

**Groundwater Monitoring Report
Fourth Quarter 2000
Former Glovatorium
3815 Broadway, Oakland, California**

**6895.00-031
January 19, 2001**

Prepared for
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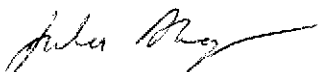
Subject: Fourth Quarter 2000 Groundwater Monitoring Report, Former Glovatorium,
3815 Broadway, Oakland, California

Dear Mr. Seery:


LFR Levine · Fricke is submitting the enclosed quarterly groundwater monitoring report for the subject site, which covers the period from September 1 through November 30, 2000. The report discusses groundwater sampling results from the fourth quarter 2000 sampling event, which includes the continuing bioattenuation evaluation and presents a summary and recommendations.

If you have any questions or comments regarding the enclosed report, please call either of us.

Sincerely,



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Senior Engineer



Charles H. Pardini, R.G.
Principal Geologist,
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Enclosure

cc: Stuart Depper, Clean Tech Machinery
Albert M. Cohen, Smiland & Khachigian
Betty Graham, Regional Water Quality Control Board
Bruce Page, Bruce W. Page Consulting

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1.0 INTRODUCTION

This quarterly groundwater monitoring report describes activities completed and presents the results of groundwater monitoring conducted during the fourth quarter 2000, which covers the period from September 1 through November 30, 2000, at the former Glovatorium, a dry cleaning business located at 3815 Broadway in Oakland, California ("the Site"; Figure 1). This report was prepared by LFR Levine-Fricke (LFR) on behalf of Smiland & Khachigian.

The quarterly groundwater monitoring activities were conducted in accordance with the June 14, 2000 Work Plan (LFR 2000b) that was approved by the Alameda County Health Care Services Agency (ACHCSA). The report was prepared pursuant to the June 14, 2000 Work Plan, a letter from the ACHCSA dated January 5, 2000, and discussions on May 10, 2000, between Mr. Scott Seery of ACHCSA, Ms. Betty Graham of the Regional Water Quality Control Board (RWQCB), and representatives of LFR and Bruce W. Page Consulting.

The report is organized into the following sections:

Section 1.0 is an introduction and summarizes the organization of this report.

Section 2.0 discusses activities completed in the fourth quarter 2000.

Section 3.0 provides a description of the Site and background information.

Section 4.0 presents groundwater monitoring results, including groundwater-level measurements, laboratory analysis results of groundwater samples, and field screening results of groundwater samples.

Section 5.0 presents a summary, conclusions, and recommendations.

This work is needed to determine the nature and extent of environmental contamination, and thus whether contamination is affecting the neighboring Thompson property. This information is needed to defend against the claim that Mr. Thompson brought against the Glovatorium and the Deppers. This work may also provide data that could help determine when releases occurred, which is also significant to defending against the claims brought by a former owner of the property, Ms. Johnson.

2.0 ACTIVITIES COMPLETED IN FOURTH QUARTER 2000

Activities completed in the fourth quarter 2000 included routine groundwater monitoring and evaluating the potential of bioattenuation as a means to reduce chemical concentrations in groundwater. Groundwater gradient and groundwater quality assessments were conducted based on the results obtained. The following activities

were conducted during the fourth quarter 2000 monitoring period (September 1 through November 30, 2000):

- **Preliminary Activities.** Before field work began, LFR set up sampling and laboratory equipment and verified access to well LFR-2 located on the property at 340 38th Street. The sampling and laboratory equipment included preparing necessary ampules and standards for use in bioattenuation testing, and obtaining special bubble-strip sampling equipment required for hydrogen analysis.

LFR's July 24, 2000 "Health and Safety Plan: Update 1" ("the HSP"), which addresses sampling, was distributed to on-site LFR field personnel. Personnel engaged in field work were briefed on the contents and procedures of the HSP. Field activities were monitored to ensure that appropriate health and safety procedures were followed.

- **Groundwater Gradient Assessment.** Information regarding the groundwater gradient was obtained by measuring groundwater levels in monitoring wells LFR-1 through LFR-4, in temporary sampling points, and in upgradient wells MW-8, MW-9, and MW-11.
- **Groundwater Quality Assessment.** Information regarding groundwater quality was obtained by collecting and analyzing groundwater samples from monitoring wells LFR-1 through LFR-4, from temporary sampling points, and from well MW-11. In addition to the routine compounds previously analyzed (total petroleum hydrocarbons as Stoddard solvent [TPHss] and TPH as gasoline [TPHg], volatile organic compounds [VOCs], benzene, toluene, ethylbenzene, total xylenes [BTEX], and methyl tertiary-butyl ether [MTBE]), bioattenuation parameters (dissolved oxygen [DO], nitrate, manganese, sulfate, ferrous iron, methane, oxidation-reduction potential [ORP], hydrogen, alkalinity, chloride, carbon dioxide, total iron, nitrite, and sulfide) were analyzed to evaluate natural bioattenuation of dissolved organic chemicals in the groundwater.

3.0 SITE DESCRIPTION AND BACKGROUND

3.1 Site Description

The Site is located between Manila Avenue and Broadway, near the intersection with 38th Street, in Oakland, California. The ground surface at the Site slopes gently southwest, with surface elevations ranging from approximately 84 to 78 feet above mean sea level (msl).

A 54-inch-inside-diameter storm drain culvert passes under the property, from Manila Avenue on the west to 38th Street on the south (Figure 2). The depth of the storm drain invert is approximately 8.5 feet under the sidewalk on the eastern side of Manila Avenue and approximately 13.2 feet bgs at the bend in the drain that is approximately 60 feet south of GW-4 (Figure 2; LFR 1999).

A 10-inch-diameter, cast iron sanitary sewer lateral slopes down from a manhole inside the building to a connection with the sanitary sewer main that runs north-south down the middle of Manila Avenue. The floor drain lines inside the building are less than 2 feet below the surface. The depth of the sanitary sewer line increases gradually inside the building near the manhole and then slopes more steeply downward near the western wall of the building, where it plunges underneath the storm drain (LFR 1999).

Six underground storage tanks (USTs) are located at the Site. Two USTs are located under the sidewalk on 38th Street and four USTs are located inside the building (Figure 2). The volumes of the USTs have been variously reported as ranging from 800 gallons up to 5,000 gallons. They reportedly contained Stoddard solvent, fuel oil, and possibly waste oil. The six USTs were closed in-place by being backfilled with either cement-sand slurry or pea gravel in August 1997. In addition to these six USTs, there are an additional three USTs owned by Earl Thompson, Sr. under the sidewalk on 38th Street (Figure 2).

Further description of site history, land uses, geology, and previous soil and groundwater investigations are contained in reports listed in the References section as LFR 1999 and LFR 2000a, and the work plan listed as LFR 2000b.

3.2 Summary of Previous Investigations

- Geosolv, LLC (“GeoSolv”) performed a soil and grab groundwater investigation in August 1997. Fourteen soil borings were advanced to depths of approximately 10 to 24 feet below ground surface (bgs) using the direct-push drilling method. Seven of the soil borings (B-2, B-3, B-7, B-8, B-9, B-10, and B-13; Figure 2) were converted to temporary sampling points from which grab groundwater samples were collected.
- Geosolv performed an additional soil and grab groundwater investigation in September 1998. Twelve direct-push soil borings were advanced to depths of approximately 19 to 25 feet bgs. All 12 of the soil borings were converted to temporary sampling points (E-15 through E-26; Figure 2), from which grab groundwater samples were collected. Those temporary grab groundwater sampling points were abandoned and sealed.

In July 1999, LFR drilled ten soil borings (GW-1 through GW-8, GW-5A, and GW-6A; Figure 2) to depths ranging from approximately 8 to 20 feet bgs using the direct-push method. LFR collected soil samples for laboratory analysis and lithologic description, and installed nine temporary sampling points in the borings.

- In July and August 1999, LFR collected grab groundwater samples from seven of the nine temporary sampling points (GW-2, GW-3, GW-4, GW-5, GW-6A, GW-7, and GW-8). Sampling point GW-1 has not yielded water since it was installed and therefore has not been sampled. Sampling point GW-6 was not measured or sampled because the adjacent sampling point, GW-6A, was sampled instead. (GW-6 had not yielded water since it was installed. The adjacent sampling point

GW-6A is deeper and has yielded water.) Temporary grab groundwater sampling point GW-7 was abandoned and sealed with cement grout after a grab groundwater sample was collected from it on July 15, 1999, in accordance with the LFR May 1999 Work Plan.

- In January and April 2000, LFR conducted quarterly groundwater monitoring events (the first and second quarter 2000 events, respectively). Groundwater monitoring included measuring groundwater levels and collecting groundwater samples. Groundwater levels were measured in the temporary sampling points installed by LFR and GeoSolv, and in off-site wells MW-8, MW-9, and MW-11 owned by TOSCO Marketing Company (TOSCO). Groundwater samples were collected from temporary sampling points installed by LFR and from well MW-11. Groundwater samples collected from the temporary sampling points are designated grab samples.
- In July and August 2000, LFR installed four groundwater monitoring wells, LFR-1 through LFR-4, and conducted the third quarterly groundwater monitoring event. This was the first sampling event in which bioattenuation parameters were analyzed. Selected samples were analyzed for the following: DO, nitrate, sulfate, ferrous iron, total iron, methane, ORP, alkalinity, chloride, carbon dioxide, nitrite, sulfide, ethene, and ethane. The bioattenuation parameters analysis provided a baseline for these parameters and a means to compare their concentrations at locations within the apparent source area against surrounding upgradient, downgradient, and crossgradient locations. Groundwater monitoring included measuring groundwater levels and collecting groundwater samples. Groundwater levels were measured in LFR-1 through LFR-4, in the temporary sampling points installed by LFR and GeoSolv, and in off-site wells MW-8, MW-9, and MW-11 owned by TOSCO. Groundwater samples were collected from LFR-1 through LFR-4, from temporary sampling points installed by LFR, and from well MW-11.

Construction data for the temporary groundwater sampling points and wells installed by GeoSolv and LFR are presented in Table 1. Construction data for the wells owned by TOSCO are not available.

3.3 Local and Site Geology

The Site is located on the alluvial plain between the San Francisco Bay shoreline and the Oakland hills. Surface sediments in the Site vicinity consist of Holocene alluvial deposits that are representative of an alluvial fan depositional environment. These deposits consist of brown, medium dense sand that fines upward to sandy or silty clay. The pattern of stream channel deposition results in a three-dimensional network of coarse-grained sediments interspersed with finer-grained silts and clays. The individual units tend to be discontinuous lenses aligned parallel to the axis of the former stream flow direction.

Sediments encountered in soil borings at the Site are typical of those encountered in an alluvial fan depositional environment. The sediments are predominantly fine-grained,

consisting of clay, silty clay, sandy clay, gravelly clay, and clayey silt. Discontinuous layers of coarse-grained sediments (clayey sand, silty sand, and clayey gravel) generally also contain relatively high percentages of silt and clay, which tend to reduce their permeability.

During previous investigations conducted by GeoSolv and LFR, a relatively coarse-grained layer of silty sand, clayey sand, and clayey gravel was encountered in soil borings E-23, E-25, E-26, GW-2, GW-3, GW-7, and GW-8 at depths between approximately 4.5 and 14 feet bgs (at elevations ranging from approximately 66 to 74 feet msl). A discontinuous layer of silty to clayey sand was encountered at depths from 17 to 21 feet bgs (60 to 64 feet msl) in borings B-11, E-23, E-25, GW-7, and GW-8.

Lithology encountered in the borings for monitoring wells LFR-1 through LFR-4 was consistent with lithology encountered in previous investigations. Soils encountered were predominantly silty clay to clayey silt, varying to sandy silt. A layer of silty sand was encountered in LFR-1 from approximately 13 to 16 feet bgs. A poorly graded sand lens was encountered in LFR-1 at approximately 9 feet bgs (71 feet msl). Poorly graded sand was also encountered in LFR-1 from approximately 16 to 18 feet bgs (62 to 64 feet msl) and in LFR-2 from approximately 6 to 6.5 feet bgs (75.5 to 76 feet msl) and from approximately 16.5 to 17 feet bgs (65 to 65.5 feet msl).

4.0 RESULTS OF FOURTH QUARTER 2000 SAMPLING EVENT

This section presents the results of the fourth quarter 2000 sampling event. Section 4.1 presents the results of groundwater level measurements. Section 4.2 presents laboratory analysis results of groundwater samples collected during the fourth quarter 2000 sampling event. Field methods used to collect groundwater samples and perform field testing using the spectrophotometer are presented in Appendix A. Water-quality sampling information forms are presented in Appendix B. Laboratory certificates are presented in Appendix C.

4.1 Groundwater Elevations

Table 2 presents groundwater depths measured on October 30, 31, and November 2, 2000, and the corresponding elevations in temporary sampling points B-2, B-3, B-7 through B-10, B-13, GW-1, GW-2, GW-3, GW-4, GW-5, GW-6A; and in monitoring wells MW-8, MW-9, MW-11, and in LFR-1 through LFR-4. Depth to groundwater ranged from 7.73 feet bgs in B-3 to 13.51 feet bgs in LFR-4.

Groundwater elevations ranged from 66.99 feet msl in LFR-3 to 78.38 feet msl in MW-8. The groundwater elevations in GW-3 and in LFR-2 were approximately 1-1/2 feet higher in October/November 2000 than in August 2000. Elevation differences between the third and fourth quarters 2000 in other wells and temporary sampling points varied up to about 2/3 foot. Elevations in GW-2, MW-11, and LFR-4 were

lower in the fourth quarter, while those in B-7, B-10, GW-3, LFR-1, LFR-2, and LFR-3 were higher in the fourth quarter.

Groundwater elevations measured in several of the temporary sampling points could not be used in the groundwater contouring and groundwater gradient calculations. The reasons these measurements were not used are presented below.

- Temporary sampling points GW-1 (screen interval from 3 feet to 8 feet bgs), GW-4 (screen interval from 7 feet to 12 feet bgs), GW-5 (screen interval from 8 feet to 13 feet bgs), and GW-6A (screen interval from 5 feet to 15 feet bgs) are constructed in backfill material adjacent to the storm drain culvert and have screened intervals shallower than those of most other points (Table 1).
- Temporary sampling points B-2, B-3, B-7, B-8, B-9, B-10, and B-13, located inside the building, exhibit groundwater elevations that are either higher or lower than those measured in wells or temporary sampling points outside the building, indicating that a groundwater mound and depression apparently exist in close proximity. The groundwater elevations measured in these points might be affected by a number of factors such as the presence of backfill material in the vicinity of the former USTs or, possibly, leaking floor drain lines inside the building.

Seven monitoring wells were used to calculate the horizontal groundwater gradient: LFR-1, LFR-2, LFR-3, LFR-4, MW-8, MW-9, and MW-11. LFR calculated the horizontal gradient to be approximately 0.019 foot per foot (ft/ft) between wells MW-8 and LFR-2, and approximately 0.023 ft/ft between wells LFR-2 and LFR-3. The direction of groundwater flow is generally towards the southwest, as shown on Figure 3. Although the average direction of groundwater flow is toward the southwest, the groundwater elevation contours suggest the presence of a groundwater divide, which may run in a southwest direction and through wells LFR-2 and LFR-3. Therefore, shallow groundwater beneath the Site appears to flow toward 38th Street to the south and toward Manila Avenue to the west.

4.2 Groundwater Analyses and Results

Groundwater samples were collected on October 30 through November 2, 2000, from monitoring wells LFR-1 through LFR-4, MW-11, and temporary sampling points GW-2, GW-3, B-7, and B-10. The groundwater samples were submitted to Curtis & Tompkins, of Berkeley, California for the routine analyses, and to Microseeps Analytical Laboratory, of Pittsburgh, Pennsylvania ("Microseeps") for the bioattenuation parameter analyses.

4.2.1 Routine Analysis Results

Groundwater samples were analyzed for TPH_{ss} and TPH_g using modified EPA Method 8015; for VOCs using EPA Method 8260B (with a listing of compounds from the 8010 analytical method); and for BTEX and MTBE using EPA Method 8021B.

Laboratory analysis results are summarized in Tables 3 and 4. Table 3, which summarizes the TPH, BTEX, and MTBE data, indicates that some of the analytical results are estimated, or have other qualifiers. Results for TPHss and tetrachloroethene (PCE) are illustrated on Figures 4 and 5.

- TPHss was detected in B-7, B-10, LFR-1, LFR-2, and LFR-4 at concentrations up to 62 mg/l (B-7). TPHss was not detected in GW-2, GW-3, MW-11, or LFR-3. An isoconcentration map, which depicts the distribution of TPHss in groundwater, is shown on Figure 4.
- Benzene was detected in B-7, B-10, LFR-2, and LFR-4 at concentrations up to 0.0091 mg/l (B-7). Benzene was not detected in GW-2, GW-3, LFR-1, LFR-3, or MW-11.
- MTBE was detected in B-7, GW-3, MW-11, LFR-1 (split), LFR-2, and LFR-4 at concentrations up to 0.01 mg/l (B-7). MTBE was not detected in B-10, GW-2, LFR-1 (primary), or LFR-3.
- PCE was detected in B-10, GW-2, GW-3, and LFR-1 at concentrations up to 2.4 mg/l (B-10). PCE was not detected in B-7, MW-11, LFR-2, LFR-3, or LFR-4. An isoconcentration map, which depicts the distribution of PCE in groundwater, is shown on Figure 6.
- TCE was detected in the same wells and temporary sampling points as PCE, in B-10, GW-2, GW-3, and LFR-1 at concentrations up to 1.9 mg/l (B-10). TCE was not detected in B-7, MW-11, LFR-2, LFR-3, or LFR-4. The distribution of TCE in groundwater is approximately the same as the distribution of PCE.
- cis-1,2-dichloroethene (cis-1,2-DCE) was detected in B-7, B-10, GW-2, GW-3, LFR-1, LFR-2, and LFR-4 at concentrations up to 7.1 mg/l (B-10). cis-1,2-DCE was not detected in LFR-3 or MW-11. The distribution of cis-1,2-DCE in groundwater is approximately the same as the distribution of PCE and TCE.
- Vinyl chloride was only detected in LFR-2 at a concentration of 0.015 mg/l.

4.2.2 Bioattenuation Parameter Analysis Results

A natural attenuation study was initiated in the third quarter 2000 sampling event to evaluate whether intrinsic bioremediation processes are active at the Site and whether PCE and other chemicals dissolved in groundwater are biodegrading as a result. During the degradation of dissolved organic chemicals, bacteria use electron acceptors, typically dissolved oxygen, nitrate, ferric iron, or sulfate. As a result, a decrease in these parameters would be indicative of this process. Similarly, during the process of anaerobic reductive dehalogenation, an increase in ferrous iron, alkalinity, methane, and carbon dioxide would be observed.

Groundwater samples collected during this fourth quarter 2000 sampling event were analyzed for common electron acceptors and other geochemical indicators as described below.

The following bioattenuation parameters were analyzed in the laboratory: dissolved oxygen, methane, and carbon dioxide by method AM19GA, AM15, or AM18; nitrate, nitrite, sulfate, and chloride by EPA Method 9056; ferrous iron by EPA modified Method 7199; manganese and iron by EPA Method 6010B; alkalinity by EPA Method 310.1; hydrogen by method AM20GAX; and sulfide by EPA Method 376.1.

A slightly different set of analytes was selected in the fourth quarter than in the third quarter. Hydrogen was not analyzed until the fourth quarter, because of the 30 to 90 day time period required after well installation before sampling for hydrogen, as discussed in the "Hydrogen" paragraph below. Ethene and ethane were not analyzed in the fourth quarter, because their third quarter results indicated that if reductive dechlorination was producing these compounds, they were not accumulating in significant concentrations, and their analytical results were not considered useful. Different laboratories conducted the bioattenuation parameter analyses in the two quarters, and the fourth quarter laboratory, Microseeps, included manganese in its general suite of anions/cations.

Additionally, several of these parameters (nitrate, sulfate, ferrous iron, iron, nitrite, and sulfide) were measured in the field using a Hach spectrophotometer. DO, ORP, pH, conductivity, and temperature were measured in the field using a flow-through instrument as described in Appendix A. A description of the field screening process is also provided in Appendix A. Results for these are summarized in Table 5 and in Appendix Table A-1. Selected samples were analyzed for the bioattenuation parameters to obtain results from at least one upgradient location (MW-11), one location within the chemically affected portion of the Site (B-7 and/or B-10), and one location downgradient of the Site (LFR-3).

Results for selected parameters (DO, nitrate, manganese, sulfate, ferrous iron, methane, ORP, and hydrogen) are presented in Table 5. Results of the other parameters tested (alkalinity, chloride, carbon dioxide, iron, nitrite, sulfide, pH, temperature, and conductivity) are summarized in Table A-1 and the field sheets are contained in Appendix B. All analytical laboratory results are contained in Appendix C.

The results of the bioattenuation parameter analysis are presented below.

Dissolved Oxygen. DO is the most favored electron acceptor used by microbes for the biodegradation of organic carbon. Concentrations of DO less than 0.5 mg/l, indicating anaerobic conditions, were measured in the field samples collected in the apparent source area and slightly downgradient from B-7, B-10, and LFR-2. The variation between laboratory and field results for these three locations (B-7 [field result of 0.25 mg/l, laboratory result of 0.62 mg/l], B-10 [field result of 0.44 mg/l, laboratory result of 2.4 mg/l], and LFR-2 [field result of 0.47 mg/l, laboratory result of 2.2 mg/l]) and for locations LFR-3 (field result of 0.58 mg/l, laboratory result of 4.7 mg/l), and LFR-4 (field result of 0.64 mg/l, laboratory result of 1.9 mg/l) makes these results somewhat inconclusive.

In general, these results indicate that conditions in the apparent source area are anaerobic and conducive to anaerobic biodegradation processes, because (1) the lowest DO concentrations occurred in the apparent source area (B-7 and B-10) and slightly downgradient (LFR-2), and in well LFR-4, and (2) the highest DO concentrations occurred in well LFR-1, the upgradient well MW-11, the downgradient well LFR-3, and temporary sampling point GW-3. Considering the variation between field and laboratory results, the fourth quarter 2000 results are relatively consistent with the third quarter results except GW-3 (0.72 mg/l field result in the third quarter; 7.76 mg/l field result in the fourth quarter). DO results are included in Table 5.

Nitrate. After DO has been depleted, nitrate may be used as an electron acceptor for anaerobic biodegradation. Nitrate concentrations less than 1.0 mg/l may indicate that reductive dechlorination is occurring. Nitrate concentrations less than 1.0 mg/l occurred near the apparent source area in B-7 and B-10, in the downgradient well LFR-2, and in well LFR-4, indicating conditions that are conducive to anaerobic biodegradation. Nitrate concentrations were 1.8/8.8 mg/l (field/laboratory results) in downgradient well LFR-3, 3.3/15 mg/l (field/laboratory results) in upgradient well MW-11, and 10.3/10.0/39/40 mg/l (field/field split/laboratory/laboratory split results) in well LFR-1.

Considering the variation between laboratory and field results in the fourth quarter, the third and fourth quarter results were relatively consistent. (LFR-1 showed some variation, having a third quarter field result of 5.5 mg/l which was less than the results obtained in the fourth quarter [39 mg/l and 40 mg/l in the laboratory primary and split samples], and 10.3 mg/l and 10.0 mg/l in the field primary and split samples). Nitrate results are included in Table 5.

Manganese. After DO and nitrate have been depleted, manganese may be used as an electron acceptor for anaerobic biodegradation, and therefore, increased dissolved manganese concentrations are indicative of reductive dechlorination. Manganese concentrations ranged from 1.4 mg/l (B-10) to 8.8 mg/l (LFR-2) in the apparent source area and in wells LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation. Manganese concentrations were less than 0.010 mg/l in upgradient well MW-11, 0.022 mg/l in downgradient well LFR-3, and 0.030 mg/l in the primary and split sample from well LFR-1. Manganese was not analyzed in the third quarter 2000. Manganese results are included in Table 5.

Sulfate. After DO, nitrate, and manganese have been depleted, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed sulfate reduction and results in the production of sulfide. Sulfate concentrations less than 20 mg/l are indicative of reductive dechlorination (EPA 1998). Sulfate concentrations ranged from less than 1.0 mg/l to 5.4 mg/l in the apparent source area locations B-7 and B-10, and in wells LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation.

The third and fourth quarter results were consistent except for temporary sampling point B-7 which had 3 mg/l as the field result in the third quarter and was not detected

in the fourth quarter, and well LFR-4, which had 1 mg/l as the field result in the third quarter, and 2.9 mg/l as the laboratory result in the fourth quarter. Sulfate concentrations ranged from 29 mg/l to 90 mg/l in wells LFR-1, LFR-3, and MW-11. Sulfate results are included in Table 5.

Ferrous Iron. Increased ferrous iron accompanies anaerobic degradation. Ferric iron can be used as an electron acceptor during anaerobic biodegradation. During this process, ferric iron is reduced to ferrous iron that may be soluble in water. Ferrous iron concentrations can thus be used as an indicator of anaerobic biodegradation.

The highest ferrous iron concentrations were in the apparent source area (11 mg/l [laboratory result] and 15.85 mg/l [field result] in B-7; 5.9 mg/l [laboratory result] and 7.60 mg/l [field result] in B-10) and 5.3 mg/l (laboratory result) and 6.05 mg/l (field result) in the slightly downgradient well LFR-2, indicating conditions that are conducive to anaerobic biodegradation. Ferrous iron concentrations were less than 1 mg/l in wells LFR-1, LFR-3, and MW-11, and were very close to 1 mg/l in well LFR-4 (1.1 mg/l [laboratory result] and 0.61 mg/l [field result]).

These results are very similar to the results from the third quarter 2000, with the exception of well LFR-2 (field result of 2.7 mg/l in the third quarter) and well LFR-4 (field result of 0.14 mg/l in the third quarter). Ferrous iron results are included in Table 5.

Methane. The presence of methane in groundwater is indicative of strongly reducing conditions and suggests reductive dechlorination by the process of methanogenesis. Methane was detected from 0.00004 mg/l to 0.00069 mg/l in wells LFR-1, LFR-3, and MW-11. Methane concentrations ranged from 2.4 mg/l to 8.5 mg/l in the apparent source area (B-7 and B-10), and in wells LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation.

In general, these results are similar to the results from the third quarter 2000, with the exception of the following laboratory results: B-7 (11 mg/l in the third quarter and 2.4 mg/l in the fourth quarter, LFR-1 (0.0096 mg/l in the third quarter and 0.00038/0.00069 mg/l in the primary/split samples from the fourth quarter), and LFR-4 (0.062 mg/l in the third quarter and 3.2 mg/l in the fourth quarter). Methane results are included in Table 5.

Oxygen Reduction Potential. The ORP of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. ORP may range from greater than 800 millivolts (mV) to less than -400 mV, with negative values expected in areas where anaerobic processes are occurring. ORP measurements obtained in this sampling event ranged from -62.5 mV (B-7) to 87.4 mV (MW-11). The highest values were found in the upgradient location (MW-11), the downgradient locations GW-3 and LFR-3, and in GW-2 and LFR-1, and the lowest values were found in the apparent source area (B-7 and B-10), in the downgradient well LFR-2, and in well LFR-4.

These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation. These fourth quarter 2000 ORP results are less than those obtained in the third quarter 2000, which were previously considered inconclusive. ORP results are included in Table 5.

Hydrogen. Hydrogen concentrations are useful indicators of the terminal electron-accepting processes (TEAPs) involved in reductive dechlorination. Groundwater samples for hydrogen analysis were collected using the bubble strip method, as described in EPA 1998. This fourth quarter 2000 sampling event is the first quarter in which hydrogen has been sampled at the Site.

Sampling and analysis for hydrogen were not conducted in the third quarter 2000 because that sampling event occurred about two weeks after installation of wells LFR-1 through LFR-4. Standard hydrogen sampling procedures suggest that at least 30 to 90 days elapse after well installation before hydrogen sampling and analysis are conducted because of the influence of ground disturbance and exposure of fresh mineral surfaces in the soil, resulting in reaction of anaerobic groundwater with iron in the soil to produce hydrogen. This disturbance and exposure has been found to result in elevated hydrogen concentrations in the groundwater; however, these concentrations have been observed to dissipate over a period of about 90 days (Microseeps 2000).

Hydrogen concentrations ranged from 0.81 nanomoles per liter (nM) in temporary sampling point B-10, to 1,200 nM in well LFR-2. The concentrations in wells LFR-1/LFR-1 split (1.5 nM primary sample result/1.0 nM split sample result), and LFR-4 (1.1 nM) are within the range expected if sulfate reduction is the dominant TEAP for reductive dechlorination (1 to 4 nM), and indicate that conditions are conducive to reductive dechlorination. The concentrations of hydrogen in the upgradient well MW-11 (130 nM) and in the downgradient wells LFR-3 (850 nM) and LFR-2 (1,200 nM) are much higher than in the other wells, and are also much higher than are typically measured in natural aquifers (up to 30 nM in methanogenic aquifers).

The reason(s) for these elevated results are unknown. Possibly a longer period should have been allowed after installation of wells LFR-2 and LFR-3 to allow hydrogen concentrations in these wells to re-equilibrate with the aquifer before hydrogen sampling and analysis. Possibly an aspect of well construction for well MW-11 contributed to its elevated hydrogen concentration (another consulting firm installed well MW-11 and its well construction materials and process are not known). Hydrogen sampling and analysis are proposed for these wells in the first quarter 2001, and the results obtained will be compared in the evaluation process. Hydrogen results are included in Table 5.

Other Parameters

Alkalinity. Alkalinity is a general water quality parameter. Increases in alkalinity result from interaction between carbon dioxide (a product of several biodegradation processes) and aquifer minerals. Background alkalinity in the site vicinity would

presumably be reflected in the result of 300 mg/l in well MW-11 because this well is upgradient of the Site. The results from well LFR-1 (220 mg/l and 240 mg/l) were less than the result from well MW-11. The remaining alkalinity concentrations were greater than 300 mg/l, with the maximum concentration of 760 mg/l in temporary sampling point B-7.

These results are very similar to the results from the third quarter 2000, and are considered inconclusive regarding the occurrence of reductive dechlorination. Alkalinity results are included in Appendix Table A-1.

Chloride. Chloride is the final product of chlorinated solvent reduction and is a general water quality parameter. The concentrations in wells LFR-4 (28 mg/l), LFR-2 (40 mg/l), and temporary sampling point B-7 (42 mg/l) were lower than those in well LFR-3 (66 mg/l), temporary sampling point B-10 (76 mg/l), and wells LFR-1 (100 mg/l) and MW-11 (120 mg/l).

These results are very similar to the results from the third quarter 2000, with the exception of well LFR-4 (28 mg/l), which is slightly less than half of the concentration encountered in the third quarter 2000 (71 mg/l). Similar to the third quarter 2000, these results are inconclusive regarding the occurrence of reductive dechlorination. Chloride results are included in Appendix Table A-1.

Carbon Dioxide. Carbon dioxide is a product of several biodegradation processes. Concentrations of carbon dioxide ranged from 25 mg/l (LFR-1) to 200 mg/l (B-7). Concentrations in LFR-1 primary and LFR-1 split (25 mg/l and 40 mg/l) were considerably lower than those in B-7, B-10, LFR-2, LFR-3, LFR-4, and MW-11 which ranged from 120 mg/l to 200 mg/l. These results are very similar to the results from the third quarter, and may indicate that conditions are conducive to reductive dechlorination (e.g., in the apparent source area locations (B-7 and B-10) and in wells LFR-2 and LFR-4; however, the furthest downgradient location (LFR-3) and the upgradient location (MW-11) also had elevated concentrations of carbon dioxide. These results are somewhat inconclusive regarding the occurrence of reductive dechlorination. Carbon dioxide results are included in Appendix Table A-1.

Iron. Ferric iron may be used as an electron acceptor during anaerobic biodegradation. During this process, ferric iron is reduced to ferrous iron that may be soluble in water. Ferric iron concentrations may be obtained by subtracting ferrous iron concentrations from total iron concentrations. Total iron concentrations ranged from 0.01 mg/l (well LFR-1 field and field split results, and well LFR-3 field result and well MW-11 field result) to 17.22 mg/l (B-7 field result). The highest concentrations were found in temporary sampling point B-7 (17.22 mg/l field result and 14 mg/l laboratory result), temporary sampling point B-10 (8.35 mg/l field result and 6.6 mg/l laboratory result), and well LFR-2 (7.45 mg/l field result and 6.2 mg/l laboratory result). These may be indicative of reductive dechlorination.

Other than B-10, these results either differ considerably from the third to the fourth quarters 2000, or no result was obtained in the third quarter to compare with the fourth quarter. Iron results are included in Appendix Table A-1.

Nitrite. Nitrate may reduce to nitrite during the process of anaerobic biodegradation. Nitrite concentrations ranged from 0.001 mg/l (B-10 field result) to 0.036 mg/l (LFR-1 field result [split]); however, the results in all samples from the laboratory were not detected (detection limit of 0.10 mg/l). Similar to the third quarter 2000, these results are inconclusive regarding the occurrence of reductive dechlorination. Nitrite results are included in Appendix Table A-1.

Sulfide. When sulfate is used as an electron acceptor for anaerobic biodegradation, it is reduced to sulfide. Sulfide concentrations ranged from 0.00 mg/l (LFR-4 field result) to 0.004 mg/l (B-10 [field result]); however, the results in all samples from the laboratory were not detected (detection limit of 2.0 mg/l). Similar to the third quarter 2000, these results are inconclusive. Sulfide results are included in Appendix Table A-1.

pH, Temperature, and Conductivity. The pH of groundwater has an effect on the activity of microbial populations in groundwater, with optimal pH values from 6 to 8 standard units for microbes capable of degrading PCE and other chlorinated aliphatic hydrocarbons. Groundwater temperature affects the metabolic activity of bacteria, and groundwater conductivity is directly related to the concentration of ions in solution. pH, temperature, and conductivity results are included in Appendix Table A-1.

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary

The following is a summary of the work performed in October and November 2000 and the results of this work.

Groundwater samples were collected from monitoring wells LFR-1 through LFR-4, temporary sampling points B-7, B-10, GW-2, GW-3, and from well MW-11. These samples were analyzed for TPHss, TPHg, MTBE, BTEX, and VOCs.

The PCE concentrations of 0.82 mg/l (primary sample result) and 0.87 mg/l (split sample result) detected in well LFR-1 are approximately one-third of the PCE concentration present in this well in August 2000 (2.8 mg/l).

This was the second sampling event in which bioattenuation parameters were analyzed. Selected samples were analyzed for the following: DO, nitrate, manganese, sulfate, ferrous iron, methane, ORP, hydrogen, alkalinity, chloride, carbon dioxide, total iron, nitrite, and sulfide.

cis-1,2-DCE is one of the breakdown products of PCE. It was detected at concentrations up to 7.1 mg/l in temporary sampling point B-10 and its presence in groundwater indicates that reductive dechlorination is likely occurring.

Vinyl chloride was only detected in well LFR-2 at a concentration of 0.015 mg/l. The presence of vinyl chloride, a breakdown product of PCE, indicates reductive dechlorination is likely occurring. Benzene was not detected in GW-3, LFR-1, LFR-3, or MW-11, but was detected in B-7, B-10, LFR-2, and LFR-4 at concentrations up to 0.0091 mg/l (B-7). The presence of MTBE in several on-site and off-site wells and sampling points may indicate an upgradient petroleum hydrocarbon source other than the former Glovatorium.

Most analytical results for each compound at each sampling location were within approximately one order of magnitude of the samples collected in August 2000 (April 2000 for GW-2), with the following exceptions:

- TPHss (3.7 mg/l in the third quarter and 62 mg/l in the fourth quarter) and TPHg (6.8 mg/l in the third quarter and 98 mg/l in the fourth quarter) in temporary sampling point B-7 which increased more than one order of magnitude from August to October/November 2000
- benzene (0.011 mg/l in third quarter and 0.00084 mg/l in fourth quarter) in LFR-4
- PCE (0.12 mg/l in third quarter and 0.0078 mg/l in fourth quarter) and TCE (0.016 mg/l in third quarter and 0.0008 mg/l in fourth quarter) in GW-2, decreased more than two orders of magnitude from August to October/November 2000

The maximum concentrations of the compounds analyzed during this fourth quarter 2000 sampling event for the following wells or sampling points are as follows:

- B-7 (TPHss [62 mg/l]; TPHg [98 mg/l]; benzene [0.0091 mg/l]; and total xylenes [0.237 mg/l])
- LFR-2 (cis-1,2-DCE [0.13 mg/l]; trans-1,2-dichloroethene [0.001mg/l]; vinyl chloride [0.015 mg/l]; and 1,2-Dichloropropane [0.0006 mg/l]; MTBE [0.003 mg/l]; benzene [0.0035 mg/l]; toluene [0.0011 mg/l]; ethylbenzene (0.0042 mg/l); and total xylenes [0.001184 mg/l])
- LFR-4 (MTBE [0.0065 mg/l])

Chemicals which decreased in concentration in the same wells or sampling points between the third and fourth quarters were as follows:

- MTBE, ethylbenzene, and trans-1,2-dichloroethene in sampling point B7
- PCE, TPHss, TPHg, MTBE, benzene, toluene, and total xylenes in sampling point B10
- PCE, TCE, cis-1,2-DCE, and TPHg in sampling point GW-2
- PCE, TCE, cis-1,2-DCE, and TPHg in sampling point GW-3

- MTBE in well MW-11
- PCE, TCE, cis-1,2-DCE, TPHss, TPHg, MTBE in well LFR-1
- TPHss and TPHg in well LFR-2
- cis-1,2-DCE, TPHss, TPHg, benzene, and total xylenes in well LFR-4

5.2 Conclusions

LFR's conclusions about the Site based on the data obtained in October and November 2000 are as follows:

- The furthest downgradient well, LFR-3, did not contain VOCs or petroleum hydrocarbons at concentrations above their respective analytical detection limits. (These compounds also were not detected in LFR-3 in the third quarter 2000.) These results indicate that migration of these compounds to this downgradient location is not occurring.

The data collected to date regarding the distribution of PCE and other VOCs in groundwater indicate the degradation of PCE to some of its breakdown products. PCE typically degrades into TCE, then cis-1,2-DCE, followed by trans-1,2-DCE (at much lower concentrations than cis-1,2-DCE), to vinyl chloride, and finally carbon dioxide, water, and chloride. This sequence of degradation would be anticipated where biological reductive dehalogenation of PCE is occurring. These breakdown products and relative concentrations are present at the Site. The presence of TCE in the apparent source area temporary sampling point B-10 in January, August, and October/November 2000 indicates that PCE degradation is occurring. The presence of relatively high concentrations of cis-1,2-DCE in B-10 and in nearby B-7, and the relatively low concentrations of trans-1,2-DCE in these temporary sampling points is also indicative of biodegradation. Historical data from former temporary sampling point GW-8 indicate the presence of vinyl chloride between July 1999 and April 2000. Vinyl chloride was also detected in LFR-2 in the October/November 2000 sampling event.

Analysis results of DO, nitrate, manganese, sulfate, ferrous iron, methane, ORP, and hydrogen indicate that conditions in the apparent source area are conducive to reductive dechlorination processes, because of their concentration distributions across the Site.

- DO concentrations of less than approximately 0.5 mg/l in groundwater are indicative of anaerobic biodegradation conditions. In general, results indicate that conditions in the apparent source area are anaerobic and conducive to anaerobic biodegradation processes, because the lowest DO concentrations occurred in the apparent source area (B-7 and B-10) and in wells LFR-2 and LFR-4.
- Relatively low concentrations of nitrate (e.g. less than 1.0 mg/l) are anticipated in locations where the oxygen has been depleted, because nitrate ion can be an effective electron acceptor in anaerobic biodegradation. Nitrate concentrations less

than 1.0 mg/l occurred near the apparent source area in temporary sampling points B-7 and B-10, in the downgradient well LFR-2, and in well LFR-4, indicating conditions that are conducive to anaerobic biodegradation.

- Increased dissolved manganese concentrations are indicative of reductive dechlorination. Manganese concentrations ranged from 1.4 mg/l (B-10) to 8.8 mg/l (LFR-2) in the apparent source area and in LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation.
- Relatively low concentrations of sulfate (e.g. less than 20 mg/l) are anticipated in locations where the oxygen has been depleted, because sulfate ion can be used as an effective electron acceptor in anaerobic biodegradation. Sulfate concentrations ranged from less than 1.0 mg/l to 5.4 mg/l in the apparent source area locations B-7 and B-10, and in LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation.
- The reducing conditions conducive to dehalogenation of VOCs can also reduce iron to the soluble ferrous state. Therefore; a relatively higher concentration of ferrous iron in locations of biodegradation than in other areas is anticipated. The highest ferrous iron concentrations were in the apparent source area (B-7 and B-10) and in the slightly downgradient location LFR-2, indicating conditions that are conducive to anaerobic biodegradation.
- A relatively higher concentration of methane is anticipated at locations of biodegradation because methane is indicative of strongly reducing conditions and suggests reductive dechlorination by the process of methanogenesis. Methane concentrations ranged from 2.4 mg/l to 8.5 mg/l in the apparent source area (B-7 and B-10), and in wells LFR-2 and LFR-4, indicating conditions that are conducive to anaerobic biodegradation.
- The ORP of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. ORP may range from greater than 800 millivolts (mV) to less than -400 mV, with negative values expected in areas where anaerobic processes are occurring. The lowest concentrations were found in and near the apparent source area (B-7, B-10, and LFR-2). These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation.
- Hydrogen concentrations in temporary sampling point B-10 (0.81 nM), in wells LFR-1/LFR-1 split (1.5 nM primary sample result/1.0 nM split sample result), and LFR-4 (1.1 nM) indicate conditions that are conducive to reductive dechlorination.

5.3 Recommendations

In order to collect additional data to assess the elevated concentrations of PCE in well LFR-1, groundwater was pumped from this well for about 6 to 8 hours per day from December 27, 2000 to December 29, 2000. The results of this work, and any conclusions that are derived from it, will be presented in a separate document.

LFR's recommendations for future work at the Site are as follows:

Continue implementing the sampling and analysis plan for the routine parameters and natural bioattenuation parameters established through discussion with representatives of ACHCSA and the RWQCB.

Continue quarterly groundwater monitoring in the four wells, LFR-1 through LFR-4, installed in July 2000, in the upgradient well MW-11, and in selected previously installed temporary sampling points. Groundwater levels will be measured in LFR-1 through LFR-4, MW-8, MW-9, and MW-11, and in temporary sampling points.

As further results are obtained, continue to evaluate PCE and potential breakdown product concentrations in the on-site and off-site temporary sampling points and groundwater monitoring wells to assess plume stability, the progress of reductive dechlorination, and any potential migration issues.

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Table 1
Construction Data for Temporary Sampling Points and Monitoring Wells
Former Glovatorium
3815 Broadway, Oakland, California

Location	Date Installed	Ground Surface Elevation (ft msl)	Top of Casing Elevation (ft msl)	Total Depth (ft bgs)	Screened Interval Depth (ft bgs)	Screened Interval Elevation (ft msl)	Notes
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Temporary sampling points installed by GeoSolv, LLC:

B-2	19-Aug-97	82.20	82.09	21	5 to 21	77.2 to 61.2	
B-3	19-Aug-97	82.60	82.57	18	5 to 18	77.6 to 64.6	(1)
B-7	20-Aug-97	77.33	76.96	17.5	5 to 17.5	72.3 to 59.8	
B-8	20-Aug-97	82.06	81.82	24	9 to 24	73.1 to 58.1	
B-9	21-Aug-97	77.57	77.37	19.5	4.5 to 19.5	73.1 to 58.1	
B-10	21-Aug-97	81.65	81.50	19	4 to 19	77.7 to 62.7	
B-13	22-Aug-97	85.12	84.58	20	5 to 20	80.1 to 65.1	

Temporary sampling points installed by LFR:

GW-1	16-Jul-99	80.24	79.94	8	3 to 8	77.2 to 72.2	
GW-2	16-Jul-99	79.44	79.14	20	10 to 20	69.4 to 59.4	
GW-3	15-Jul-99	78.48	77.92	20	10 to 20	68.5 to 58.5	
GW-4	16-Jul-99	82.55	82.37	12	7 to 12	75.6 to 70.6	
GW-5	15-Jul-99	81.31	81.01	13	8 to 13	73.3 to 68.3	
GW-6	15-Jul-99	81.91	81.65	13.5	7.5 to 13.5	74.4 to 68.4	(2)
GW-6A	16-Jul-99	81.93	81.61	15	5 to 15	76.9 to 66.9	
GW-7	15-Jul-99	81.3	NS	20	10 to 20	71.3 to 61.3	(2)
GW-8	16-Jul-99	80.28	80.10	20	10 to 20	70.3 to 60.3	(2)

Groundwater Monitoring Wells Installed by Tosco:

MW-8	unknown	NS	87.44	unknown	unknown	unknown	
MW-9	unknown	NS	86.56	unknown	unknown	unknown	
MW-11	unknown	NS	84.13	unknown	unknown	unknown	

Groundwater Monitoring Wells Installed by LFR:

LFR-1	28-Jul-00	NS	79.97	19	9 to 19		
LFR-2	27-Jul-00	NS	81.89	19	9 to 19		
LFR-3	27-Jul-00	NS	77.96	22	12 to 22		
LFR-4	28-Jul-00	NS	81.65	19	9 to 19		

Notes:

(1) Top of casing surveyed on south side on January 21, 2000, because the casing was broken.

(2) GW-7 was abandoned on July 15, 1999, in accordance with LFR's work plan dated May 6, 1999, and GW-6 and GW-8 were abandoned on July 26, 2000, in accordance with LFR's work plan dated June 14, 2000.

ft msl = feet above mean sea level

ft bgs = feet below ground surface

NS = Not surveyed.

Table 2
Groundwater Elevations
Former Glovatorium
3815 Broadway, Oakland, California

Location	Date Measured	Top of Casing Elevation (ft msl)	Depth To Groundwater (feet)	Groundwater Elevation (ft msl)	Notes
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Temporary sampling points installed by GeoSolv, LLC:

B-2	26-Oct-97	82.20	9.54	72.66	(1)
	18-Feb-98		4.04	78.16	(1)
	19-Jan-00	82.09	8.12	73.97	(P)
	24-Jan-00		6.16	75.93	(P)
	27-Apr-00		6.68	75.41	(P)
	09-Aug-00		8.19	73.90	(P)
	30-Oct-00		7.75	74.34	
B-3	26-Oct-97	82.60	8.93	73.67	(1)
	18-Feb-98		4.53	78.07	(1)
	19-Jan-00	82.57	9.35	73.22	(2)
	24-Jan-00		6.74	75.83	
	27-Apr-00		6.71	75.86	(P)
	09-Aug-00		8.02	74.55	(P)
	30-Oct-00		7.73	74.84	(P)
B-7	26-Oct-97	77.33	9.24	68.09	(1)
	18-Feb-98		5.76	71.57	(1)
	19-Jan-00	76.96	8.36	68.60	(P)
	24-Jan-00		7.3	69.66	(P)
	27-Apr-00		7.11	69.85	(P)
	09-Aug-00		8.35	68.61	
	30-Oct-00		7.95	69.01	
B-8	26-Oct-97	82.06	10.95	71.11	(1)
	18-Feb-98		5.42	76.64	(1)
	19-Jan-00	81.82	10.01	71.81	(P)
	24-Jan-00		8.98	72.84	(P)
	27-Apr-00		7.68	74.14	(P)
	09-Aug-00		9.02	72.80	(P)
	30-Oct-00		8.50	73.32	
B-9	26-Oct-97	77.57	9.18	68.39	(1)
	18-Feb-98		6.13	71.44	(1)
	19-Jan-00	77.37	8.46	68.91	(P)
	24-Jan-00		7.12	70.25	(P)
	27-Apr-00		7.41	69.96	
	09-Aug-00		8.55	68.82	
	30-Oct-00		7.95	69.42	
B-10	26-Oct-97	81.65	9.39	72.26	(1)

Table 2
Groundwater Elevations
Former Glovatorium
3815 Broadway, Oakland, California

Location	Date Measured	Top of Casing Elevation (ft msl)	Depth To Groundwater (feet)	Groundwater Elevation (ft msl)	Notes
B-10	18-Feb-98	81.65	6.52	75.13	(1)
	19-Jan-00	81.50	8.48	73.02	(P)
	24-Jan-00		7.35	74.15	(P)
	27-Apr-00		7.80	73.70	
	09-Aug-00		8.85	72.65	
	30-Oct-00		8.15	73.35	
B-13	26-Oct-97	85.12	12.10	73.02	(1)
	18-Feb-98		6.61	78.51	(1)
	19-Jan-00	84.58	10.40	74.18	
	24-Jan-00		8.26	76.32	
	27-Apr-00		8.71	75.87	
	09-Aug-00		9.35	75.23	
	30-Oct-00		DRY	DRY	
Temporary sampling points installed by LFR:					
GW-1	27-Aug-99	79.94	DRY	DRY	
	19-Jan-00		DRY	DRY	
	27-Apr-00		DRY	DRY	
	09-Aug-00		DRY	DRY	
GW-2	27-Aug-99	79.14	10.68	68.46	
	19-Jan-00		10.90	68.24	
	21-Jan-00		10.82	68.32	
	27-Apr-00		8.55	70.59	
	09-Aug-00		10.03	69.11	
	30-Oct-00		10.69	68.45	
GW-3	27-Aug-99	77.92	10.26	67.66	
	19-Jan-00		10.06	67.86	
	20-Jan-00		9.99	67.93	
	27-Apr-00		9.76	68.16	
	09-Aug-00		11.38	66.54	
	30-Oct-00		9.97	67.95	
GW-4	27-Aug-99	82.37	NM	NM	
	19-Jan-00		7.66	74.71	
	21-Jan-00		8.04	74.33	
	27-Apr-00		8.40	73.97	
	09-Aug-00		DRY	DRY	
	30-Oct-00		7.82	74.55	
GW-5	27-Aug-99	81.01	12.30	68.71	

Table 2
Groundwater Elevations
Former Glovatorium
3815 Broadway, Oakland, California

Location	Date Measured	Top of Casing Elevation (ft msl)	Depth To Groundwater (feet)	Groundwater Elevation (ft msl)	Notes
GW-5	19-Jan-00	81.01	12.40	68.61	
	20-Jan-00		12.40	68.61	
	27-Apr-00		12.31	68.70	
	09-Aug-00		12.30	68.71	
	30-Oct-00		12.37	68.64	
GW-6A	27-Aug-99	81.61	13.90	67.71	
	19-Jan-00		13.98	67.63	
	27-Apr-00		13.61	68.00	
	09-Aug-00		13.73	67.88	
GW-8	30-Oct-00	80.10	13.45	68.16	
	27-Aug-99		9.50	70.60	
	19-Jan-00		9.66	70.44	
	20-Jan-00		9.68	70.42	
	27-Apr-00		8.76	71.34	
Monitoring wells owned by TOSCO:					
MW-8	27-Apr-00	87.44	8.29	79.15	
	10-Aug-00		10.18	77.26	
	02-Nov-00		9.06	78.38	
MW-9	27-Apr-00	86.56	9.31	77.25	
	10-Aug-00		9.42	77.14	
	02-Nov-00		8.25	78.31	
MW-11	25-Jan-00	84.21	10.73	73.48	
	27-Apr-00		8.86	75.35	
	09-Aug-00		10.09	74.12	
	30-Oct-00		10.59	73.62	
Monitoring wells installed by LFR:					
LFR-1	09-Aug-00	79.97	9.81	70.16	
	30-Oct-00		9.75	70.22	
LFR-2	09-Aug-00	81.89	11.90	69.99	
	30-Oct-00		10.27	71.62	
LFR-3	09-Aug-00	77.96	11.20	66.76	
	30-Oct-00		10.97	66.99	
LFR-4	09-Aug-00	81.65	13.26	68.39	
	31-Oct-00		13.51	68.14	

Table 2
Groundwater Elevations
Former Glovatorium
3815 Broadway, Oakland, California

Location	Date Measured	Top of Casing Elevation (ft msl)	Depth To Groundwater (feet)	Groundwater Elevation (ft msl)	Notes
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Notes:

(1) Survey elevation and water-level measurement taken at concrete surface. Elevations and water levels without a (1) in the Notes column were measured from top of casing.

(2) Top of casing was resurveyed because it was broken.

ft msl = Feet above mean sea level

NM = Not measured

(P) = Floating product or sheen was observed

Table 3
Summary of Analytical Results For Total Petroleum Hydrocarbon, BTEX, and MTBE Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	TPH, ext., Stoddard	TPH, purge., Stoddard	TPH, ext., Diesel	TPH, purge., Gasoline	MTBE	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	Notes
Temporary sampling points installed by GeoSolv, LLC												
B-2	24-Jan-00	5 to 21	NA	20 J	NA	31 YJ	<0.05	<0.013	<0.013	0.11 C	0.22 C	
B-3	24-Jan-00	5 to 18	NA	4.9 J	NA	8.8 YJ	<0.01	0.0048	<0.0025	<0.0025	0.0714	
B-7	24-Jan-00	5 to 17.5	NA	19	NA	30 Y	<0.05	<0.013	0.062	<0.013	0.207	
B-7	11-Aug-00		NA	3.7 J	NA	6.8 YHJ	0.02	0.0077 J	0.047 J	0.007 J	0.065 CJ	
B-7	31-Oct-00		NA	62 J	NA	98 YHJ	0.01 J	0.0091 J	0.061 J	<0.0005	0.237 J	
B-8	24-Jan-00	9 to 24	NA	11 J	NA	19 YJ	<0.01	<0.0025	<0.0025	<0.0025	0.17 C	
B-9	24-Jan-00	4.5 to 19.5	NA	1 YJ	NA	1.8 YHJ	<0.002	<0.0005	<0.0005	0.01 C	0.0089 C	
B-10	24-Jan-00	4 to 19	NA	2.4 Y	NA	4.2	0.014 C	0.0072	0.027	0.025 C	0.032	
B-10	10-Aug-00		NA	2.8 Y	NA	6.1 Y	0.16	0.0073	0.012	<0.005	0.0241	
B-10	31-Oct-00		NA	2.2 YZ	NA	3.5 Z	<0.002	0.0038	0.011	<0.0005	0.0182	
B-13	24-Jan-00	5 to 20	NA	1.7 J	NA	3 YJ	<0.01	<0.0025	<0.0025	<0.0025	0.02	
Temporary sampling points installed by LFR:												
GW-2	19-Jul-99	10 to 20	NA	<0.05	NA	<0.05	0.0025	<0.0005	0.00071	<0.0005	0.00074	
GW-2	20-Jan-00		NA	0.15	NA	0.25 Y	0.0044	<0.0005	<0.0005	0.00097 C	0.0013	
GW-2	28-Apr-00		NA	<0.05	NA	0.095 YZ	<0.0021	<0.0005	<0.0005	<0.0005	<0.0005	(1)
GW-2	02-Nov-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
GW-3	19-Jul-99	10 to 20	NA	0.07 Z	NA	0.1 Z	<0.002	<0.0005	<0.0005	<0.0005	0.00064	
GW-3	20-Jan-00		NA	0.15	NA	0.26 Y	<0.002	<0.0005	0.00051	<0.0005	0.0013 C	
GW-3	27-Apr-00		NA	0.2 YZ	NA	0.38 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	

Table 3
Summary of Analytical Results For Total Petroleum Hydrocarbon, BTEX, and MTBE Analyses of
Groundwater Samples
Former Glovatorium

3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	TPH, ext., Stoddard	TPH, purge., Stoddard	TPH, ext., Diesel	TPH, purge., Gasoline	MTBE	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	Notes
Split	27-Apr-00	10 to 20	NA	0.3 Z	NA	0.57 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
GW-3	11-Aug-00		NA	<0.05	NA	0.077 YZ	<0.002	<0.0005	<0.0005	<0.0005	0.00051	
GW-3	02-Nov-00		NA	<0.05	NA	0.05 YZ	0.0026	<0.0005	<0.0005	<0.0005	<0.0005	
GW-4	21-Jul-99	7 to 12	NA	6.8 J	NA	10 YHJ	0.0022	<0.0005	<0.0005	<0.0005	0.0029 J	
GW-4	20-Jan-00		NA	0.97 J	NA	1.6 YJ	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Split	20-Jan-00		NA	0.85 J	NA	1.5 YJ	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-4	27-Apr-00		NA	0.31	NA	0.6 Y	<0.002	<0.0005	<0.0005	<0.0005	0.0027	
GW-5	27-Aug-99	8 to 13	NA	<0.05	NA	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	
GW-5	20-Jan-00		NA	<0.05	NA	0.057 Y	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	
GW-5	27-Apr-00		NA	0.05 Y	NA	0.096 Y	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	27-Aug-99	5 to 15	NA	<0.05	NA	0.054 Y	0.0089	<0.0005	<0.0005	<0.0005	<0.0005	
Split	27-Aug-99		NA	<0.05	NA	0.057 Y	0.0087	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	25-Jan-00		NA	<0.05	NA	<0.05	0.0022	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	27-Apr-00		NA	<0.05	NA	0.087 Y	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
GW-7	15-Jul-99	10 to 20	0.697 BJ	NA	1.79 AJ	NA	<0.0025	0.05 J	<0.0005	0.000727	0.00313 J	
Split	15-Jul-99		1.42 BJ	NA	3.1 AJ	NA	NA	NA	NA	NA	NA	
GW-7	15-Jul-99		NA	NA	NA	NA	NA	0.0567 J	<0.002	<0.002	<0.002	
Split	15-Jul-99		NA	NA	NA	NA	NA	0.0755 J	<0.002	<0.002	<0.002	
GW-8	19-Jul-99	10 to 20	NA	<0.05	NA	<0.05	0.0078	<0.0005	0.00064	<0.0005	0.00151	
GW-8	20-Jan-00		NA	0.19	NA	0.33 Y	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	

Table 3
Summary of Analytical Results For Total Petroleum Hydrocarbon, BTEX, and MTBE Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	TPH, ext., Stoddard	TPH, purge., Stoddard	TPH, ext., Diesel	TPH, purge., Gasoline	MTBE	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	Notes
Split	20-Jan-00	10 to 20	NA	0.2	NA	0.37 Y	<0.002	0.00058	<0.0005	<0.0005	<0.0005	
GW-8	28-Apr-00		NA	0.064 YZ	NA	0.12 YZ	0.013	<0.0005	<0.0005	<0.0005	<0.0005	
Monitoring wells owned by TOSCO:												
MW-11	25-Jan-00	unknown	NA	<0.05	NA	<0.05	0.009	<0.0005	<0.0005	<0.0005	<0.0005	
MW-11	28-Apr-00		NA	<0.05	NA	<0.05	<0.0087	<0.0005	<0.0005	<0.0005	<0.0005	(1)
MW-11	10-Aug-00		NA	<0.05	NA	<0.05	0.011	<0.0005	<0.0005	<0.0005	<0.0005	
MW-11	01-Nov-00		NA	<0.05	NA	<0.05	0.0068	<0.0005	<0.0005	<0.0005	<0.0005	
Monitoring wells installed by LFR:												
LFR-1	09-Aug-00	9 to 19	NA	0.53	NA	1.2	0.0095	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-1	30-Oct-00		NA	0.24 YZ	NA	0.37 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Split	30-Oct-00		NA	0.24 YZ	NA	0.37 YZ	0.0043	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-2	11-Aug-00	9 to 19	NA	0.59	NA	1.1 YH	0.0022	0.0018	<0.0005	<0.0005	0.0013 C	
LFR-2	02-Nov-00		NA	0.38	NA	0.7 YH	0.003	0.0035	0.0011	0.0042	0.01184 C	
LFR-3	10-Aug-00	12 to 22	NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Split	10-Aug-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-3	01-Nov-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-4	11-Aug-00	9 to 19	NA	0.22 Y	NA	0.41 Y	0.0051	0.011	<0.0005	<0.0005	0.00162 C	
LFR-4	31-Oct-00		NA	0.17 Y	NA	0.27	0.0065	0.00084	<0.0005	<0.0005	<0.0005	
Blanks												
Trip Blank	19-Jul-99		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	

Table 3
Summary of Analytical Results For Total Petroleum Hydrocarbon, BTEX, and MTBE Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	TPH, ext., Stoddard	TPH, purge., Stoddard	TPH, ext., Diesel	TPH, purge., Gasoline	MTBE	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Notes
Trip Blank	20-Jan-00		NA	<0.05	NA	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	27-Apr-00		NA	<0.05	NA	<0.05	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	30-Oct-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	31-Oct-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	01-Nov-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	02-Nov-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Field Blank	27-Apr-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	0.00054	<0.0005	<0.0005	
Field Blank	10-Aug-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	
Field Blank	01-Nov-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	

Notes:

- (1) = MTBE was considered not detected due to blank contamination.
- A = Chromatogram pattern: unidentified hydrocarbons C9-C24
- B = Chromatogram pattern: unidentified hydrocarbons C9-C13
- C = Presence of this compound confirmed by second column, however, the confirmation concentration differed from the reported result by more than a factor of two.
- J = Result is estimated.
- Y = Sample exhibits fuel pattern which does not resemble standard.
- H = Heavier hydrocarbons than the standard are present in the sample.
- Z = Sample exhibits unknown single peak or peaks.

ft bgs = Feet below ground surface

NA = Not analyzed

Table 3
Summary of Analytical Results For Total Petroleum Hydrocarbon, BTEX, and MTBE Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	TPH, ext., Stoddard	TPH, purge., Stoddard	TPH, ext., Diesel	TPH, purge., Gasoline	MTBE	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	Notes
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TPH, ext. = Total petroleum hydrocarbons (extractable)

TPH, purge. = Total petroleum hydrocarbons (purgeable)

MTBE = Methyl tertiary-butyl ether

Groundwater samples collected from the temporary sampling points are considered grab samples; therefore, the results should be considered estimates of groundwater quality.

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
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Temporary sampling points installed by GeoSolv, LLC:

B-2	24-Jan-00	5 to 21	NA	<0.0013	<0.0013	0.27	0.0014	<0.0013	<0.0013	
B-3	24-Jan-00	5 to 18	NA	<0.002	<0.002	0.61	<0.002	<0.002	<0.002	
B-7	24-Jan-00	5 to 17.5	NA	<0.0036	<0.0036	0.92	0.0043	<0.0036	<0.0036	
B-7	11-Aug-00		NA	<0.0031	<0.0031	0.86	0.0048	<0.0031	<0.0031	
B-7	31-Oct-00		NA	<0.0042	<0.0042	0.91	0.0042	<0.0042	<0.0042	
B-8	24-Jan-00	9 to 24	NA	<0.0005	<0.0005	0.035	<0.0005	<0.0005	<0.0005	
B-9	24-Jan-00	4.5 to 19.5	NA	<0.0005	0.0006	0.0032	<0.0005	<0.0005	<0.0005	
B-10	24-Jan-00	4 to 19	NA	1.2	2.4	14	0.09	<0.063	<0.063	
B-10	10-Aug-00		NA	2.9	1.6	6.5	0.05	<0.025	<0.025	
B-10	31-Oct-00		NA	2.4	1.9	7.1	0.061	<0.025	<0.025	
B-13	24-Jan-00	5 to 20	NA	0.02	0.029	0.13	0.0049	<0.0005	<0.0005	

Temporary sampling points installed by LFR:

GW-2	19-Jul-99	10 to 20	NA	0.014	0.0014	<0.0005	<0.0005	<0.0005	<0.0005	
GW-2	20-Jan-00		NA	0.13	0.019	0.0055	<0.0005	<0.0005	<0.0005	
GW-2	28-Apr-00		NA	0.12	0.016	0.0033	<0.0005	<0.0005	<0.0005	
GW-2	02-Nov-00		NA	0.0078	0.0008	0.0032	<0.0005	<0.0005	<0.0005	
GW-3	19-Jul-99	10 to 20	NA	0.22	<0.001	<0.001	<0.001	<0.001	<0.001	

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
GW-3	20-Jan-00	10 to 20	NA	0.055	0.001	0.02	<0.0005	<0.0005	<0.0005	
GW-3	27-Apr-00		NA	0.35	0.0023	0.0056	<0.0005	<0.0005	<0.0005	
Split	27-Apr-00		NA	0.27	0.0015	0.0023	<0.0013	<0.0013	<0.0013	
GW-3	11-Aug-00		NA	0.068	0.0028	0.012	<0.0005	<0.0005	<0.0005	
GW-3	02-Nov-00		NA	0.059	0.0008	0.0024	<0.0005	<0.0005	<0.0005	
GW-4	19-Jul-99	7 to 12	NA	<0.0005	<0.0005	0.0035	<0.0005	<0.0005	0.0017	
GW-4	20-Jan-00		<0.01	0.0008	<0.0005	0.0036	<0.0005	<0.0005	0.0015	(1)
Split	20-Jan-00		<0.01	0.0006	<0.0005	0.0044	<0.0005	<0.0005	0.0021	(2)
GW-4	27-Apr-00		NA	0.0017	<0.0005	0.001	<0.0005	<0.0005	0.0006	
GW-5	27-Aug-99	8 to 13	0.24	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
GW-5	20-Jan-00		<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-5	27-Apr-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	27-Aug-99	5 to 15	0.19	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Split	27-Aug-99		0.11	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	25-Jan-00		<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-6A	27-Apr-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
GW-7	15-Jul-99	10 to 20	NA	<0.0005	<0.0005	0.00358	<0.0005	<0.0005	0.000632	
GW-7	15-Jul-99		NA	<0.002	<0.002	0.00398	<0.002	<0.002	<0.002	(3)

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
Split	15-Jul-99	10 to 20	NA	<0.002	<0.002	0.00383	<0.002	<0.002	<0.002	(4)
GW-8	19-Jul-99	10 to 20	NA	0.024	0.015	0.0038	0.0017	0.0012	<0.0005	
GW-8	20-Jan-00		NA	0.15	0.19	0.053	0.012	0.0045	<0.0007	
Split	20-Jan-00		NA	0.15	0.18	0.052	0.011	0.0046	<0.0005	
GW-8	28-Apr-00		NA	0.12	0.11	0.029	0.0053	0.0023	<0.0005	
Monitoring wells owned by TOSCO:										
MW-11	25-Jan-00	Unknown	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
MW-11	28-Apr-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	(5)
MW-11	10-Aug-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
MW-11	01-Nov-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Monitoring wells installed by LFR:										
LFR-1	09-Aug-00	9 to 19	NA	2.8	0.064	0.041	<0.0083	<0.0083	<0.0083	
LFR-1	30-Oct-00		NA	0.82	0.034	0.01	<0.0031	<0.0031	<0.0031	
Split	30-Oct-00		NA	0.87	0.035	0.014	<0.0031	<0.0031	<0.0031	
LFR-2	11-Aug-00	9 to 19	NA	<0.0005	<0.0005	0.035	<0.0005	0.0045	<0.0005	
LFR-2	02-Nov-00		NA	<0.0005	<0.0005	0.13	0.001	0.015	0.0006	
LFR-3	10-Aug-00	12 to 22	NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Split	10-Aug-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
LFR-3	01-Nov-00	12 to 22	NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-4	11-Aug-00	9 to 19	NA	<0.0005	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	
LFR-4	31-Oct-00		NA	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	
Blanks										
Trip Blank	19-Jul-99		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	20-Jan-00		<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	27-Apr-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	10-Aug-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	30-Oct-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	31-Oct-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	01-Nov-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	02-Nov-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Field Blank	27-Apr-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Field Blank	10-Aug-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	(6)
Field Blank	01-Nov-00		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
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Notes:

- (1) = 1,2,4-Trimethylbenzene was detected at 0.0034 mg/l; 1,3,5-trimethylbenzene was detected at 0.0009 mg/l; isopropylbenzene was detected at 0.0055 mg/l; n-butylbenzene was detected at 0.0041 mg/l; para-isopropyl toluene was detected at 0.0009 mg/l; propylbenzene was detected at 0.0094 mg/l; sec-butylbenzene was detected at 0.017 mg/l; tert-butylbenzene was detected at 0.0027 mg/l; 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, para-isopropyl toluene, and n-butylbenzene results are estimated due to FD RPD > 50%.
- (2) = 1,2,4-Trimethylbenzene was detected at 0.0083 mg/l; 1,3,5-trimethylbenzene was detected at 0.0022 mg/l; isopropylbenzene was detected at 0.0078 mg/l; n-butylbenzene was detected at 0.0067 mg/l; para-isopropyl toluene was detected at 0.0021 mg/l; propylbenzene was detected at 0.014 mg/l; sec-butylbenzene was detected at 0.024 mg/l; tert-butylbenzene was detected at 0.0034 mg/l.; 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, para-isopropyl toluene, and n-butylbenzene results are estimated due to FD RPD > 50%
- (3) = tert-Butylbenzene was detected at 0.00307 mg/l. Results are estimated because EPA-recommended hold time was exceeded.
- (4) = sec-Butylbenzene was detected at 0.00206 mg/l; tert-butylbenzene was detected at 0.0031 mg/l; carbon tetrachloride was detected at 0.00786 mg/l. Results are estimated because EPA-recommended hold time was exceeded.
- (5) = 1,3-Dichlorobenzene was detected at 0.0005 mg/l.
- (6) = Chloroform was detected at 0.0088 mg/l.

ft bgs = Feet below ground surface

NA = Not analyzed

mg/l = milligrams per liter

cis-1,2-DCE = cis-1,2-dichloroethene

trans-1,2-DCE =trans-1,2-dichloroethene

PCE = Tetrachloroethene

TCE = Trichloroethene

Table 4
Summary of Analytical Results For Volatile Organic Compound (VOC) Analyses of
Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

All results expressed in milligrams per liter (mg/l)

Location	Date Sampled	Screened Interval Depth (ft bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloropropane	Notes
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Groundwater samples collected from the temporary sampling points are considered grab samples; therefore the results should be considered estimates of groundwater quality.

Table 5
Summary of Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, and ORP
in Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

(concentrations in milligrams per liter [mg/l] unless otherwise noted)

Well ID	Date Sampled	Dissolved Oxygen	Manganese (dissolved)	Nitrate	Sulfate	Ferrous Iron (Fe + 2)	Methane	ORP (milliVolts)	Hydrogen (nano-Moles)
B-7	11-Aug-00						11	193	
B-7-field	11-Aug-00	0.63		(1)	3				
B-7	31-Oct-00	0.62	2.6	<0.10	<1.0	11	2.4		(3)
B-7-field	31-Oct-00	0.25		0.4	(1)	15.85		-62.5	
B-10	10-Aug-00			<0.05	<0.05	5.7	10	213	
B-10-field	10-Aug-00	0.44		(1)	(2)				
B-10	31-Oct-00	2.4	1.4	<0.10	<1.0	5.9	6.7		0.81
B-10-field	31-Oct-00	0.44		0	0	7.60		-22.2	
GW-2-field	1-Nov-00	2.32						77.0	
GW-3	11-Aug-00						<0.0005	395	
GW-3-field	11-Aug-00	0.72		1	46				
GW-3	1-Nov-00								
GW-3-field		7.76						81.0	
MW-11	10-Aug-00			2.8	63	<0.1	<0.0005	476	
MW-11-field	10-Aug-00	2.52		4.1	67				
MW-11	1-Nov-00	4.1	<0.010	15	90	<1.0	0.00004		130
MW-11-field	1-Nov-00	4.01		3.3	73	0		87.4	
LFR-1	9-Aug-00							462	
	11-Aug-00						0.0096		
LFR-1-field	9-Aug-00	3.63		5.5	30				1.5
LFR-1	30-Oct-00	2.7	0.030	39	42	<1.0	0.00038		
LFR-1-field/split	30-Oct-00	2.95		10.3/10.0	29/29	0.01/0.01		77.4	1.0
LFR-1 split	30-Oct-00	3.4	0.030	40	43	<1.0	0.00069		
LFR-2	11-Aug-00						6.6	270	
LFR-2-field	11-Aug-00	0.48		1.5	(1)	2.7			1200
LFR-2	2-Nov-00	2.2	8.8	0.33	5.4	5.3	8.5		
LFR-2-field	2-Nov-00	0.47		0.5	(1)	6.05		-23.7	

Table 5
Summary of Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, and ORP
in Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California

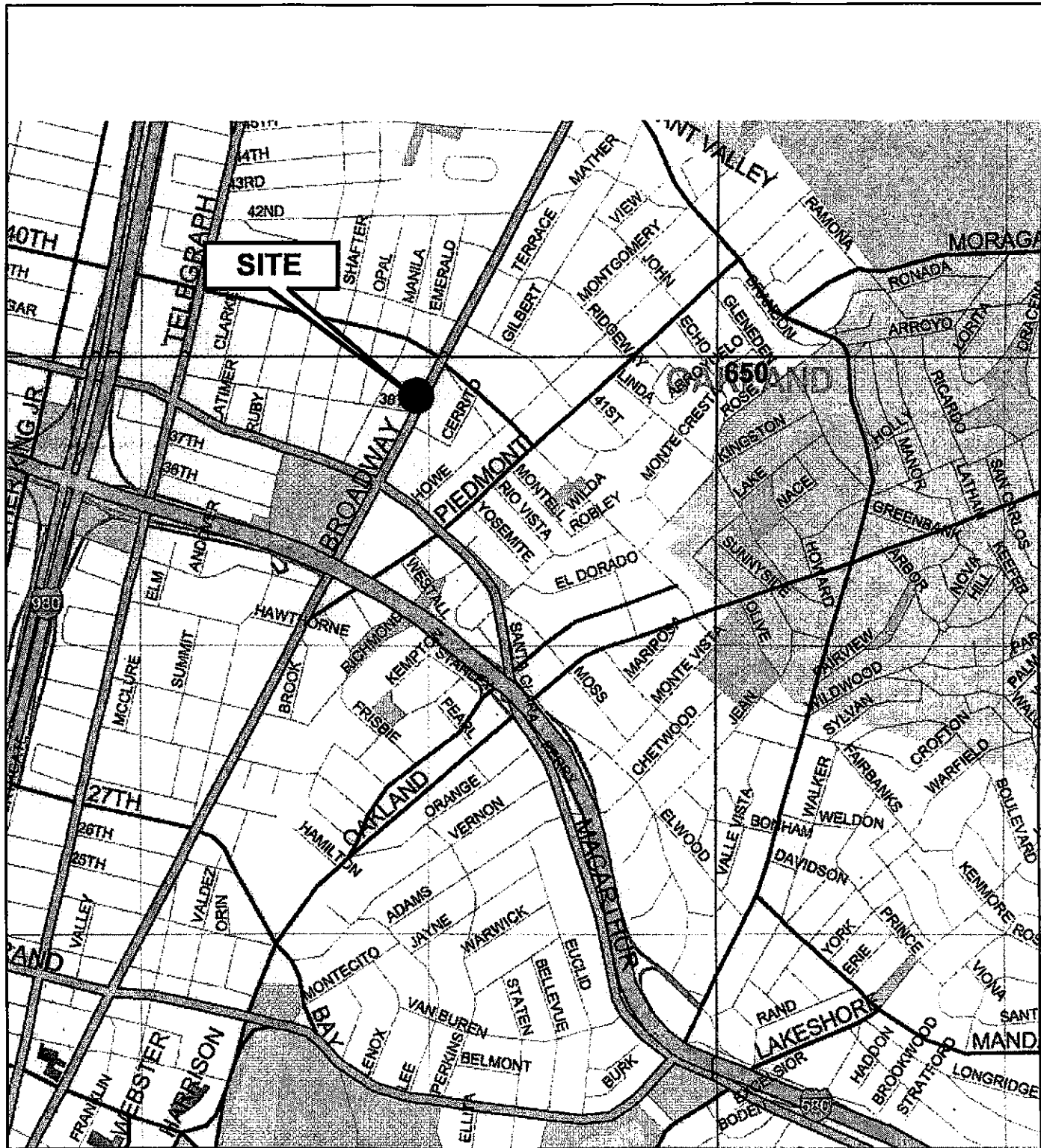
(concentrations in milligrams per liter [mg/l] unless otherwise noted)

Well ID	Date Sampled	Dissolved Oxygen	Manganese (dissolved)	Nitrate	Sulfate	Ferrous Iron (Fe+2)	Methane	ORP (milliVolts)	Hydrogen (nano-Moles)
LFR-3	10-Aug-00			2.4	64	<0.1	0.00051	464	
LFR-3 split	10-Aug-00						<0.0005		
LFR-3-field	10-Aug-00	1.3		2.4	64				850
LFR-3	1-Nov-00	4.7	0.022	8.8	74	<1.0	0.00028		
LFR-3-field	1-Nov-00	0.58		1.8	57	0.0		75.2	
LFR-4	11-Aug-00						0.062	402	
LFR-4-field	11-Aug-00	1.13		0.7	1	0.14			1.1
LFR-4	31-Oct-00	1.9	2.2	<0.10	2.9	1.1	3.2		
LFR-4-field	31-Oct-00	0.64		0.1		0.61		-8.0	

Notes:

Samples with "field" in the well number indicate that the results are from field measurements obtained using a Hach spectrophotometer or a Hydrolab Quanta flow-through instrument.

- (1) Sample concentration was too dilute to be reproducibly measured using the Hach spectrophotometer.
- (2) Field measurement was not recorded.
- (3) Hydrogen sample not obtained from B-7 in 4th Quarter 2000 because well did not yield enough water, and water was too turbid.



Source: The Thomas Guide Digital Edition
1999 Bay Area

3815 BROADWAY, OAKLAND, CALIFORNIA

Site Location Map

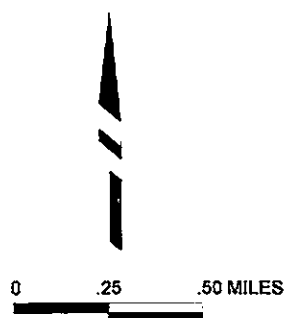
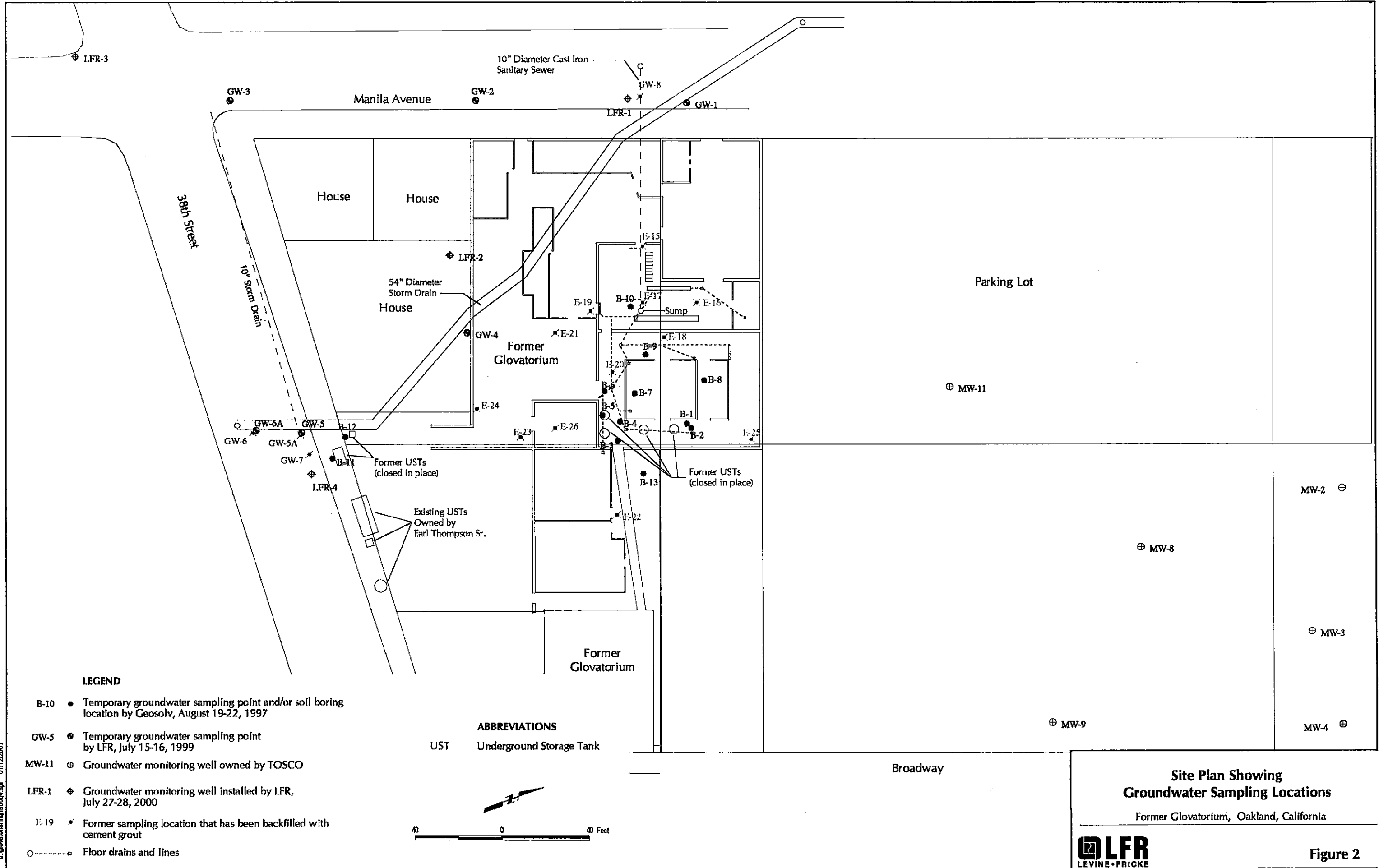
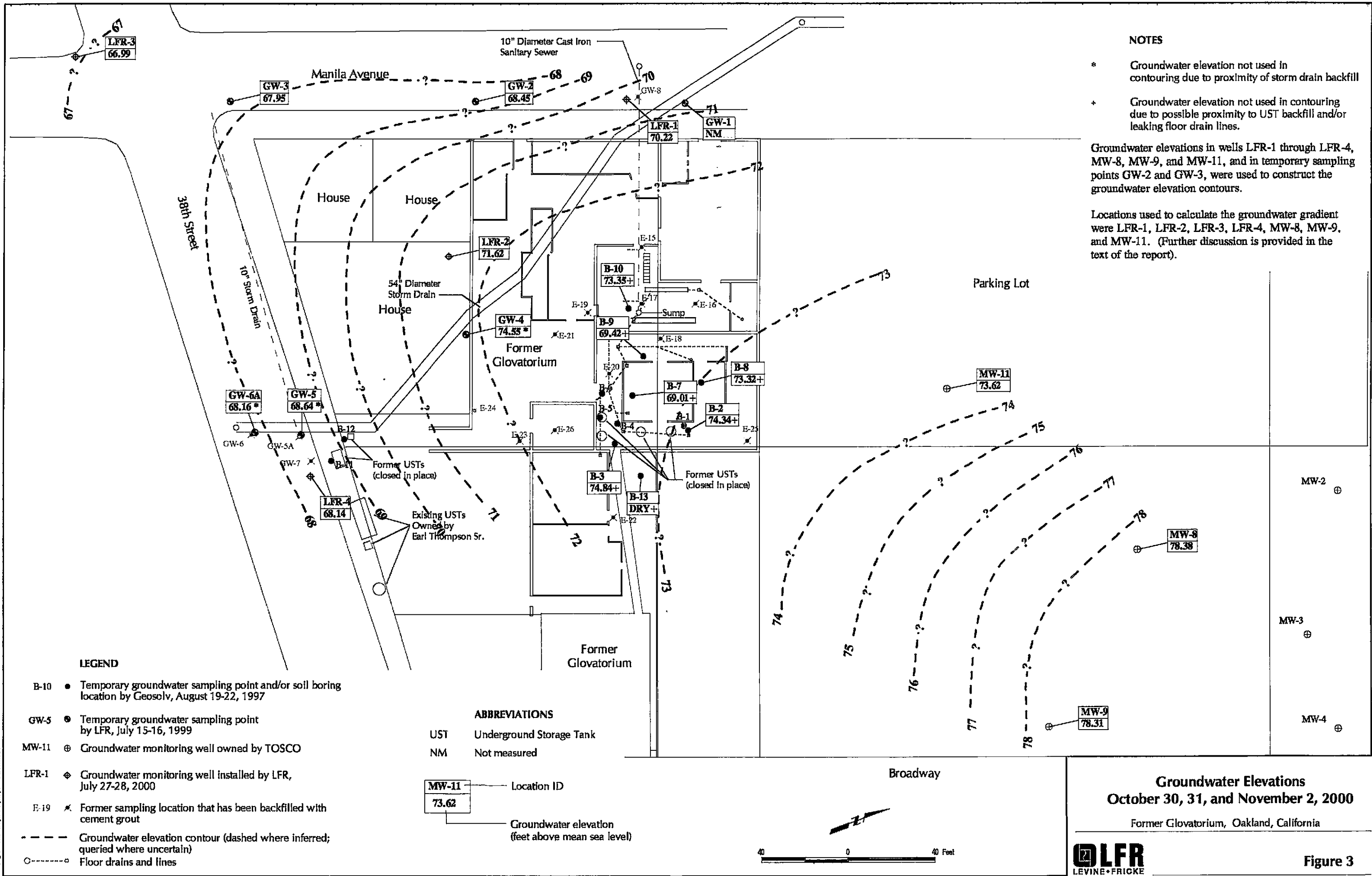


Figure 1

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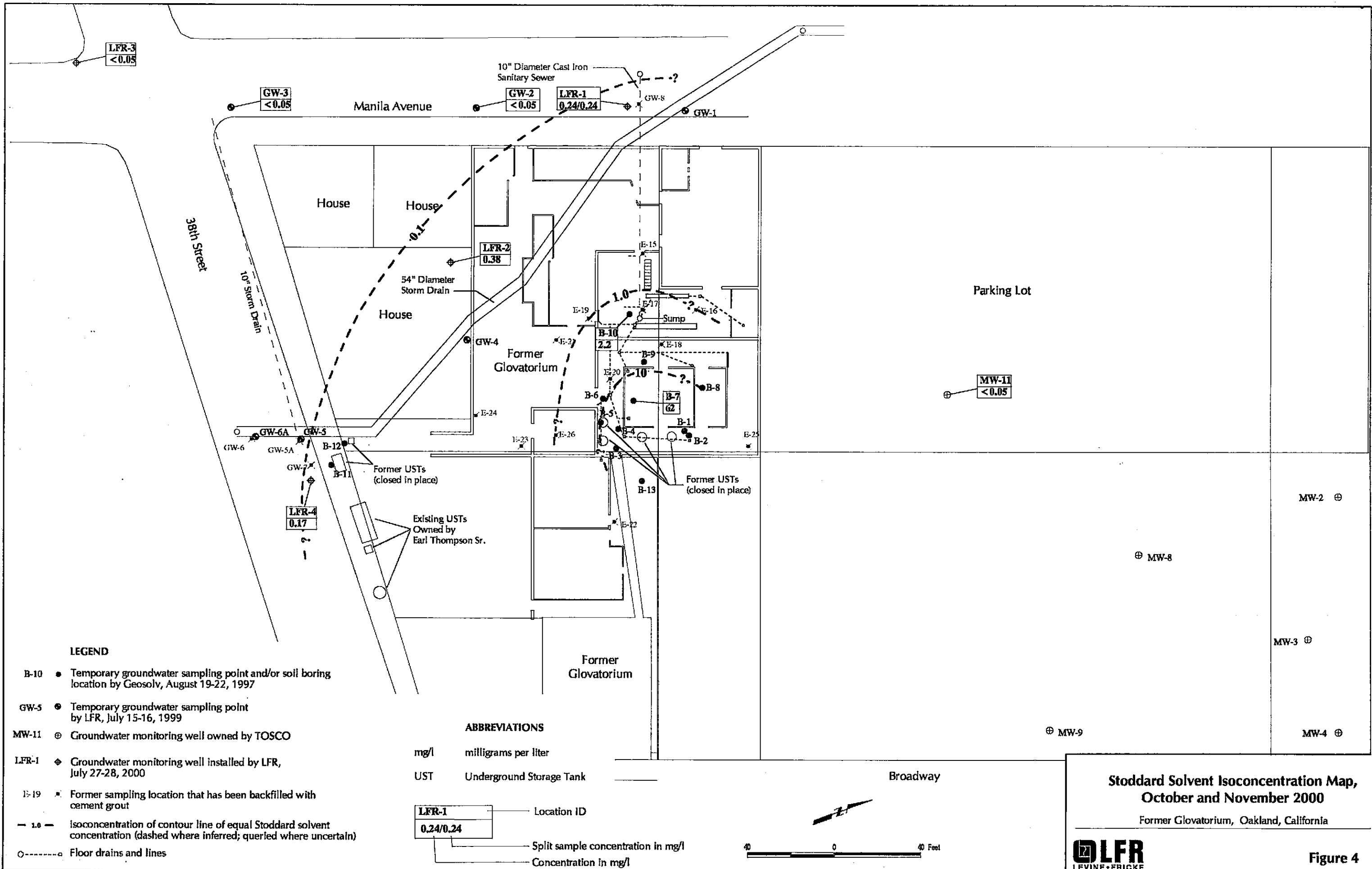


Groundwater Elevations
October 30, 31, and November 2, 2000
 Former Glovatorium, Oakland, California



Figure 3

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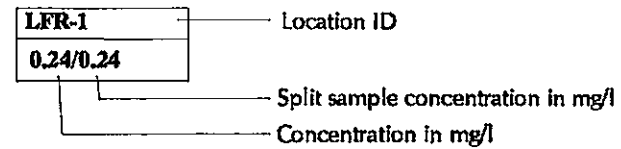


LEGEND

- B-10 ● Temporary groundwater sampling point and/or soil boring location by Geosolv, August 19-22, 1997
- GW-5 ● Temporary groundwater sampling point by LFR, July 15-16, 1999
- MW-11 ⊕ Groundwater monitoring well owned by TOSCO
- LFR-1 ⊕ Groundwater monitoring well installed by LFR, July 27-28, 2000
- E-19 * Former sampling location that has been backfilled with cement grout
- 1.0 - Isoconcentration of contour line of equal Stoddard solvent concentration (dashed where inferred; queried where uncertain)
- Floor drains and lines

ABBREVIATIONS

- mg/l milligrams per liter
- UST Underground Storage Tank

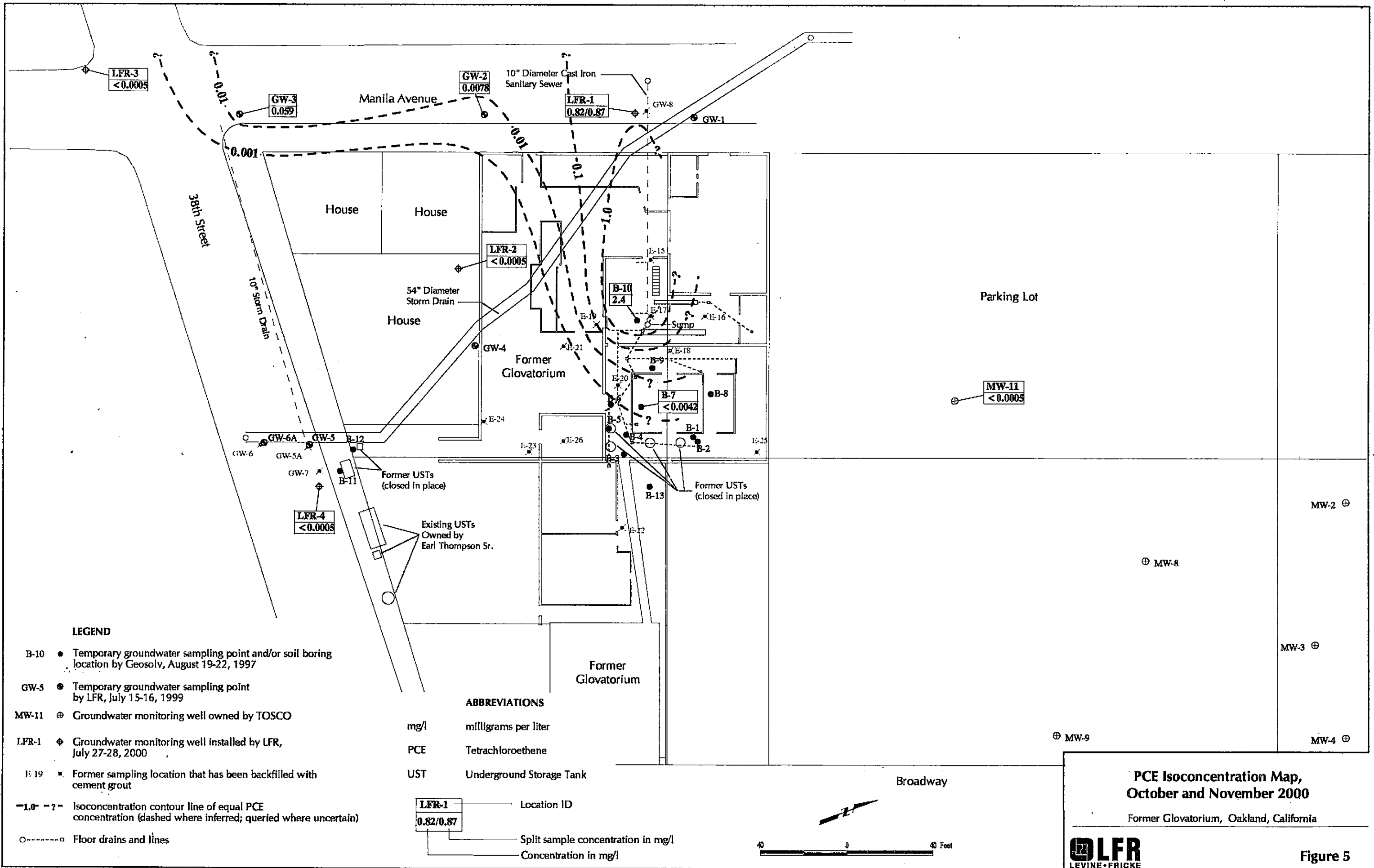


**Stoddard Solvent Isoconcentration Map,
October and November 2000**
Former Glovatorium, Oakland, California



Figure 4

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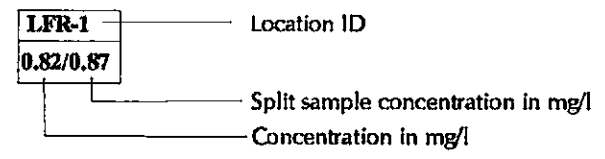


LEGEND

- B-10 ● Temporary groundwater sampling point and/or soil boring location by Geosolv, August 19-22, 1997
- GW-5 ● Temporary groundwater sampling point by LFR, July 15-16, 1999
- MW-11 ⊕ Groundwater monitoring well owned by TOSCO
- LFR-1 ◆ Groundwater monitoring well installed by LFR, July 27-28, 2000
- B-19 ✕ Former sampling location that has been backfilled with cement grout
- 1.0- -? - Isoconcentration contour line of equal PCE concentration (dashed where inferred; queried where uncertain)
- - - - Floor drains and lines

ABBREVIATIONS

- mg/l milligrams per liter
- PCE Tetrachloroethene
- UST Underground Storage Tank



**PCE Isoconcentration Map,
October and November 2000**
Former Glovatorium, Oakland, California



Figure 5

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Appendix A

**Field Methods for
Groundwater Monitoring**

INTRODUCTION

Field activities were performed under the direct supervision of a California-registered geologist and/or a registered engineer. Before use, all downhole equipment used for groundwater sampling was new or decontaminated by washing with high-pressure, hot water (steam cleaned) and/or a solution of laboratory-grade detergent and tap water, followed by rinsing with tap water. Water generated from decontaminating the sampling equipment, and development and purge water were stored at the Site in 55-gallon drums pending selection of an appropriate disposal alternative.

GROUNDWATER PURGING AND SAMPLING

To optimize representative sample collection, monitoring wells and temporary sampling points were purged using a low-flow peristaltic pump (i.e., the "low-flow" or "micro-purge" technique) before sampling. The wells and temporary sampling points were micro-purged to minimize cascading of the groundwater down the casing during purging, whenever possible. The pump intake hose was typically located in approximately the middle of the screened interval in the wells and temporary sampling points in which the screen interval was known. The wells and temporary sampling points were purged at a rate that maintained approximately 90% of the water column.

Measurements of depth to groundwater, pH, temperature, conductivity, ORP, DO, and turbidity were read and recorded approximately every 5 minutes. (Samples were collected from wells and temporary sampling points that produced water. The temporary sampling points GW-2 and GW-3 did not produce enough water for all of the bioattenuation parameter analyses.) When these parameters had stabilized to within the approximate respective amounts listed; pH (± 0.1 standard units), conductivity ($\pm 3\%$), ORP (± 10 mV), DO ($\pm 10\%$), and turbidity ($\pm 10\%$) for three successive readings, samples were collected from the discharge tube to be used for the bioattenuation parameter indicator tests. (The reading taken just before sampling is the reading presented in Tables 5 and A-1.)

Groundwater samples were collected using a peristaltic pump with new polyethylene and PVC tubing. The groundwater samples were pumped directly through the tubing into laboratory-supplied, 40-milliliter (ml) volatile organic analysis (VOA) vials with Teflon septa and/or laboratory-supplied plastic bottles. The VOA vials were filled to eliminate headspace after the vials were sealed. Samples for the analysis of metals were filtered through a new QED™ 0.45-micron water filter before filling the sampling bottles.

The VOA vials and plastic bottles were capped, labeled, and placed in a chilled cooler for transport to the analytical laboratory under standard chain-of-custody protocol. Laboratory-prepared trip blanks were placed in the coolers with the samples to check for possible contamination of the samples during shipment. Duplicate and field blank

(equipment rinse) samples were also submitted for analysis. These field QC samples were collected and analyzed in addition to the QA/QC procedures that are part of the standard program followed by certified laboratories.

Hydrogen sampling was conducted using the bubble strip method, so named because during the sampling process, a bubble strips hydrogen out of the water. Sampling was conducted per Microseep's instructions. The principle is to continuously pump groundwater through a gas-sampling cell containing an air bubble, so that hydrogen can partition between the gas and liquid phases until the concentration of hydrogen in the bubble comes into equilibrium with the concentration of hydrogen in the groundwater. The concentration in groundwater is calculated using the Ideal Gas Law and Henry's Law.

After the well or temporary sampling point was appropriately purged, the outlet of the peristaltic pump was connected to the inlet tubing of the cell, and the cell discharge was affixed beneath the purge water to create a sealed system in which air could not infiltrate back into the sampling cell. The cell was clamped to a ring stand to secure it during the sampling process. The equilibrium time needed for the hydrogen stripping process was determined based on the flow rate calculated during micropurging, using a table provided by Microseeps in its instructions. The typical flow rate was approximately 0.1 liter/minute, with corresponding sampling time of approximately 30 minutes. The cell assembly was inverted, then ambient air was injected into the cell. Groundwater was then pumped through the cell for approximately 30 minutes, after which the cell was turned to its upright position. A sample of gas was then withdrawn from the cell and injected into a sample vial.

The sample vial was sent to Microseeps, who analyzed the bubble for hydrogen. Results of the hydrogen testing are presented in Table A-1.

GROUNDWATER LEVEL MEASUREMENT

Groundwater levels were measured in temporary sampling points or monitoring wells B-2, B-3, B-7, B-8, B-9, B-10, B-13, GW-2, GW-3, GW-4, GW-5, GW-6A, MW-8, MW-9, MW-11, and LFR-1 through LFR-4. The groundwater levels were measured to approximately the nearest 0.01-foot using an electric water-level probe graduated in 0.01-foot increments. Floating product was observed in B-3. Groundwater level data and elevations are summarized in Table 2.

GROUNDWATER FIELD SCREENING

The following parameters—iron, ferrous iron, sulfide, sulfate, nitrite and nitrate nitrogen—were screened in the field using a Hach ISO 9001 Certified spectrophotometer. Each parameter has a corresponding wavelength, which was entered into the spectrophotometer before the testing began. Testing was conducted per the manufacturer's specifications. Typically, as samples were collected, a portion of

the sample was poured into a clean 150-ml beaker. An AcuVac™ ampul containing a reagent corresponding to the parameter being measured was then placed at the bottom of the beaker and the tip broken off under the groundwater sample, allowing the groundwater to enter the ampul with minimal air contact. The sample would then react with the reagent to form a color in proportion to the parameter's concentration. After the sample had reacted with the reagent, the ampul was placed into the spectrophotometer, and the concentration was measured and recorded. Dilutions were performed as necessary, and correction factors were applied per manufacturer's specifications. Results of the field parameter testing are presented in Table 5 and Table A-1.

The pH, temperature, conductivity, ORP, and DO were measured using a Hydrolab Quanta™ flow-through instrument which measured each parameter from sensors housed in the flow-through cell. Turbidity measurements were recorded using a LaMotte™ Model 2008 turbidity meter.

Table A-1
Summary of Analytical Results and Field Measurements for
Dissolved Anions, Cations, and Gases, pH, Temperature, and Conductivity in Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
(concentrations in milligrams per liter [mg/l] unless otherwise noted)

Well ID	Date Sampled	Alkalinity, Total as CaCO ₃ , Bicarb- onate	Chloride	Carbon Dioxide	Iron	Nitrite	Sulfide	Ethane	Ethene	pH (standard units)	Temperature (degrees Celsius)	Conduc- tivity (milli- siemens/cm)
B-7	8/11/00	760	39	202				<0.0005	<0.0005	6.86	17.55	1.279
B-7-field	8/11/00					(1)	0.049					
B-7	31-Oct-00	760	42	200	14	<0.10	<2.0					
B-7-field	31-Oct-00				17.22	(1)	(1)			6.16	16.05	1.454
B-10	8/10/00	520	74	145	6	<0.05	<0.04	<0.0005	0.00057	6.86	16.8	1.13
B-10-field	10-Aug-00					0.023	0.06					
B-10	31-Oct-00	500	76	120	6.6	<0.10	<2.0					
B-10-field	31-Oct-00				8.35	0.001	0.004			6.21	16.62	1.051
GW-2	1-Nov-00									6.31	18.97	1.218
GW-3	11-Aug-00	340	25	54.3				<0.0005	<0.0005	7.05	21.43	0.86
GW-3-field	11-Aug-00					0.046	(1)					
GW-3	1-Nov-00											
GW-3-field										6.52	18.83	0.967
MW-11	10-Aug-00	360	110	216	0.13	<0.05	<0.04	<0.0005	<0.0005	6.47	21	1.089
MW-11-field	10-Aug-00					0.036	0.002					
MW-11	1-Nov-00	300	120	190	<0.050	<0.10	<2.0					
MW-11-field	1-Nov-00				0.01	0.003	(1)			5.83	20.13	1.264
LFR-1	11-Aug-00	250	110					<0.0005	<0.0005	6.97	19.73	0.936
LFR-1-field	9-Aug-00			51.1		0.02	(1)					
LFR-1	30-Oct-00	240	100	25	<0.050	<0.10	<2.0					
LFR-1-field/split	30-Oct-00				0.01/0.01	0.031/0.036	0.001/0.001			6.38	17.94	0.697
LFR-1 split	30-Oct-00	220	100	40	<0.050	<0.10	<2.0					
LFR-2	11-Aug-00	590	33	174				<0.0005	0.0017	6.8	19.87	1.088
LFR-2-field	11-Aug-00				2.95	(1)	0.005					
LFR-2	2-Nov-00	550	40	180	6.2	<0.10	<2.0					
LFR-2-field	2-Nov-00				7.45	0.007	0.003			6.19	19.67	1.306
LFR-3	10-Aug-00	310	85	162	<0.1	0.15	<0.04	<0.0005	<0.0005	6.57	19.92	0.951

Table A-1
Summary of Analytical Results and Field Measurements for
Dissolved Anions, Cations, and Gases, pH, Temperature, and Conductivity in Groundwater Samples
Former Glovatorium
3815 Broadway, Oakland, California
(concentrations in milligrams per liter [mg/l] unless otherwise noted)

Well ID	Date Sampled	Alkalinity, Total as CaCO ₃ , Bicarb- onate	Chloride	Carbon Dioxide	Iron	Nitrite	Sulfide	Ethane	Ethene	pH (standard units)	Temperature (degrees Celsius)	Conduc- tivity (milli- siemens/cm)
LFR-3 split	10-Aug-00	300	85	152				<0.0005	<0.0005			
LFR-3-field	10-Aug-00					0.058	(1)					
LFR-3	1-Nov-00	350	66	160	<0.050	<0.10	<2.0					
LFR-3-field	1-Nov-00				0.01	0.011	0.002			6.16	17.71	1.164
LFR-4	11-Aug-00	630	71	161				<0.0005	<0.0005	6.9	20.11	1.24
LFR-4-field	11-Aug-00				0.22	0.018	0.002					
LFR-4	31-Oct-00	490	28	130	1.0	<0.10	<2.0					
LFR-4-field	31-Oct-00				0.67	0.022	0.00			6.21	18.11	0.833
B-10-Field Blank	10-Aug-00							<0.0005	<0.0005			

Notes:

Samples with "field" in the well number indicate that the results are from field measurements obtained using a Hach spectrophotometer or a Hydrolab Quanta flow-through instrument.

(1) Sample concentration was too dilute to be reproducibly measured using the Hach spectrophotometer.

Appendix B

**Water-Quality Sampling Information Forms
And Water-Level Measurements Log**

LFR

WATER-LEVEL MEASUREMENTS LOG

Project No. 6895.00.031

Date 10/30/00

Page

Well Name Gloveatorium

Day: Sun Mon Tues Weds Thurs Fri Sat

Field Personnel MXD, KTS

General Observations Rain 50°F

WELL NO.	WELL ELEVATION	DEPTH TO WATER		WATER ELEVATION	WELL SECURED		REMARKS (UNITS = FEET)
		1	2		Y	N	
MW 11		10.89			Y		8:20 No product Detected
GW 5		12.37					8:30 " " "
GW 6A		13.45					8:35 " " "
GW 4		7.82					8:35 " " "
LFR 2		10.27					8:40 " " "
GW 3		9.97					8:45 " " "
LFR 3		10.97					8:45 " " "
GW 2		10.69					8:50 " " "
LFR 1		9.75					8:50 " " "
B 10		8.15					9:00 " " "
B 9		7.95					9:00 " " "
B 13		8.72	DRY				9:05 " " "
B 3		7.73					9:05 Product Detected
B 2		7.75					9:15 No Product Detected
B 7		7.95					9:15 " " "
B 8		8.50					9:20 " " "
LFR 4		PARKED ON					0823; 1500
LFR 4		13.57					0745 on 10/31
							11/2/00
MW 9		8.25					Nearest Street 1102
MW-8		9.06					Nearest Building 1105

Project #: 8895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/31/00 Well #: B-7
 Sample ID: B-7
 Blank: Dup:
 DTW: 7.35 Inlet: Bottom (well historically percolates)
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory:	Microsweeps & Curtis and Tompkins	Analysis:	
Delivery:	Courier	Dissolved H ₂ :	1 Septum Vial
Sulfide:	1 Poly w/ Zn(C ₂ H ₃ O ₂) ₂ +NAOH	Dissolved Perm Gases:	2 Unpres VOAs
Alk, Cl-, Sulfate:	1 unpres poly L	Ferrous Iron:	1 HCl Pres Poly
Total Iron, Manganese:	1 HNO ₃ pres Poly	Cation&Anion w/ Nitrate & Nitrite:	1 unpres poly and 1 H ₂ SO ₄ poly
8260 (8010 List) & MTBE & BTEX & TPHg & TPHss	6 VOAs w/ HCl		

TIME	DTW	VOLUME	TEMP (°C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
1328	7.35	0						start purge at 100ml/min (slowest)
1343								
1348	11.00	0.6	61.29	1.459	2.44	-63.2	1205.3	cloudy - Gray
1353		0.7	61.34	1.430	1.20	-66.9	1205.5	cloudy - Gray
1400	11.80	0.8	61.33	1.440	0.55	-68.6	1205.3	cloudy - Gray
1405	DPT (inlet)	1	61.04	1.445	0.41	-63.6	1204.8	cloudy - Gray
1410		1.25	60.92	1.452	0.25	-63.7	1205.0	cloudy - Gray
1415		1.4	60.89	1.456	0.24	-62.8	1205.1	cloudy - Gray
1420		1.5	60.89	1.454	0.25	-62.5	1205.1	cloudy - Gray
Collect Lab + field samples								

pH
 6.23
 6.25
 6.26
 6.18
 6.13
 6.15
 6.16

Notes: 11/1/00 MXD verified with Microsweeps that any air in line would skew sample

Project #: 6895.00.031

Well #: B-7

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				±3%	±10%	±10 mv	±10%	
505								
1520								well DEWATERING AND injection tip clogging on Microseeps. No Hydrogen sample. Start the perle: entire bottle filled w/ air.

HACH KIT RESULTS FOR WELL B-7 AT SAMPLE TIME 1420 (ALL RESULTS IN mg/L)						
ANALYTE	RESULT	FORM 1		FORM 2		Dilution
						COMMENTS
Ferrous Iron (Filtered)	3.17	NA	NA	NA	NA	10ml sample to 40ml DI
Total Iron (Filtered)	2.87	NA	NA	NA	NA	10ml sample to 50ml DI
Nitrate (2.0 correction Factor)	0.4	NO ₃ ⁻ (9.0 Correction Factor)	1.5	NA	NA	
Nitrite	-0.001	NO ₂ ⁻	-0.005	NaNO ₂	-0.007	
Sulfate	-2	NA	NA	NA	NA	
Sulfide	-0.003	NA	NA	NA	NA	

Notes:

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/3/00 Well #: B-10
 Sample ID: B-10
 Blank: 1 Dup: 1
 DTW: 8.15 Inlet: Bottom (well draws down)
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory:	<u>Microsweeps & Curtis and Tompkins</u>	Analysis:	
Delivery:	<u>Courier</u>	Dissolved H ₂ :	<u>1 Septum Vial</u>
Sulfide:	<u>1 Poly w/ Zn(C₂H₃O₂)₂+NAOH</u>	Dissolved Perm Gases:	<u>2 Unpres VOAs</u>
Alk, Cl-, Sulfate:	<u>1 unpres poly L</u>	Ferrous iron:	<u>1 HCl Pres Poly</u>
Total Iron, Manganese:	<u>1 HNO₃ pres Poly</u>	Cation&Anion w/ Nitrate & Nitrite:	<u>1 unpres poly and 1 H₂SO₄ poly</u>
8260 (8010 List) & MTBE & BTEX & TPHg & TPHss	<u>6 VOAs w/ HCl</u>		

TIME	DTW	VOLUME	TEMP (°F)	COND (µmS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within $\pm 3\%$ $\pm 10\%$ $\pm 10\text{ mv}$ $\pm 10\%$								
<u>1048</u>	<u>8.15</u>	<u>0</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>start purge</u>
	<u>solinst</u>	<u>won't get past 5</u>		<u>5</u>				<u>pumping as slow as possible (100ml/min)</u>
<u>1100</u>	<u>NA</u>	<u>0.25</u>	<u>61.87</u>	<u>1.126</u>	<u>1.03</u>	<u>-39.3</u>	<u>13.8</u>	<u>clear</u>
<u>1105</u>	<u>/</u>	<u>0.35</u>	<u>61.92</u>	<u>1.085</u>	<u>0.73</u>	<u>-35.7</u>	<u>23.9</u>	<u>clear</u>
<u>1115</u>		<u>0.5</u>	<u>61.93</u>	<u>1.061</u>	<u>0.51</u>	<u>-26.3</u>	<u>35.6</u>	<u>clear</u>
<u>1125</u>		<u>0.75</u>	<u>61.93</u>	<u>1.055</u>	<u>0.47</u>	<u>-16.4</u>	<u>85.9</u>	<u>clear</u>
<u>1130</u>		<u>1.0</u>	<u>61.95</u>	<u>1.052</u>	<u>0.45</u>	<u>-21.0</u>	<u>88.1</u>	<u>clear</u>
<u>1135</u>		<u>1.25</u>	<u>61.91</u>	<u>1.051</u>	<u>0.44</u>	<u>-22.2</u>	<u>87.6</u>	<u>clear</u>
<u>1140</u>								<u>sample + setup H₂</u>

pH
6.32
6.26
6.21
6.20
6.20
6.21

Notes:

Project #: 6895.00.031

Well #: B-10

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				+/- 3%	+/- 10%	+/- 10 mv	+/- 10%	
1245	—							
1315								Start H ₂ O ₂
1330	8.34	≈ 5 gal		total				after pulling HACH H ₂ O ₂ sample

HACH KIT RESULTS FOR WELL B-10							AT SAMPLE TIME	(ALL RESULTS IN mg/L)
ANALYTE	RESULT	FORM 1		FORM 2		Dilution	COMMENTS	
Ferrous Iron (Filtered)	1.52	NA	NA	NA	NA	10ml sample to 40ml DI		
Total Iron (Filtered)	1.67	NA	NA	NA	NA	10ml sample to 40ml DI		
Nitrate (2.0 correction factor)	0	NO ₃ ⁻ (9.0 Correction Factor)	-0.4	NA	NA	—		
Nitrite	0.001	NO ₂ ⁻	0.003	NaNO ₂	0.004			
Sulfate	0	NA	NA	NA	NA	—		
Sulfide	0.001	NA	NA	NA	NA	—		

Notes:

Project #: 8895.00.031
 Project Name: Giovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/30/00 Well #: GW-2
 Sample ID: GW-2
 Blank: / Dup: /
 DTW: 10-69 Inlet: Bottom
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory: Microsweeps & Curtis and Tompkins
 Delivery: Courier
 Sulfide: 1 Poly w/ Zn(C₂H₃O₂)₂+NAOH
 Alk, Cl-, Sulfate: 1 unpres poly L
 Total Iron, Manganese: 1 HNO₃ pres Poly
 8260 (e010 List) & MTBE & BTEX & TPHg & TPHss: 6 VOAs w/ HCl

Analysis:
 Dissolved H₂: 1 Septum Vial
 Dissolved Perm Gases: 2 Unpres VOAs
 Ferrous Iron: 1 HCl Pres Poly
 Cation&Anion w/ Nitrate & Nitrite: 1 unpres poly and 1 H₂SO₄ poly

ONLY

TIME	DTW	VOLUME	TEMP (°F)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
1358	10.69	0						
1403	13.23	0.1	65.77	954	1.12	13.9	0.2	start purge
1407		0.25	66.69	914	0.50	-35.7	17.6	stop DWTR
1330 11/100	14.76							
1433 11/10		0.25						
1438		0.5	66.14	1.218	2.32	77.0	202.7	Restart purge
1210	16.79							clear DWTR sample

pH
6.35
6.31

Notes: well DWTRS Based on previous results

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/30/00 Well #: GW-3
 Sample ID: GW-3
 Blank: 1 Dup: 1
 DTW: 9.97 Inlet: Bottom (well & DWTRs)
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory: Microsweeps & Curtis and Tompkins
 Delivery: Courier
 Sulfide: 1 Poly w/ Zn(C₂H₃O₂)₂+NAOH
 Alk, Cl-, Sulfate: 1 unpres poly L
 Total Iron, Manganese: 1 HNO₃ pres Poly
 8260 (8010 List) & MTBE & BTEX & TPHg & TPHss: 6 VOAs w/ HCl only

Analysis:
 Dissolved H₂: 1 Septum Vial
 Dissolved Perm Gases: 2 Unpres VOAs
 Ferrous Iron: 1 HCl Pres Poly
 Cation&Anion w/ Nitrate & Nitrite: 1 unpres poly and 1 H₂SO₄ poly

TIME	DTW	VOLUME	TEMP (°F)	COND (µs/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within $\pm 3\%$ $\pm 10\%$ $\pm 10\%$ $\pm 10\%$								
1417	9.97	0	—	—	—	—	—	Start Purge
1422	17.80	0.25	65.74	630	1.39	18.3	102.9	clear
1426		0.75	65.66	770	1.03	26.1	123.2	clear off DWTR
1433	17.65							
1444	15.19							
1449		0.75	—	—	—	—	—	Restart Purge
1450		1.1	65.90	1.063	7.49	74.7	237.2	clear
1555	15.49		65.89	0.967	7.76	91.0	230.9	clear DWTR
1600								Sample Volatiles

pH
 6.24
 6.50
 6.51
 6.50

Notes:

Project #: 8895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 11/1/00 Well #: MW-11
 Sample ID: MW-11
 Blank: MW-11 FB Dup: /
 DTW: 10.61 Inlet: 16.5 FT
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory: Microsweeps & Curtis and Tompkins
 Delivery: Courier
 Sulfide: 1 Poly w/ Zn(C₂H₃O₂)₂+NAOH
 Alk, Cl-, Sulfate: 1 unpres poly L
 Total Iron, Manganese: 1 HNO₃ pres Poly
 8260 (8010 List) & MTBE & BTEX & TPHg & TPHss: 6 VOAs w/ HCl
 Analysis:
 Dissolved H₂: 1 Septum Vial
 Dissolved Perm Gases: 2 Unpres VOAs
 Ferrous Iron: 1 HCl Pres Poly
 Cation&Anion w/ Nitrate & Nitrite: 1 unpres poly and 1 H₂SO₄ poly

TIME	DTW	VOLUME	TEMP (°C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization: If 3 successive parameters are within								
				+/-3%	+/-10%	+/- 10 mv	+/-10%	
1100								
1140	10.61	0						FB + setup
1150	11.00	0.25	68.47	1.284	3.98	83.2	0.6	Start purge
1155	11.29	0.4	69.21	1.274	3.98	83.4	0.5	clear ^{to 100ml/min}
1200	11.50	0.5	68.64	1.264	4.03	86.3	-0.5	clear
1210	11.73	0.7	68.70	1.262	4.04	87.9	-0.6	clear
1215	11.78	0.8	68.82	1.262	3.98	87.6	-0.6	clear
1220		0.9	68.24	1.264	4.01	87.4	-0.6	clear
1225		1.05						clear
1318	13.83	3.5						Sample
								Start microsweeps

PH
 5.94
 5.85
 5.82
 5.81
 5.82
 5.83

Notes: HACH kit Not done for FB b/c DI H₂O will be used for both the "Sample" and Reagent Blank and therefore always = 0.

Project #: 6895.00.031

Well #: MW-11

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS	
Stabilization: 3 successive parameters are within									
1445	1343			+/- 3%	+/- 10%	+/- 10 mv	+/- 10%		
1425		Break down + move to denser GW-3+2							H2 Sample, complete HACH

ANALYTE	HACH KIT RESULTS FOR WELL MW-11				AT SAMPLE TIME (300)	Dilution	COMMENTS
	RESULT	FORM 1		FORM 2			
Ferrous Iron (Filtered)	0.0	NA	NA	NA	NA		
Total Iron (Filtered)	0.01	NA	NA	NA	NA		
Nitrate (2.0 correction Factor)	3.3	NO ₃ ⁻ (9.0 Correction Factor)	14.5	NA	NA		
Nitrite	0.003	NO ₂ ⁻	0.011	NaNO ₂	0.017		
Sulfate	73	NA	NA	NA	NA		
Sulfide	-0.001	NA	NA	NA	NA		Reclean glassware and resample

Submits 74

Notes:

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/30/00 Well #: LFR-1
 Sample ID: LFR-1
 Blank: / Dup: LFR-101
 DTW: 9.75 Inlet: 12 FT
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory: <u>Microsweeps & Curtis and Tompkins</u>	Analysis:
Delivery: <u>Courier</u>	Dissolved H ₂ : <u>1 Septum Vial</u>
Sulfide: <u>1 Poly w/ Zn(C₂H₃O₂)₂+NAOH</u>	Dissolved Perm Gases: <u>2 Unpres VOAs</u>
Alk, Cl-, Sulfate: <u>1 unpres poly L</u>	Ferrous Iron: <u>1 HCl Pres Poly</u>
Total Iron, Manganese: <u>2x 1 HNO₃ pres Poly</u>	Cation&Anion w/ Nitrate & Nitrite: <u>1 unpres poly and 1 H₂SO₄ poly</u>
8260 (8010 List) & MTBE& BTEX & TPHg &TPHss: <u>2x 6 VOAs w/ HCl</u>	

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
0948	9.75	0	—	—	—	—	—	Start Purge
1000	9.62	0.1	62.89	1.097	3.35	102.2	-0.4	clear
1001015	9.82	0.25	63.88	0.696	3.55	85.9	-0.1	clear
1020	9.89	0.4	63.94	0.666	3.43	84.7	-0.2	clear
1040	9.91	1.25	63.92	0.688	3.19	81.1	-0.4	clear
1045	9.93	1.3	64.14	0.696	3.07	80.1	-0.3	clear
1050		1.5	64.51	0.693	3.04	77.4	-0.4	clear
1055		1.6	64.29	0.697	2.95	77.4	-0.3	clear
1130								complete H ₂ + sample
1135								Dup

Notes: Dup requires rerun of H₂ perle

2H
 5.94
 6.26
 6.26
 6.28
 6.33
 6.40
 6.38

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 11/2/00 Well #: LFR-2
 Sample ID: LFR-2
 Blank: / Dup: /
 DTW: 10.18 Inlet: 16.5 FT
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory: <u>Microsweeps & Curtis and Tompkins</u>	Analysis:
Delivery: <u>Courier</u>	Dissolved H ₂ : <u>1 Septum Vial</u>
Sulfide: <u>1 Poly w/ Zn(C₂H₃O₂)₂+NAOH</u>	Dissolved Perm Gases: <u>2 Unpres VOAs</u>
Alk, Cl-, Sulfate: <u>1 unpres poly L</u>	Ferrous Iron: <u>1 HCl Pres Poly</u>
Total Iron, Manganese: <u>1 HNO₃ pres Poly</u>	
8260 (8010 List) & MTBE & BTEX & TPHg & TPHss: <u>6 VOAs w/ HCl</u>	Cation&Anion w/ Nitrate & Nitrite: <u>1 unpres poly and 1 H₂SO₄ poly</u>

TIME	DTW	VOLUME	TEMP (°F)	COND (µs/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within $\pm 3\%$ $\pm 10\%$ $\pm 10\text{ mv}$ $\pm 10\%$								
0915	10.18	0	—	—	—	—	—	start purge $\pm 10\%$
0925	10.57	0.2	66.38	1.278	0.84	-30.5	0.1	clear
0935	10.85	0.4	67.07	1.284	0.59	-27.5	0.4	clear
0940	10.91	0.5	67.09	1.294	0.55	-26.9	0.4	clear
0945	11.01	0.6	67.10	1.303	0.51	-24.9	0.5	clear
0950	11.11	0.7	67.08	1.307	0.47	-24.2	0.5	clear
0955	11.21	0.8	67.50	1.309	0.46	-23.1	0.7	clear
1000	11.29	0.9	67.41	1.306	0.47	-23.7	0.7	clear
1005								sample
1008	11.35	≈ 3	—	—	—	—	—	start H ₂ perK

pH

6.02
6.10
6.12
6.14
6.16
6.18
6.19

Notes:

Project #: 6895.00.031

Well #: LFR-2

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				+/- 3%	+/- 10%	+/- 10 mv	+/- 10%	
1130								Sample Hz

HACH KIT RESULTS FOR WELL LFR-2 AT SAMPLE TIME 1025 (ALL RESULTS IN mg/L)						
ANALYTE	RESULT	FORM 1	FORM 2	Dilution		COMMENTS
Ferrous Iron (Filtered)	1.21	NA	NA	NA	NA	10ml sample to 40ml DI
Total Iron (Filtered)	1.49	NA	NA	NA	NA	10ml sample to 40ml DI
Nitrate (2.0 correction Factor)	0.5	NO ₃ - (8.0 Correction Factor)	200	NA	NA	
Nitrite	0.007	NO ₂ -	0.021	NaNO ₂	0.032	
Sulfate	-8	NA	NA	NA	NA	
Sulfide	0.003	NA	NA	NA	NA	

Notes: 9.06 - near BLDs 0.25 - near ST D120 e cor lot

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 11/1/00 Well #: LFR - 3
 Sample ID: LFR-3
 Blank: / Dup: /
 DTW: 11.10 Inlet: 18 FT
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory:	<u>Microsweeps & Curtis and Tompkins</u>	Analysis:	
Delivery:	<u>Courier</u>	Dissolved H ₂ :	<u>1 Septum Vial</u>
Sulfide:	<u>1 Poly w/ Zn(C₂H₃O₂)₂+NAOH</u>	Dissolved Perm Gases:	<u>2 Unpres VOAs</u>
Alk, Cl-, Sulfate:	<u>1 unpres poly L</u>	Ferrous Iron:	<u>1 HCl Pres Poly</u>
Total Iron,	<u>1 HNO₃ pres Poly</u>	Cation&Anion w/ Nitrate & Nitrite:	<u>1 unpres poly and 1 H₂SO₄ poly</u>
Manganese:			
8260 (8010 List) & MTBE & BTEX & TPHg & TPHss	<u>6 VOAs w/ HCl</u>		

TIME	DTW	VOLUME	TEMP (°F)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				+/-3%	+/-10%	+/- 10 mv	+/-10%	
0750	11.10	0						
0805	11.32	0.1	63.16	1.074	1.25	86.4	7.8	start purge
0815	11.54	0.25	63.65	1.147	0.73	77.5	6.9	clear pump 400ml/min
0820		0.35	62.99	1.164	0.69	76.3	8.2	clear
0830	11.55	0.5	63.18	1.199	0.65	73.9	13.3	clear
0835		0.6	63.30	1.191	0.65	75.0	17.4	clear
0840	11.59	0.75	63.58	1.178	0.60	75.4	25.1	clear
0850		1	63.80	1.179	0.59	75.9	37.1	clear
0855	11.61	1.1	63.86	1.171	0.59	74.7	38.6	clear
0900		1.25	63.88	1.164	0.58	75.2	38.8	clear

PH
 6.37
 6.34
 6.32
 6.28
 6.24
 6.21
 6.19
 6.17
 6.16

Notes:

Project #: 6895.00.031

Well #: LFR-3

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within								
				+/- 3%	+/- 10%	+/- 10 mv	+/- 10%	
0905								
0955	11.81	≈ 4						SAMPLE Lab + Hach Start Microseeps Sample Ha
1025								

HACH KIT RESULTS FOR WELL LFR-3 AT SAMPLE TIME 0905 (ALL RESULTS IN mg/L)							
ANALYTE	RESULT	FORM 1		FORM 2		Dilution	COMMENTS
		NO ₃ ⁻ (9.0 Correction Factor)	NO ₂ ⁻	NaNO ₂			
Ferrous Iron (Filtered)	0.0	NA	NA	NA	NA		
Total Iron (Filtered)	0.01	NA	NA	NA	NA		
Nitrate (2.0 correction factor)	1.8	7.9		NA	NA		
Nitrite	2.01		0.036	NaNO ₂	0.054		
Sulfate	57	NA	NA	NA	NA		
Sulfide	0.002	NA	NA	NA	NA		

Notes:

Project #: 6895.00.031
 Project Name: Glovatorium
 Location: Oakland, CA
 Sampling Plan: JCS
 Field Staff: MXD, KXJ

Date: 10/31/00 Well #: LFR-4
 Sample ID: LFR-4
 Blank: / Dup: /
 DTW: 13.51 Inlet: 16 FT
 Purge Method: Peristaltic Pump w/ New tubing

Laboratory:	<u>Microsweeps & Curtis and Tompkins</u>	Analysis:	
Delivery:	<u>Courier</u>	Dissolved H ₂ :	<u>1 Septum Vial*</u>
Sulfide:	<u>1 Poly w/ Zn(C₂H₃O₂)₂+NAOH</u>	Dissolved Perm Gases:	<u>2 Unpres VOAs *</u>
Alk, Cl-, Sulfate:	<u>1 unpres poly L</u>	Ferrous Iron:	<u>1 HCl Pres Poly</u>
Total Iron,	<u>1 HNO₃ pres Poly</u>	Cation&Anion w/ Nitrate & Nitrite:	<u>/ 1 unpres poly and 1 H₂SO₄ poly</u>
Manganese:			
8260 (8010 List) & MTBE& BTEX & TPHg &TPHss	<u>6 VOAs w/ HCl</u>		

TIME	DTW	VOLUME	TEMP (°F)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				+/-3%	+/-10%	+/- 10 mv	+/-10%	
0758	13.51	0						START @ 7:00 AM
0803	13.63	0.2	63.85	0.888	1.46	-5.1	-1.1	clear slow pump
0815	13.86	0.5	63.59	0.880	0.98	-16.8	-0.9	Pumping at 75 ml/min
								clear > 100 ml/min
0820	13.94	0.6	63.70	0.865	0.95	-16.6	-0.9	clear
0825	14.04	0.7	64.31	0.856	0.78	-14.0	-0.6	clear
0830	14.10	0.75	64.41	0.849	0.71	-12.6	-0.7	clear
0835	14.20	0.8	64.20	0.839	0.69	-10.0	-0.8	clear
0840	14.24	0.9	64.59	0.833	0.64	-8.0	-1.0	clear - setup H ₂
0930			S A M P L E					

pH
 5.99
 6.15
 6.18
 6.19
 6.18
 6.23
 6.21

Notes:

Project #: 6895.00.031

Well #: LFR-4

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	COMMENTS
Stabilization if 3 successive parameters are within				+/- 3%	+/- 10%	+/- 10 mv	+/- 10%	

HACH KIT RESULTS FOR WELL LFR-4 AT SAMPLE TIME 0930 (ALL RESULTS IN mg/L)							
ANALYTE	RESULT	FORM 1		FORM 2		Dilution	COMMENTS
Ferrous Iron (Filtered)	0.61	NA	NA	NA	NA		
Total Iron (Filtered)	0.67	NA	NA	NA	NA		
Nitrate (2.0 correction Factor)	0.1	NO ₃ ⁻ (9.0 Correction Factor)	0.3	NA	NA		
Nitrite	0.022	NO ₂ ⁻	0.072	NaNO ₂	0.108		
Sulfate		NA	NA	NA	NA		
Sulfide	0.00	NA	NA	NA	NA		

Notes:

Appendix C

Laboratory Certificates



A N A L Y T I C A L R E P O R T

Prepared for:

LFR-Levine-Fricke
1900 Powell Street
12th Floor
Emeryville, CA 94608

Date: 13-NOV-00
Lab Job Number: 148367
Project ID: 6895.00.031
Location: Glovatorium

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by:


Project Manager

Reviewed by:


Operations Manager

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Laboratory Numbers: **148367**
Client: **LFR-Levine-Fricke**
Location: **Glovatorium**
Project#: **6895.00.031**
COC#: **10173**

Sampled Date: **10/30/00**
Received Date: **10/30/00**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for three water samples, which were received from the site referenced above on October 30, 2000. The samples were received cold and intact. One water sample was logged in for a 24-hour rush. All data were faxed to Julie Sharp and Taylor Bennet on October 31, 2000 and November 06, 2000.

TVH/BTXE: No analytical problems were encountered.

VOCs (EPA 8260): No analytical problems were encountered.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 6895.00.031	Field Logbook No.: MXD-4	Date: 10/30/00	Serial No.: 10173
Project Name: Glovatorium		Project Location: Oakland, CA	

SAMPLER (Signature): <i>[Signature]</i>					ANALYSES								SAMPLERS: MXD		
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE									REMARKS	
						EPA 601	EPA 624	3760	8015	8015	8015	576	NATGE		HOLD
LFR-1	10/30/00	1130	148367-1	6	H ₂ O			X	X	X	X			X	Please Rush LFR-1
LFR-101		1135	-2	6	"			X	X	X	X			X	
TB-103000-A		1140	-3	1	H ₂ O			X				X			standard TAT on LFR-101 + TB103000-A
															Results to Julie Sharp (510) 652-4906

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Carrier	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500	Analytical Laboratory: C+T Berkeley, CA
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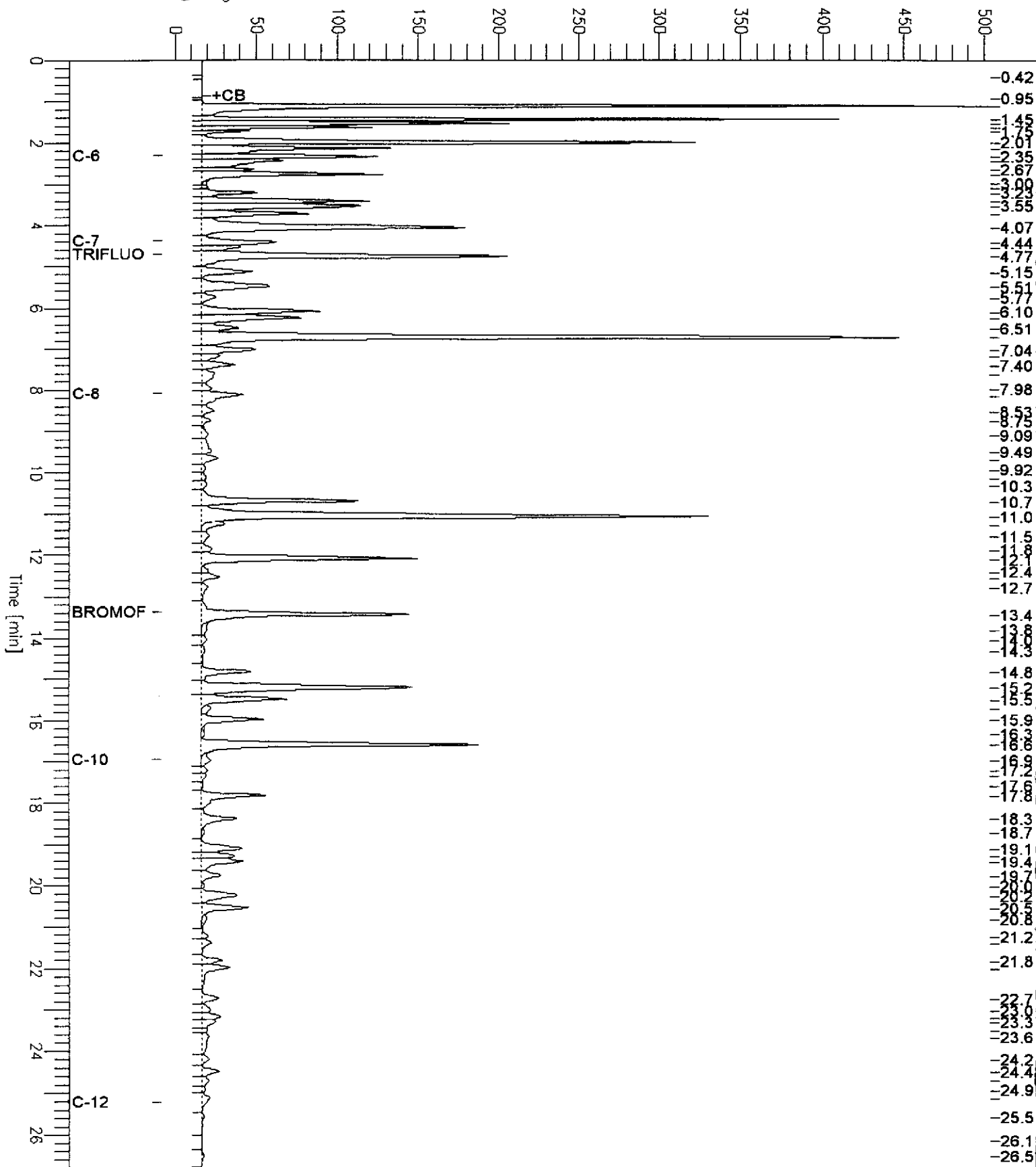
GC19 TVH 'X' Data File (FID)

Sample Name : CCV/LCS, QC128959, 59264, 00WS9736, 5/5000
 FileName : G:\GC19\DATA\305X004.raw
 Method : TVHBTXE
 Start Time : 0.00 min End Time : 26.80 min
 Scale Factor : 1.0 Plot Offset : -8 mV

Sample # :
 Date : 10/31/00 12:53 PM
 Time of Injection: 10/31/00 12:26 PM
 Low Point : -7.64 mV High Point : 504.05 mV
 Plot Scale: 511.7 mV

Gasoline

Response [mV]



GC19 TVH 'X' Data File (FID)

Sample Name : CCV,STODDARD,59264,00WS9595,5/5000

Sample #:

Page 1 of 1

FileName : G:\GC19\DATA\305X003.raw

Date : 10/31/00 12:17 PM

Method : TVHBTXE

Time of Injection: 10/31/00 11:50 AM

Start Time : 0.00 min End Time : 26.80 min

Low Point : -11.51 mV

High Point : 586.21 mV

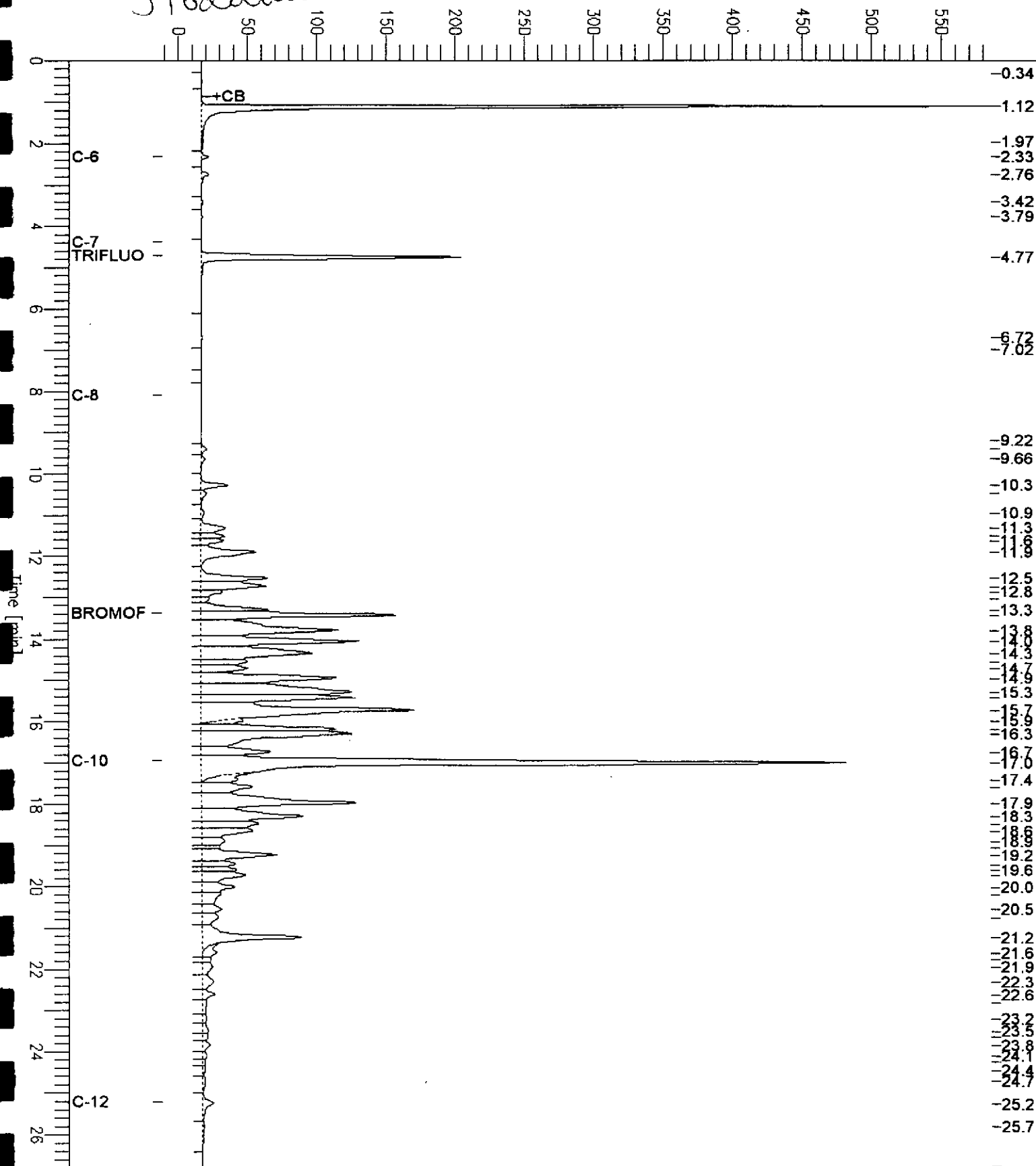
Scale Factor: 1.0

Plot Offset: -12 mV

Plot Scale: 597.7 mV

Stoddard

Response [mV]



**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	10/30/00
Units:	ug/L	Received:	10/30/00
Diln Fac:	1.000		

Field ID:	LFR-1	Batch#:	59264
Type:	SAMPLE	Analyzed:	10/31/00
Lab ID:	148367-001		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	106	55-149

Field ID:	LFR-101	Batch#:	59264
Type:	SAMPLE	Analyzed:	10/31/00
Lab ID:	148367-002		

Analyte	Result	RL
MTBE	4.3	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	56-142
Bromofluorobenzene (PID)	105	55-149

Field ID:	TB-103000-A	Batch#:	59405
Type:	SAMPLE	Analyzed:	11/06/00
Lab ID:	148367-003		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	101	55-149



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	10/30/00
Units:	ug/L	Received:	10/30/00
Diln Fac:	1.000		

Type: BLANK Batch#: 59264
Lab ID: QC128961 Analyzed: 10/31/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	105	55-149

Type: BLANK Batch#: 59405
Lab ID: QC129511 Analyzed: 11/06/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	56-142
Bromofluorobenzene (PID)	96	55-149



Gasoline by GC/FID CA LUFT

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC128959	Batch#:	59264
Matrix:	Water	Analyzed:	10/31/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,966	98	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	115	59-135
Bromofluorobenzene (FID)	112	60-140



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC128960	Batch#:	59264
Matrix:	Water	Analyzed:	10/31/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	16.50	83	51-125
Benzene	20.00	16.84	84	67-117
Toluene	20.00	18.88	94	69-117
Ethylbenzene	20.00	19.33	97	68-124
m,p-Xylenes	40.00	39.21	98	70-125
o-Xylene	20.00	19.54	98	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	56-142
Bromofluorobenzene (PID)	105	55-149

**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129513	Batch#:	59405
Matrix:	Water	Analyzed:	11/06/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.66	103	51-125
Benzene	20.00	18.28	91	67-117
Toluene	20.00	20.33	102	69-117
Ethylbenzene	20.00	20.32	102	68-124
m,p-Xylenes	40.00	41.04	103	70-125
o-Xylene	20.00	20.23	101	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	97	55-149



Gasoline by GC/FID CA LUFT

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	59264
MSS Lab ID:	148378-002	Sampled:	10/26/00
Matrix:	Water	Received:	10/27/00
Units:	ug/L	Analyzed:	11/01/00
Diln Fac:	1.000		

Type: MS Lab ID: QC128962

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	129.7	2,000	1,835	85	65-131
Surrogate	%REC	Limits			
Trifluorotoluene (FID)	111	59-135			
Bromofluorobenzene (FID)	112	60-140			

Type: MSD Lab ID: QC128963

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,728	80	65-131	6	20
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	110	59-135				
Bromofluorobenzene (FID)	110	60-140				



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Field ID:	ZZZZZZZZZZ	Batch#:	59405
MSS Lab ID:	148429-001	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/06/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129514

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	ND	20.00	21.80	109	33-131
Benzene	<0.1200	20.00	18.74	94	65-123
Toluene	<0.2500	20.00	21.66	108	73-122
Ethylbenzene	<0.05600	20.00	20.66	103	59-137
m,p-Xylenes	<0.1400	40.00	40.74	102	68-132
o-Xylene	<0.1500	20.00	20.66	103	61-140

Surrogate	%REC	Limits
Trifluorotoluene (PID)	104	56-142
Bromofluorobenzene (PID)	103	55-149

Type: MSD Lab ID: QC129515

Analyte	Spiked	Result	%REC	Limits	RPD	Lin
MTBE	20.00	21.46	107	33-131	2	20
Benzene	20.00	18.34	92	65-123	2	20
Toluene	20.00	21.31	107	73-122	2	20
Ethylbenzene	20.00	20.12	101	59-137	3	20
m,p-Xylenes	40.00	40.92	102	68-132	0	20
o-Xylene	20.00	20.23	101	61-140	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	99	55-149



Purgeable Halocarbons by GC/MS

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	LFR-1	Batch#:	59262
Lab ID:	148367-001	Sampled:	10/30/00
Matrix:	Water	Received:	10/30/00
Units:	ug/L	Analyzed:	10/31/00
Diln Fac:	6.250		

Analyte	Result	RL
Freon 12	ND	6.3
Chloromethane	ND	6.3
Vinyl Chloride	ND	3.1
Bromomethane	ND	13
Chloroethane	ND	6.3
Trichlorofluoromethane	ND	3.1
Freon 113	ND	31
1,1-Dichloroethene	ND	3.1
Methylene Chloride	ND	31
trans-1,2-Dichloroethene	ND	3.1
1,1-Dichloroethane	ND	3.1
cis-1,2-Dichloroethene	10	3.1
Chloroform	ND	3.1
1,1,1-Trichloroethane	ND	3.1
Carbon Tetrachloride	ND	3.1
1,2-Dichloroethane	ND	3.1
Trichloroethene	34	3.1
1,2-Dichloropropane	ND	3.1
Bromodichloromethane	ND	3.1
cis-1,3-Dichloropropene	ND	3.1
trans-1,3-Dichloropropene	ND	3.1
1,1,2-Trichloroethane	ND	3.1
Tetrachloroethene	820	3.1
Dibromochloromethane	ND	3.1
Chlorobenzene	ND	3.1
Bromoform	ND	3.1
1,1,2,2-Tetrachloroethane	ND	3.1
1,3-Dichlorobenzene	ND	3.1
1,4-Dichlorobenzene	ND	3.1
1,2-Dichlorobenzene	ND	3.1

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	99	80-115

ND = Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	LFR-101	Batch#:	59262
Lab ID:	148367-002	Sampled:	10/30/00
Matrix:	Water	Received:	10/30/00
Units:	ug/L	Analyzed:	10/31/00
Diln Fac:	6.250		

Analyte	Result	RL
Freon 12	ND	6.3
Chloromethane	ND	6.3
Vinyl Chloride	ND	3.1
Bromomethane	ND	13
Chloroethane	ND	6.3
Trichlorofluoromethane	ND	3.1
Freon 113	ND	31
1,1-Dichloroethene	ND	3.1
Methylene Chloride	ND	31
trans-1,2-Dichloroethene	ND	3.1
1,1-Dichloroethane	ND	3.1
cis-1,2-Dichloroethene	14	3.1
Chloroform	ND	3.1
1,1,1-Trichloroethane	ND	3.1
Carbon Tetrachloride	ND	3.1
1,2-Dichloroethane	ND	3.1
Trichloroethene	35	3.1
1,2-Dichloropropane	ND	3.1
Bromodichloromethane	ND	3.1
cis-1,3-Dichloropropene	ND	3.1
trans-1,3-Dichloropropene	ND	3.1
1,1,2-Trichloroethane	ND	3.1
Tetrachloroethene	870	3.1
Dibromochloromethane	ND	3.1
Chlorobenzene	ND	3.1
Bromoform	ND	3.1
1,1,2,2-Tetrachloroethane	ND	3.1
1,3-Dichlorobenzene	ND	3.1
1,4-Dichlorobenzene	ND	3.1
1,2-Dichlorobenzene	ND	3.1

Surrogate	REC	Limits
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	105	80-115

**Purgeable Halocarbons by GC/MS**

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	TB-103000-A	Batch#:	59237
Lab ID:	148367-003	Sampled:	10/30/00
Matrix:	Water	Received:	10/30/00
Units:	ug/L	Analyzed:	10/30/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	106	78-123
Toluene-d8	108	80-110
Bromofluorobenzene	113	80-115

ND = Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC128861	Batch#:	59237
Matrix:	Water	Analyzed:	10/30/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	109	80-115

ND = Not Detected

RL = Reporting Limit

**Purgeable Halocarbons by GC/MS**

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC128953	Batch#:	59262
Matrix:	Water	Analyzed:	10/31/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	VRFC	Limits
1,2-Dichloroethane-d4	93	78-123
Toluene-d8	105	80-110
Bromofluorobenzene	107	80-115

**Purgeable Halocarbons by GC/MS**

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	59237
Units:	ug/L	Analyzed:	10/30/00
Diln Fac:	1.000		

Type: BS Lab ID: QC128858

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	57.19	114	74-132
Trichloroethene	50.00	45.67	91	80-119
Chlorobenzene	50.00	48.47	97	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	107	80-110
Bromofluorobenzene	106	80-115

Type: BSD Lab ID: QC128859

Analyte	Spiked	Result	%REC	Limits	RPD	Lin
1,1-Dichloroethene	50.00	53.47	107	74-132	7	20
Trichloroethene	50.00	44.65	89	80-119	2	20
Chlorobenzene	50.00	46.21	92	80-117	5	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	102	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	105	80-115



Purgeable Halocarbons by GC/MS

Lab #:	148367	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	59262
Units:	ug/L	Analyzed:	10/31/00
Diln Fac:	1.000		

Type: BS Lab ID: QC128950

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	51.53	103	74-132
Trichloroethene	50.00	42.98	86	80-119
Chlorobenzene	50.00	45.71	91	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	101	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	108	80-115

Type: BSD Lab ID: QC128951

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	57.17	114	74-132	10	20
Trichloroethene	50.00	43.76	88	80-119	2	20
Chlorobenzene	50.00	45.87	92	80-117	0	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	106	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	107	80-115



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

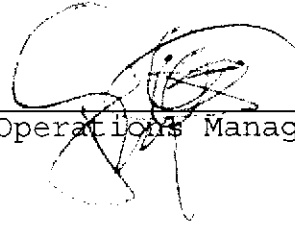
Prepared for:

LFR-Levine-Fricke
1900 Powell Street
12th Floor
Emeryville, CA 94608

Date: 16-NOV-00
Lab Job Number: 148421
Project ID: 6895.00.031
Location: Glovatorium

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: 
Project Manager

Reviewed by: 
Operations Manager

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Curtis & Tompkins, Ltd.

Laboratory Numbers: **148421**
Client: **LFR-Levine-Fricke**
Location: **Glovatorium**
Project#: **6895.00.031**
COC#: **8011**

Sampled Date: **10/31/00**
Received Date: **10/31/00**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for four water samples, which were received from the site referenced above on October 31, 2000. The samples were received cold and intact. All data were faxed to Julie Sharp on November 14, 2000.

TVH/BTXE: High Bromofluorobenzene surrogate recovery was observed for sample B-7 (CT# 148421-004) due to hydrocarbons coeluting with the surrogate peak. No other analytical problems were encountered.

VOCs (EPA 8260): No analytical problems were encountered.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 6895.00.031		Project Location: Oakland, CA		Date: 10/31/00		Serial		
Project Name: Glovatorium		Field Logbook No.: MXD-4		Sample Event Name: Q4		No: 8011		
Sampler (Signature): <i>[Signature]</i>						Samplers: MXD		
SAMPLE INFORMATION (Print Clearly)								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	ANALYSES		REMARKS
						HOLD	RUSH	
TB-103100-A	10/31/00	0700	148421-1	1	(b) X	X	X	Standard TAT
CFR-4		0930	-2	6	↓	X	X	results to Julie Sharp (510) 652-4906
B-10		1140	-3	6	↓	X	X	
B-7		1420	-4	6	↓	X	X	
RELINQUISHED BY: (Signature) <i>[Signature]</i>		DATE	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>		DATE	TIME	
		10/31/00	1650			10/31/00	4:50pm	
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		DATE	TIME	
RELINQUISHED BY: (Signature)		DATE	TIME	RECEIVED BY: (Signature)		DATE	TIME	
METHOD OF SHIPMENT: COURIER		DATE	TIME	LAB COMMENTS:				
Sample Collector: LEVINE•FRICKE•RECON 1900 Powell Street, 12th Floor Emeryville, California 94608-1827 (510) 652-4500				Analytical Laboratory: CTT, Berkeley				

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 10-May-99
Revision: 1 Number 3 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd



COOLER RECEIPT CHECKLIST

Login#: 148421 Date Received: 10/31/00 Number of Coolers: 1
Client: LFR Project: GloVatarium

- A. Preliminary Examination Phase
Date Opened: 10/31/00 By (print): James Brumby (sign) [Signature]
1. Did cooler come with a shipping slip (airbill, etc.)?..... YES NO
 2. Were custody seals on outside of cooler?..... YES NO
If YES, enter carrier name and airbill number: _____
 3. Were custody seals unbroken and intact at the date and time of arrival?..... YES NO
 4. Were custody papers dry and intact when received?..... YES NO
 5. Were custody papers filled out properly (ink, signed, etc.)?..... YES NO
 6. Did you sign the custody papers in the appropriate place?..... YES NO
 7. Was project identifiable from custody papers?..... YES NO
If YES, enter project name at the top of this form.
 8. If required, was sufficient ice used? Samples should be 2-6 degrees C. YES NO
Type of ice: wet ice Temperature: Chilled

- B. Login Phase
Date Logged In: 11/1/00 By (print): James Brumby (sign) [Signature]
1. Describe type of packing in cooler: Ziplocks / Foamie
 2. Did all bottles arrive unbroken?..... YES NO
 3. Were labels in good condition and complete (ID, date, time, signature, etc.)?... YES NO
 4. Did bottle labels agree with custody papers?..... YES NO
 5. Were appropriate containers used for the tests indicated?..... YES NO
 6. Were correct preservatives added to samples?..... YES NO
 7. Was sufficient amount of sample sent for tests indicated?..... YES NO
 8. Were bubbles absent in VOA samples? If NO, list sample Ids below..... YES NO
 9. Was the client contacted concerning this sample delivery?..... YES NO
If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:



Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Matrix:	Water	Sampled:	10/31/00
Units:	ug/L	Received:	10/31/00

Field ID:	TB-103100-A	Batch#:	59405
Type:	SAMPLE	Analyzed:	11/07/00
Lab ID:	148421-001	Analysis:	EPA 8021B
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	56-142
Bromofluorobenzene (PID)	102	55-149

Field ID:	LFR-4	Lab ID:	148421-002
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Soline C7-C12	270	50	59377	11/04/00	EPA 8015M
Moddard Solvent C7-C12	170 Y	50	59377	11/04/00	EPA 8015M
MTBE	6.5	2.0	59405	11/07/00	EPA 8021B
Benzene	0.84	0.50	59405	11/07/00	EPA 8021B
Toluene	ND	0.50	59405	11/07/00	EPA 8021B
Ethylbenzene	ND	0.50	59405	11/07/00	EPA 8021B
m,p-Xylenes	ND	0.50	59405	11/07/00	EPA 8021B
o-Xylene	ND	0.50	59405	11/07/00	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	101	59-135	59377	11/04/00	EPA 8015M
Bromofluorobenzene (FID)	119	60-140	59377	11/04/00	EPA 8015M
Trifluorotoluene (PID)	102	56-142	59405	11/07/00	EPA 8021B
Bromofluorobenzene (PID)	107	55-149	59405	11/07/00	EPA 8021B

* = Value outside of QC limits; see narrative
H = Heavier hydrocarbons contributed to the quantitation
Y = Sample exhibits fuel pattern which does not resemble standard
Z = Sample exhibits unknown single peak or peaks
b = See narrative
ND = Not Detected
RL = Reporting Limit
NA = Not Analyzed
>LR = Response exceeds instrument's linear range

GC04 TVH 'J' Data File FID

Sample Name : 148421-002,59377,+mtbe/stod

Sample #: a1

Page 1 of 1

FileName : G:\GC04\DATA\308J008.raw

Date : 11/4/00 11:45 AM

Method : TVHBTXE

Time of Injection: 11/4/00 12:41 AM

Start Time : 0.00 min

End Time : 26.00 min

Low Point : 56.33 mV

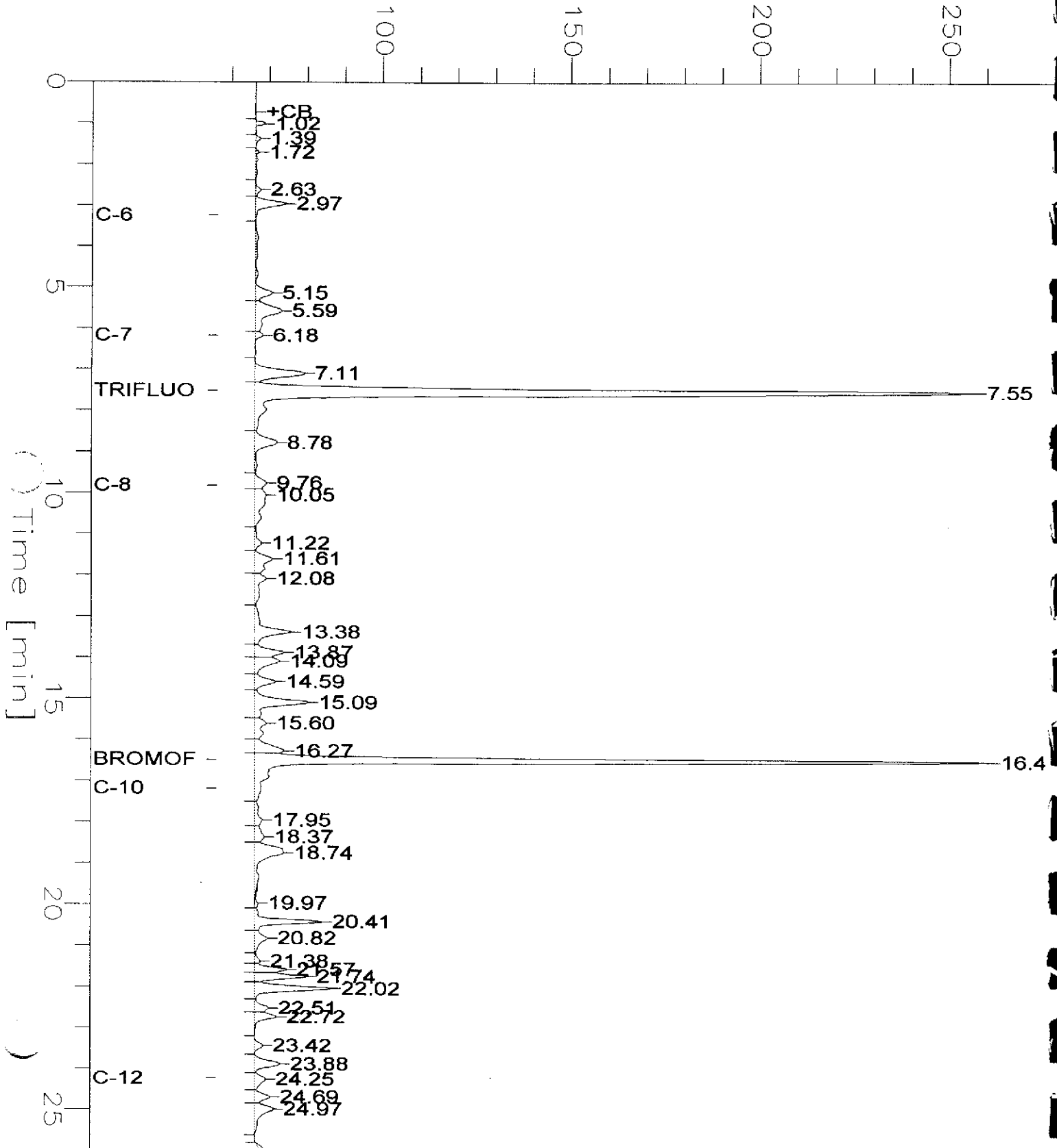
High Point : 261.61 mV

Factor: 1.0

Plot Offset: 56 mV

Plot Scale: 205.3 mV

Response [mV]



Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Matrix:	Water	Sampled:	10/31/00
Units:	ug/L	Received:	10/31/00

Field ID:	B-10	Lab ID:	148421-003
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	3,500 Z	50	59377	11/04/00	EPA 8015M
Stoddard Solvent C7-C12	2,200 Y Z	50	59377	11/04/00	EPA 8015M
MTBE	ND	2.0	59405	11/07/00	EPA 8021B
Benzene	3.8	0.50	59405	11/07/00	EPA 8021B
Toluene	11	0.50	59405	11/07/00	EPA 8021B
Ethylbenzene	ND	0.50	59405	11/07/00	EPA 8021B
m,p-Xylenes	10	0.50	59405	11/07/00	EPA 8021B
o-Xylene	8.2	0.50	59405	11/07/00	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	108	59-135	59377	11/04/00	EPA 8015M
Bromofluorobenzene (FID)	136	60-140	59377	11/04/00	EPA 8015M
Trifluorotoluene (PID)	115	56-142	59405	11/07/00	EPA 8021B
Bromofluorobenzene (PID)	99	55-149	59405	11/07/00	EPA 8021B

Field ID:	B-7	Lab ID:	148421-004
Type:	SAMPLE		

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	98,000 H Y	500	10.00	59377	11/04/00	EPA 8015M
Stoddard Solvent C7-C12	62,000	500	10.00	59377	11/04/00	EPA 8015M
MTBE	10	2.0	1.000	59405	11/07/00	EPA 8021B
Benzene	9.1	0.50	1.000	59405	11/07/00	EPA 8021B
Toluene	61	0.50	1.000	59405	11/07/00	EPA 8021B
Ethylbenzene	ND	0.50	1.000	59405	11/07/00	EPA 8021B
m,p-Xylenes	57	0.50	1.000	59405	11/07/00	EPA 8021B
o-Xylene	180	0.50	1.000	59405	11/07/00	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	99	59-135	10.00	59377	11/04/00	EPA 8015M
Bromofluorobenzene (FID)	218 *	>LR b 60-140	10.00	59377	11/04/00	EPA 8015M
Trifluorotoluene (PID)	104	56-142	1.000	59405	11/07/00	EPA 8021B
Bromofluorobenzene (PID)	173 *	55-149	1.000	59405	11/07/00	EPA 8021B

* = Value outside of QC limits; see narrative
 H = Heavier hydrocarbons contributed to the quantitation
 Y = Sample exhibits fuel pattern which does not resemble standard
 Z = Sample exhibits unknown single peak or peaks
 b = See narrative
 ND = Not Detected
 Reporting Limit
 Not Analyzed
 >LR = Response exceeds instrument's linear range

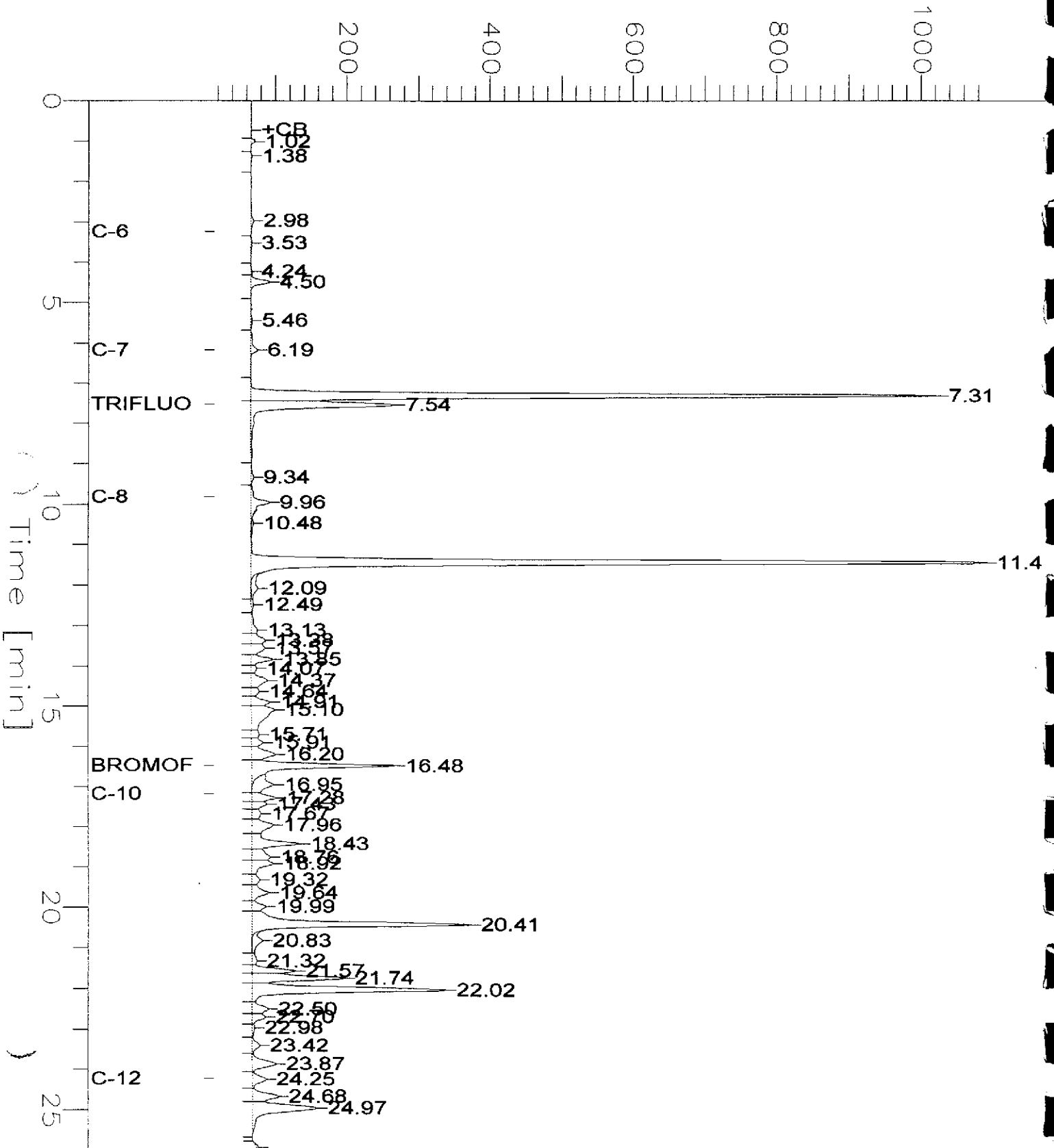
GC04 TVH 'J' Data File FID

Sample Name : 148421-003,59377,+mtbe/stod
 FileName : G:\GC04\DATA\308J009.raw
 Method : TVHBTXE
 Start Time : 0.00 min
 Factor : 1.0

End Time : 26.00 min
 Plot Offset: 15 mV

Sample #: a1
 Date : 11/4/00 11:46 AM
 Time of Injection: 11/4/00 01:16 AM
 Low Point : 14.79 mV
 High Point : 1094.29 mV
 Plot Scale: 1079.5 mV

Response [mV]



GC04 TVH 'J' Data File FID

Sample Name : 148421-004,59377,+mtbe/stod

Sample #: a1

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FileName : G:\GC04\DATA\308J010.raw

Date : 11/4/00 11:46 AM

Method : TVHBTXE

Time of Injection: 11/4/00 01:52 AM

Start Time : 0.00 min

End Time : 26.00 min

Low Point : 30.62 mV

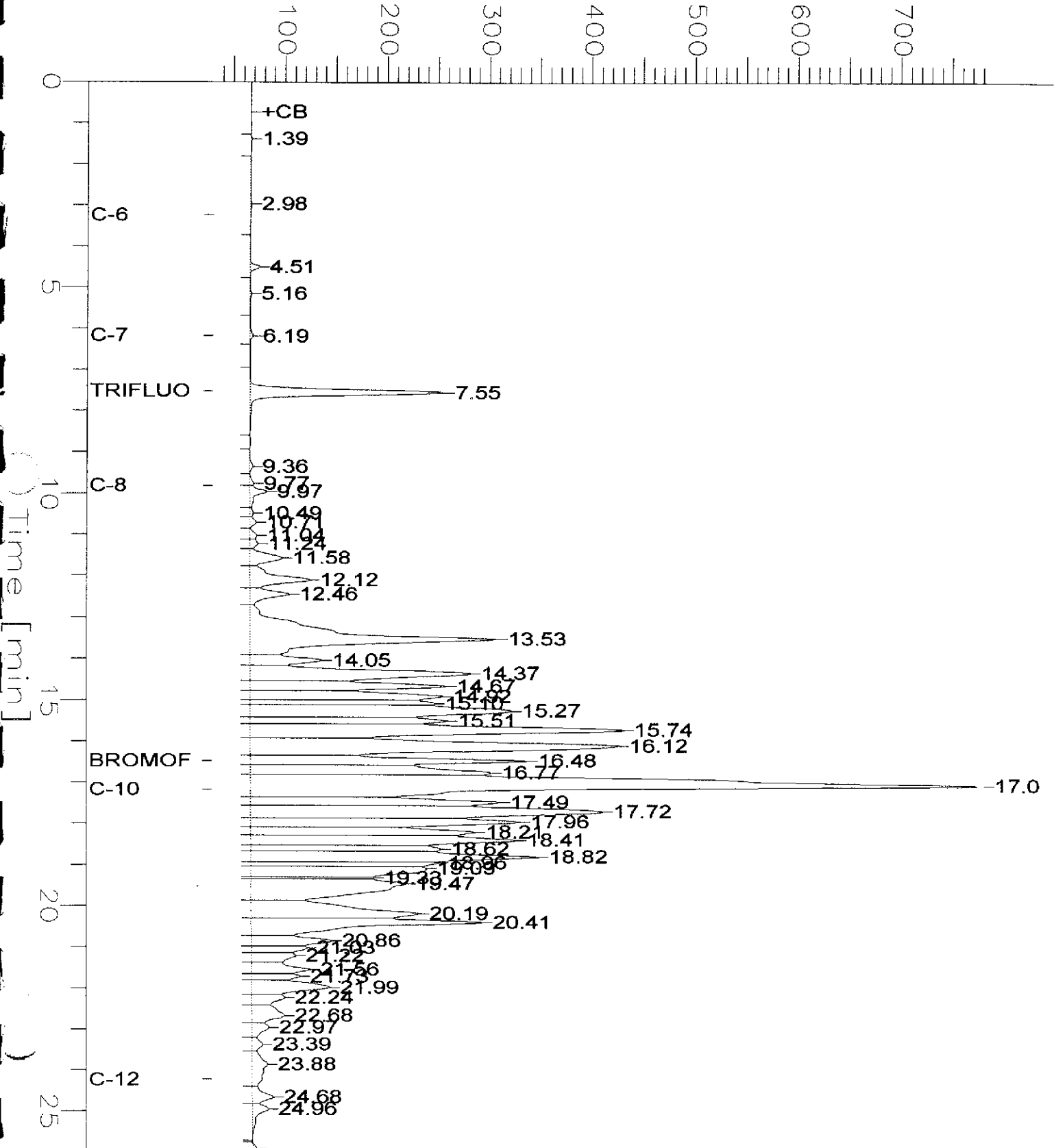
High Point : 784.40 mV

Factor: 1.0

Plot Offset: 31 mV

Plot Scale: 753.8 mV

Response [mV]



GC04 TVH 'J' Data File FID

Sample Name : ccv,gas lo,59377,00ws9736,2.5/5000

FileName : G:\GC04\DATA\308J014.raw

Method : TVHBTXE

Start Time : 0.00 min

Scale Factor : 1.0

End Time : 26.00 min

Plot Offset : 57 mV

Sample #:

Date : 11/4/00 11:47 AM

Time of Injection: 11/4/00 04:14 AM

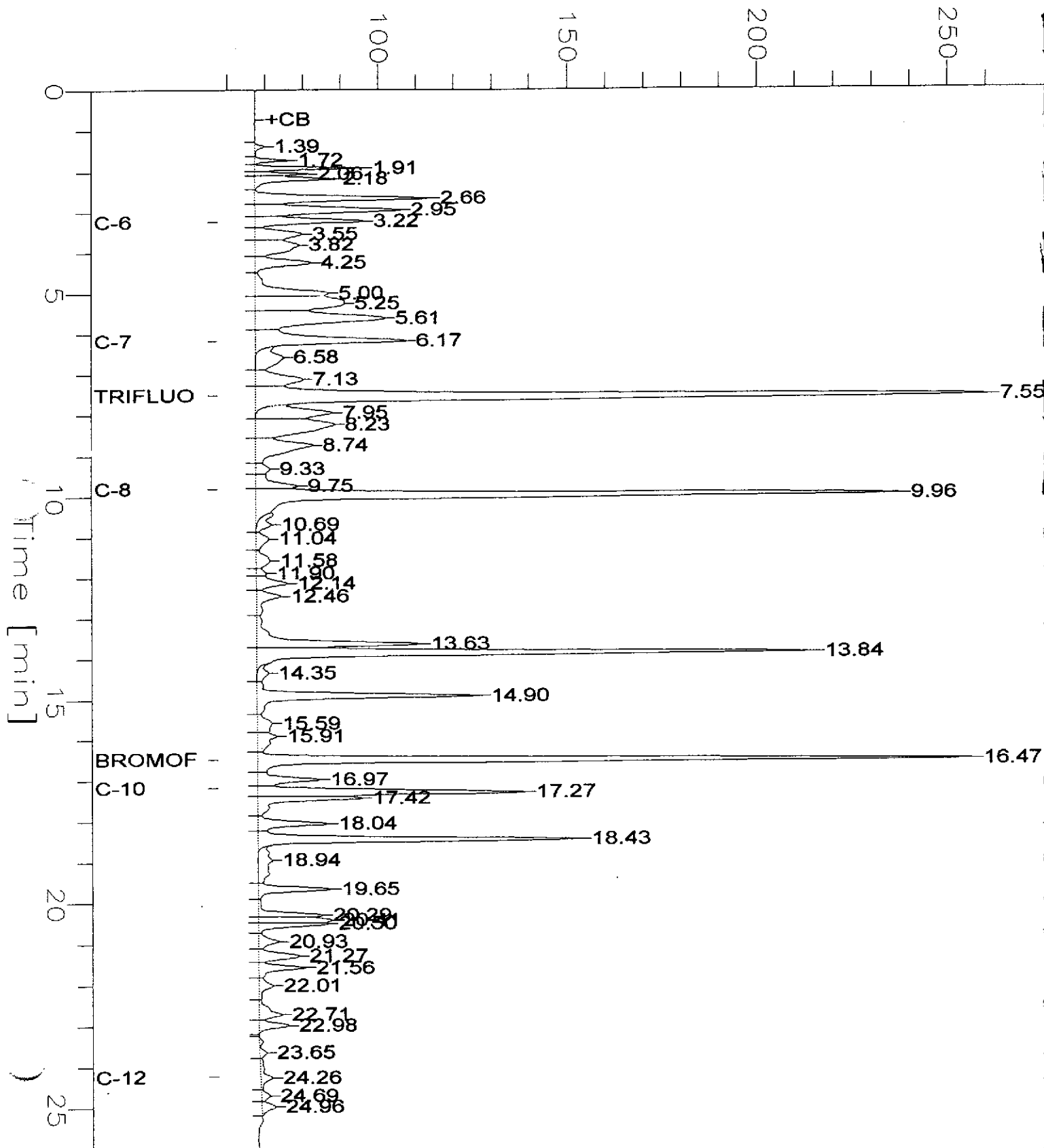
Low Point : 57.49 mV

Plot Scale: 203.6 mV

Page 1 of 1

High Point : 261.04 mV

Response [mV]



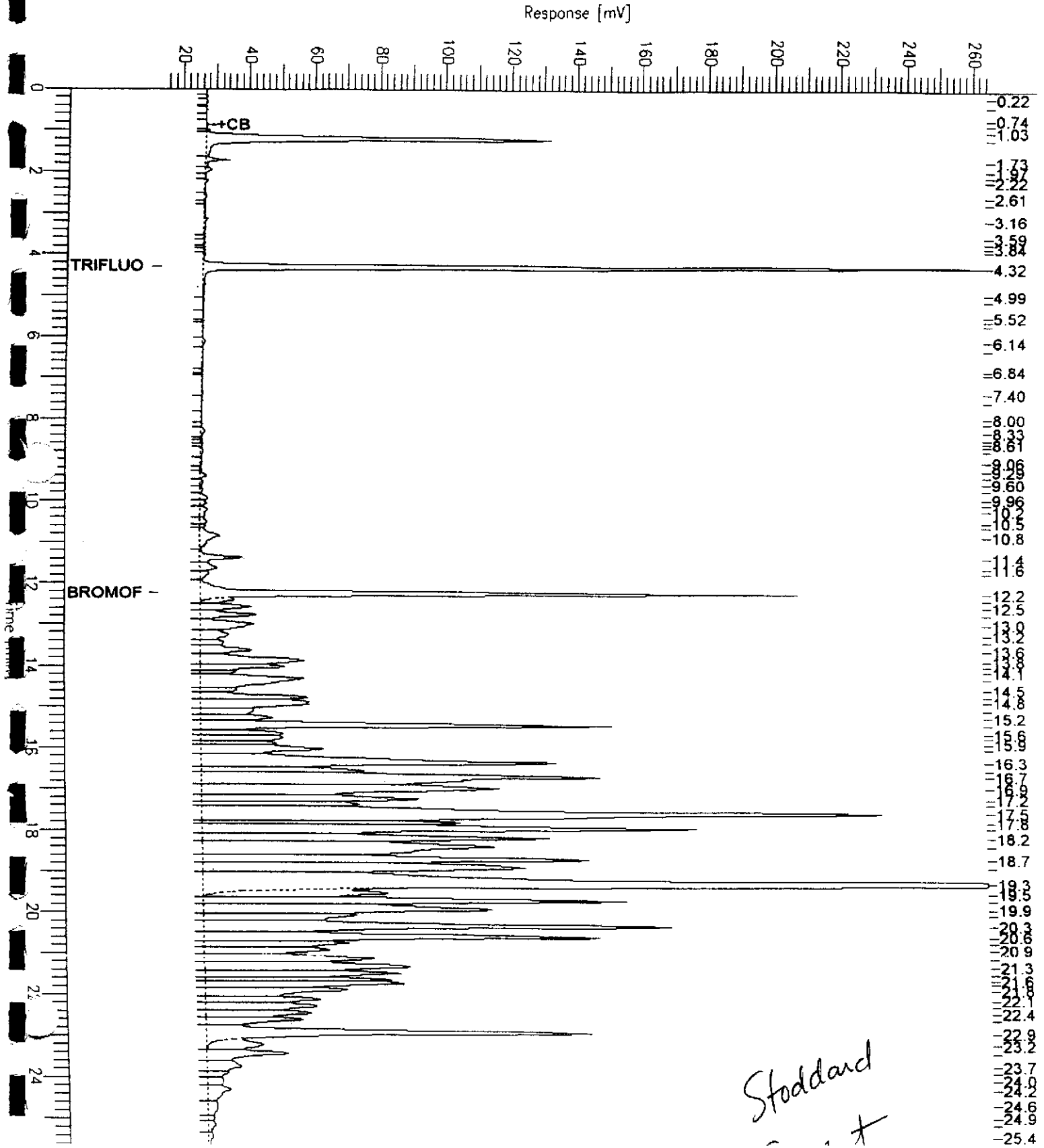
GC19 TVH 'X' Data File (FID)

Sample Name : CCV, 97WS4980, 40466
 File : G:\GC19\DATA\113X030.raw
 Method : TVHBTXE
 Start Time : 0.00 min
 Scale Factor : -1.0

End Time : 26.80 min
 Plot Offset : 14 mV

Sample #: STODD
 Date : 4/24/98 08:16 PM
 Time of Injection: 4/24/98 07:49 PM
 Low Point : 14.15 mV
 High Point : 264.15 mV
 Plot Scale: 250.0 mV

Page 1 of 1



Stoddard

Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Matrix:	Water	Sampled:	10/31/00
Units:	ug/L	Received:	10/31/00

Type:	BLANK	Batch#:	59377
Lab ID:	QC129409	Analyzed:	11/03/00
Diln Fac:	1.000	Analysis:	EPA 8015M

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50
MTBE	NA	
Benzene	NA	
Toluene	NA	
Ethylbenzene	NA	
m,p-Xylenes	NA	
o-Xylene	NA	

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		97	59-135
Bromofluorobenzene (FID)		106	60-140
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type:	BLANK	Batch#:	59405
Lab ID:	QC129511	Analyzed:	11/06/00
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015M
Stoddard Solvent C7-C12	NA		
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	95	59-135	EPA 8015M
Bromofluorobenzene (FID)	103	60-140	EPA 8015M
Trifluorotoluene (PID)	100	56-142	EPA 8021B
Bromofluorobenzene (PID)	96	55-149	EPA 8021B

* = Value outside of QC limits; see narrative
 H = Heavier hydrocarbons contributed to the quantitation
 Y = Sample exhibits fuel pattern which does not resemble standard
 Z = Sample exhibits unknown single peak or peaks
 b = See narrative
 ND = Not Detected
 RL = Reporting Limit
 NA = Not Analyzed
 >LR = Response exceeds instrument's linear range

Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129410	Batch#:	59377
Matrix:	Water	Analyzed:	11/03/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	2,000	1,989	99	73-121	EPA 8015M
MTBE		NA			
Benzene		NA			
Toluene		NA			
Ethylbenzene		NA			
m,p-Xylenes		NA			
o-Xylene		NA			

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	110	59-135	EPA 8015M
Bromofluorobenzene (FID)	103	60-140	EPA 8015M
Trifluorotoluene (PID)	111	56-142	EPA 8021B
Bromofluorobenzene (PID)	99	55-149	EPA 8021B

Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129513	Batch#:	59405
Matrix:	Water	Analyzed:	11/06/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12		NA			
MTBE	20.00	20.66	103	51-125	EPA 8021B
Benzene	20.00	18.28	91	67-117	EPA 8021B
Toluene	20.00	20.33	102	69-117	EPA 8021B
Ethylbenzene	20.00	20.32	102	68-124	EPA 8021B
m,p-Xylenes	40.00	41.04	103	70-125	EPA 8021B
o-Xylene	20.00	20.23	101	65-129	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	96	59-135	EPA 8015M
Bromofluorobenzene (FID)	98	60-140	EPA 8015M
Trifluorotoluene (PID)	102	56-142	EPA 8021B
Bromofluorobenzene (PID)	97	55-149	EPA 8021B



Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Field ID:	ZZZZZZZZZZ	Batch#:	59377
MSS Lab ID:	148440-001	Sampled:	10/27/00
Matrix:	Water	Received:	10/30/00
Units:	ug/L	Analyzed:	11/04/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129413

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	<21.00	2,000	1,952	98	65-131	EPA 8015M
MTBE						NA
Benzene						NA
Toluene						NA
Ethylbenzene						NA
m,p-Xylenes						NA
o-Xylene						NA

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	112	59-135	EPA 8015M
Bromofluorobenzene (FID)	111	60-140	EPA 8015M
Trifluorotoluene (PID)	110	56-142	EPA 8021B
Bromofluorobenzene (PID)	103	55-149	EPA 8021B

Type: MSD Lab ID: QC129414

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Gasoline C7-C12	2,000	1,977	99	65-131	1	20	EPA 8015M
MTBE							NA
Benzene							NA
Toluene							NA
Ethylbenzene							NA
m,p-Xylenes							NA
o-Xylene							NA

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	112	59-135	EPA 8015M
Bromofluorobenzene (FID)	109	60-140	EPA 8015M
Trifluorotoluene (PID)	111	56-142	EPA 8021B
Bromofluorobenzene (PID)	102	55-149	EPA 8021B



Curtis & Tompkins Laboratories Analytical Report

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031		
Field ID:	ZZZZZZZZZZ	Batch#:	59405
MSS Lab ID:	148429-001	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/06/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129514

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12			NA			
MTBE	ND	20.00	21.80	109	33-131	EPA 8021B
Benzene	<0.1200	20.00	18.74	94	65-123	EPA 8021B
Toluene	<0.2500	20.00	21.66	108	73-122	EPA 8021B
Ethylbenzene	<0.05600	20.00	20.66	103	59-137	EPA 8021B
m,p-Xylenes	<0.1400	40.00	40.74	102	68-132	EPA 8021B
o-Xylene	<0.1500	20.00	20.66	103	61-140	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	98	59-135	EPA 8015M
Bromofluorobenzene (FID)	103	60-140	EPA 8015M
Trifluorotoluene (PID)	104	56-142	EPA 8021B
Bromofluorobenzene (PID)	103	55-149	EPA 8021B

Type: MSD Lab ID: QC129515

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Gasoline C7-C12		NA					
MTBE	20.00	21.46	107	33-131	2	20	EPA 8021B
Benzene	20.00	18.34	92	65-123	2	20	EPA 8021B
Toluene	20.00	21.31	107	73-122	2	20	EPA 8021B
Ethylbenzene	20.00	20.12	101	59-137	3	20	EPA 8021B
m,p-Xylenes	40.00	40.92	102	68-132	0	20	EPA 8021B
o-Xylene	20.00	20.23	101	61-140	2	20	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	96	59-135	EPA 8015M
Bromofluorobenzene (FID)	100	60-140	EPA 8015M
Trifluorotoluene (PID)	101	56-142	EPA 8021B
Bromofluorobenzene (PID)	99	55-149	EPA 8021B

N Not Detected

Not Analyzed

RPD= Relative Percent Difference

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	TB-103100-A	Batch#:	59473
Lab ID:	148421-001	Sampled:	10/31/00
Matrix:	Water	Received:	10/31/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	REC	Limits
1,2-Dichloroethane-d4	85	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	104	80-115



Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	LFR-4	Batch#:	59473
Lab ID:	148421-002	Sampled:	10/31/00
Matrix:	Water	Received:	10/31/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	0.5	0.5
loroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	106	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	B-10	Batch#:	59440
Lab ID:	148421-003	Sampled:	10/31/00
Matrix:	Water	Received:	10/31/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	50.00		

Analyte	Result	RL
Freon 12	ND	50
Chloromethane	ND	50
Vinyl Chloride	ND	25
Bromomethane	ND	100
Chloroethane	ND	50
Trichlorofluoromethane	ND	25
Freon 113	ND	250
1,1-Dichloroethene	ND	25
Methylene Chloride	ND	250
trans-1,2-Dichloroethene	61	25
1,1-Dichloroethane	ND	25
cis-1,2-Dichloroethene	7,100	25
loroform	ND	25
1,1,1-Trichloroethane	ND	25
Carbon Tetrachloride	ND	25
1,2-Dichloroethane	ND	25
Trichloroethene	1,900	25
1,2-Dichloropropane	ND	25
Bromodichloromethane	ND	25
cis-1,3-Dichloropropene	ND	25
trans-1,3-Dichloropropene	ND	25
1,1,2-Trichloroethane	ND	25
Tetrachloroethene	2,400	25
Dibromochloromethane	ND	25
Chlorobenzene	ND	25
Bromoform	ND	25
1,1,2,2-Tetrachloroethane	ND	25
1,3-Dichlorobenzene	ND	25
1,4-Dichlorobenzene	ND	25
1,2-Dichlorobenzene	ND	25

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	117	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	110	80-115



Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	B-7	Batch#:	59500
Lab ID:	148421-004	Sampled:	10/31/00
Matrix:	Water	Received:	10/31/00
Units:	ug/L	Analyzed:	11/10/00
Diln Fac:	8.333		

Analyte	Result	RL
Freon 12	ND	8.3
Chloromethane	ND	8.3
Vinyl Chloride	ND	4.2
Bromomethane	ND	17
Chloroethane	ND	8.3
Trichlorofluoromethane	ND	4.2
Freon 113	ND	42
1,1-Dichloroethene	ND	4.2
Methylene Chloride	ND	42
trans-1,2-Dichloroethene	4.2	4.2
1,1-Dichloroethane	ND	4.2
cis-1,2-Dichloroethene	910	4.2
loroform	ND	4.2
1,1,1-Trichloroethane	ND	4.2
Carbon Tetrachloride	ND	4.2
1,2-Dichloroethane	ND	4.2
Trichloroethene	ND	4.2
1,2-Dichloropropane	ND	4.2
Bromodichloromethane	ND	4.2
cis-1,3-Dichloropropene	ND	4.2
trans-1,3-Dichloropropene	ND	4.2
1,1,2-Trichloroethane	ND	4.2
Tetrachloroethene	ND	4.2
Dibromochloromethane	ND	4.2
Chlorobenzene	ND	4.2
Bromoform	ND	4.2
1,1,2,2-Tetrachloroethane	ND	4.2
1,3-Dichlorobenzene	ND	4.2
1,4-Dichlorobenzene	ND	4.2
1,2-Dichlorobenzene	ND	4.2

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	115	78-123
Toluene-d8	106	80-110
Bromofluorobenzene	107	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129655	Batch#:	59440
Matrix:	Water	Analyzed:	11/08/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	108	78-123
Toluene-d8	108	80-110
Bromofluorobenzene	105	80-115

= Not Detected
 RL = Reporting Limit
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Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129656	Batch#:	59440
Matrix:	Water	Analyzed:	11/08/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	IRRC	Limits
1,2-Dichloroethane-d4	107	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	110	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129782	Batch#:	59473
Matrix:	Water	Analyzed:	11/09/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	107	80-115

= Not Detected
 RL = Reporting Limit
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Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129783	Batch#:	59473
Matrix:	Water	Analyzed:	11/09/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	106	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129911	Batch#:	59500
Matrix:	Water	Analyzed:	11/10/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	YREC	Limits
1,2-Dichloroethane-d4	109	78-123
Toluene-d8	110	80-110
Bromofluorobenzene	106	80-115



Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129912	Batch#:	59500
Matrix:	Water	Analyzed:	11/10/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	REC	Limits
1,2-Dichloroethane-d4	113	78-123
Toluene-d8	108	80-110
Bromofluorobenzene	107	80-115

ND = Not Detected

RL = Reporting Limit



Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129654	Batch#:	59440
Matrix:	Water	Analyzed:	11/08/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	58.95	118	74-132
Trichloroethene	50.00	46.72	93	80-119
Chlorobenzene	50.00	46.22	92	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	103	80-110
Bromofluorobenzene	100	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	59440
MSS Lab ID:	148407-009	Sampled:	10/31/00
Matrix:	Water	Received:	10/31/00
Units:	ug/L	Analyzed:	11/08/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129657

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<5.000	50.00	60.06	120	70-132
Trichloroethene	<5.000	50.00	46.08	92	62-137
Chlorobenzene	<5.000	50.00	47.39	95	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	78-123
Toluene-d8	106	80-110
Bromofluorobenzene	106	80-115

Type: MSD Lab ID: QC129658

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	58.33	117	70-132	3	20
Trichloroethene	50.00	47.52	95	62-137	3	20
Chlorobenzene	50.00	47.65	95	80-117	1	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	78-123
Toluene-d8	106	80-110
Bromofluorobenzene	105	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	59473
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Type: BS Lab ID: QC129780

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	65.13	130	74-132
Trichloroethene	50.00	52.43	105	80-119
Chlorobenzene	50.00	48.58	97	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	98	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	96	80-115

Type: BSD Lab ID: QC129781

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	60.09	120	74-132	8	20
Trichloroethene	50.00	51.20	102	80-119	2	20
Chlorobenzene	50.00	47.03	94	80-117	3	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	97	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129910	Batch#:	59500
Matrix:	Water	Analyzed:	11/10/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	66.05	132	74-132
Trichloroethene	50.00	49.28	99	80-119
Chlorobenzene	50.00	47.78	96	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	105	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	102	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148421	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	59500
MSS Lab ID:	148494-001	Sampled:	11/01/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/10/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129927

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.5000	50.00	56.25	112	70-132
Trichloroethene	<0.5000	50.00	49.21	98	62-137
Chlorobenzene	<0.5000	50.00	48.02	96	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	108	78-123
Toluene-d8	105	80-110
Bromofluorobenzene	99	80-115

Type: MSD Lab ID: QC129928

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	60.71	121	70-132	8	20
Trichloroethene	50.00	49.54	99	62-137	1	20
Chlorobenzene	50.00	45.86	92	80-117	5	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	113	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	105	80-115



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A N A L Y T I C A L R E P O R T

Prepared for:

LFR-Levine-Fricke
1900 Powell Street
12th Floor
Emeryville, CA 94608

Date: 10-NOV-00
Lab Job Number: 148455
Project ID: 6895.00.031
Location: Glovatorium

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: Tracy Bobbitt
Project Manager

Reviewed by: [Signature]
Operations Manager

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Laboratory Numbers: **148455**
Client: **LFR-Levine-Fricke**
Project #: **6895.00.031**
Location: **Glovatorium**
COC#: **8012**

Sampled Date: **11/01/00**
Received Date: **11/01/00**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for four water samples, which were received from the site referenced above on November 01, 2000. The samples were received cold and intact. All data were faxed to Julie Sharp on November 10, 2000.

TVH/BTXE:

No analytical problems were encountered.

VOCs (EPA 8260):

No analytical problems were encountered.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 6895.00.031		Project Location: Oakland, CA			Date: 11/1/00		Serial							
Project Name: Glovatorium		Field Logbook No.: MXD-4			Sample Event Name: Q4		No: 8012							
Sampler (Signature): <i>[Signature]</i>					ANALYSES			Samplers: MXD						
SAMPLE INFORMATION (Print Clearly)														
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES							REMARKS	
						BAD	COOLIST	COAL	ICE	BTEX	TPH _g	TPH ₂₅		HOLD
TB-110100A	11/1/00	0800	148455-1	1	H ₂ O	X	X	X						Results to Julie
LFR-3		0905	-2	6		X	X	X	X	X				Sherp (510) 652-4906
MW-11 FB		1100	-3	3		X	X	X						
MW-11		1225	-4	6		X	X	X	X	X				Standard TAT
RELINQUISHED BY: (Signature) <i>[Signature]</i>			DATE	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>			DATE	TIME					
RELINQUISHED BY: (Signature)			DATE	TIME	RECEIVED BY: (Signature)			DATE	TIME					
RELINQUISHED BY: (Signature)			DATE	TIME	RECEIVED BY: (Signature)			DATE	TIME					
METHOD OF SHIPMENT: Courier			DATE	TIME	LAB COMMENTS:									
Sample Collector: LEVINE•FRICKE•RECON 1900 Powell Street, 12th Floor Emeryville, California 94608-1827 (510) 652-4500					Analytical Laboratory: CTI, Berkeley CA									

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 10-May-99
Revision: 1 Number 3 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd



COOLER RECEIPT CHECKLIST

Login#: 148455 Date Received: 11/1/00 Number of Coolers: 1
Client: LFA Project: Glucoatorium

A. Preliminary Examination Phase

Date Opened: 11/1/00 By (print): Jim Brewster (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc.)?..... YES NO
- If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler?..... YES NO
- How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival?..... YES NO
4. Were custody papers dry and intact when received?..... YES NO
5. Were custody papers filled out properly (ink, signed, etc.)?..... YES NO
6. Did you sign the custody papers in the appropriate place?..... YES NO
7. Was project identifiable from custody papers?..... YES NO
- If YES, enter project name at the top of this form.
8. If required, was sufficient ice used? Samples should be 2-6 degrees C. YES NO
- Type of ice: white Temperature: Chilled

B. Login Phase

Date Logged In: 11/2/00 By (print): James Brewster (sign) [Signature]

1. Describe type of packing in cooler: Zip/Plastic
2. Did all bottles arrive unbroken?..... YES NO
3. Were labels in good condition and complete (ID, date, time, signature, etc.)?... YES NO
4. Did bottle labels agree with custody papers?..... YES NO
5. Were appropriate containers used for the tests indicated?..... YES NO
6. Were correct preservatives added to samples?..... YES NO
7. Was sufficient amount of sample sent for tests indicated?..... YES NO
8. Were bubbles absent in VOA samples? If NO, list sample Ids below..... YES NO
9. Was the client contacted concerning this sample delivery?..... YES NO

If YES, give details below.

Who was called? _____ By whom? _____ Date: _____

Additional Comments:

FB-110102A has headspace



Gasoline by GC/FID CA LUFT

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Matrix:	Water	Batch#:	59362
Units:	ug/L	Sampled:	11/01/00
Diln Fac:	1.000	Received:	11/01/00

Field ID:	LFR-3	Lab ID:	148455-002
Type:	SAMPLE	Analyzed:	11/04/00

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	59-135
Bromofluorobenzene (FID)	96	60-140

Field ID:	MW-11	Lab ID:	148455-004
Type:	SAMPLE	Analyzed:	11/04/00

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	97	59-135
Bromofluorobenzene (FID)	96	60-140

Type:	BLANK	Analyzed:	11/03/00
Lab ID:	QC129340		

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	59-135
Bromofluorobenzene (FID)	92	60-140

**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	59362
Units:	ug/L	Sampled:	11/01/00
	1.000	Received:	11/01/00

Field ID:	TB-110100A	Lab ID:	148455-001
Type:	SAMPLE	Analyzed:	11/03/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	98	56-142
Bromofluorobenzene (PID)	93	55-149

Field ID:	LFR-3	Lab ID:	148455-002
Type:	SAMPLE	Analyzed:	11/04/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	98	56-142
Bromofluorobenzene (PID)	99	55-149

Field ID:	MW-11FB	Lab ID:	148455-003
Type:	SAMPLE	Analyzed:	11/03/00

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	95	55-149



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	59362
Units:	ug/L	Sampled:	11/01/00
Diln Fac:	1.000	Received:	11/01/00

Field ID:	MW-11	Lab ID:	148455-004
Type:	SAMPLE	Analyzed:	11/04/00

Analyte	Result	RL
MTBE	6.8	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	56-142
Bromofluorobenzene (PID)	99	55-149

Type:	BLANK	Analyzed:	11/03/00
Lab ID:	QC129340		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	56-142
Bromofluorobenzene (PID)	94	55-149



Gasoline by GC/FID CA LUFT

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129338	Batch#:	59362
Matrix:	Water	Analyzed:	11/03/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,910	95	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	59-135
Bromofluorobenzene (FID)	94	60-140



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129339	Batch#:	59362
Matrix:	Water	Analyzed:	11/03/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.67	93	51-125
Benzene	20.00	18.83	94	67-117
Toluene	20.00	20.00	100	69-117
Ethylbenzene	20.00	20.34	102	68-124
m,p-Xylenes	40.00	40.90	102	70-125
o-Xylene	20.00	19.77	99	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	94	55-149



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Field ID:	GW-2	Batch#:	59362
MSS Lab ID:	148482-004	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/03/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129341

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5700	20.00	19.52	98	33-131
Benzene	<0.1000	20.00	18.89	94	65-123
Toluene	0.1824	20.00	19.77	98	73-122
Ethylbenzene	<0.1100	20.00	20.08	100	59-137
m,p-Xylenes	<0.1400	40.00	40.30	101	68-132
o-Xylene	<0.1900	20.00	19.57	98	61-140

Surrogate	%REC	Limits
fluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	101	55-149

Type: MSD Lab ID: QC129342

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	20.10	101	33-131	3	20
Benzene	20.00	19.06	95	65-123	1	20
Toluene	20.00	20.22	100	73-122	2	20
Ethylbenzene	20.00	20.49	102	59-137	2	20
m,p-Xylenes	40.00	41.24	103	68-132	2	20
o-Xylene	20.00	20.29	101	61-140	4	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	103	55-149



Purgeable Halocarbons by GC/MS

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	TB-110100A	Batch#:	59471
Lab ID:	148455-001	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	96	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	101	80-115

**Purgeable Halocarbons by GC/MS**

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	LFR-3	Batch#:	59471
Lab ID:	148455-002	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
loroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	UREC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	99	80-115

= Not Detected

RL = Reporting Limit



Purgeable Halocarbons by GC/MS

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	MW-11FB	Batch#:	59471
Lab ID:	148455-003	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
loroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	REC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	101	80-115

= Not Detected

RL = Reporting Limit

**Purgeable Halocarbons by GC/MS**

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	59471
Lab ID:	148455-004	Sampled:	11/01/00
Matrix:	Water	Received:	11/01/00
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
loroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	100	80-115



Purgeable Halocarbons by GC/MS

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129775	Batch#:	59471
Matrix:	Water	Analyzed:	11/09/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	AREC	Limits
1,2-Dichloroethane-d4	95	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	100	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC129776	Batch#:	59471
Matrix:	Water	Analyzed:	11/09/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	NRCC	Limits
1,2-Dichloroethane-d4	96	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	100	80-115

Purgeable Halocarbons by GC/MS

Lab #:	148455	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	59471
Units:	ug/L	Analyzed:	11/09/00
Diln Fac:	1.000		

Type: BS Lab ID: QC129773

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	58.42	117	74-132
Trichloroethene	50.00	50.83	102	80-119
Chlorobenzene	50.00	48.61	97	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	101	80-115

Type: BSD Lab ID: QC129774

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	55.50	111	74-132	5	20
Trichloroethene	50.00	50.95	102	80-119	0	20
Chlorobenzene	50.00	47.83	96	80-117	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	99	80-115



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

LFR-Levine-Fricke
1900 Powell Street
12th Floor
Emeryville, CA 94608

Date: 16-NOV-00
Lab Job Number: 148482
Project ID: 6895.00.031
Location: Glovatorium

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: Tracy Bibica
Project Manager

Reviewed by: [Signature]
Operations Manager

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Curtis & Tompkins, Ltd.

Laboratory Numbers: **148482**
Client: **LFR-Levine-Fricke**
Location: **Glovatorium**
Project#: **6895.00.031**
COC#: **8016**

Sampled Date: **11/02/00**
Received Date: **11/02/00**

CASE NARRATIVE

This hardcopy data package contains sample and QC results for four water samples, which were received from the site referenced above on November 02, 2000. The samples were received cold and intact. All data were faxed to Julie Sharp on November 14, 2000.

TVH/BTXE: No analytical problems were encountered.

VOCs (EPA 8260): No analytical problems were encountered.

148482

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Proje. No.: 6095.00.031	Project Location: Oakland, CA	Date: 11/2/00	Serial No: 8016
Project Name: laboratory	Field Logbook No.: MXD-4	Sample Event Name: Q4	

Sampler (Signature): *[Signature]* ANALYSES: **MXD, KTJ**

SAMPLE INFORMATION (Print Clearly)						ANALYSES										HOLD RUSH		REMARKS	
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	8200	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)	8200 (2000 L)		
-1 TB-11200A	11/2/00	0900		1	thc	X	X	X	X	X	X	X	X	X	X	X	X	X	STANDARD TAT
-2 LFR-2		1005		6		X	X	X	X	X	X	X	X	X	X	X	X	X	Results to Julie Shorpe SIC 652 4906
-3 GLW-3		1200		1		X	X	X	X	X	X	X	X	X	X	X	X		
-4 GLW-2		1210		1		X	X	X	X	X	X	X	X	X	X	X	X		

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE: 11/2/00	TIME: 1600	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE: 11/2/00	TIME: 4:00pm
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME

METHOD OF SHIPMENT: **COURIER** DATE: TIME: LAB COMMENTS:

Sample Collector: **LEVINE•FRICKE•RECON**
 1900 Powell Street, 12th Floor
 Emeryville, California 94608-1827
 (510) 652-4500

Analytical Laboratory: **CFR**

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 10-May-99
Revision: 1 Number 3 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd



COOLER RECEIPT CHECKLIST

Login#: _____ Date Received: 11/2/00 Number of Coolers: 1
Client: LFH Project: GLOVARIUM

A. Preliminary Examination Phase

Date Opened: 11/2/00 By (print): Jrmer Bruchard (sign) [Signature]

- 1. Did cooler come with a shipping slip (airbill, etc.)?..... YES NO
- If YES, enter carrier name and airbill number: _____
- 2. Were custody seals on outside of cooler?..... YES NO
- How many and where? _____ Seal date: _____ Seal name: _____
- 3. Were custody seals unbroken and intact at the date and time of arrival?..... YES NO
- 4. Were custody papers dry and intact when received?..... YES NO
- 5. Were custody papers filled out properly (ink, signed, etc.)?..... YES NO
- 6. Did you sign the custody papers in the appropriate place?..... YES NO
- 7. Was project identifiable from custody papers?..... YES NO
- If YES, enter project name at the top of this form.
- 8. If required, was sufficient ice used? Samples should be 2-6 degrees C. YES NO
- Type of ice: wet ice Temperature: Chilled

B. Login Phase

Date Logged In: 11/3/00 By (print): S. Stanley (sign) [Signature]

- 1. Describe type of packing in cooler: ziplocks
- 2. Did all bottles arrive unbroken?..... YES NO
- 3. Were labels in good condition and complete (ID, date, time, signature, etc.)?..... YES NO
- 4. Did bottle labels agree with custody papers?..... YES NO *
- 5. Were appropriate containers used for the tests indicated?..... YES NO
- 6. Were correct preservatives added to samples?..... YES NO
- 7. Was sufficient amount of sample sent for tests indicated?..... YES NO
- 8. Were bubbles absent in VOA samples? If NO, list sample Ids below..... YES NO
- 9. Was the client contacted concerning this sample delivery?..... YES NO

If YES, give details below.
Who was called? J. Sharpe By whom? Tr Babjan Date: 11/3/00

Additional Comments:
* GW-3 was labelled GW-6



Gasoline by GC/FID CA LUFT

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	11/02/00
Units:	ug/L	Received:	11/02/00
Diln Fac:	1.000	Analyzed:	11/03/00
Batch#:	59362		

Field ID: LFR-2 Lab ID: 148482-002
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	700 H Y	50
Stoddard Solvent C7-C12	380	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	125	60-140

Field ID: GW-3 Lab ID: 148482-003
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	50 Y Z	50
Stoddard Solvent C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	99	60-140

Field ID: GW-2 Lab ID: 148482-004
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	98	59-135
Bromofluorobenzene (FID)	97	60-140

Type: BLANK Lab ID: QC129340

Analyte	Result	RL
Gasoline C7-C12	ND	50
Stoddard Solvent C7-C12	ND	50

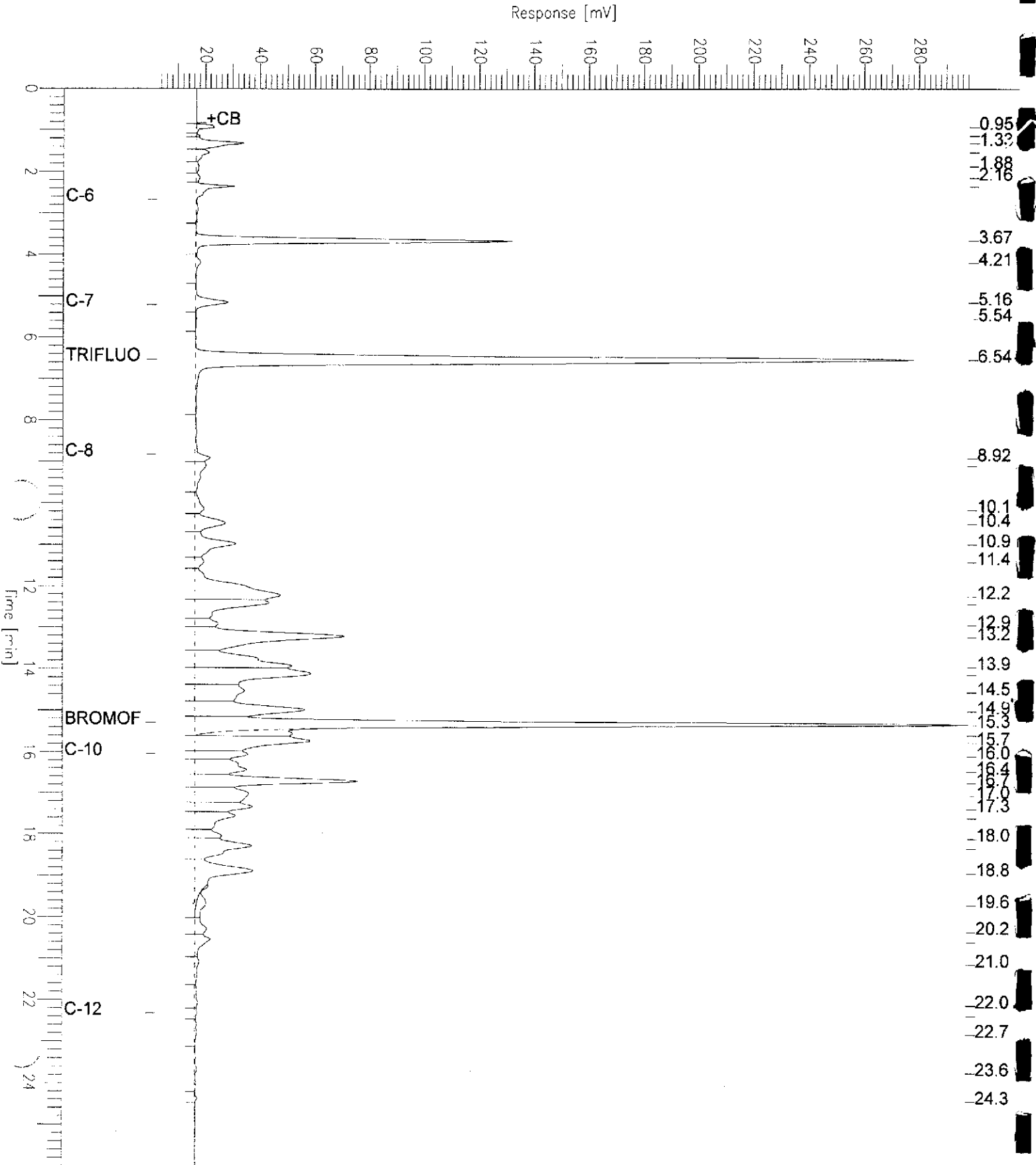
Surrogate	%REC	Limits
Trifluorotoluene (FID)	94	59-135
Bromofluorobenzene (FID)	92	60-140

H = Heavier hydrocarbons contributed to the quantitation
 Y = Sample exhibits fuel pattern which does not resemble standard
 Z = Sample exhibits unknown single peak or peaks
 ND = Not Detected
 RL = Reporting Limit

GC07 TVH 'A' Data File RTX 502

Sample Name : 148482-002,59362
 FileName : G:\GC07\DATA\308A010.raw
 Method : TVHBTXE
 Time : 0.00 min
 Factor : 1.0

Page 1 of 1
 Sample #: B1
 Date : 11/6/00 09:53 AM
 Time of Injection: 11/3/00 07:44 PM
 Low Point : 2.54 mV
 High Point : 298.39 mV
 Plot Scale: 295.8 mV



GC07 TVH 'A' Data File RTX 502

Sample Name : 148482-003,59362

Sample #: C1

Page 1 of 1

FileName : G:\GC07\DATA\308A011.raw

Date : 11/3/00 08:45 PM

Method : TVHBTXE

Time of Injection: 11/3/00 08:19 PM

Time : 0.00 min

End Time : 26.00 min

Low Point : 3.44 mV

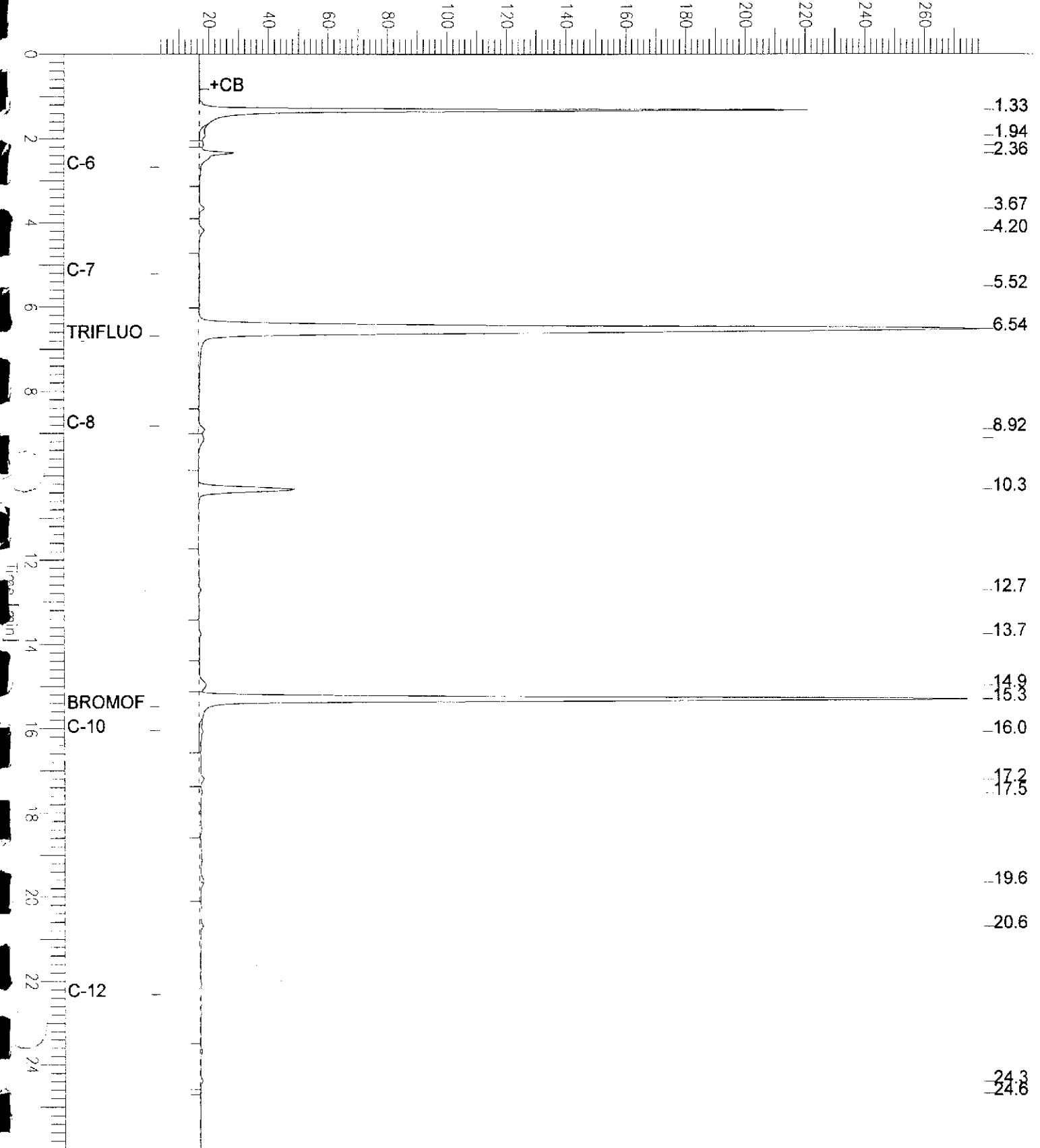
High Point : 280.00 mV

Factor: 1.0

Plot Offset: 3 mV

Plot Scale: 276.6 mV

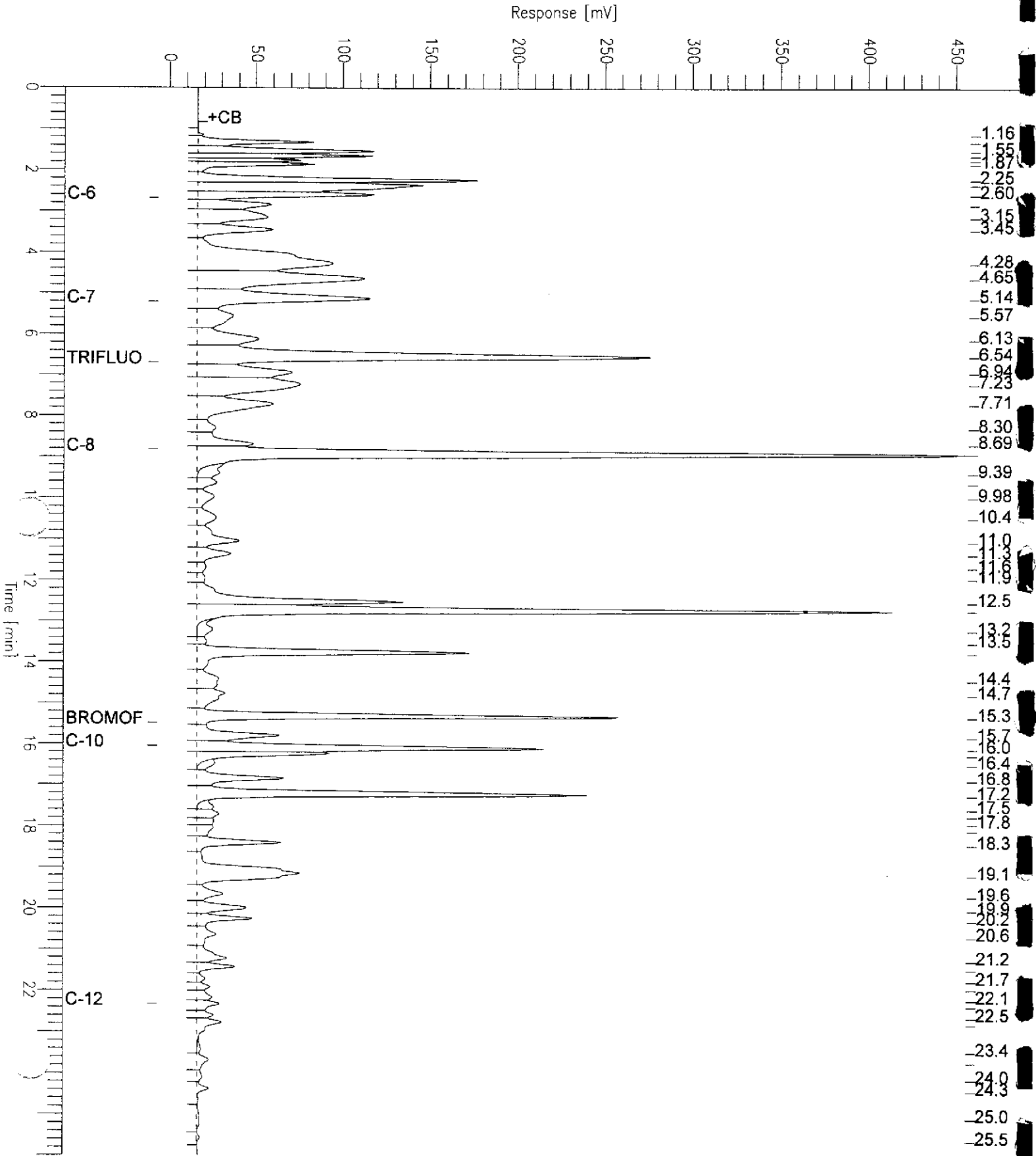
Response [mV]



GC07 TVH 'A' Data File RTX 502

Sample Name : CCV/LCS, QC129338, 59362, 00WS9736, 5/5000
 FileName : G:\GC07\DATA\308A004.raw
 Method : TVHBTXE
 Start Time : 0.00 min End Time : 26.00 min
 Sp Factor : 1.0 Plot Offset : -6 mV

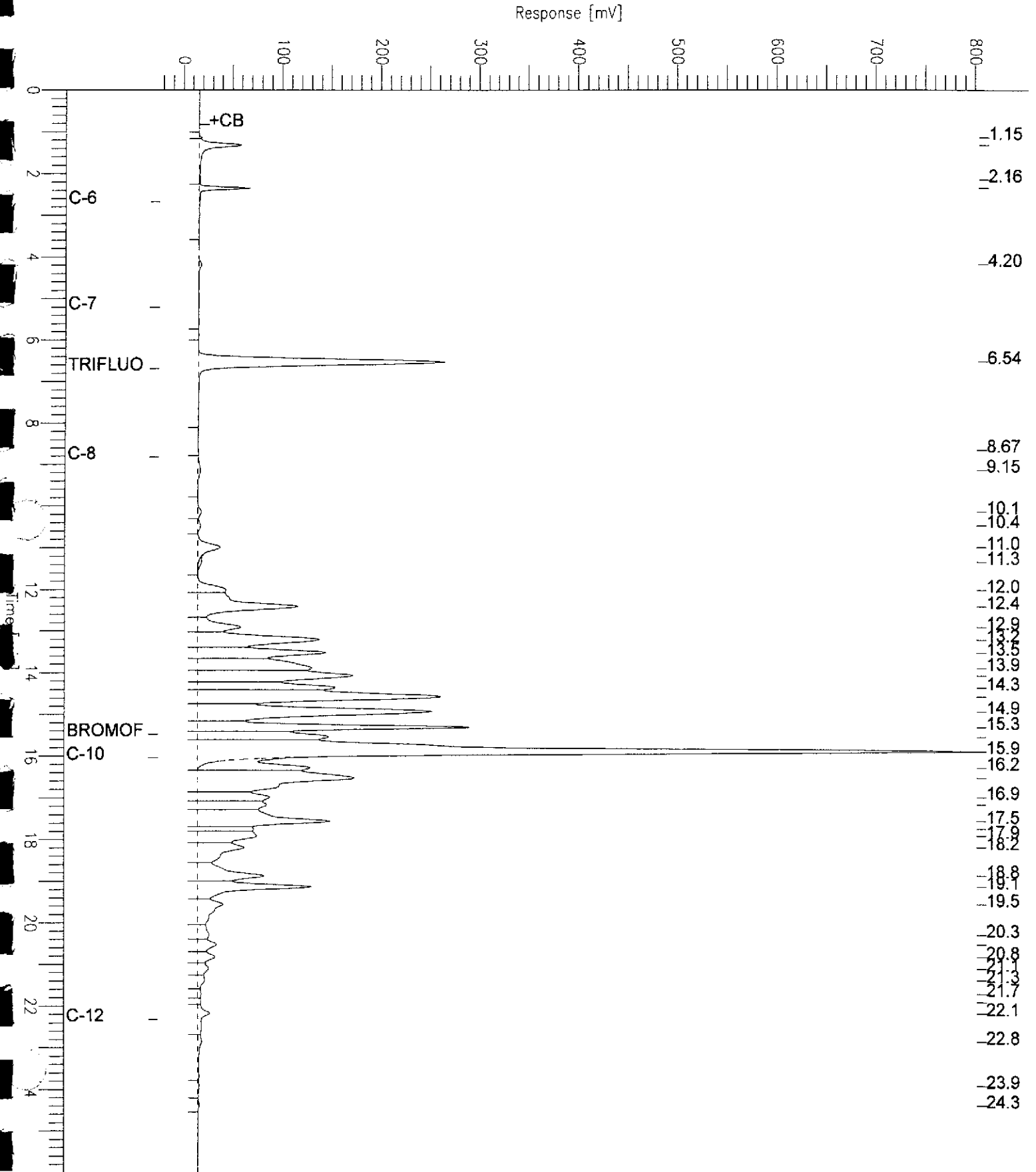
Sample # : Page 1 of 1
 Date : 11/3/00 03:01 PM
 Time of Injection: 11/3/00 02:35 PM
 Low Point : -6.34 mV High Point : 458.65 mV
 Plot Scale: 465.0 mV



GC07 TVH 'A' Data File RTX 502

Sample Name : CCV,STODDARD,59362,00WS9595,5/5000
 FileName : G:\GC07\DATA\308A003.raw
 Method : TVHBTXE
 Start Time : 0.00 min End Time : 26.00 min
 Factor : 1.0 Plot Offset : -24 mV

Sample # :
 Date : 11/3/00 02:26 PM
 Time of Injection: 11/3/00 02:00 PM
 Low Point : -23.58 mV High Point : 803.59 mV
 Plot Scale: 827.2 mV





Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	11/02/00
Units:	ug/L	Received:	11/02/00
Diln Fac:	1.000	Analyzed:	11/03/00
Batch#:	59362		

Field ID: TB-110200A Lab ID: 148482-001
Type: SAMPLE

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	95	56-142
Bromofluorobenzene (PID)	94	55-149

Field ID: LFR-2 Lab ID: 148482-002
Type: SAMPLE

Analyte	Result	RL
MTBE	3.0	2.0
Benzene	3.5	0.50
Toluene	1.1	0.50
Ethylbenzene	4.2	0.50
m,p-Xylenes	0.84	0.50
o-Xylene	11 C	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	56-142
Bromofluorobenzene (PID)	115	55-149

Field ID: GW-3 Lab ID: 148482-003
Type: SAMPLE

Analyte	Result	RL
MTBE	2.6	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	102	55-149



Gasoline by GC/FID CA LUFT

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129338	Batch#:	59362
Matrix:	Water	Analyzed:	11/03/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,910	95	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	109	59-135
Bromofluorobenzene (FID)	94	60-140



Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC129339	Batch#:	59362
Matrix:	Water	Analyzed:	11/03/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.67	93	51-125
Benzene	20.00	18.83	94	67-117
Toluene	20.00	20.00	100	69-117
Ethylbenzene	20.00	20.34	102	68-124
m,p-Xylenes	40.00	40.90	102	70-125
o-Xylene	20.00	19.77	99	65-129

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	56-142
Bromofluorobenzene (PID)	94	55-149

**Benzene, Toluene, Ethylbenzene, Xylenes**

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8021B
Field ID:	GW-2	Batch#:	59362
MSS Lab ID:	148482-004	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/03/00
Diln Fac:	1.000		

Type: MS Lab ID: QC129341

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5700	20.00	19.52	98	33-131
Benzene	<0.1000	20.00	18.89	94	65-123
Toluene	0.1824	20.00	19.77	98	73-122
Ethylbenzene	<0.1100	20.00	20.08	100	59-137
m,p-Xylenes	<0.1400	40.00	40.30	101	68-132
o-Xylene	<0.1900	20.00	19.57	98	61-140

Surrogate	%REC	Limits
fluorotoluene (PID)	101	56-142
Bromofluorobenzene (PID)	101	55-149

Type: MSD Lab ID: QC129342

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	20.10	101	33-131	3	20
Benzene	20.00	19.06	95	65-123	1	20
Toluene	20.00	20.22	100	73-122	2	20
Ethylbenzene	20.00	20.49	102	59-137	2	20
m,p-Xylenes	40.00	41.24	103	68-132	2	20
o-Xylene	20.00	20.29	101	61-140	4	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	56-142
Bromofluorobenzene (PID)	103	55-149

Purgeable Halocarbons by GC/MS

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	TB-110200A	Batch#:	59533
Lab ID:	148482-001	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/11/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	92	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	98	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	LFR-2	Batch#:	59533
Lab ID:	148482-002	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/11/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	15	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	1.0	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	130	0.5
loroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	0.6	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	#REC	Limits
1,2-Dichloroethane-d4	91	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	98	80-115

= Not Detected

RL = Reporting Limit



Purgeable Halocarbons by GC/MS

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	GW-3	Batch#:	59533
Lab ID:	148482-003	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/11/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	2.4	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	0.8	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	59	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	REC	Limits
1,2-Dichloroethane-d4	90	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	99	80-115

= Not Detected

RL = Reporting Limit



Purgeable Halocarbons by GC/MS

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Field ID:	GW-2	Batch#:	59533
Lab ID:	148482-004	Sampled:	11/02/00
Matrix:	Water	Received:	11/02/00
Units:	ug/L	Analyzed:	11/11/00
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	3.2	0.5
Chloroform	ND	0.5
1,1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	0.8	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	7.8	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	99	80-115

= Not Detected

RL = Reporting Limit

Purgeable Halocarbons by GC/MS

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC130047	Batch#:	59533
Matrix:	Water	Analyzed:	11/11/00
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	2.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	0.5
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
trans-1,2-Dichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5
cis-1,2-Dichloroethene	ND	0.5
Chloroform	ND	0.5
1,1-Trichloroethane	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
Chlorobenzene	ND	0.5
Bromoform	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	78-123
Toluene-d8	101	80-110
Bromofluorobenzene	101	80-115

= Not Detected

RL = Reporting Limit

**Purgeable Halocarbons by GC/MS**

Lab #:	148482	Location:	Glovatorium
Client:	LFR-Levine-Fricke	Prep:	EPA 5030
Project#:	6895.00.031	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	59533
Units:	ug/L	Analyzed:	11/11/00
Diln Fac:	1.000		

Type: BS Lab ID: QC130045

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	62.29	125	74-132
Trichloroethene	50.00	50.99	102	80-119
Chlorobenzene	50.00	48.97	98	80-117

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	90	78-123
Toluene-d8	102	80-110
Bromofluorobenzene	99	80-115

Type: BSD Lab ID: QC130046

Analyte	Spiked	Result	%REC	Limits	RPD	LL
1,1-Dichloroethene	50.00	59.53	119	74-132	5	20
Trichloroethene	50.00	48.74	97	80-119	5	20
Chlorobenzene	50.00	47.98	96	80-117	2	20

Surrogate	%REC	Limits
1,2-Dichloroethane-d4	89	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	100	80-115

MICROSEEPS

Client Name: Levine Fricke
Contact: Julie Sharp
Address: 1900 Powell Street
Suite 1200
Emeryville, CA 94608

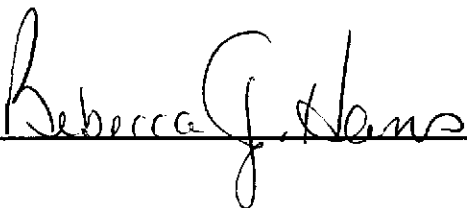
Page: Page 1 of 4
Lab Proj #: P0011001
Report Date: 11/15/00
Client Proj Name: Glovetorium

Sample Identification

Lab Sample # Client Sample ID

P0011001-01 LFR-1
P0011001-02 LFR-101

Approved by:



Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011001-01

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>	<u>Received</u>	
LFR-1	Water	COC #						30 Oct. 00 11:30	01 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>
WetChem										
Alkalinity as CaCO3	1.0	240		4.0	0	mg/L	310.1	11/2/00 11:20	hw	M001102022
Chloride	1.0	100		1.0	0.12	mg/L	9056	11/11/00 14:37	md	M001113027
Ferrous Iron	1.0	< 1.0		1.0	0	mg/L	Mod_7199	11/1/00 16:00	md	M001102016
Nitrate	1.0	39		0.10	0.02	mg/L	9056	11/11/00 14:37	md	M001113027
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/11/00 14:37	md	M001113027
Sulfate	1.0	42		1.0	0.12	mg/L		11/11/00 14:37	md	M001113027
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/2/00 10:55	hw	M001102020
Metals										
Iron	1.0	< 0.050		0.050	0.012	mg/L	6010B	11/3/00 16:13	bv	M001103028
Manganese	1.0	0.030		0.010	0.000	mg/L		11/3/00 16:13	bv	M001103028
Manganese-dissolved	1.0	0.030		0.010	0.000	mg/L		11/3/00 16:14	bv	M001103027
RiskAnalysis										
Carbon dioxide	1.0	25		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009
Hydrogen	1.0	1.5		0.030	0.029	nM		11/13/00 16:07	bc	M001113010
Methane	1.0	0.38		0.02	0.02	ug/L		11/13/00 15:54	bc	M001113008
Nitrogen	1.0	15		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009
Oxygen	1.0	2.7		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011001-02

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
LFR-101	Water	COC #						30 Oct. 00 11:35		01 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	220		4.0	0	mg/L	310.1	11/2/00 11:20	hw	M001102022	
Chloride	1.0	100		1.0	0.12	mg/L	9056	11/11/00 14:37	md	M001113027	
Ferrous Iron	1.0	< 1.0		1.0	0	mg/L	Mod_7199	11/1/00 16:00	md	M001102016	
Nitrate	1.0	40		0.10	0.02	mg/L	9056	11/11/00 14:37	md	M001113027	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/11/00 14:37	md	M001113027	
Sulfate	1.0	43		1.0	0.12	mg/L		11/11/00 14:37	md	M001113027	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/2/00 10:55	hw	M001102020	
Metals											
Iron	1.0	< 0.050		0.050	0.012	mg/L	6010B	11/3/00 16:13	bv	M001103028	
Manganese	1.0	0.030		0.010	0.000	mg/L		11/3/00 16:13	bv	M001103028	
Manganese-dissolved	1.0	0.030		0.010	0.000	mg/L		11/3/00 16:14	bv	M001103027	
RiskAnalysis											
Carbon dioxide	1.0	40		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009	
Hydrogen	1.0	1.0		0.030	0.029	nM		11/13/00 16:07	bc	M001113010	
Methane	1.0	0.69		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008	
Nitrogen	1.0	15		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009	
Oxygen	1.0	3.4		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009	

Page: Page 4 of 4
Lab Proj #: P0011001
Report Date: 11/15/00
Client Proj Name: Glovetorium

Case Narrative:

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <u>6495 (2) 03P</u>	Field Logbook No.:	Date:	Serial No.: <u>10234</u>
Project Name:	Project Location:		

SAMPLES					ANALYSES										SAMPLERS:			
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	* HOLD RUSH										REMARKS		
						EPA 601	EPA 624											
<u>11/15/07</u>	<u>11/15/07</u>	<u>1130</u>		<u>1</u>	<u>TEM</u>													<u>Results to Eric Hogg</u>
<u>2572-1</u>		<u>1130</u>		<u>3</u>				<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>							<u>(510) (52-4906)</u>
<u>2572-101</u>		<u>1135</u>		<u>3</u>	<u>d</u>			<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>							<u>* include nitrate nitrite</u>
																		<u>Nitrate w/ Alk. Cl. Set</u>
																		<u>US 10</u>
																		<u>* = total iron; Ferrus iron</u>
																		<u>Standard TAT</u>

RELINQUISHED BY: (Signature) <u>[Signature]</u>	DATE <u>11/15/07</u>	TIME <u>15:15</u>	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE <u>11/15/07</u>	TIME <u>15:15</u>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: <u>FedEx</u>	DATE	TIME	LAB COMMENTS:		

Sample Collector: <u>LEVINE-FRICKE</u> 1900 Powell Street, 12th Floor Emeryville, Ca 94608 (415) 652-4500	Analytical Laboratory: <u>[Signature]</u>
--	--

MICROSEEPS

Client Name: Levine Fricke
Contact: Julie Sharp
Address: 1900 Powell Street
Suite 1200
Emeryville, CA 94608

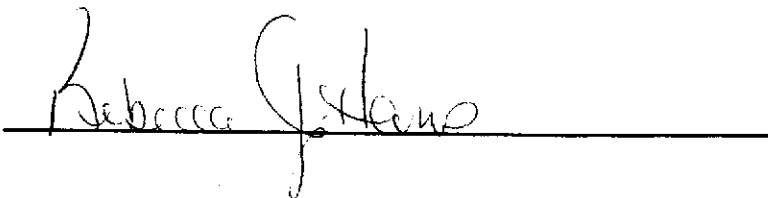
Page: Page 1 of 5
Lab Proj #: P0011008
Report Date: 11/15/00
Client Proj Name: Glovetorium

Sample Identification

Lab Sample # Client Sample ID

P0011008-01	LFR-4
P0011008-02	B-10
P0011008-03	B-7

Approved by:



Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011008-01

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
LFR-4	Water	COC #						31 Oct. 00	7:00	01 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	490		4.0	0	mg/L	310.1	11/2/00 11:20	hw	M001102022	
Chloride	1.0	28		1.0	0.12	mg/L	9056	11/11/00 14:37	md	M001113027	
Ferrous Iron	1.0	1.1		1.0	0	mg/L	Mod_7199	11/2/00 17:14	md	M001103001	
Nitrate	1.0	< 0.10		0.10	0.02	mg/L	9056	11/11/00 14:37	md	M001113027	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/11/00 14:37	md	M001113027	
Sulfate	1.0	2.9		1.0	0.12	mg/L		11/11/00 14:37	md	M001113027	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/2/00 10:55	hw	M001102020	
Metals											
Iron	1.0	1.0		0.050	0.012	mg/L	6010B	11/3/00 16:13	bv	M001103028	
Manganese	1.0	2.3		0.010	0.000	mg/L		11/3/00 16:13	bv	M001103028	
Manganese-dissolved	1.0	2.2		0.010	0.000	mg/L		11/3/00 16:14	bv	M001103027	
RiskAnalysis											
Carbon dioxide	1.0	130		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009	
Hydrogen	1.0	1.1		0.030	0.029	nM		11/13/00 16:07	bc	M001113010	
Methane	1.0	3200		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008	
Nitrogen	1.0	12		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009	
Oxygen	1.0	1.9		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009	

Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011008-02

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>	<u>Received</u>	
B-10	Water	COC #						31 Oct. 00 7:00	01 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>
WetChem										
Alkalinity as CaCO3	1.0	500		4.0	0	mg/L	310.1	11/2/00 11:20	hw	M001102022
Chloride	1.0	76		1.0	0.12	mg/L	9056	11/11/00 14:37	md	M001113027
Ferrous Iron	1.0	5.9		1.0	0	mg/L	Mod_7199	11/2/00 17:14	md	M001103001
Nitrate	1.0	< 0.10		0.10	0.02	mg/L	9056	11/11/00 14:37	md	M001113027
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/11/00 14:37	md	M001113027
Sulfate	1.0	< 1.0		1.0	0.12	mg/L		11/11/00 14:37	md	M001113027
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/2/00 10:55	hw	M001102020
Metals										
Iron	1.0	6.6		0.050	0.012	mg/L	6010B	11/3/00 16:13	bv	M001103028
Manganese	1.0	1.4		0.010	0.000	mg/L		11/3/00 16:13	bv	M001103028
Manganese-dissolved	1.0	1.4		0.010	0.000	mg/L		11/3/00 16:14	bv	M001103027
RiskAnalysis										
Carbon dioxide	1.0	120		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009
Hydrogen	1.0	0.81		0.030	0.029	nM		11/13/00 16:07	bc	M001113010
Methane	1.0	6700		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008
Nitrogen	1.0	9.0		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009
Oxygen	1.0	2.4		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009

Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011008-03

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
B-7	Water	COC #						31 Oct. 00	7:00	01 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	760		4.0	0	mg/L	310.1	11/2/00 11:20	hw	M001102022	
Chloride	1.0	42		1.0	0.12	mg/L	9056	11/11/00 14:37	md	M001113027	
Ferrous Iron	1.0	11		1.0	0	mg/L	Mod_7199	11/2/00 17:14	md	M001103001	
Nitrate	1.0	< 0.10		0.10	0.02	mg/L	9056	11/11/00 14:37	md	M001113027	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/11/00 14:37	md	M001113027	
Sulfate	1.0	< 1.0		1.0	0.12	mg/L		11/11/00 14:37	md	M001113027	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/2/00 10:55	hw	M001102020	
Metals											
Iron	1.0	14		0.050	0.012	mg/L	6010B	11/3/00 16:13	bv	M001103028	
Manganese	1.0	2.6		0.010	0.000	mg/L		11/3/00 16:13	bv	M001103028	
Manganese-dissolved	1.0	2.6		0.010	0.000	mg/L		11/3/00 16:14	bv	M001103027	
RiskAnalysis											
Carbon dioxide	1.0	200		0.60	0.33	mg/L	AM15	11/13/00 16:19	bc	M001113013	
Carbon monoxide	1.0	< 0.40		0.40	0.050	mg/L		11/13/00 16:19	bc	M001113013	
Methane	1.0	2400		0.015	0.008	ug/L	AM18	11/13/00 16:17	bc	M001113011	
Nitrogen	1.0	10		0.40	0.080	mg/L	AM15	11/13/00 16:19	bc	M001113013	
Oxygen	1.0	0.62		0.15	0.060	mg/L		11/13/00 16:19	bc	M001113013	

Page: Page 5 of 5
Lab Proj #: P0011008
Report Date: 11/15/00
Client Proj Name: Glovetorium

Case Narrative:

P11008

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 6895.00.031 Project Location: Oakland, CA Date: 10/31/00 Serial No: 8010
 Project Name: Gloratorium Field Logbook No.: MXD-4 Sample Event Name:

Sampler (Signature): *[Signature]* ANALYSES LIST: *[List of analyses]* Samplers: MXD

SAMPLE INFORMATION (Print Clearly)

01
02
03

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES LIST							REMARKS	
						Hydrogen Dissolved	Ammon/Cation	Nitrate/Nitrite	Total Ferrus Iron	Manganese	PH	RUSH		
TB-103100	10/31/00	0700		1	H ₂ O									PG = CH ₄ CO ₂ N ₂ O ₂
CFR-4				8		X	X	X	X	X	X			Standard TAT
B-10				8		X	X	X	X	X	X			Results to Julie Sharp at (510) 652-4906
B-7				7		X	X	X	X	X	X			
														* Temp Blank

RELINQUISHED BY: *[Signature]* DATE: 10/31/00 TIME: 1715 RECEIVED BY: *[Signature]* DATE: TIME: *[Signature]* DATE: TIME:

RELINQUISHED BY: DATE: TIME: RECEIVED BY: *[Signature]* DATE: 11/1/00 TIME: *[Signature]* DATE: TIME:

METHOD OF SHIPMENT: FedEx DATE: TIME: LAB COMMENTS:

Sample Collector: LEVINE-FRICKE-RECON
 1900 Powell Street, 12th Floor
 Emeryville, California 94608-1827
 (510) 652-4500 Analytical Laboratory: Microseeps, PA

MICROSEEPS

Client Name: Levine Fricke
Contact: Julie Sharp
Address: 1900 Powell Street
Suite 1200
Emeryville, CA 94608

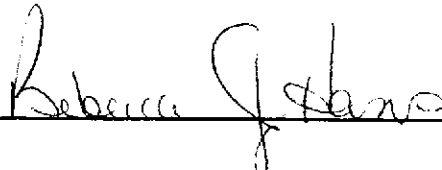
Page: Page 1 of 4
Lab Proj #: P0011024
Report Date: 11/16/00
Client Proj Name: Glovetorium

Sample Identification

Lab Sample # Client Sample ID

P0011024-01 LFR-3
P0011024-02 MW-11

Approved by:



Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011024-01

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
LFR-3	Water	COC #						01 Nov. 00	9:05	02 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	350		4.0	0	mg/L	310.1	11/8/00 15:23	hw	M001108014	
Chloride	1.0	66		1.0	0.12	mg/L	9056	11/15/00 17:14	md	M001115016	
Ferrous Iron	1.0	< 1.0		1.0	0	mg/L	Mod_7199	11/3/00 10:54	md	M001107002	
Nitrate	1.0	8.8		0.10	0.02	mg/L	9056	11/15/00 17:14	md	M001115016	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/15/00 17:14	md	M001115016	
Sulfate	1.0	74		1.0	0.12	mg/L		11/15/00 17:14	md	M001115016	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/3/00 9:15	hw	M001103034	
Metals											
Iron	1.0	< 0.050		0.050	0.012	mg/L	6010B	11/7/00 15:38	bv	M001106008	
Manganese	1.0	0.023		0.010	0.000	mg/L		11/7/00 15:38	bv	M001106008	
Manganese-dissolved	1.0	0.022		0.010	0.000	mg/L		11/7/00 15:39	bv	M001106007	
RiskAnalysis											
Carbon dioxide	1.0	160		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009	
Hydrogen	1.0	850		0.030	0.029	nM		11/13/00 16:07	bc	M001113010	
Methane	1.0	0.28		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008	
Nitrogen	1.0	13		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009	
Oxygen	1.0	4.7		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009	

Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011024-02

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
MW-11	Water	COC #						01 Nov. 00 12:25		02 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	300		4.0	0	mg/L	310.1	11/8/00 15:23	hw	M001108014	
Chloride	1.0	120		1.0	0.12	mg/L	9056	11/15/00 17:14	md	M001115016	
Ferrous Iron	1.0	< 1.0		1.0	0	mg/L	Mod_7199	11/3/00 10:54	md	M001107002	
Nitrate	1.0	15		0.10	0.02	mg/L	9056	11/15/00 17:14	md	M001115016	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/15/00 17:14	md	M001115016	
Sulfate	1.0	90		1.0	0.12	mg/L		11/15/00 17:14	md	M001115016	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/3/00 9:15	hw	M001103034	
Metals											
Iron	1.0	< 0.050		0.050	0.012	mg/L	6010B	11/7/00 15:38	bv	M001106008	
Manganese	1.0	0.0001	J	0.010	0.000	mg/L		11/7/00 15:38	bv	M001106008	
Manganese-dissolved	1.0	0.0001	J	0.010	0.000	mg/L		11/7/00 15:39	bv	M001106007	
RiskAnalysis											
Carbon dioxide	1.0	190		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009	
Hydrogen	1.0	130		0.030	0.029	nM		11/13/00 16:07	bc	M001113010	
Methane	1.0	0.04		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008	
Nitrogen	1.0	13		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009	
Oxygen	1.0	4.1		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009	

Page: Page 4 of 4
Lab Proj #: P0011024
Report Date: 11/16/00
Client Proj Name: Glovetorium

Case Narrative:

MICROSEEPS



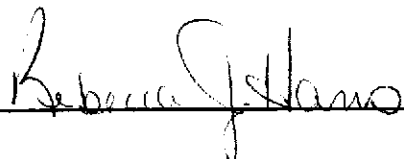
Client Name: Levine Fricke
Contact: Julie Sharp
Address: 1900 Powell Street
Suite 1200
Emeryville, CA 94608

Page: Page 1 of 3
Lab Proj #: P0011037
Report Date: 11/20/00
Client Proj Name: Glovetorium

Sample Identification

Lab Sample # Client Sample ID
P0011037-01 LFR-2

Approved by:



Client Proj Name: Glovetorium

Client Name: Levine Fricke
 Contact: Julie Sharp
 Address: 1900 Powell Street
 Suite 1200
 Emeryville, CA 94608

Lab Sample #: P0011037-01

<u>Sample Description</u>	<u>Matrix</u>							<u>Sampled Date/Time</u>		<u>Received</u>	
LFR-2	Water	COC #						02 Nov. 00	10:05	03 Nov. 00	
<u>Analyte(s)</u>	<u>Dil</u>	<u>Result</u>	<u>Flag</u>	<u>PQL</u>	<u>MDL</u>	<u>Units</u>	<u>Method #</u>	<u>Analysis Date/Time</u>	<u>Analyst</u>	<u>Batch #</u>	
WetChem											
Alkalinity as CaCO3	1.0	550		4.0	0	mg/L	310.1	11/8/00 15:23	hw	M001108014	
Chloride	1.0	40		1.0	0.12	mg/L	9056	11/15/00 16:16	md	M001117012	
Ferrous Iron	1.0	5.3		1.0	0	mg/L	Mod_7199	11/3/00 10:54	md	M001107002	
Nitrate	1.0	0.33		0.10	0.02	mg/L	9056	11/15/00 16:16	md	M001117012	
Nitrite	1.0	< 0.10		0.10	0.02	mg/L		11/15/00 16:16	md	M001117012	
Sulfate	1.0	5.4		1.0	0.12	mg/L		11/15/00 16:16	md	M001117012	
Sulfide	1.0	< 2.0		2.0	0	mg/L	376.1	11/7/00 15:08	hw	M001107020	
Metals											
Iron	1.0	6.2		0.050	0.012	mg/L	6010B	11/8/00 16:50	bv	M001106018	
Manganese	1.0	9.2		0.010	0.000	mg/L		11/8/00 16:50	bv	M001106018	
Manganese-dissolved	1.0	8.8		0.010	0.000	mg/L		11/8/00 11:02	bv	M001106017	
RiskAnalysis											
Carbon dioxide	1.0	180		0.60	0.57	mg/L	AM20GAX	11/14/00 15:59	bc	M001113009	
Hydrogen	1.0	1200		0.030	0.029	nM		11/13/00 16:07	bc	M001113010	
Methane	1.0	8500		0.02	0.00	ug/L		11/13/00 15:54	bc	M001113008	
Nitrogen	1.0	6.8		0.40	0.00	mg/L		11/14/00 15:59	bc	M001113009	
Oxygen	1.0	2.2		0.15	0.01	mg/L		11/14/00 15:59	bc	M001113009	

Page: Page 3 of 3
Lab Proj #: P0011037
Report Date: 11/20/00
Client Proj Name: Glovetorium

Case Narrative:

P110

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 6895.00.031		Project Location: Oakland, CA			Date: 11/2/00		Serial No. 8017				
Project Name: Gloveatorium		Field Logbook No.: MXD-4		Sample Event Name: Q4							
Sampler (Signature): <i>[Signature]</i>								Samplers: MXD, KTJ			
SAMPLE INFORMATION (Print Clearly)											
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES				HOLD RUSH	REMARKS
						Hydrogen	Diss P.C.	Anion/Cation list	Nitrate + Nitrite		
TB-110200 LFR-2	11/2/00	0900	1	8	Ho	TEMP.	BLANK				CH ₄ + N ₂ + O ₂ + CO ₂ Anion/Cat list = Sulfate Sulfide - Cl ⁻ AK, Total Fe, Fe ²⁺ Manganese Standard TAT Filtered in Field Results to Julie sharp (510) 652-4906
RELINQUISHED BY: (Signature) <i>[Signature]</i>		DATE: 11/2/00	TIME: 1500	RECEIVED BY: (Signature) <i>[Signature]</i>		DATE:	TIME:				
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature)		DATE:	TIME:				
RELINQUISHED BY: (Signature)		DATE:	TIME:	RECEIVED BY: (Signature) <i>[Signature]</i>		DATE: 11/3/00	TIME: 10:49				
METHOD OF SHIPMENT: Fedex		DATE:	TIME:	LAB COMMENTS:							
Sample Collector: LEVINE-FRICKE-RECON 1900 Powell Street, 12th Floor Emeryville, California 94608-1827 (510) 652-4500				Analytical Laboratory: Microseeps, Pittsburgh PA							

01
01B

Shipping Copy (White)

Lab Copy (Yellow)

File Copy (Pink)

Field Copy (Goldenrod)

**QA/QC Report for
Total/Dissolved Metals
Continued**

Laboratory Duplicate Sample Information

Analysis Date	Iron	Total Manganese
11/7/00		
Sample Result	0.35	0.89
Dup Result mg/L	0.4	0.89
% Difference	13	0

Laboratory Duplicate Sample Information

Analysis Date	Iron	Total Manganese
11/9/00		
Sample Result	<0.050	0.16
Dup Result mg/L	<0.050	0.16
% Difference	0	0

Laboratory Matrix Spike Information

Analysis Date	Iron	Manganese
11/3/00		
Sample Result	0.67	2.3
MS Result	1.7	2.7
% Recovery	103	80

Analysis Date	Iron	Manganese
11/7/00		
Sample Result	0.35	0.89
MS Result	1.4	1.4
% Recovery	105	102

Analysis Date	Iron	Manganese
11/9/00		
Sample Result	140	2.3
MS Result	164	2.5
% Recovery	96	80

**QA/QC Report for
Total/Dissolved Metals**

Blank Information

Analysis Date	Iron	Total Manganese	Dissolved Manganese
11/3/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/3/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/3/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/7/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/7/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/7/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/9/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/9/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L
11/9/00	<0.050 mg/L	<0.010 mg/L	<0.010 mg/L

Laboratory Control Sample Information

Analysis Date	Iron	Total Manganese
11/3/00		
True Value mg/L	5	2.50
Sample Result	5.28	2.48
% Recovery	106	99

Analysis Date	Iron	Total Manganese
11/7/00		
True Value mg/L	5	2.50
Sample Result	5.68	2.76
% Recovery	114	110

Analysis Date	Iron	Total Manganese
11/9/00		
True Value mg/L	5	2.50
Sample Result	5.68	2.68
% Recovery	114	107

Laboratory Duplicate Sample Information

Analysis Date	Iron	Total Manganese
11/3/00		
Sample Result	1	2.3
Dup Result mg/L	1	2.4
% Difference	0	4

**QA/QC Report for
Anions by IC**

Blank Information

Analysis Date	Chloride	Nitrate	Nitrite	Sulfate
11/11/00	<1.0 mg/L	<0.1mg/L	<0.1mg/L	<1.0mg/L
11/14/00	<1.0 mg/L	<0.1mg/L	<0.1mg/L	<1.0mg/L
11/15/00	<1.0 mg/L	<0.1mg/L	<0.1mg/L	<1.0mg/L

Laboratory Control Sample Information

Analysis Date	Chloride	Nitrate	Nitrite	Sulfate
11/11/00				
True Value mg/L	10	10	10	10
Sample Result	9.5	9.9	10.4	11
% Recovery	95	99	104	110
11/13/00				
True Value mg/L	10	10	10	10
Sample Result	9.4	9.5	10.7	10.4
% Recovery	94	95	107	104
11/15/00				
True Value mg/L	10	10	10	10
Sample Result	8.5	9.4	9.7	10.8
% Recovery	85	94	97	108

Laboratory Duplicate Sample Information

Analysis Date	Chloride	Nitrate	Nitrite	Sulfate
11/14/00				
Sample Result	120	15	<0.10	90
Dup Result mg/L	120	15	<0.10	90
% Difference	0	0	0	0

Laboratory Matrix Spike/Spike Duplicate Information

Analysis Date	Nitrite
11/14/00	
Sample Result	<0.1
MS Result	10.5
% Recovery	105
MSD Result	10.8
% Recovery	108
% Difference	3

**QA/QC Report for
Ferrous Iron**

Blank Information

Analysis Date	Result
11/1/00	<1.0 mg/L
11/1/00	<1.0 mg/L
11/1/00	<1.0 mg/L
11/2/00	<1.0 mg/L
11/2/00	<1.0 mg/L
11/2/00	<1.0 mg/L
11/3/00	<1.0 mg/L
11/3/00	<1.0 mg/L
11/3/00	<1.0 mg/L

Laboratory Control Sample Information

Analysis Date	True Value (mg/L)	Result (mg/L)	% Recovery
11/2/00	5	5.61	112
11/3/00	5	5.43	109

Laboratory Duplicate Sample Information

Analysis Date	Sample Result (mg/L)	Duplicate Result (mg/L)	% Difference
11/1/00	<1.0	<1.0	0
11/2/00	1.1	1.1	0

Laboratory Matrix Spike/Spike Duplicate Information

Analysis Date	Sample Result(mg/L)	MS Result(mg/L)	% Recovery
11/1/00	<1.0	8.1	81
11/2/00	1.1	4.9	75

Analysis Date	Result(mg/L)	MSD Result(mg/L)	% Recovery	%D
11/1/00	<1.0	8.3	83	2
11/2/00	1.1	4.84	75	0

**QA/QC Report for
Sulfide**

Blank Information

Analysis Date	Result
11/2/00	<2.0 mg/L
11/3/00	<2.0 mg/L
11/7/00	<2.0 mg/L

Laboratory Control Sample Information

Analysis Date	True Value (mg/L)	Result (mg/L)	% Recovery
11/2/00	34	25.1	74
11/3/00	34	28.7	84
11/8/00	34	24.5	72

Laboratory Duplicate Sample Information

Analysis Date	Sample Result (mg/L)	Duplicate Result (mg/L)	% Difference
11/2/00	<2.0	<2.0	0
11/3/00	<2.0	<2.0	0
11/7/00	<2.0	<2.0	0

Laboratory Matrix Spike Information

Analysis Date	Sample Result(mg/L)	MS Result(mg/L)	% Recovery
11/2/00	<2.0	24.7	73
11/7/00	<2.0	25.3	75

**QA/QC Report for
Alkalinity**

Blank Information

Analysis Date	Result
11/2/00	<4.0 mg/L
11/8/00	<4.0 mg/L

Laboratory Control Sample Information

Analysis Date	True Value (mg/L)	Result (mg/L)	% Recovery
11/2/00	74	80	108
11/8/00	73	76	104

Laboratory Duplicate Sample Information

Analysis Date	Sample Result (mg/L)	Duplicate Result (mg/L)	% Difference
11/8/00	56	54	4

Laboratory Matrix Spike Information

Analysis Date	Sample Result(mg/L)	MS Result(mg/L)	% Recovery
11/8/00	56	278	90