4. Recover probe, replace and tighten well cap, replace lock (if applicable), replace well box cover and tighten hardware (if applicable).

Blaine Tech Services, Inc.
Standard Operating Procedure

WELL WATER EVACUATION (PURGING)

Purpose

Evacuation of a predetermined minimum volume of water from a well (purging) while *simultaneously* measuring water quality parameters is typically required prior to sampling. Purging a minimum volume guarantees that actual formation water is drawn into the well. Measuring water quality parameters either verifies that the water is stable and suitable for sampling or shows that the water remains unstable, indicating the need for continued purging. Both the minimum volume and the stable parameter qualifications need to be met prior to sampling. This assures that the subsequent sample will be representative of the formation water surrounding the well screen and not of the water standing in the well.

Defining Casing Volumes

The predetermined minimum quantity of water to be purged is based on the wells' casing volume. A casing volume is the volume of water presently standing within the casing of the well. This is calculated as follows:

Casing Volume = (TD – DTW) VCF

1. Subtract the wells' depth to water (DTW) measurement from its total depth (TD) measurement. This is the height of the water column in feet.
2. Determine the well casings' volume conversion factor (VCF). The VCF is based on the diameter of the well casing and represents the volume, in gallons, that is contained in one (1) foot of a particular diameter of well casing. The common VCF's are listed on our Well Purge Data Sheets.
3. Multiply the VCF by the calculated height of the water column. This is the casing volume, the amount of water in gallons standing in the well.

Remove Three to Five Casing Volumes

Prior to sampling, an attempt will be made to purge all wells of a minimum of three casing volumes and a maximum of five casing volumes except where regulations mandate the minimum removal of four casing volumes.

Choose the Appropriate Evacuation Device Based on Efficiency

In the absence of instructions on the SOW to the contrary, selection of evacuation device will be based on efficiency.

Measure Water Quality Parameters at Each Casing Volume

At a minimum, water quality measurements include pH, temperature and electrical conductivity (EC). Measurements are made and recorded at least once every casing volume. They are considered stable when all parameters are within 10% of their previous measurement.

Note: The following instructions assume that well has already been properly located, accessed, inspected and gauged.

Prior to Purging a Well

1. Confirm that the well is to be purged and sampled per the SOW.
2. Confirm that the well is suitable based on the conditions set by the client relative to separate phase.
3. Calculate the wells' casing volume.
4. Put new Latex or Nitrile gloves on your hands.

Purging With a Bailer (Stainless Steel, Teflon or Disposable)

1. Attach bailer cord or string to bailer. Leave other end attached to spool.
2. Gently lower empty bailer into well until well bottom is reached.
3. Cut cord from spool. Tie end of cord to hand.
4. Gently raise full bailer out of well and clear of well head. Do not let the bailer or cord touch the ground.
5. Pour contents into graduated 5-gallon bucket or other graduated receptacle.
6. Repeat purging process.
7. Upon removal of first casing volume, fill clean parameter cup with purgewater, empty the remainder of the purgewater into the bucket, lower the bailer back into the well and secure the cord on the Sampling Vehicle.
8. Use the water in the cup to collect and record parameter measurements.
9. Continue purging until second casing volume is removed.
10. Collect parameter measurements.
11. Continue purging until third casing volume is removed.
12. Collect parameter measurements. If parameters are stable, stop purging. If parameters remain unstable, continue purging until stabilization occurs or the fifth casing volume is removed.

Purging With a Pneumatic Pump

1. Position Pneumatic pump hose reel over the top of the well.
2. Gently unreel and lower the pump into the well. Do not contact the well bottom.
3. Secure the hose reel.
4. Begin purging into graduated 5-gallon bucket or other graduated receptacle.
5. Adjust water recharge duration and air pulse duration for maximum efficiency.
6. Upon removal of first casing volume, fill clean parameter cup with water.
7. Use the water in the cup to collect and record parameter measurements.
8. Continue purging until second casing volume is removed.

9. Collect parameter measurements.
10. Continue purging until third casing volume is removed.
11. Collect parameter measurements. If parameters are stable, stop purging. If parameters remain unstable, continue purging until stabilization occurs or the fifth casing volume is removed.
12. Upon completion of purging, gently recover the pump and secure the reel.

Purging With a Fixed Speed Electric Submersible Pump

1. Position Electric Submersible hose reel over the top of the well.
2. Gently unreel and lower the pump to the well bottom.
3. Raise the pump 5 feet off the bottom.
4. Secure the hose reel.
5. Begin purging.
6. Verify pump rate with flow meter or graduated 5-gallon bucket
7. Upon removal of first casing volume, fill clean parameter cup with water.
8. Use the water in the cup to collect and record parameter measurements.
9. Continue purging until second casing volume is removed.
10. Collect parameter measurements.
11. Continue purging until third casing volume is removed.
12. Collect parameter measurements. If parameters are stable, stop purging. If parameters remain unstable, continue purging until stabilization occurs or the fifth casing volume is removed.
13. Upon completion of purging, gently recover the pump and secure the reel.

Blaine Tech Services, Inc.
Standard Operating Procedure

SAMPLE COLLECTION FROM GROUNDWATER WELLS USING BAILERS

Sampling with a Bailer (Stainless Steel, Teflon or Disposable)

1. Put new Latex or Nitrile gloves on your hands.
2. Determine required bottle set.
3. Fill out sample labels completely and attach to bottles.
4. Arrange bottles in filling order and loosen caps (see Determine Collection Order below).
5. Attach bailer cord or string to bailer. Leave other end attached to spool.
6. Gently lower empty bailer into well until water is reached.
7. As bailer fills, cut cord from spool and tie end of cord to hand.
8. Gently raise full bailer out of well and clear of well head. Do not let the bailer or cord touch the ground. If a set of parameter measurements is required, go to step 9. If no additional measurements are required, go to step 11.
9. Fill a clean parameter cup, empty the remainder contained in the bailer into the sink, lower the bailer back into the well and secure the cord on the Sampling Vehicle. Use the water in the cup to collect and record parameter measurements.
10. Fill bailer again and carefully remove it from the well.
11. Slowly fill and cap sample bottles. Fill and cap volatile compounds first, then semi-volatile, then inorganic. Return to the well as needed for additional sample material.

    Fill 40-milliliter vials for volatile compounds as follows: Slowly pour water down the inside on the vial. Carefully pour the last drops creating a convex or positive meniscus on the surface. Gently screw the cap on eliminating any air space in the vial. Turn the vial over, tap several times and check for trapped bubbles. If bubbles are present, repeat process.

    Fill 1 liter amber bottles for semi-volatile compounds as follows: Slowly pour water into the bottle. Leave approximately 1 inch of headspace in the bottle. Cap bottle.

    Field filtering of inorganic samples using a stainless steel bailer is performed as follows: Attach filter connector to top of full stainless steel bailer. Attach 0.45 micron filter to connector. Flip bailer over and let water gravity feed through the filter and into the sample bottle. If high turbidity level of water clogs filter, repeat process with new filter until bottle is filled. Leave headspace in the bottle. Cap bottle.

    Field filtering of inorganic samples using a disposable bailer is performed as follows: Attach 0.45 micron filter to connector plug. Attach connector plug to bottom of full disposable bailer. Water will gravity feed through the filter and into the sample bottle. If high turbidity level of water clogs filter, repeat process with new filter until bottle is filled. Leave headspace in the bottle. Cap bottle.

12. Bag samples and place in ice chest.
13. Note sample collection details on well data sheet and Chain of Custody.

Appendix B

Well Monitoring Data Sheets and *Well Gauging Data,*

Blaine Tech Services, Inc.
November 25, 2008

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
BTS # 081125-S02

CLIENT: Blymyer Engineers, Inc.

SITE: Former Fiesta Beverage
966 89th Avenue
Oakland, CA

LAB: McCampbell
DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA
☐ LIA
☐ OTHER
☐ RWQCB REGION ____

SPECIAL INSTRUCTIONS

Invoice and Report to : Blymyer Engineers, Inc.
Attn: Mark Detterman
EDF Format Required.

Global ID = T0600101573

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	TPH-G (8015M)	BTEX & MTBE (8021B)						ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1R	11/25/08	1055	W	3	HCL Voa		X	X									
MW-2	↓	1135	W	3	HCL Voa		X	X									
MW-3		1205	W	3	HCL Voa		X	X									
MW-4		1510	W	3	HCL Voa		X	X									
MW-5		1420	W	3	HCL Voa		X	X									
MW-6		1015.	W	3	HCL Voa		X	X									
MW-7		1340	W	3	HCL Voa		X	X									
MW-8		1310	W	3	HCL Voa		X	X									
MW-9		1235	W	3	HCL Voa		X	X									

SAMPLING COMPLETED — DATE: 11/25/08 — TIME: 1510
SAMPLING PERFORMED BY: Jose Ortiz
RESULTS NEEDED NO LATER THAN: As contracted

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	11/25/08	1650		11/25/08	1650
(Sample Custodian)	11/26/08	1340		11/26/08	13:40

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

WELL GAUGING DATA

Project # 081125-JO1 Date 11/25/08 Client Blymyer

Site 966 89th Ave. Oakland CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or [✓ TOC]	Notes
mw-1R	925	2					8.73	21.43		
mw-2	905	2					8.63	23.71		
mw-3	907	2					9.02	24.85		
mw-4	1430	2	parked over				8.54	21.80		
mw-5	1400	2	parked over				9.03	19.70		
mw-6	902	2					8.80	19.74		
mw-7	909	2					8.70	21.70		
mw-8	915	2					8.56	19.50		
mw-9	920	2					8.64	21.93		
							~~9.03~~	~~19.70~~		

WELLHEAD INSPECTION CHECKLIST

Page 1 of 1

Date 11/25/08 Client Blymyer

Site Address 966 89th Ave. Oakland CA.

Job Number 081125-SD1 Technician JU

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
mw-1R	X							
mw-2	X							
MW-3		2/2 Bolts missing tar in well						
mw-4	X	X						
mw-5	X							
mw-6	X							
mw-7	X							
mw-8	X							
mw-9	X							

NOTES:

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME [illegible]

PROJECT NUMBER 081125-501

EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
myron L Ultrameter II	6222712	840 11/25/08	PH 4 PH 7	4 7 10	yes	16°C	SO
			PH10 ORP solution 3900 uS solution	247 @ 16°C 3927	↓	↓	↓
ysi 550 DO.	0351287	845 11/25/08		101	yes	16°C	DD
meter							

WELL MONITORING DATA SHEET

Project #: 081125-001	Client: Bynyar
Sampler: SO	Date: 11/25/08
Well I.D.: MW-1R	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 21.43	Depth to Water (DTW): 8.73
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.27	

Purge Method: Bailer, ☒ Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other____________

Sampling Method: Bailer, ☒ Disposable Bailer, Extraction Port, Dedicated Tubing

Other: ____________

2.0 (Gals.) X 3 = 6.0 Gals.
1 Case Volume · Specified Volumes · Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or [✓ °C])	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1048	18.3	7.11	807	909	2.0	
1050	18.0	7.07	839	1000<	4.0	
1052	18.3	7.05	848	1000<	6.0	
post purge parameters		taken at	18' bgs		Fe^{+2}	0.4

Did well dewater? Yes [✓ No] Gallons actually evacuated: 6.0

Sampling Date: 11/25/08 Sampling Time: 1055 Depth to Water:

Sample I.D.: MW-1R Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.17 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-38 mV

WELL MONITORING DATA SHEET

Project #: 081125-801	Client: Blymyer
Sampler: SO	Date: 11/25/08
Well I.D.: ~~MW-2R~~ (dc) mw-2	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 23.71	Depth to Water (DTW): 8.63
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.65

Purge Method:
- Bailer
- ☒ Disposable Bailer
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other____________

Sampling Method:
- Bailer
- ☒ Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ____________

2.4 (Gals.) X 3 = 7.2 Gals.
1 Case Volume / Specified Volumes / Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$\text{radius}^2 * 0.163$

Time	Temp (°F or [✓ °C])	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1124	18.2	7.03 ~~10.70~~	874	629	2.4	
1127	18.3	7.06	869	1000<	4.8	
1130	18.4	7.03	865	1000<	7.2	
post purge parameters		taken @		20 bgs		Fe^{2+} = 0.0

Did well dewater? Yes [✓ No] Gallons actually evacuated: 7.2

Sampling Date: 11/25/08 Sampling Time: 1135 Depth to Water: 10.98

Sample I.D.: MW-2 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See coc

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.12 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	96 mV

WELL MONITORING DATA SHEET

Project #: 081125-J01	Client: Blymyer
Sampler: SO	Date: 11/25/08
Well I.D.: ~~MW-5R~~ mw-3	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 24.85	Depth to Water (DTW): 9.02
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.19

Purge Method:
- Bailer
- ☒ Disposable Bailer
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other____________

Sampling Method:
- Bailer
- ☒ Disposable Bailer
- Extraction Port
- Dedicated Tubing
- Other: ____________

2.5 (Gals.) X 3 = 7.5 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1148	17.9	7.04	973	72.9	2.5	
1150	17.9	7.04	912	116	5.0	
1152	17.8	7.05	927	158	7.5	
post purge parameters taken at				21' bgs		Fe^{+2} = 0.0

Did well dewater? Yes [✓ No] Gallons actually evacuated: 7.5

Sampling Date: 11/25/08 Sampling Time: 1205 Depth to Water: 11.87

Sample I.D.: mw-3 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see coc

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.11 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-40 mV

WELL MONITORING DATA SHEET

Project #: 081125-JD1	Client: Blymyer
Sampler: JD	Date: 11/25/08
Well I.D.: ~~mw-4R~~ mw-4	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 21.80	Depth to Water (DTW): 8.54
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.19	

Purge Method: Bailer
[✓ Disposable Bailer]
Positive Air Displacement
Electric Submersible
Waterra
Peristaltic
Extraction Pump
Other____________

Sampling Method: Bailer
[✓ Disposable Bailer]
Extraction Port
Dedicated Tubing
Other: ____________

2.1 (Gals.) X 3 = 6.3 Gals.
1 Case Volume — Specified Volumes — Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1455	17.3	6.97	696	481	2.1	
1457	17.5	6.96	695	960	4.2	
1459	17.6	6.95	695	1000 <	6.3	

post purge parameters taken @ 18' bgs Fe^{2+} = 0.1

Did well dewater? Yes [✓ No]	Gallons actually evacuated: 6.3
Sampling Date: 11/25/08 Sampling Time: 1510	Depth to Water: 11.07
Sample I.D.: mw-4	Laboratory: Kiff CalScience Other mccampbell
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other: See COC
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other:
D.O. (if req'd): Pre-purge: mg/L	Post-purge: 0.11 mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: 153 mV

V L MONITORING DATA SH

Project #: 081125-JO1	Client: Blymyer
Sampler: JO	Date: 11/25/08
Well I.D.: ~~MW-5R~~ MW-5	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 19.70	Depth to Water (DTW): 9.03
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.16	

Purge Method:			Sampling Method:	
	Bailer	Waterra		Bailer
	[✓ Disposable Bailer]	Peristaltic		[✓ Disposable Bailer]
	Positive Air Displacement	Extraction Pump		Extraction Port
	Electric Submersible	Other______		Dedicated Tubing
			Other:	______

1.7 (Gals.) X 3 = 5.1 Gals.
1 Case Volume / Specified Volumes / Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	$\text{radius}^2 * 0.163$

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1402	17.7	7.05	720	984	1.7	
1404	17.9	7.02	721	1000<	3.4	
1406	17.8	6.99	721	1000<	5.1	

post purge parameters taken at 16' bgs Fe^{2+} = 0.0

Did well dewater? Yes [✓ No]	Gallons actually evacuated: 5.1	
Sampling Date: 11/25/08	Sampling Time: 14:20	Depth to Water: 10.23
Sample I.D.: MW-5	Laboratory: Kiff CalScience Other McCampbell	
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other: See COC	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D	Oxygenates (5) Other:	

D.O. (if req'd):	Pre-purge:	mg/L	[✓ Post-purge:]	6.07 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	[✓ Post-purge:]	175 mV

W L MONITORING DATA SHE

Project #: 081125-S01	Client: Blymyer
Sampler: SU	Date: 11/25/08
Well I.D.: ~~MW-6R~~ mw-6	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 19.74	Depth to Water (DTW): 8.80
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 10.99

Purge Method: Bailer, Disposable Bailer, Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other________

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: ________

1.8 (Gals.) X ~~5.4~~ 3 = 5.4 Gals.
1 Case Volume · Specified Volumes · Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or [✓ °C])	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1002	17.8	6.86	805	129	1.8	
1004	17.8	6.87	803	74	3.6	
1006	17.9	6.90	800	510	5.4	

post purge parameters take at 16.74' bgs Fe^{2+} = 0.3

Did well dewater? Yes [✓ No]   Gallons actually evacuated: 5.4

Sampling Date: 11/25/08   Sampling Time: 1015   Depth to Water: 10.73

Sample I.D.: mw-6   Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: see COC

EB I.D. (if applicable): @ Time   Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	[✓ Post-purge:]	0.24 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	[✓ Post-purge:]	220 mV

Fe - 0.3

WELL MONITORING DATA SHEET

Project #: 08125-S01	Client: Blymyer
Sampler: JO	Date: 11/25/08
Well I.D.: ~~mw-7R~~ mw-7	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 21.70	Depth to Water (DTW): 8.70
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.30

Purge Method: Bailer, [✓ Disposable Bailer], Positive Air Displacement, Electric Submersible, Waterra, Peristaltic, Extraction Pump, Other____________

Sampling Method: Bailer, [✓ Disposable Bailer], Extraction Port, Dedicated Tubing, Other: ____________

2.0 (Gals.) X 3 = 6.0 Gals.
1 Case Volume — Specified Volumes — Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1326	18.0	7.20	772	1000<	2.0	
1328	17.9	7.06	771	1000<	4.0	
1330	18.4	7.07	769	1000<	6.0	
post purge parametrs		taken @	18' bgs		Fe^{2+}	= 0.0

Did well dewater? Yes [✓ No] Gallons actually evacuated: 6.0

Sampling Date: 11/25/08 Sampling Time: 1340 Depth to Water: 11.04

Sample I.D.: mw-7 Laboratory: Kiff CalScience Other mccampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.19 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	206 mV

WELL MONITORING DATA SHEET

Project #: 081125-SO1	Client: Blymyer
Sampler: SO	Date: 11/25/08
Well I.D.: ~~mw-8l~~ mw-8	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 19.50	Depth to Water (DTW): 8.56
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 10.75	

Purge Method: Bailer
[✓ Disposable Bailer]
Positive Air Displacement
Electric Submersible
Waterra
Peristaltic
Extraction Pump
Other________

Sampling Method: Bailer
[✓ Disposable Bailer]
Extraction Port
Dedicated Tubing
Other: ________

1.8 (Gals.) X 3 = 5.4 Gals.
1 Case Volume / Specified Volumes / Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1258	18.6	7.02	795	1000 <	1.8	
1300	18.7	6.98	803	1000 <	3.6	
1302	19.0	7.03	799	1000 <	5.4	
post purge parameters		taken @ 16' bgs			Fe^{2+} = 0.0	

Did well dewater? Yes [✓ No]	Gallons actually evacuated: 5.4

Sampling Date: 11/25/08 Sampling Time: 1310 Depth to Water: 10.57

Sample I.D.: mw-8 Laboratory: Kiff CalScience Other McCampbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.13 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	212 mV

WELL MONITORING DATA SHEET

Project #: 081125-SO1	Client: Blymyer
Sampler: SO	Date: 11/25/08
Well I.D.: ~~MW-9R~~ mw-9	Well Diameter: [✓ 2] 3 4 6 8 ____
Total Well Depth (TD): 21.93	Depth to Water (DTW): 8.64
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: [✓ PVC] Grade	D.O. Meter (if req'd): [✓ YSI] HACH

DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.29

Purge Method: Bailer
✓ Disposable Bailer
Positive Air Displacement
Electric Submersible
Waterra
Peristaltic
Extraction Pump
Other______

Sampling Method: Bailer
✓ Disposable Bailer
Extraction Port
Dedicated Tubing
Other: ______

2.1 (Gals.) X 3 = 6.3 Gals.
1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1220	18.2	7.07	667	131	2.1	
1222	18.4	7.04	696	340	4.2	
1224	18.7	7.01	693	584	6.3	
post purge parameters		taken @	18' bgs		Fe^{+2}	= 0.1

Did well dewater? Yes [✓ No] Gallons actually evacuated: 6.3

Sampling Date: 11/25/08 Sampling Time: 1235 Depth to Water: 11.14

Sample I.D.: mw-9 Laboratory: Kiff CalScience Other mc campbell

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	[✓ Post-purge:]	0.12 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	[✓ Post-purge:]	123 mV

S or Purge Water Drum Lo

Client: Blymyer Eng

Site Address: 966 89th Av. Oakland, CA

STATUS OF DRUM(S) UPON ARRIVAL

Date	11/25/08					
Number of drum(s) empty:	0					
Number of drum(s) 1/4 full:	⑩ ~~1~~ 0					
Number of drum(s) 1/2 full:						
Number of drum(s) 3/4 full:	2					
Number of drum(s) full:	⑬ ~~7~~ 5					
Total drum(s) on site:	⑧ ~~8~~ 7					
Are the drum(s) properly labeled?	Y					
Drum ID & Contents:	Purge H2O					
If any drum(s) are partially or totally filled, what is the first use date:	08/28/07					

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.

-If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.

-All BTS drums MUST be labeled appropriately.

STATUS OF DRUM(S) UPON DEPARTURE

Date	11/25/08					
Number of drums empty:	0					
Number of drum(s) 1/4 full:	1					
Number of drum(s) 1/2 full:						
Number of drum(s) 3/4 full:						
Number of drum(s) full:	7					
Total drum(s) on site:	8					
Are the drum(s) properly labeled?	Y					
Drum ID & Contents:	Purge H2O					

LOCATION OF DRUM(S)

Describe location of drum(s):

FINAL STATUS

Number of new drum(s) left on site this event	1					
Date of inspection:	11/25/08					
Drum(s) labelled properly:	Y					
Logged by BTS Field Tech:	JO					
Office reviewed by:						

Appendix C

Analytical Laboratory Report

McCampbell Analytical, Inc.
December 5, 2008

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Blymyer Engineers, Inc.	Client Project ID: #081125-S02; Former Fiesta Beverage, 966 89th Ave	Date Sampled: 11/25/08
1829 Clement Avenue		Date Received: 11/26/08
Alameda, CA 94501-1395	Client Contact: Mark Detterman	Date Reported: 12/05/08
	Client P.O.:	Date Completed: 12/05/08

WorkOrder: 0811850

December 05, 2008

Dear Mark:

Enclosed within are:

1) The results of the **9** analyzed samples from your project: **#081125-S02; Former Fiesta Bevera**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

0811850

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
BTS # 081125-S02

CLIENT: Blymyer Engineers, Inc.

SITE: Former Fiesta Beverage
966 89th Avenue
Oakland, CA

CONDUCT ANALYSIS TO DETECT

LAB: McCampbell
DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA
☐ LIA
☐ OTHER
☐ RWQCB REGION

SPECIAL INSTRUCTIONS

Invoice and Report to : Blymyer Engineers, Inc.
Attn: Mark Detterman
EDF Format Required.

Global ID = T0600101573

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H₂0	CONTAINERS TOTAL	CONTAINERS	C = COMPOSITE ALL CONTAINERS	TPH-G (8015M)	BTEX & MTBE (8021B)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-1R	11/25/08	1055	W	3	HCL Voa		X	X				
MW-2		1135	W	3	HCL Voa		X	X				
MW-3		1205	W	3	HCL Voa		X	X				
MW-4		1510	W	3	HCL Voa		X	X				
MW-5		1420	W	3	HCL Voa		X	X				
MW-6		1015	W	3	HCL Voa		X	X				
MW-7		1340	W	3	HCL Voa		X	X				
MW-8		1310	W	3	HCL Voa		X	X				
MW-9		1235	W	3	HCL Voa		X	X				

ICE / t° 2.6
GOOD CONDITION ✓ APPROPRIATE CONTAINERS ✓
HEAD SPACE ABSENT ____
DECHLORINATED IN LAB ____ PRESERVED IN LAB ____
PRESERVATION ____ VOAS | O & G | METALS | OTHER

SAMPLING COMPLETED: DATE 11/25/08 TIME 1510
SAMPLING PERFORMED BY: Jose Ortiz
RESULTS NEEDED NO LATER THAN: As contracted

RELEASED BY	DATE 11/25/08	TIME 1650	RECEIVED BY	DATE 11/25/08	TIME 1650
RELEASED BY (Sample Custodian)	DATE 11/26/08	TIME 1340	RECEIVED BY Derek Carter	DATE 11/26/08	TIME 13:40
RELEASED BY Derek Carter	DATE 11/26/08	TIME 1740	RECEIVED BY V8	DATE	TIME
SHIPPED VIA	DATE SENT	TIME SENT	COOLER #		

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WorkOrder: 0811850 **ClientCode: BEIA**

☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Mark Detterman
Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501-1395

(510) 521-3773 FAX (510) 865-2594

Email: MDetterman@blymyer.com
cc:
PO:
ProjectNo: #081125-S02; Former Fiesta Beverage, 966 89th Ave

Bill to:
Accounts Payable
Blymyer Engineers, Inc.
1829 Clement Avenue
Alameda, CA 94501-1395

Requested TAT: **5 days**

Date Received: **11/26/2008**
Date Printed: **11/26/2008**

					Requested Tests (See legend below)											
Lab ID	**Client ID**	**Matrix**	**Collection Date**	**Hold**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
0811850-001	MW-1R	Water	11/25/2008 10:55	☐	A	A										
0811850-002	MW-2	Water	11/25/2008 11:35	☐	A											
0811850-003	MW-3	Water	11/25/2008 12:05	☐	A											
0811850-004	MW-4	Water	11/25/2008 15:10	☐	A											
0811850-005	MW-5	Water	11/25/2008 14:20	☐	A											
0811850-006	MW-6	Water	11/25/2008 10:15	☐	A											
0811850-007	MW-7	Water	11/25/2008 13:40	☐	A											
0811850-008	MW-8	Water	11/25/2008 13:10	☐	A											
0811850-009	MW-9	Water	11/25/2008 12:35	☐	A											

Test Legend:

1	G-MBTEX_W	2	PREDF REPORT	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Ana Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

Sample Receipt Checklist

Client Name: **Blymyer Engineers, Inc.**

Date and Time Received: **11/26/08 7:21:54 PM**

Project Name: **#081125-S02; Former Fiesta Beverage, 966 89th A**

Checklist completed and reviewed by: Ana Venegas

WorkOrder N°: **0811850** Matrix Water

Carrier: Derik Cartan (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Sample IDs noted by Client on COC?	Yes ☑	No ☐	
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐	
Sampler's name noted on COC?	Yes ☑	No ☐	

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 2.8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

** NOTE: If the "No" box is checked, see comments below.*

Client contacted:

Date contacted:

Contacted by:

Comments:

Blymyer Engineers, Inc. 1829 Clement Avenue Alameda, CA 94501-1395	Client Project ID: #081125-S02; Former Fiesta Beverage, 966 89th Ave	Date Sampled: 11/25/08 Date Received: 11/26/08
	Client Contact: Mark Detterman	Date Extracted: 12/02/08-12/05/08
	Client P.O.:	Date Analyzed 12/02/08-12/05/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0811850

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1R	W	130,d1	ND	11	ND	10	1.5	1	96
002A	MW-2	W	ND	ND	1.2	ND	ND	ND	1	93
003A	MW-3	W	61,d1	ND	4.8	0.56	1.1	1.5	1	85
004A	MW-4	W	ND	ND	ND	ND	ND	ND	1	95
005A	MW-5	W	ND	ND	ND	ND	ND	ND	1	96
006A	MW-6	W	ND	ND	ND	ND	ND	ND	1	97
007A	MW-7	W	ND	ND	ND	ND	ND	ND	1	108
008A	MW-8	W	ND	ND	ND	ND	ND	ND	1	121
009A	MW-9	W	ND	ND	ND	ND	ND	ND	1	95

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 39962 WorkOrder 0811850

EPA Method SW8021B/8015Cm **Extraction SW5030B** **Spiked Sample ID: 0811848-008A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	99.3	92.4	7.15	86.2	93.2	7.88	70 - 130	20	70 - 130	20
MTBE	ND	10	95.1	85.6	10.6	81.3	88.1	8.11	70 - 130	20	70 - 130	20
Benzene	ND	10	96.3	92.8	3.72	96	94.5	1.61	70 - 130	20	70 - 130	20
Toluene	ND	10	87.2	84	3.73	87.2	87.8	0.764	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	97	93	4.27	97	94.2	2.98	70 - 130	20	70 - 130	20
Xylenes	ND	30	94	88.2	6.35	92	90.4	1.81	70 - 130	20	70 - 130	20
%SS:	97	10	101	102	1.59	110	101	8.34	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 39962 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0811850-001A	11/25/08 10:55 AM	12/02/08	12/02/08 5:42 PM	0811850-002A	11/25/08 11:35 AM	12/02/08	12/02/08 6:16 PM
0811850-003A	11/25/08 12:05 PM	12/02/08	12/02/08 6:49 PM	0811850-004A	11/25/08 3:10 PM	12/02/08	12/02/08 7:23 PM
0811850-005A	11/25/08 2:20 PM	12/02/08	12/02/08 7:56 PM	0811850-006A	11/25/08 10:15 AM	12/02/08	12/02/08 8:30 PM
0811850-007A	11/25/08 1:40 PM	12/02/08	12/02/08 9:03 PM	0811850-008A	11/25/08 1:10 PM	12/05/08	12/05/08 8:52 AM
0811850-009A	11/25/08 12:35 PM	12/02/08	12/02/08 9:36 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

DHS ELAP Certification 1644 ________ QA/QC Officer