ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive • Suite 203 • San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

Fourth Quarter 2001
Groundwater Monitoring Report
Former Glovatorium Facility

3815 Broadway

Oakland, California

December 11, 2001

Project 01-2510

Prepared for

Smiland and Khachigian

601 West Fifth Street, 7th Floor

Los Angeles, California 90071-2004

Prepared by

SOMA Environmental Engineering, Inc.

2680 Bishop Drive, Suite 203

San Ramon, California 94583

ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive • Suite 203 • San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

December 12, 2001

DEC 17 2001

Mr. Scott Seery, CHMM
Alameda County Department of
Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Project: 01-2510

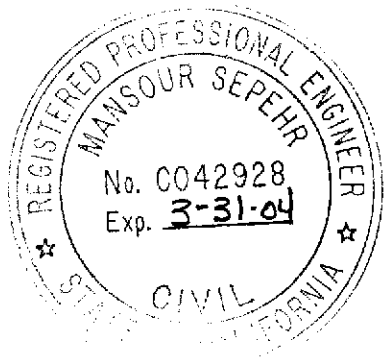
Subject: Site Located at 3815 Broadway, Oakland, California
Former Glovatorium Facility

Dear Mr. Seery:

A copy of SOMA's "Fourth Quarter 2001 Groundwater Monitoring Report" for the subject property is enclosed.

Thank you for your time in reviewing our report. Please do not hesitate to call me at (925) 244-6600, if you have any questions or comments.

Sincerely,



Mansour Sepehr, Ph.D.,P.E.
Principal Hydrogeologist

Enclosure

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

Certification

This report has been prepared by SOMA Environmental Engineering, Inc. for Smiland & Khachigian, to comply with Alameda County Department of Environmental Health's requirements for the Fourth Quarter 2001 groundwater monitoring event and to provide information necessary to defend claims brought against the owners by Earl Thompson and Grace Johnson.

Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist

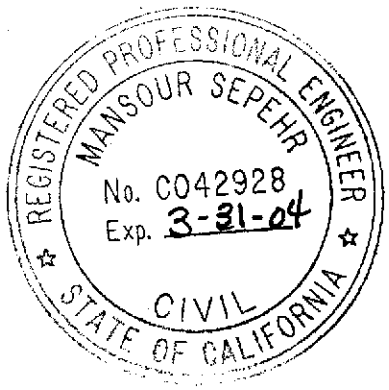


Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc. (SOMA) for the Law Offices of Smiland and Khachigian on behalf of their client, the owners of the former Glovatorium. The site is the former Glovatorium property located at 3815 Broadway Avenue, Oakland, California (the "Site"), as illustrated in Figure 1. The Site is located in an area consisting primarily of commercial and residential uses.

This report summarizes the results of the Fourth Quarter 2001 groundwater monitoring event conducted on October 18 and 19, 2001 by SOMA at the Site, including the results of the laboratory analyses of the groundwater samples, which were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-g), and as Stoddard solvents (TPH-ss) using EPA modified 8015;
- Volatile organic compounds (VOCs) using EPA Method 8260B;
- Benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX) and methyl tertiary butyl ether (MtBE) using EPA Method 8021B.

During the current groundwater monitoring event the newly installed groundwater monitoring wells SOMA-1 through SOMA-4 were sampled for the first time and analyzed for the above constituents. However, monitoring wells B-7 and B-10, which were replaced by the new wells, were not sampled.

In addition to the above laboratory analyses, the natural attenuation study which was initiated by Levine•Fricke Recon (LFR) in the Third Quarter of 2000 continued during this monitoring event. The objective of the natural attenuation study was to evaluate whether or not tetrachloroethylene (PCE) and other VOCs found in groundwater are biodegrading. Therefore, the groundwater samples

collected during this monitoring event were analyzed for common electron acceptors and other geochemical indicators, and the results are described in this report.

These activities were performed in accordance with the general guidelines of the Regional Water Quality Control Board (RWQCB) and the Alameda County Environmental Health Services (ACEHS).

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 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.

1.1 Site Description

The Site is located between Manila Avenue and Broadway, near the intersection of 38th Street in Oakland, California. The ground surface at the Site is covered with concrete and asphalt and slopes gently southwest, with surface elevations ranging from approximately 78 to 84 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 (see 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 below ground surface (bgs) at the far end approximately 60 feet south of GW-4.

In addition to a storm drain system, a 10-inch diameter cast iron sanitary sewer

conduit runs in a westerly direction from the on-site building and discharges into the sanitary sewer line, which runs north to south along Manila Avenue. The floor drain inside the building is less than 2 feet bgs. However, the depth of the sanitary sewer line inside the building gradually increases and then slopes more steeply downward near the western wall of the building, where it plunges underneath the 54-inch storm drain (LFR, January 2001). Figure 2 shows the location of the storm drain and sanitary sewer system.

Reportedly, there were six underground storage tanks (USTs) at the Site. Two USTs were located under the sidewalk on 38th Street and four USTs were located inside the building. 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. In August 1997, the six USTs were abandoned in-place by backfilling with either cement-sand slurry or pea gravel. In addition, there are three USTs owned by Earl Thompson, Sr., under the sidewalk on 38th Street, see Figure 2.

The surrounding properties are primarily commercial, businesses and residential housing. A TOSCO Marketing Company (TOSCO) site is located north and upgradient of the Site, at 40th Street and Broadway and contains a number of groundwater monitoring wells. Figure 2 shows the location of the main building, fuel tank areas, and the on-site and off-site groundwater monitoring wells. The groundwater monitoring wells are currently monitored on a quarterly basis. Past groundwater monitoring events have indicated the presence of VOCs and petroleum hydrocarbons in the groundwater beneath the Site. The source of VOCs and Stoddard solvent is believed to be the former USTs, which were used to store Stoddard solvent and VOCs at the Site. There also has been testimony in the ongoing litigation concerning the Site that there were releases from the piping on the washer system and from washing the floors with Stoddard solvent. This report includes both the results of historical groundwater monitoring events and the results of the Fourth Quarter 2001 groundwater monitoring event.

1.2 Background

The following is a brief description of previous Site investigations conducted by different environmental firms:

In August 1997, Geosolv, LLC (Geosolv) initiated the first soil and groundwater investigation at the Site. Geosolv drilled fourteen soil borings to approximate depths of 10 to 24 feet bgs using the direct push method. Seven of the soil borings (B-2, B-3, B-7 through B-10 and B-13; see Figure 2) were converted into temporary groundwater monitoring wells where grab groundwater samples were collected. In September 1998, Geosolv conducted further soil and groundwater investigations by drilling twelve additional soil borings to approximate depths of 19 to 25 feet bgs. All of the twelve soil borings were converted into temporary groundwater sampling points, and are labeled E-15 through E-26 in Figure 2. After collecting grab groundwater samples from the "E" temporary sampling points, they were abandoned and grouted.

In July 1999, based on the request of the ACEHS, an investigation of potential groundwater preferential flow paths was initiated by LFR. LFR drilled ten soil borings (GW-1 through GW-8, GW-5A, and GW-6A) primarily along the 54-inch diameter storm drain and sanitary sewer systems to depths ranging from 8 to 20 feet bgs using a direct push drilling method. During drilling operations, soil samples were collected from various depth intervals. In August 1999, LFR collected grab groundwater samples from seven of the nine "GW" wells.

In January and April 2000, LFR conducted quarterly groundwater monitoring events at the Site. During the groundwater monitoring events, groundwater elevations were measured in the temporary sampling points installed by LFR and Geolsolv, and in off-site wells MW-8, MW-9 and MW-11 owned by TOSCO. Groundwater samples were collected from the temporary sampling points

installed by LFR and from the off-site well MW-11.

In July and August 2000, LFR installed four groundwater monitoring wells, namely LFR-1 through LFR-4, and conducted the Third Quarter 2000 groundwater monitoring event. This was the first sampling event in which bioattenuation parameters were collected. The measured bioattenuation parameters included: dissolved oxygen (DO), nitrate (NO_3^{-1}), sulfate (SO_4^{-2}) ferrous iron (Fe^{+2}), total iron, methane, oxidation reduction potential (ORP), alkalinity, chloride, carbon dioxide, nitrite, sulfide, ethene, and ethane. The bioattenuation parameters 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 cross-gradient locations. During this monitoring event, groundwater elevations were measured and groundwater samples were collected from the newly installed groundwater monitoring wells LFR-1 through LFR-4, from temporary sampling points installed by LFR and Geosolv, and from off-site monitoring wells MW-8, MW-9, and MW-11 owned by TOSCO. No groundwater samples were collected from MW-8 or MW-9.

In late October and early November 2000, LFR conducted the Fourth Quarter 2000 groundwater monitoring event, including another bioattenuation study. During the fourth quarter monitoring event, LFR sampled nine groundwater monitoring wells and temporary groundwater sampling points and measured groundwater elevations in nineteen groundwater monitoring wells and temporary sampling points (LFR, January 2001).

Well completion details for the LFR wells and the Geosolv sampling points are presented in Table 1.

In late January, LFR conducted the First Quarter 2001 groundwater monitoring

event. However, SOMA prepared the First Quarter 2001 monitoring report (SOMA, May 2001). The results of the First Quarter 2001 groundwater monitoring event suggested the occurrence of strong anaerobic biodegradation activities and dechlorination of PCE beneath the Site.

The Second Quarter 2001 groundwater monitoring event was conducted by SOMA on April 26 and 27, 2001 and reported on July 5, 2001. During this period certain bioattenuation data, which were proved to be less useful, were not collected. The results of the Second Quarter 2001 monitoring event indicated a strong occurrence of the dechlorination process of PCE in the subsurface.

The Third Quarter 2001 groundwater monitoring event was conducted by SOMA on July 26 and 27, 2001. During this monitoring event ten groundwater monitoring wells were sampled and depths to groundwater was measured in 20 groundwater monitoring wells and temporary sampling points. To better evaluate the bioattenuation parameters including DO, SOMA recommended replacing the existing small diameter monitoring wells B-7 and B-10 with larger diameter wells as proposed in the SOMA June 15, 2001 Workplan.

After receiving approval of the workplan on August 27, 2001, on October 4, 11 and 12, 2001 SOMA installed five groundwater monitoring wells, SOMA-1 through SOMA-5, at the Site. During the installation of groundwater monitoring wells, boreholes were continuously logged and soil samples were collected at 5-foot depth intervals. The objective of this investigation was to delineate the vertical extent of soil and groundwater contamination and install larger diameter monitoring wells at the suspected chemical source areas in order to collect more reliable bioattenuation parameters (i. e., DO) in groundwater.

1.3 Site Geology and Hydrogeology

The Site is located on the alluvial plain between the San Francisco Bay shoreline

and the Oakland hills. Surface sediments in the Site's 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 (LFR, 2001).

According to LFR, 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. Based on LFR (2001), 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 of approximately 4.5 to 14 feet bgs. A discontinuous layer of silty to clayey sand was encountered at depths of 17 to 21 bgs in borings B-11, E-23, E-25, GW-7 and GW-8.

Based on the October 2001 results of the field investigation conducted by SOMA, no major water-bearing zone at a deeper depth was encountered. However, as the lithological logs of the newly installed groundwater monitoring wells indicate, the water-bearing zone is composed of fine-grained, clayey silt sediments which are separated by very low permeability intervening clay layers, which in some locations are unsaturated. For instance, SOMA-5, which has been screened within a significantly thick clay layer beneath the first water-bearing zone from 21 to 26 feet bgs using the dual tubing method, is a dry well. Due to the presence of unsaturated and low permeability of the intervening clay layers between shallow

and deep layers, there is a significant vertical downward gradient between the shallow and deep wells.

According to the results of historical groundwater monitoring activities, groundwater occurs at 4 to 14 feet bgs. Based on the current and previous groundwater monitoring reports, groundwater flows from the northeast to the southwest with an approximate groundwater flow gradient of 0.019 ft/ft to 0.035 ft/ft. The results of the slug tests indicated that the hydraulic conductivity of the saturated sediments ranges between 1.2×10^{-4} and 6.9×10^{-4} cm/sec, which is equivalent to 0.34 ft/day to 1.95 ft/day. Using the average groundwater flow gradient of 0.027 and aquifer porosity of 0.32, the groundwater flow velocity ranges between 10.5 and 60.1 ft/year.

2.0 FIELD ACTIVITIES

Field activities were conducted on October 18 and 19, 2001, during which eleven groundwater monitoring wells were sampled and water levels were measured in 22 groundwater monitoring wells and temporary sampling points. Figure 2 shows the location of the groundwater monitoring wells and temporary sampling points. Appendix A includes SOMA's site-specific field activities during the current groundwater monitoring event.

On October 18, 2001, SOMA's field crew measured the depths to groundwater in the monitoring wells and temporary groundwater sampling points from the top of the casings to the nearest 0.01 feet using an electrical sounder. The depth to groundwater and top of the casing elevation data at each groundwater monitoring well were used to calculate the groundwater elevation.

Groundwater sampling was conducted on October 18 and 19, 2001. During the groundwater sampling activities, certain biodegradation groundwater parameters such as DO, ORP, ferrous iron, total iron, nitrate, nitrite, sulfate and manganese

were measured by the field crew. After collecting the groundwater samples, they were placed in an ice chest and delivered to Curtis & Tompkins, Ltd. of Berkeley, California for routine analyses and to Microseeps Analytical Laboratories of Pittsburgh, Pennsylvania (Microseeps) for methane analyses only. Additionally, the field crew measured certain groundwater parameters such as pH, temperature, electrical conductivity (EC) and turbidity in-situ during the groundwater monitoring event.

2.1 Laboratory Analysis

Curtis & Tompkins, Ltd. of Berkeley, California analyzed the groundwater samples. The measured constituents included TPH-g, TPH-ss, BTEX , MtBE and VOCs.

TPH-g and TPH-ss were measured using EPA Method 8015M. EPA Method 8021B was used to measure BTEX and MtBE. EPA Method 8260B was used to measure VOCs.

Most of the groundwater constituents related to bio-degradation activities were measured by SOMA's field crew except dissolved methane, which was performed by Microseeps. The analyses conducted by the field crew included ferrous iron, total iron, nitrate, nitrite, sulfate, dissolved manganese, and DO.

3.0 Results

This section describes the results of the Fourth Quarter 2001 groundwater monitoring event. It includes groundwater flow conditions, the status of groundwater contamination, and the occurrence of bioattenuation in the subsurface.

3.1 Groundwater Flow Condition

Table 2 presents the measured groundwater elevations at different groundwater monitoring wells and temporary groundwater sampling points. At each location, depth to watertable and elevation of the top of the casings were used to calculate the watertable elevation relative to the assumed datum. Appendix B presents the field notes. Table 3 shows the historical water level elevations at different groundwater monitoring wells.

As Table 2 shows, the watertable elevations ranged from 67.89 feet in SOMA-1 and B-7 to 76.81 feet above msl in MW-8; the watertable elevations were about 1 foot lower than those in the third quarter. The drop in the water level elevation since the previous monitoring event can be attributed to the lack of rainfall during this monitoring event. In evaluating the groundwater flow direction and gradient, water level data from GW-4, B-7, B-8, B-9, SOMA-3, SOMA-1 and SOMA-4 were not utilized for the following reasons:

1. No accurate information about the construction details of the "B" wells installed by Geosolve is available, therefore water level data from these wells are questionable;
2. GW-4 was installed adjacent to the storm drain system in order to evaluate whether or not the storm drain system is leaking. This well was installed in the shallow formation, and may partially penetrate into the underlying water-bearing zone. Therefore, the water level elevation recorded inside GW-4 may not be representative of the underlying water-bearing zone.
3. SOMA-1 and SOMA-3 have been completed in the deeper zone and due to the strong vertical gradient, the water level elevation in the deeper zone is significantly lower than the shallow water-bearing zone.
4. Due to the presence of a significant amount of free product in SOMA-4, the recorded water level elevation in this well is not representative of the shallow water-bearing zone.

5. The water level elevation in SOMA-2 closely matches the water level elevation of the other groundwater monitoring well within the source area, therefore, it was used in drawing water level elevation contour map.

Figure 3 displays the groundwater elevation contour map. As Figure 3 shows, during the recent monitoring event, the groundwater was found to flow from the northeast to southwest. This is consistent with the findings of the previous monitoring events. It should be noted that our knowledge of groundwater flow direction does not extend beyond LFR-3, the most downgradient groundwater monitoring well.

The field measurements of some physical and chemical parameters of the groundwater samples are presented in detail in the field notes in Appendix B, and are summarized in Table 4, along with their historical values. Water temperatures ranged from 16.88 °C to 22.55 °C. The variation in temperature may reflect the changes in air temperature during sampling. The temperature measurements allowed the field crew to make corrections to the pH, EC, and DO measurements. pH measurements ranged from 6.41 to 6.91 units. The EC measurements ranged from 0.109 to 0.786 µS/cm.

3.2 Groundwater Quality

The groundwater samples were analyzed for petroleum hydrocarbons and VOCs using EPA Methods 8015M, 8021B, and 8260B. Table 5 displays the results of the laboratory analyses for TPH-ss, TPH-g, MtBE, benzene, toluene, ethylbenzene, and total xylenes. As Table 5 shows, TPH-g and TPH-ss were found at high concentrations beneath the Site. The maximum concentrations of TPH-g and TPH-ss were found in SOMA-2 and SOMA-4, which are located inside the former Glovatorium building. Also, TPH-g and TPH-ss were found in eight out of eleven groundwater monitoring wells sampled during this monitoring event. Historically, the maximum concentrations of TPH-g and TPH-ss occurred

in B-7 and B-10. During the current groundwater monitoring event, the detected concentration of TPH-ss and TPH-g in SOMA-2 and SOMA-4 were comparable with historical concentrations of these chemicals in B-7 and B-10. Figures 4 and 5 show the concentration contour maps of TPH-g and TPH-ss in groundwater, respectively.

For the first time, during the current groundwater monitoring event, elevated levels of MtBE were detected in SOMA-3 and SOMA-4. MtBE was only detected in newly installed groundwater monitoring wells SOMA-1, SOMA-3 and SOMA-4, at concentrations ranging from 34 µg/L in SOMA-1 to 650 µg/L in SOMA-4. Surprisingly, no MtBE was detected in SOMA-2 despite its close proximity to SOMA-3. In the past, the maximum concentration of MtBE was detected in LFR-4 at 11 µg/L.

Benzene, toluene, ethylbenzene and xylenes were not detected in any of the groundwater monitoring wells during this event. During the previous event BTEX were sporadically detected at low concentrations in B-7, LFR-2, LFR-4 and MW-11.

Table 7 shows the historical TPH-ss, TPH-g, TPH-d, MtBE and BTEX concentrations measured at different groundwater monitoring wells and groundwater sampling points.

Table 6 shows the concentrations of VOCs in the groundwater during this monitoring event. As Table 6 shows, cis-1,2-dichloroethene (cis-1,2-DCE) and tetrachloroethylene were found most frequently. Cis-1,2-DCE was detected at a maximum concentration of 5,000 µg/L in SOMA-2. During the previous monitoring event, it was detected at a maximum concentration of 6,600 in B-10. Cis-1,2-DCE is produced during the reductive dechlorination of PCE. In general, the reductive dechlorination process occurs by sequential dechlorination from

PCE to trichloroethene (TCE) to DCE to vinyl chloride (VC). Bouwer (1994) reports that under the influence of biodegradation, cis-1,2-DCE is a more common intermediate compound than trans-1,2-DCE, and that 1,1-DCE is the least prevalent of the three DCE isomers when they are present as daughter products. Trans-1,2-DCE was not found in any of the groundwater monitoring wells during this event. Cis-1,2-DCE was reported in five out of eleven groundwater monitoring wells. Figure 6 shows the distribution of cis-1,2-DCE concentration in groundwater.

PCE and TCE were reported at relatively high frequencies in the groundwater samples, especially in the source area. PCE was detected in five out of eleven groundwater monitoring wells, while TCE was found in three of eleven wells. The maximum reported concentrations of PCE and TCE were 1,400 and 350 µg/L, respectively, both in well SOMA-2. In the previous monitoring event PCE and TCE were reported in B-10 at relatively lower concentrations than SOMA-2. This represents a considerable decrease from the values reported during the previous groundwater monitoring event. Figures 7 and 8 show the distribution of PCE and TCE concentrations in the groundwater.

Unlike the previous monitoring event, VC was not detected in any of the wells. As mentioned before, the reductive dechlorination process in general occurs by sequential dechlorination from PCE to TCE to DCE to VC. The depletion of PCE and TCE coupled with slight increase of VC may indicate that the reductive dechlorination process of PCE and TCE is strongly occurring beneath the Site. Table 8 shows the historical concentration of VOCs in the groundwater.

3.3 Bioattenuation Parameter Analysis Results

This is the sixth groundwater quarterly monitoring event in which the natural attenuation parameters of groundwater were studied. The objective of the

bioattenuation study is to evaluate whether or not intrinsic bioremediation processes are active at the Site. The results of this study will reveal whether or not PCE and other dissolved organic compounds are biodegrading beneath the Site.

Like the previous monitoring event, most of the bioattenuation parameters were measured in the field. Only dissolved methane was measured in the laboratory. In addition, DO was measured in-situ by the field crew. Based on Borden (1998) and Sepehr (1999), the ex-situ measurement of natural gases such as DO may introduce oxygen into the groundwater sample and result in certain errors. Therefore, DO was measured in the field inside the casing without collecting a groundwater sample.

During the degradation process, the indigenous bacteria that exist in the subsurface consume electron acceptors such as DO. After the DO is consumed, anaerobic microorganisms typically use alternative electron acceptors in the following order of preference: nitrate, ferric iron, oxyhydroxide, sulfate, and, finally, carbon dioxide. Evaluating the distribution of these electron acceptors can provide evidence of where and to what extent chlorinated and aliphatic hydrocarbon biodegradation is occurring. The by-products of biodegradation processes are nitrite, ferrous iron, alkalinity, sulfide, methane, and carbon dioxide. For evaluation of the bioattenuation processes, groundwater samples were collected during the Fourth Quarter 2001 groundwater monitoring event and analyzed for selected electron acceptors and the by-products of biodegradation activities, as described below:

Dissolved Oxygen. DO is the most favored electron acceptor used by microbes for the biodegradation of organic compounds. A concentration of DO less than 0.5 mg/L indicates anaerobic conditions. It is our experience that down-hole measurements of DO (i.e., in-situ measurements) yield more realistic results than

ex-situ (laboratory) measurements. Significant differences in DO concentrations using in-situ and ex-situ measurements (conducted by Microseep) during the First Quarter 2001, can be attributed to cross contamination by atmospheric air during ex-situ measurement (R. Borden, 1998, M. Sepehr 1999). Therefore, during the current monitoring events, the DO measurements were conducted in-situ only by SOMA's field crew. Figure 9 presents the DO concentration contour map in groundwater using in-situ measurements. One of the components of SOMA's additional investigations in October 2001 was the installation of larger diameter wells for better assessment of the biodegradation parameters within the source area. As discussed in the Third Quarter 2001 groundwater monitoring report, using the small diameter wells such as B-7 and B-10 within the chemical source area is not suitable for measurement of DO due to the excess drawdown during the purging process.

For the first time, the new wells (SOMA-1 through SOMA-4) were used for DO measurements during this event. It should be noted that due to the limitation of drilling equipment, SOMA-3 still is a ¾ inch diameter well which was installed in the deeper zone within the suspected chemical source area inside the building. This well still is not suitable for DO measurements. As the results of field measurements indicate the measured DO in SOMA-2 and SOMA-4 were quite low as expected, which seems to be representative of an anaerobic condition within the chemical source area. However, a larger drawdown occurred in SOMA-3, which caused the groundwater entering the borehole to come in contact with ambient air, and as a result, showed a higher oxygen content. Table 9 presents the current and historical DO concentrations in the groundwater.

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. Low concentrations of nitrate near the apparent source area in SOMA-2, and in the downgradient wells LFR-2 and SOMA-1 indicate conditions that are conducive to anaerobic

biodegradation. High concentrations of nitrate were observed in upgradient monitoring well MW-11, and downgradient well GW-3 indicating a low likelihood of anaerobic biodegradation in these wells. Figure 10 shows the nitrate concentration contour map using the field data.

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 non-detectable (ND) level in GW-2, MW-11, LFR-1, to 4.0 mg/L in SOMA-4, in the apparent source area, indicating conditions that are conducive to anaerobic biodegradation.

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 were ND in the apparent source area locations (SOMA-2) and 17 mg/L at SOMA-4. Sulfate concentration around well LFR-3 was 30 mg/L. Figure 11 shows a sulfate concentration contour map in the groundwater using the field data.

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, which 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 (40 mg/L in SOMA-2). The minimum concentrations of ferrous iron were detected in LFR-3 (0.11 mg/L), where conditions are aerobic. Figure 12 shows a ferrous iron concentration contour map using the field data.

Methane. The presence of methane in groundwater is indicative of strongly reduced conditions, and suggests reductive dechlorination by the process of methanogenesis. Methane was detected in concentrations ranging from 0.00091 mg/L in GW-2 to 11 mg/L in LFR-2. The higher concentration of methane at GW-4 (4.8 mg/L) and at the source area (SOMA-2 and LFR-2) indicates conditions that are conducive to anaerobic biodegradation. Figure 13 shows a methane concentration contour map during the recent groundwater monitoring event, using the laboratory data.

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 lower values expected in areas where anaerobic processes are occurring. ORP measurements obtained in this sampling event ranged from -89 mV in SOMA-2 to +155 mV in MW-11. The highest values were also found in downgradient locations (LFR-1 and LFR-3) and upgradient locations (MW-11). The lowest values were found in the apparent source area (SOMA-2 and SOMA-3). These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation.

Other Parameters

Alkalinity. Alkalinity is a general water quality parameter. High alkalinity levels are a result of interaction between carbon dioxide (a product of several biodegradation processes) and aquifer minerals. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no alkalinity data was collected during the current and previous groundwater monitoring events.

Chloride. Chloride is the final product of the reduction of chlorinated solvents, and is also a general water quality parameter.

Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no chloride data was collected during the current groundwater monitoring event.

Carbon Dioxide. Carbon dioxide is a product of several biodegradation processes. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no carbon dioxide data was collected during the last two groundwater monitoring events.

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 ND (well MW-11) to 44 mg/L (SOMA-2). The ferrous iron concentration ranged between ND (GW-3 and MW-11) to 40 mg/L (SOMA-2). These may be indicative of the reductive dechlorination processes. Table 4 presents the results of the total iron analyses, and Table 9 presents the results of the ferrous iron analyses.

Nitrite. Nitrate may reduce to nitrite during the process of anaerobic biodegradation. Nitrite measurements were not performed on any of the monitoring wells because of the limited value in interpretation of biodegradation processes.

Sulfide. When sulfate is used as an electron acceptor for anaerobic biodegradation, it is reduced to sulfide. Due to the inconclusive nature of data collected during the previous groundwater monitoring events in connection with the bioattenuation process, no sulfide data was collected during the current groundwater monitoring event.

pH, Temperature, and Conductivity. The pH of groundwater has an effect on

the activity of microbial populations in groundwater, with optimal pH values ranging from 6 to 8 standard units for microbes capable of degrading PCE and other chlorinated aliphatic hydrocarbons. The groundwater temperature affects the metabolic activity of bacteria, and groundwater conductivity is directly related to the concentration of ions in solution. The pH, temperature, and conductivity values are included in Table 4.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of the work performed on October 18 and 19, 2001 and the results of this work.

Groundwater samples were collected from monitoring wells SOMA-1 through SOMA-4, (SOMA-5 was dry), LFR-1 through LFR-3, (LFR-4 was inaccessible) temporary sampling points GW-2, GW-3, GW-4, and from well MW-11. The samples were analyzed for TPH-ss, TPH-g, MtBE, BTEX, and VOCs.

A maximum concentration of PCE of 1.4 mg/L was detected in SOMA-2, which is higher than its previous concentration at B-10. PCE was also detected in LFR-1 at 0.78 mg/L, which is higher than its concentration during the previous monitoring event. Since PCE was detected at SOMA-3 at only 0.042 mg/L, it is apparent that the vertical extent of PCE is limited. The presence of intervening and unsaturated clay layers prevents its movement beyond the sampling depth of SOMA-3. SOMA-3 is a deep monitoring well located adjacent to SOMA-2, where the maximum concentration of PCE was detected. SOMA-3 has been screened from 21 to 26 feet bgs, while SOMA-2 has been screened from 10 to 20 feet bgs. Historically, a maximum concentration of PCE was detected in LFR-1 at 2.8 mg/L during the Third Quarter 2000 groundwater monitoring event.

This was the sixth quarterly groundwater monitoring event in which bioattenuation parameters were analyzed. Selected samples were analyzed for the following: DO, nitrate, manganese, sulfate, ferrous iron, methane, ORP, and total iron. Certain parameters such as chloride, carbon dioxide, hydrogen,

alkalinity, and sulfide were not measured due to their inconclusive role in the bioattenuation processes at this Site.

Cis-1,2-DCE is one of the breakdown products of PCE. It was detected at concentrations up 5 mg/L in the newly installed monitoring well SOMA-2. Previously it was detected at 7.3 mg/L in the temporary sampling point B-10 and its presence in groundwater indicates that reductive dechlorination is likely occurring.

Vinyl chloride was historically detected in wells GW-4 and LFR-2. However, during this current groundwater monitoring event it was not detected in any of the monitoring wells. The presence of vinyl chloride, a breakdown product of PCE, indicates reductive dechlorination is likely occurring.

Benzene was not detected in any of the groundwater monitoring wells during the current groundwater monitoring event. Elevated levels of MtBE were detected in new groundwater monitoring wells SOMA-1, SOMA-3 and SOMA-4. Since no MtBE was detected in the upgradient monitoring well MW-11, the source of the high MtBE concentration in these wells is unknown.

The maximum concentrations of petroleum hydrocarbons were found in groundwater monitoring wells SOMA-4 and SOMA-2, as are shown in Table-5. Table 6 shows the analytical results of groundwater samples analyzed for VOCs.

4.1 Conclusions

Based on the data obtained during the Fourth Quarter 2001 groundwater monitoring event, our conclusions are as follows:

The farthest downgradient well, LFR-3, contained no concentration of VOCs, TPH-g, TPH-ss and BTEX.

The data collected to date regarding the distribution of PCE and other VOCs in groundwater indicates that PCE has been degraded into some of its breakdown products. PCE typically degrades into TCE, then cis-1,2-DCE and trans-1,2-DCE (at much lower concentrations than cis-1,2-DCE), then to VC, ethane and ethene 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 well SOMA-2 and SOMA-3 and LFR-1 during the current sampling event indicates that PCE degradation is occurring. The presence of relatively high concentrations of cis-1,2-DCE in SOMA-2 and other wells such as SOMA-1, SOMA-3 and SOMA-4 is also indicative of biodegradation. Historical data from temporary sampling point GW-8 indicates the presence of VC between July 1999 and April 2000. VC was also detected in LFR-2 since the October/November 2000 groundwater monitoring event and for the first time in GW-4 during the previous monitoring event. We expect to detect VC in the other groundwater monitoring wells in the future due to the progression of the dechlorination process of PCE in the subsurface.

The results of DO, nitrate, manganese, sulfate, ferrous iron, methane, and ORP measurements indicate that conditions in the apparent source area are conducive to the reductive dechlorination processes.

DO concentrations of approximately less than 1.0 mg/L in the groundwater are indicative of anaerobic biodegradation conditions. During the recent groundwater monitoring event, anaerobic conditions were detected in LFR-2, LFR-3, SOMA-2 and SOMA-4. In the past several monitoring events, results indicated that conditions in the apparent source area were conducive to the anaerobic biodegradation processes. It appears that in-situ DO measurements in the newly installed monitoring wells of SOMA-2 and SOMA-4 within the chemical source are more representative of actual anaerobic conditions in this area. This

improvement over the previous monitoring event was due to the replacement of B-7 and B-10 with the newly installed monitoring wells SOMA-2, and SOMA-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 processes. Low concentrations of nitrate occurred near the apparent source area in temporary sampling points SOMA-2, SOMA-3 and SOMA-4, indicating conditions that are conducive to anaerobic biodegradation.

Increased dissolved manganese concentrations are indicative of reductive dechlorination conditions. Manganese concentrations ranged from ND (GW-3, MW-11, LFR-1, LFR-2, LFR-4) to 4.0 mg/L (SOMA-4) in the apparent source area, 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 the anaerobic biodegradation processes. Sulfate concentrations were 17 mg/L in the apparent source area locations SOMA-4 and ND at SOMA-2, 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 high concentration of ferrous iron is anticipated in locations where biodegradation occurs. The highest ferrous iron concentrations were in the apparent source area (SOMA-2) and in the slightly downgradient location LFR-2 and GW-4, indicating conditions that are conducive to anaerobic biodegradation.

A relatively high concentration of methane is anticipated in locations where biodegradation occurs because methane is indicative of strongly reducing conditions and suggests reductive dechlorination by the process of

methanogenesis. Methane concentrations ranged from 6.6 mg/L in the apparent source area (SOMA-2) and were 11 mg/L in the slightly downgradient location LFR-2, 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 value (-89 millivolts) was found in and near the apparent source area (SOMA-2). These results indicate that conditions in and near the apparent source area are conducive to anaerobic biodegradation.

4.2 Recommendations

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

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

2. Continue quarterly groundwater monitoring in the newly installed monitoring wells SOMA-1 through SOMA-5 (installed in October 2001), LFR-1 through LFR-4, (installed in July 2000), in the upgradient well MW-11, and in selected previously installed temporary sampling points.

3. Continue to evaluate PCE and potential breakdown product concentrations in on- and off-site wells.

4. Develop a workplan for delineation of the extent of the free product beneath the former Glovatorium building. Once the extent of free product is identified, the best free product removal alternative can be employed.

The second phase of SOMA's approved Workplan dated June 15, 2001 will be

implemented in order to define the Site's regulatory status in the near future. Once the Site's regulatory status in terms of "Low Risk" or "High Risk" chemical release site is known, the most appropriate corrective action can be proposed to the ACEHS.

5.0 REFERENCES

Borden, R.C., 1998 "Hand book of Bioremediation" Section 9 Natural Bioremediation of Hydrocarbon-Contaminated Ground Water, pp 177-199.

EPA 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, EPA/600/R-98/128. September.

Helley, E.J., K.R. Lajoie, and D.B. Burke. 1972. Geologic Map of Late Cenozoic Deposits, Alameda County, California.

LFR. 1999. Results of Utility Survey and Work Plan for Soil and Grab Groundwater Investigation. May 6.

LFR. 2000a. Soil and Groundwater Investigation Report. March 20.

LFR. 2000b, Work Plan for Installation of Groundwater Monitoring Wells, Former Glovatorium, 3815 Broadway, Oakland, California. June 14.

LFR. 2000c. Groundwater Monitoring Report, Second Quarter 2000, Former Glovatorium, 3815 Broadway, Oakland, California. July 7.

LFR. 2000d. Groundwater Monitoring Report, Third Quarter 2000, Former Glovatorium, 3815 Broadway, Oakland, California. November 2.

LFR. 2001. Groundwater Monitoring Report, Fourth Quarter 2000, Former Glovatorium, 3815 Broadway, Oakland, California. November 2.

Microseeps. 2000. Monitored Natural Attenuation As a Remedial Alternative In Groundwater Contamination. Lecture at LFR Levine - Fricke (LFR) Emeryville office by Robert J. Pirkle, Ph.D. of Microseeps. May 31.

Sepehr, M., 1999 "Methanogenesis and Anaerobic Biodegradation of Petroleum Hydrocarbons in Soil and Groundwater" a Paper Presented in 4th IAA Annual Conference at Petrochemical, Energy and Environment, September 1999, New York.

SOMA Environmental Engineering, Inc. 2001 First Quarter 2001 Groundwater Monitoring Report, Former Glovatorium Facility, 3815 Broadway, Oakland, California, May 7, 2001.

SOMA Environmental Engineering, Inc. 2001 Second Quarter 2001 Groundwater Monitoring Report, Former Glovatorium Facility, 3815 Broadway, Oakland, California, May 7, 2001.

SOMA Environmental Engineering, Inc. 2001 Third Quarter 2001 Groundwater Monitoring Report, Former Glovatorium Facility, 3815 Broadway, Oakland, California, May 7, 2001.

U.S. Geological Survey. Quaternary Geology of Alameda Cty, and Parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, CA: A Digital Database. U.S. Dept of the Interior.

TABLES

Table 1

Construction Data for Temporary Sampling Points and Monitoring Wells

Former Glovatorium Site
3815 Broadway, Oakland, California

Location	Date Installed	Ground Surface Elevation (ft)	Top of Casing Elevation (ft)	Total Depth (ft)	Screen Interval Depth (ft)	Screen Interval Elevation (ft)	Notes
Temporary Sampling Points Installed by Geosolv, LLC:							
B-2	19-Aug-97	82.2	82.09	21	5 to 21	77.2 to 61.2	
B-3	19-Aug-97	82.6	82.57 (1)	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	81.5	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	80.1	20	10 to 20	70.3 to 60.3	(2)
Temporary Sampling Points 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		
Groundwater Monitoring Wells Installed by SOMA:							
SOMA-1	4-Oct-01	82.31	81.64	40	25 to 40	42.31 to 57.71	
SOMA-2	11-Oct-01	81.62	81.39	20	10 to 20	61.62 to 71.62	
SOMA-3	11-Oct-01	81.65	81.42	30	21 to 26	60.65 to 65.65	
SOMA-4	12-Oct-01	81.51	81.09	20	10 to 20	61.51 to 71.51	
SOMA-5	12-Oct-01	81.68	81.50	26	21 to 26	55.68 to 60.68	

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 workplan dated May 6, 1999. GW-6 and GW-8 were abandoned on July 26, 2000, in accordance with LFR's workplan dated June 14, 2000.

NS = Not surveyed.

Table 2
Groundwater Elevation Data, Fourth Quarter 2001
Groundwater Monitoring Event
Former Glovatorium Site
3815 Broadway, Oakland, California

Well Name	Date	Casing Elev. (ft.)	DTW (ft.)	GW Elev. (ft.)
B-2	10/18/01	82.09	8.83	73.26
B-3	10/18/01	82.57	9.33	73.24
B-7	10/18/01	76.96	9.07	67.89
B-8	10/18/01	81.82	12.31	69.51
B-9	10/18/01	77.37	9.39	67.98
B-10	10/18/01	81.50	9.54	71.96
B-13	10/18/01	84.58	dry	dry
GW-1	10/18/01	79.94	dry	dry
GW-2	10/18/01	79.14	11.23	67.91
GW-3	10/18/01	77.92	10.25	67.67
GW-4	10/18/01	82.37	8.15	74.22
GW-5	10/18/01	81.01	12.60	68.41
GW-6A	10/18/01	81.61	13.80	67.81
LFR-1	10/18/01	79.97	9.93	70.04
LFR-2	10/18/01	81.89	11.36	70.53
LFR-3	10/18/01	77.96	11.87	66.09
LFR-4	10/18/01	81.65	13.91	67.74
MW-8	10/18/01	87.44	10.63	76.81
MW-9	10/18/01	86.56	10.10	76.46
MW-11	10/18/01	84.21	11.24	72.97
SOMA-1	10/18/01	81.64	13.75	67.89
SOMA-2	10/18/01	81.39	9.53	71.86
SOMA-3	10/18/01	81.42	13.10	68.32
SOMA-4	10/18/01	81.09	11.32	69.77
SOMA-5	10/18/01	81.50	dry	dry

Table 3
Historical Groundwater Elevations at Different Wells
Former Glovatorium Site
3815 Broadway, Oakland, California

Well Name	Date Measured	Top of Casing Elevation (ft)	Depth to Water (ft.)	Groundwater Elevation (ft.)	Notes
Temporary Sampling Points Installed by Geosolv, LLC:					
B-2	18-Oct-01		8.83	73.26	0.25' FP
	26-Jul-01		8.23	73.86	
	26-Apr-01		6.83	75.26	
	29-Jan-01	82.09	7.46	74.63	
	30-Oct-00		7.75	74.34	
	9-Aug-00		8.19	73.90	FP
	27-Apr-00		6.68	75.41	FP
	24-Jan-00		6.16	75.93	FP
	19-Jan-00	82.09	8.12	73.97	FP
	18-Feb-98		4.04	78.16	1
	26-Oct-97	82.20	9.54	72.66	1
B-3	18-Oct-01		9.33	73.24	1' FP
	26-Jul-01		9.40	73.17	
	26-Apr-01		8.57	74.00	
	29-Jan-01	82.57	7.51	75.06	
	30-Oct-00		7.73	74.84	FP
	9-Aug-00		8.02	74.55	FP
	27-Apr-00		6.71	75.86	FP
	24-Jan-00		6.74	75.83	
	19-Jan-00	82.57	9.35	73.22	2
	18-Feb-98		4.53	78.04	1
	26-Oct-97		8.93	73.64	1
B-7	18-Oct-01		9.07	67.89	
	26-Jul-01		8.27	68.69	
	26-Apr-01		7.36	69.60	
	29-Jan-01	76.96	7.85	69.11	
	30-Oct-00		7.95	69.01	
	9-Aug-00		8.35	68.61	
	27-Apr-00		7.11	69.85	FP
	24-Jan-00		7.30	69.66	FP
	19-Jan-00	76.96	8.36	68.60	FP
	18-Feb-98		5.76	71.57	1
	26-Oct-97	77.33	9.24	68.09	1
B-8	18-Oct-01		12.31	69.51	2.1' FP
	26-Jul-01		11.41	70.41	
	26-Apr-01		8.63	73.19	
	29-Jan-01	81.82	7.59	74.23	
	30-Oct-00		8.50	73.32	
	9-Aug-00		9.02	72.80	FP
	27-Apr-00		7.68	74.14	FP
	24-Jan-00		8.98	72.84	FP
	19-Jan-00	81.82	10.01	71.81	FP
	18-Feb-98		5.42	76.64	1
	26-Oct-97	82.06	10.95	71.11	1
B-9	18-Oct-01		9.39	67.98	
	26-Jul-01		8.64	68.73	
	26-Apr-01		7.57	69.80	
	29-Jan-01	77.37	8.04	69.33	
	30-Oct-00		7.95	69.42	
	9-Aug-00		8.55	68.82	
	27-Apr-00		7.41	69.96	
	24-Jan-00		7.12	70.25	FP
	19-Jan-00	77.37	8.46	68.91	FP
	18-Feb-98	77.57	6.13	71.44	1
	26-Oct-97		9.18	68.39	1

Table 3

Historical Groundwater Elevations at Different Wells

Former Glovatorium Site
3815 Broadway, Oakland, California

Well Name	Date Measured	Top of Casing Elevation (ft)	Depth to Water (ft.)	Groundwater Elevation (ft.)	Notes
B-10	**18-Oct-01**		**9.54**	**71.96**	
	26-Jul-01		8.89	72.61	
	26-Apr-01		7.89	73.61	
	29-Jan-01	81.50	8.30	73.20	
	30-Oct-00		8.15	73.35	
	9-Aug-00		8.85	72.65	
	27-Apr-00		7.80	73.70	
	24-Jan-00		7.35	74.15	FP
	19-Jan-00	81.50	8.48	73.02	FP
	18-Feb-98	81.65	6.52	75.13	1
	26-Oct-97		9.39	72.26	1
B-13	**18-Oct-01**		**DRY**	**DRY**	
	26-Jul-01	81.65	DRY	DRY	
	30-Oct-00	81.65	DRY	DRY	
	9-Aug-00		9.35	75.23	
	27-Apr-00		8.71	75.87	
	24-Jan-00		8.26	76.32	
	19-Jan-00	84.58	10.40	74.18	
	18-Feb-98		6.61	78.51	1
	26-Oct-97	85.12	12.10	73.02	1
Temporary Sampling Points Installed by LFR:					
GW-1	**18-Oct-01**		**DRY**	**NA**	
	26-Jul-01		DRY	NA	
	26-Apr-01		DRY	NA	
	29-Jan-01	79.94	7.95	71.99	
	9-Aug-00		DRY	DRY	
	27-Apr-00		DRY	DRY	
	19-Jan-00		DRY	DRY	
	27-Aug-99	79.94	DRY	DRY	
GW-2	**18-Oct-01**		**11.23**	**67.91**	
	26-Jul-01		10.59	68.55	
	26-Apr-01		9.73	69.41	
	29-Jan-01	79.14	10.52	68.62	
	30-Oct-00		10.69	68.45	
	9-Aug-00		10.03	69.11	
	27-Apr-00		8.55	70.59	
	21-Jan-00		10.82	68.32	
	19-Jan-00		10.90	68.24	
	27-Aug-99	79.14	10.68	68.46	
GW-3	**18-Oct-01**		**10.25**	**67.67**	
	26-Jul-01		10.08	67.84	
	26-Apr-01		9.99	67.93	
	29-Jan-01	77.92	10.03	67.89	
	30-Oct-00		9.97	67.95	
	9-Aug-00		11.38	66.54	
	27-Apr-00		9.76	68.16	
	20-Jan-00		9.99	67.93	
	19-Jan-00		10.06	67.86	
	27-Aug-99	77.92	10.26	67.66	

Table 3
Historical Groundwater Elevations at Different Wells
Former Glovatorium Site
3815 Broadway, Oakland, California

Well Name	Date Measured	Top of Casing Elevation (ft)	Depth to Water (ft.)	Groundwater Elevation (ft.)	Notes
GW-4	**18-Oct-01**		**8.15**	**74.22**	
	26-Jul-01		8.52	73.85	
	26-Apr-01		7.78	74.59	
	29-Jan-01	82.37	7.45	74.92	
	30-Oct-00		7.82	74.55	
	9-Aug-00		DRY	DRY	
	27-Apr-00		8.40	73.97	
	21-Jan-00		8.04	74.33	
	19-Jan-00		7.66	74.71	
	27-Aug-99	82.37	NM	NM	
GW-5	**18-Oct-01**		**12.60**	**68.41**	
	26-Jul-01		12.24	68.77	
	26-Apr-01		12.58	68.43	
	29-Jan-01	81.01	12.40	68.61	
	30-Oct-00		12.37	68.64	
	9-Aug-00		12.30	68.71	
	27-Apr-00		12.31	68.70	
	20-Jan-00		12.40	68.61	
	19-Jan-00	81.01	12.40	68.61	
	27-Aug-99	81.01	12.30	68.71	
GW-6A	**18-Oct-01**		**13.80**	**67.81**	
	26-Jul-01		13.61	68.00	
	26-Apr-01		13.18	68.43	
	29-Jan-01	81.61	13.71	67.90	
	30-Oct-00		13.45	68.16	
	9-Aug-00		13.73	67.88	
	27-Apr-00		13.61	68.00	
	19-Jan-00		13.98	67.63	
	27-Aug-99		13.90	67.71	
GW-8	27-Apr-00	81.61	8.76	71.34	
	20-Jan-00		9.68	70.42	
	19-Jan-00		9.66	70.44	
	27-Aug-99	80.10	9.50	70.60	
Monitoring Wells Owned by TOSCO:					
MW-8	**18-Oct-01**		**10.63**	**76.81**	
	26-Jul-01		10.04	77.40	
	29-Jan-01	87.44	9.30	78.14	
	2-Nov-00		9.06	78.38	
	10-Aug-00		10.18	77.26	
	27-Apr-00	87.44	8.29	79.15	
MW-9	**18-Oct-01**		**10.10**	**76.46**	
	26-Jul-01		9.53	77.03	
	29-Jan-01	86.56	8.61	77.95	
	2-Nov-00		8.25	78.31	
	10-Aug-00		9.42	77.14	
	27-Apr-00	86.56	9.31	77.25	
MW-11	**18-Oct-01**		**11.24**	**72.97**	
	26-Jul-01		10.48	73.73	
	26-Apr-01		9.40	74.81	
	29-Jan-01	84.21	10.42	73.79	
	30-Oct-00		10.59	73.62	
	9-Aug-00		10.09	74.12	
	27-Apr-00		8.86	75.35	
	25-Jan-00	84.21	10.73	73.48	

Table 3
Historical Groundwater Elevations at Different Wells
Former Glovatorium Site
3815 Broadway, Oakland, California

Well Name	Date Measured	Top of Casing Elevation (ft)	Depth to Water (ft.)	Groundwater Elevation (ft.)	Notes
Monitoring Wells Installed by LFR:					
LFR-1	18-Oct-01		9.93	70.04	
	26-Jul-01		9.81	70.16	
	26-Apr-01		9.74	70.23	
	29-Jan-01	79.97	9.53	70.44	
	30-Oct-00		9.75	70.22	
	9-Aug-00	79.97	9.81	70.16	
LFR-2	18-Oct-01		11.36	70.53	
	26-Jul-01		10.97	70.92	
	26-Apr-01		9.99	71.90	
	29-Jan-01	81.89	9.85	72.04	
	30-Oct-00		10.27	71.62	
	9-Aug-00	81.89	11.90	69.99	
LFR-3	18-Oct-01		11.87	66.09	
	26-Jul-01		11.40	66.56	
	26-Apr-01		10.34	67.62	
	29-Jan-01	77.96	11.00	66.96	
	30-Oct-00		10.97	66.99	
	9-Aug-00	77.96	11.20	66.76	
LFR-4	18-Oct-01		13.91	67.74	
	26-Jul-01		13.32	68.33	
	26-Apr-01		12.78	68.87	
	29-Jan-01	81.65	13.73	67.92	
	31-Oct-00		13.51	68.14	
	9-Aug-00	81.65	13.26	68.39	
SOMA-1	18-Oct-01	81.64	13.75	67.89	
SOMA-2	18-Oct-01	81.39	9.53	71.86	
SOMA-3	18-Oct-01	81.42	13.1	68.32	
SOMA-4	18-Oct-01	81.09	11.32	69.77	FP
SOMA-5	18-Oct-01	81.5	dry	NA	

Notes:
1= Survey elevation and water-level measurement taken at concrete surface. Elevations and water levels without a "1" in Notes Column were measured from top of casing.
2= Top of the casing was re-surveyed because it was broken.
NM = not measured, NA=Not applicable
FP= Floating product or sheen was observed.

Table 4

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

(Concentrations are in milligram per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Alkalinity	Chloride	Carbon Dioxide	Iron	Nitrite	Sulfide	Ethane	Ethene	pH Standard Unit	Temp. Celcius	Electrical Cond. (mS/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	10/31/00	760	42	200	14	<0.1	<2.0					
B-7 field	10/31/00				17.22	(1)	(1)			6.16	16.05	1.454
B-7	1/31/00	720	43	170	12	<0.1	<2.0					
B-7 field	1/31/00									6.79	13.9	1.424
B-7 field	Apr-26-01				>3.3	0.243				6.59	16.3	1.34
B-7 field	Jul-26-01				15.3	0.024				6.39	15.97	1.40
B-10	8/10/01	520	74	145	6	<0.05	<0.04	<0.0005	0.00057	6.86	16.8	1.13
B-10 field	8/10/00					0.023	0.06					
B-10	10/31/00	500	76	120	6.6	<0.1	<2.0					
B-10 field	10/31/00				8.35	0.001	0.004			6.21	16.62	1.051
B-10	1/31/01	480	81	72	6.1	<0.1	<2.0					
B-10 field	1/31/01				1.44	0.073				6.81	14.66	1.117
B-10 field	Jun-11-01				1.31					6.65	16.7	1.09
B-10 field	Jul-26-01				6.5	0				6.38	16.09	1.16
GW-2	11/1/00									6.31	18.97	1.218
GW-2	1/30/01			63								
GW-2 field	1/31/01									6.82	13.75	0.846
GW-2 field	Apr-26-01				0.02					6.8	19.5	0.874
GW-2 field	Jul-26-01				0.03	0.024				6.74	20.3	0.803
GW-2 field	**Oct-19-01**	**NM**	**NM**	**NM**	**NM**	**NM**	**NM**	**NM**	**NM**	**6.84**	**21.3**	**0.786**
GW-3	8/11/00	340	25	54.3				<0.0005	<0.0005	7.05	21.43	0.86
GW-3 field	8/11/00					0.046	(1)					
GW-3 field	11/1/00									6.52	18.83	0.967
GW-3	2/1/01			54								
GW-3 field	1/29/01									6.89	17.29	0.602
GW-3 field	Jun-11-01				0	0.7				5.68	16.2	0.673
GW-3 field	Jul-26-01				0.14	0.004				6.53	22.25	0.547
GW-3 field	**Oct-19-01**	**NM**	**NM**	**NM**	**0**	**NM**	**NM**	**NM**	**NM**	**6.84**	**22.56**	**0.59**

Table 4

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

(Concentrations are in milligram per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Alkalinity	Chloride	Carbon Dioxide	Iron	Nitrite	Sulfide	Ethane	Ethene	pH Standard Unit	Temp. Celcius	Electrical Cond. (mS/cm)
GW-4	1/30/01									6.6	13.48	0.479
GW-4	Jul-26-01				2	0.035				6.45	19.44	0.827
GW-4	**Oct-19-01**	**NM**	**NM**	**NM**	**11**	**NM**	**NM**	**NM**	**NM**	**6.79**	**18.36**	**0.732**
MW-11	8/10/00	360	110	216	0.13	<0.05	<0.04	<0.0005	<0.0005	6.47	21	1.089
MW-11field	8/10/00					0.036	0.002					
MW-11	11/1/00	300	120	190	<0.05	<0.1	<2.0					
MW-11field	11/1/00				0.01	0.003	(1)			5.83	20.13	1.264
MW-11	1/31/01	330	130	150	<0.05	<0.1	<2.0					
MW-11field	1/31/01									6.35	13.67	1.098
MW-11 field	Apr-26-01				0.01					5.67	18	1.21
MW-11 field	Jul-26-01				0	0.021				6.02	19.85	1.12
MW-11 field	**Oct-19-01**	**NM**	**NM**	**NM**	**0**	**NM**	**NM**	**NM**	**NM**	**6.41**	**21.25**	**0.13**
LFR-1	8/11/00	250	110					<0.0005	<0.0005	6.97	19.73	0.936
LFR-1 field	8/9/00			51.1		0.02	(1)					
LFR-1	10/30/00	240	100	25	<0.05	<0.1	<2					
LFR-1 field/sp	10/30/00				0.01/0.01	0.031/0.036	0.001/0.001			6.38	17.94	0.697
LFR-1-spl	10/30/00	220	100	40	<0.05	<0.1	<2					
LFR-1	1/29/01	150	76	28	<0.05	<0.1	<2					
LFR-1 field	1/29/01				0	0.037				6.82	15	0.87
LFR-1 Dup	1/29/01	150	75	26	<0.05	<0.1	<2					
LFR-1 field	Apr-26-01				0.004					5.76	16.8	0.98
LFR-1 field	Jul-26-01				0.05	0.008				6.48	19.38	0.772
LFR-1 field	**Jul-26-01**	**NM**	**NM**	**NM**	**0.42**	**NM**	**NM**	**NM**	**NM**	**6.73**	**20.83**	**0.661**
LFR-2	8/11/00	590	33	174				<0.0005	0.0017	6.8	19.87	1.088
LFR-2 field	8/11/00				2.95	(1)	0.005					
LFR-2	11/2/00	550	40	180	6.2	<0.1	<2					
LFR-2 field	11/2/00				7.45	0.007	0.003			6.19	19.67	1.306
LFR-2	1/30/01	480	21	130	4.6	<0.1	<2					
LFR-2 field	1/30/01				1.04	0.007				6.6	12.73	0.945
LFR-2 field	Apr-27-01				2.97					5.64	16.4	0.921
LFR-2 field	Jul-26-01				4.6	0.011				6.31	18.66	0.97
LFR-2 field	**Oct-18-01**	**NM**	**NM**	**NM**	**8.2**	**NM**	**NM**	**NM**	**NM**	**6.78**	**19.56**	**0.109**
LFR-3	8/10/00	310	85	162	<0.1	0.15	0.04	<0.0005	<0.0005	6.57	19.92	0.951
LFR-3 split	8/10/00	300	85	152				<0.0005	<0.0005			
LFR-3 field	8/10/00					0.058	(1)					

Table 4

Historical Analytical Results and Field Measurements for Dissolved Anions, Cations, Gases, pH, Temperature, and Electrical Conductivity in Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

(Concentrations are in milligram per liter [mg/L] unless otherwise noted)

Well ID	Date Sampled	Alkalinity	Chloride	Carbon Dioxide	Iron	Nitrite	Sulfide	Ethane	Ethene	pH Standard Unit	Temp. Celcius	Electrical Cond. (mS/cm)
LFR-3	11/1/00	350	66	160	<0.05	<0.1	<2					
LFR-3 field	11/1/00				0.01	0.011	0.002			6.16	17.71	1.164
LFR-3	1/30/01	250	31	71	<0.05	<0.1	<2					
LFR-3 field	1/30/01				0.03					6.64	17.29	0.541
LFR-3 field	Jun-11-01				0.01					5.43	18	0.613
LFR-3 field	Jul-26-01				0.7	0.027				6.25	20.5	0.602
LFR-3 field	**Oct-18-01**	**NM**	**NM**	**NM**	**0.12**	**NM**	**NM**	**NM**	**NM**	**6.5**	**21.39**	**0.645**
LFR-4	8/11/00	630	71	161				<0.0005	<0.0005	6.9	20.11	1.24
LFR-4 field	8/11/00				0.22	0.018	0.002					
LFR-4	10/31/00	490	28	130	1	<0.1	<2					
LFR-4 field	10/31/00				0.67	0.022	0			6.21	18.11	0.83
B-10 FB	8/10/00							<0.0005	<0.0005			
LFR-4	2/1/01	460	25	120	1.3	<0.1	<2					
LFR-4 field	2/1/01				1.43	0.017				6.55	15.28	0.916
LFR-4 field	Apr-27-01				1.44					5.79	18.3	1.06
LFR-4 field	Jul-26-01				0.95	0				6.26	19.23	0.866
SOMA-1	**Oct-19-01**	**NM**	**NM**	**NM**	**0.75**	**NM**	**NM**	**NM**	**NM**	**6.77**	**18.15**	**0.146**
SOMA-2	**Oct-19-01**	**NM**	**NM**	**NM**	**44**	**NM**	**NM**	**NM**	**NM**	**6.87**	**16.93**	**0.122**
SOMA-3	**Oct-19-01**	**NM**	**NM**	**NM**	**0.4**	**NM**	**NM**	**NM**	**NM**	**6.91**	**17.09**	**0.158**
SOMA-4	**Oct-19-01**	**NM**	**NM**	**NM**	**0.26**	**NM**	**NM**	**NM**	**NM**	**6.53**	**16.88**	**0.145**

Notes

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

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

*)Methane measured by Microseep Laboratory, Pittsburgh, PA

NM= not measured

Table 5

Anayltical Results of Groundwater Samples Analyzed for Petroleum Hydrocarbons

Former Glovatorium Site

3815 Broadway, Oakland, California

Sample ID	Date	Stoddard Solvent C7-C12 (µg/L)	Gasoline C7-C12 (µg/L)	MtBE (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)
B-7	NS	NA	NA	NA	NA	NA	NA	NA
B-10	NS	NA	NA	NA	NA	NA	NA	NA
GW-2	10/19/01	ND	ND	ND	ND	ND	ND	ND
GW-3	10/19/01	54	110	ND	ND	ND	ND	ND
GW-4	10/19/01	830	1600	ND	ND	ND	ND	ND
LFR-1	10/18/01	190	380	ND	ND	ND	ND	ND
LFR-2	10/18/01	730	1500	ND	ND	ND	ND	ND
LFR-3	10/18/01	ND	ND	ND	ND	ND	ND	ND
LFR-4	NS	NA	NA	NA	NA	NA	NA	NA
MW-11	10/19/01	ND	ND	ND	ND	ND	ND	ND
SOMA-1	10/19/01	220	440	34	ND	ND	ND	ND
SOMA-2	10/19/01	1400	2800	ND	ND	ND	ND	ND
SOMA-3	10/19/01	420	830	650	ND	ND	ND	ND
SOMA-4	10/19/01	2500	5000	630	ND	ND	ND	ND
Trip Blank	7/27/01	ND	ND	ND	ND	ND	ND	ND

ND: Not Detected

NA: Not Analyzed

NS: Not Surveyed

Table 6

Anayltical Results of Groundwater Samples Analyzed for Volative Organic Compound

at the Former Glovatorium Site
3815 Broadway, Oakland, California

Sample ID	Date	Tetra chloro ethene (µg/L)	Tri chloro ethene (µg/L)	cis-1,2-Dichloro ethene (µg/L)	trans-1,2-Dichloro ethene (µg/L)	Vinyl Chloride (µg/L)	1,2-Dichloro propane (µg/L)	1,1-Dichloro ethene (µg/L)
B-7	10/18/01	NA	NA	NA	NA	NA	NA	NA
B-10	10/18/01	NA	NA	NA	NA	NA	NA	NA
GW-2	10/19/01	19	ND	ND	ND	ND	ND	ND
GW-3	10/19/01	180	ND	ND	ND	ND	ND	ND
GW-4	10/19/01	ND	ND	ND	ND	ND	ND	ND
LFR-1	10/18/01	780	93	ND	ND	ND	ND	ND
LFR-2	10/18/01	ND	ND	160	ND	ND	ND	ND
LFR-3	10/18/01	ND	ND	ND	ND	ND	ND	ND
LFR-4	10/18/01	NA	NA	NA	NA	NA	NA	NA
MW-11	10/19/01	ND	ND	ND	ND	ND	ND	ND
SOMA-1	10/19/01	ND	ND	14	ND	ND	ND	ND
SOMA-2	10/19/01	1,400	350	5,000	ND	ND	ND	ND
SOMA-3	10/19/01	42	57	440	ND	ND	ND	ND
SOMA-4	10/19/01	ND	ND	2,600	ND	ND	ND	ND
Trip Blank	10/19/01	ND	ND	ND	ND	ND	ND	ND
Blank	10/19/01	ND	ND	ND	ND	ND	ND	ND
Blank	10/19/01	ND	ND	ND	ND	ND	ND	ND
Blank	10/19/01	ND	ND	ND	ND	ND	ND	ND

ND: Not Detected
NA: Not Analyzed

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes
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 J	<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-7	Jan-31-01		NA	5.3	NA	7.9	0.01	0.0089	0.059	0.0097	0.087
B-7	Apr-26-01		NA	4.5	NA	8.9 H	0.0069	0.011	0.071	.077 C	0.208
B-7	Jul-27-01		NA	2.5	NA	5.2 HY	0.0057	0.007	0.051	0.0082	0.074
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-10	Jan-31-01		NA	2.4 Z	NA	3.6 HYZ	<0.002	0.0031	0.01	0.00076 c	0.0197
B-10	Apr-26-01		NA	2.4 Z	NA	4.7 Z	0.0025	0.0041	0.013	ND	0.029
B-10	Jul-27-01		NA	1.7	NA	3.6 H	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
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
GW-2	2-Nov-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-2	1-Feb-01		NA	<0.05	NA	ND	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-2	Apr-27-01		NA	<0.05	NA	0.086 YZ	0.0022	<0.0005	0.024	<0.0005	<0.0005
GW-2	Jul-27-01		NA	<0.05	NA	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
GW-2	**Oct-19-01**		**NA**	**<0.05**	**NA**	**<0.05**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**
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	<0.0005	<0.0005	0.0013 C

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes
GW-3	27-Apr-00		NA	0.2 YZ	NA	0.38 YZ	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
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	2-Nov-00		NA	<0.05	NA	0.05 YZ	0.0026	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	1-Feb-01		NA	<.05	NA	<0.05	<.002	<.0005	<.0005	<.0005	<.0005
GW-3	27-Apr-01		NA	<.05	NA	0.062 YZ	0.0056	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	Jul-27-01		NA	<.05	NA	<0.05	0.0008	<0.0005	<0.0005	<0.0005	<0.0005
GW-3	**Oct-19-01**		**NA**	**0.054**	**NA**	**0.11**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.02**
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-4	Jan-30-01		NA	0.39	NA	0.58 HY	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
GW-4	Jul-27-01		NA	0.42	NA	0.86 HY	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
GW-4	**Oct-19-01**		**NA**	**0.83**	**NA**	**1.6**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**
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
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

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes
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
MW-11	10-Aug-00		NA	<0.05	NA	<0.05	0.011	<0.0005	<0.0005	<0.0005	<0.0005
MW-11	1-Nov-00		NA	<0.05	NA	<0.05	0.0068	<0.0005	<0.0005	<0.0005	<0.0005
MW-11	31-Jan-01		NA	<.05	NA	<.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
MW-11	Jul-27-01		NA	<0.05	NA	.1 HY	0.001	<0.0005	<0.0005	<0.0005	0.0007
MW-11	**Oct-19-01**		**NA**	**<0.05**	**NA**	**<0.05**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**
Monitoring Wells Installed by LFR:											
LFR-1	9-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
LFR-1	29-Jan-01		NA	0.21 YZ	NA	0.31 YZ	0.0033	<0.0005	<0.0005	<0.0005	<0.0005
LFR-1	Apr-26-01		NA	0.092	NA	0.18 YZ	0.0044	<0.0005	0.002	<0.0005	<0.0005
LFR-1	Jul-27-01		NA	0.086	NA	0.18 YZ	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
LFR-1	**Oct-18-01**		**NA**	**0.19**	**NA**	**0.38**	**<0.031**	**<0.031**	**<0.031**	**<0.031**	**<0.062**
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	2-Nov-00		NA	0.38	NA	0.7 YH	0.003	0.0035	0.0011	0.0042	0.01184 C
LFR-2	30-Jan-01		NA	0.36	NA	0.54 HY	0.0034	0.00057	<0.0005	<0.0005	<0.0005
LFR-2	Apr-27-01		NA	0.33	NA	0.66 HY	<0.002	<0.0005	0.0013	<0.0005	<0.0005
LFR-2-2	Apr-27-01		NA	0.36	NA	0.72 HY	<0.002	0.00059	0.0019	<0.0005	0.013
LFR-2	Jul-27-01		NA	0.33	NA	0.76 HY	<0.0005	0.0013	<0.0005	<0.0005	0.0006
LFR-2	**Oct-18-01**		**NA**	**0.73**	**NA**	**1.5**	**<0.0071**	**<0.0071**	**<0.0071**	**<0.0071**	**<0.0142**
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	1-Nov-00		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	30-Jan-01		NA	<.05	NA	<.05	0.0036	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	Apr-27-01		NA	<0.05	NA	<0.05	0.0024	<0.0005	0.0054	<0.0005	<0.0005
LFR-3	Jul-27-01		NA	<0.05	NA	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
LFR-3	**Oct-18-01**		**NA**	**<0.05**	**NA**	**<0.05**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes
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
LFR-4	1-Feb-01		NA	0.16Y	NA	0.22	0.0097	0.0033	<0.0005	<0.0005	<0.0005
LFR-4	Apr-27-01		NA	0.22 Y	NA	0.44	0.0058	0.027	0.0036	<0.0005	<0.0005
LFR-4	Jul-27-01		NA	0.091 Y	NA	0.19	0.011	0.0009	<0.0005	<0.0005	<0.0005
SOMA-1	**Oct-19-01**		**NA**	**0.22**	**NA**	**0.44**	**0.034**	**<0.005**	**<0.005**	**<0.005**	**<0.01**
SOMA-2	**Oct-19-01**		**NA**	**1.4**	**NA**	**2.8**	**<0.25**	**<0.25**	**<0.25**	**<0.25**	**<0.5**
SOMA-3	**Oct-19-01**		**NA**	**0.42**	**NA**	**0.83**	**0.65**	**<0.025**	**<0.025**	**<0.025**	**<0.05**
SOMA-4	**Oct-19-01**		**NA**	**2.5**	**NA**	**5**	**0.63**	**<0.13**	**<0.13**	**<0.13**	**<0.26**

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes
Blanks											
Trip Blank	1-Feb-01		NA	<.05	NA	<.05	0.0051	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	31-Jan-01		NA	<.05	NA	<.05	0.0033	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	29-Jan-01		NA	<.05	NA	<.05	0.0025	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	30-Jan-01		NA	<.05	NA	<.05	0.0038	<0.0005	<0.0005	<0.0005	<0.0005
Field Blank	1-Feb-01		NA	NA	NA	NA	<.002	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	Apr-26-01		NA	<0.05	NA	<0.05	<.002	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	Jul-27-01		NA	<0.05	NA	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	**Oct-19-01**		**NA**	**<0.05**	**NA**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**
Trip Blank	19-Jul-99		NA	<0.05	NA	<0.05	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
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	1-Nov-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blank	2-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	1-Nov-00		NA	NA	NA	NA	<0.002	<0.0005	<0.0005	<0.0005	<0.0005

Notes:

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 different from reported results 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.

NA = Not analyzed

TPH, ext. = Total petroleum hydrocarbons (extractable)

Table 7

Historical Analytical Results for Total Petroleum Hydrocarbon, BTEX, and MtBE Analyses on Groundwater Samples

Former Glovatorium Site

3815 Broadway, Oakland, California

All results are expressed in milligram per liter (mg/L)

Location	Date Sampled	Sreened Interval Depth (ft)	TPH, Ext. Stoddard	TPH, Purgable Stoddard	TPH, Ext. Diesel	TPH, Purgable Gasoline	MtBE	Benzene	Toluene	Ethyl benzene	Xylenes

TPH, purge = Total petroleum hydrocarbons (purgeable)

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

Table 8

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

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

Location	Date Sampled	Screened Interval (ft-bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloro-propane	Notes
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-7	31-Jan-01		NA	< 0.0042	< 0.0042	0.92	0.0048	< 0.0042	< 0.0042	
B-7	Apr-27-01		NA	<0.0031	<0.0031	1.1	0.0069	<0.0031	<0.0031	
B-7	Jul-27-01		NA	0.0098	0.017	0.86	0.005	<0.0031	<0.0031	
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-10	31-Jan-01		NA	2.1	1.6	6.6	0.044	< 0.025	< 0.025	
B-10	Jul-27-01		NA	1.7	1.4	7.3	0.043	<0.025	<0.025	
B-10	Jul-27-01		NA	0.87	0.81	6.6	0.041	<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	2-Nov-00		NA	0.0078	0.0008	0.0032	< 0.0005	< 0.0005	< 0.0005	
GW-2	1-Feb-01		NA	0.0077	0.0006	0.0028	< 0.0005	< 0.0005	< 0.0005	
GW-2	Apr-27-01		NA	0.0096	0.0018	0.0024	<0.0005	<0.0005	<0.0005	
GW-2	Jul-27-01		NA	0.033	0.0043	0.0024	<0.0005	<0.0005	<0.0005	
GW-2	**Oct-19-01**		**NA**	**0.019**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	

Table 8

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

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

Location	Date Sampled	Screened Interval (ft-bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloro-propane	Notes
GW-3	19-Jul-99	10 to 20	NA	0.22	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	
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	2-Nov-00		NA	0.059	0.0008	0.0024	< 0.0005	< 0.0005	< 0.0005	
GW-3	1-Feb-01		NA	0.046	0.0006	0.0011	< 0.0005	< 0.0005	< 0.0005	
GW-3	Apr-27-01		NA	0.079	0.0007	0.0015	<0.0005	<0.0005	<0.0005	
GW-3	Jul-27-01		NA	0.09	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	
GW-3	**Oct-19-01**		**NA**	**0.18**	**<0.01**	**<0.01**	**<0.01**	**<0.02**	**<0.01**	
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-4	30-Jan-01		NA	< 0.0005	< 0.0005	0.0024	< 0.0005	< 0.0005	0.0014	
GW-4	Jul-27-01		NA	< 0.0005	< 0.0005	0.003	< 0.0005	0.0006	0.0019	
GW-4	**Oct-19-01**		**NA**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	
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)
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	

Table 8

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

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

Location	Date Sampled	Screened Interval (ft-bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloro-propane	Notes
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	1-Nov-00		NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	31-Jan-01		NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	Apr-27-01		NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
MW-11	Jul-27-01		NA	0.0017	0.001	0.0062	< 0.0005	< 0.0005	< 0.0005	
MW-11	**Oct-19-01**		**NA**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	
Monitoring wells installed by LFR:										
LFR-1	9-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-1	29-Jan-01		NA	0.77	0.026	0.0073	<0.0025	<0.0025	<0.0025	
LFR-1	Apr-26-01		NA	0.44	0.013	0.005	<0.0013	<0.0013	<0.0013	
LFR-1	Jul-27-01		NA	0.38	0.031	0.0098	<0.0013	<0.0013	<0.0013	
LFR-1	**Oct-18-01**		**NA**	**0.78**	**0.093**	**<0.031**	**<0.031**	**<0.063**	**<0.031**	
LFR-2	11-Aug-00	9 to 19	NA	< 0.0005	< 0.0005	0.035	< 0.0005	0.0045	< 0.0005	
LFR-2	2-Nov-00		NA	< 0.0005	< 0.0005	0.13	0.001	0.015	0.0006	
LFR-2	29-Jan-01		NA	<0.0005	<0.0005	0.0056	<0.0005	0.0016	<0.0005	
LFR-2	Apr-27-01		NA	0.0007	<0.0005	0.0056	<0.0005	0.0013	<0.0005	
LFR-2	Jul-27-01		NA	0.0014	0.0007	0.019	<0.0005	<0.0005	<0.0005	
LFR-2	**Oct-18-01**		**NA**	**<0.0071**	**<0.0071**	**0.16**	**<0.0071**	**<0.014**	**<0.0071**	
LFR-2-2	Apr-27-01		NA	0.0007	<0.0005	0.0065	<0.0005	0.0019	<0.0005	
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	
LFR-3	1-Nov-00	12 to 22	NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
LFR-3	30-Jan-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-3	Apr-27-01		NA	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	

Table 8

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

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

Location	Date Sampled	Screened Interval (ft-bgs)	Acetone	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,2-Dichloro-propane	Notes
LFR-3	Jul-27-01		NA	0.0022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
LFR-3	**Oct-18-01**		**NA**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	
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	
LFR-4	30-Jan-01		NA	<0.0005	<0.0005	0.0006	<0.0005	< 0.0005	< 0.0005	
LFR-4	Apr-27-01		NA	<0.0005	<0.0005	0.0016	<0.0005	<0.0005	<0.0005	
LFR-4	Jul-27-01		NA	0.0005	<0.0005	0.0021	<0.0005	<0.0005	<0.0005	
SOMA-1	**Oct-19-01**		**NA**	**<0.005**	**<0.005**	**0.014**	**<0.005**	**<0.01**	**<0.005**	
SOMA-2	**Oct-19-01**		**NA**	**1.4**	**0.35**	**5**	**<0.25**	**<0.5**	**<0.25**	
SOMA-3	**Oct-19-01**		**NA**	**0.042**	**0.057**	**0.44**	**<0.025**	**<0.05**	**<0.025**	
SOMA-4	**Oct-19-01**		**NA**	**<0.13**	**<0.13**	**2.6**	**<0.13**	**<0.25**	**<0.13**	
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	1-Nov-00		NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
Trip Blank	2-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	1-Nov-00		NA	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
Trip Blank	30-Jan-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	29-Jan-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	31-Jan-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	1-Feb-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	Apr-26-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	Jul-27-01		NA	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
Trip Blank	**Oct-19-01**		**NA**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	

Table 8

Historical Analytical Results For Volatile Organic Compound (VOC) Analyses on Groundwater Samples

at the Former Glovatorium Site

3815 Broadway, Oakland, California

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

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

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

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

Table 9

Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters on Groundwater Samples at the Former Glovatorium Site 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-7	1-Feb-01	0.78	2.2	0.78	<1.0	15	13		
B-7-field	31-Jan-01	0.48						28	
B-7 Field	Apr-26-01	0.6	1.7	2.5	5	>3.3	7.6	-28	
B-7 Field	Jul-26-01	1.98	7.3	0	8	11.6	7.0	-40	
B-8 field	31-Jan-01	0.45						58	
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	7.6		-22.2	
B-10	31-Jan-01	6.4	1.3	< 0.10	<2.0	7.7	24		1.3
B-10-field	31-Jan-01	0.46						64	
B-10 Field	Jun-11-01	0.9	0	0	0	1.25	3.9	-8	NM
B-10 Field	Jul-26-01	1.87	1.3	0	3	6.2	5.6	-22	
GW-2-field	1-Nov-00	2.32						77	
GW-2	1-Feb-01	3.8					0.041		
GW-2-field	1-Feb-01	0.58						159	
GW-2	Apr-26-01	4	1	7.1	36	0.015	0.00022	152	NM
GW-2	Jul-26-01	1.93	0	3.9	60	0	0.016	233	
GW-2 field	**Not En. Sample**						**0.00091**		
GW-3	11-Aug-00						< 0.0005	395	
GW-3-field	11-Aug-00	0.72		1	46				

Table 9

Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters on Groundwater Samples at the Former Glovatorium Site 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)
GW-3	1-Nov-00								
GW-3-field		7.76						81	
GW-3	29-Jan-01	8.8					0.012		
GW-3-field	1-Feb-01	8.99						235	
GW-3	Apr-27-01	2.9	0	0.7	30	0	0.015	212	NM
GW-3	Jul-26-01	2.48	0	2.4	52	0.12	0.0083	214	
GW-3 field	**Oct-18-01**	**3.76**	**0**	**5.2**	**4.9**	**0**	**0.0041**	**131**	**NM**
GW-4-field	30-Jan-01	0.83						67	
GW-4-field	Jul-26-01	2.59	0.2	10.5	25	1.29	0.0028	-3	
GW-4-field	**Oct-18-01**	**1**	**0.1**	**0**	**0**	**4.8**	**4.8**	**-84**	**NM**
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	< 0.1	0.00004		130
MW-11-field	1-Nov-00	4.01		3.3	73	0		87.4	
MW-11	31-Jan-01	6.3	< 0.010	15	94	< 1.0	0.00005		1.1
MW-11-field	1-Nov-00	3.97		27.3	74	0		319	
MW-11 Field	Apr-26-01	7.4	0	6.8	52	0	0.0014	229	NM
MW-11 Field	Jul-26-01	1.85	0	5.2	77	0	0.0049	233	
MW-11 Field	**Oct-18-01**	**5.58**	**0**	**10.1**	**NM**	**0**	**0.0066**	**155**	**NM**
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	0.03	39	42	< 1.0	0.00038		
LFR-1-field/spli	30-Oct-00	2.95		10.3/10.0	29/29	0.01/0.01		77.4	1
LFR-1 split	30-Oct-00	3.4	0.03	40	43	< 1.0	0.00069		

Table 9

Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters on Groundwater Samples at the Former Glovatorium Site 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-1	29-Jan-01	5.1	<0.01	<0.10	51	<1.0	0.00012		0.43
LFR-1-field	29-Jan-01	3.78	0		36	0		383	
LFR-1 Dup	29-Jan-01	4.6	<0.01	<0.10	50	<1.0	0.000011		0.32
LFR-1	Apr-26-01	3.2	0.02	12.9	16	0	0.0003	224	NM
LFR-1	Jul-26-01	1.07	0	8	25	0.01	0.0084	238	
LFR-1 filed	**Oct-18-01**	**1.03**	**0**	**6.9**	**24**	**0.18**	**0.0054**	**119**	**NM**
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	
LFR-2	30-Jan-01	4.4	8.9	1	8.3	4.6	4.6		1.1
LFR-2-field	30-Jan-01	0.61	10.7	2.9		1.02		210	
LFR-2	Apr-27-01	1.4	0.4	1.6	1	2.66	14	9	NM
LFR-2	Jul-26-01	0.55	0.2	0	0	4.5	10	-20	
LFR-2 field	**Oct-18-01**	**0.43**	**0**	**0**	**0**	**6.5**	**11**	**-75**	**NM**
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		75.2	
LFR-3	31-Jan-01	4.1	<0.01	1.2	58	< 1.0	0.00038		
LFR-3-field	30-Jan-01	1.75		0.023	44	0		195	
LFR-3 Field	Jun-11-01	1	0	0.8	28	0	0.0086	201	NM
LFR-3 Field	Jul-26-01	1.29	0.4	0	51	0.6	0.0035	228	
LFR-3 Field	**Oct-18-01**	**0.54**	**0**	**0.8**	**30**	**0.11**	**0.0093**	**139**	**NM**

Table 9

Historical In-Situ and Ex-Situ Analyses Results for Bioattenuation Parameters on Groundwater Samples at the Former Glovatorium Site 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-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		1		0.61		-80	
LFR-4	1-Feb-01	3.2	2.8	1.5	2.8	1.8	2.2		1.5
LFR-4-field	1-Feb-01	0.55	4.5	8	0	1.5		59	
LFR-4 Field	Apr-27-01	5.6	0	1.7	0	1.37	7	14	NM
LFR-4 Field	Jul-26-01	1.65	0	0	0	0.84	1.2	18	
SOMA-1	**Oct-18-01**	**4.19**	**0.3**	**0.2**	**33**	**0.52**	**0.12**	**151**	**NM**
SOMA-2	**Oct-18-01**	**0.57**	**0**	**0.4**	**0**	**40**	**6.6**	**-89**	**NM**
SOMA-3	**Oct-18-01**	**1.32**	**0**	**0**	**33**	**0.22**	**1**	**2**	**NM**
SOMA-4	**Oct-18-01**	**0.83**	**4**	**22**	**17**	**0.22**	**1.2**	**88**	**NM**
SOMA-5	**Dry**								

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.

*) Methane was messured in laboratory by Microseep Laboratory

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

(2) Field measurement was not recorded.

FIGURES

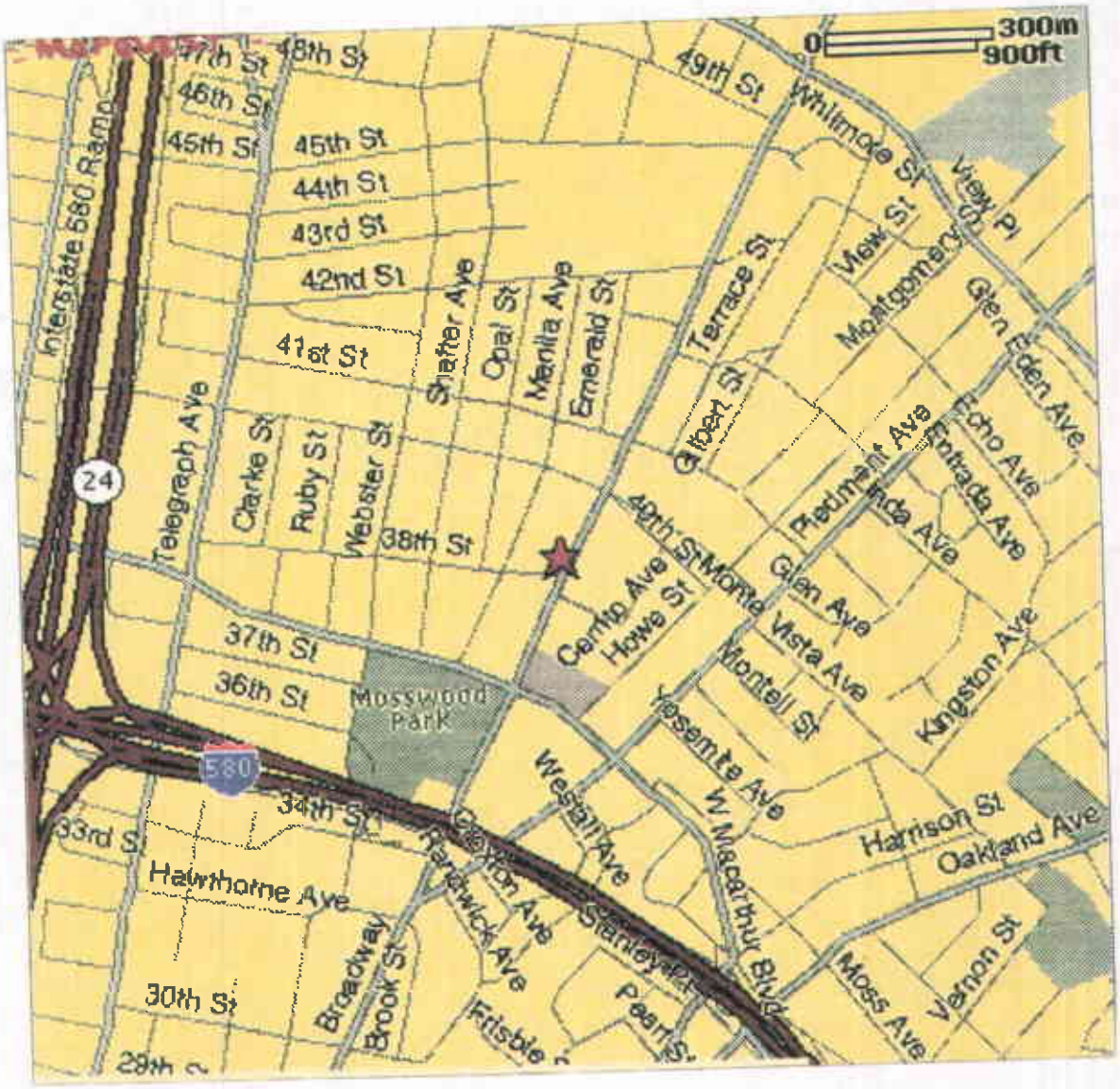


Figure 1: Site Location Map

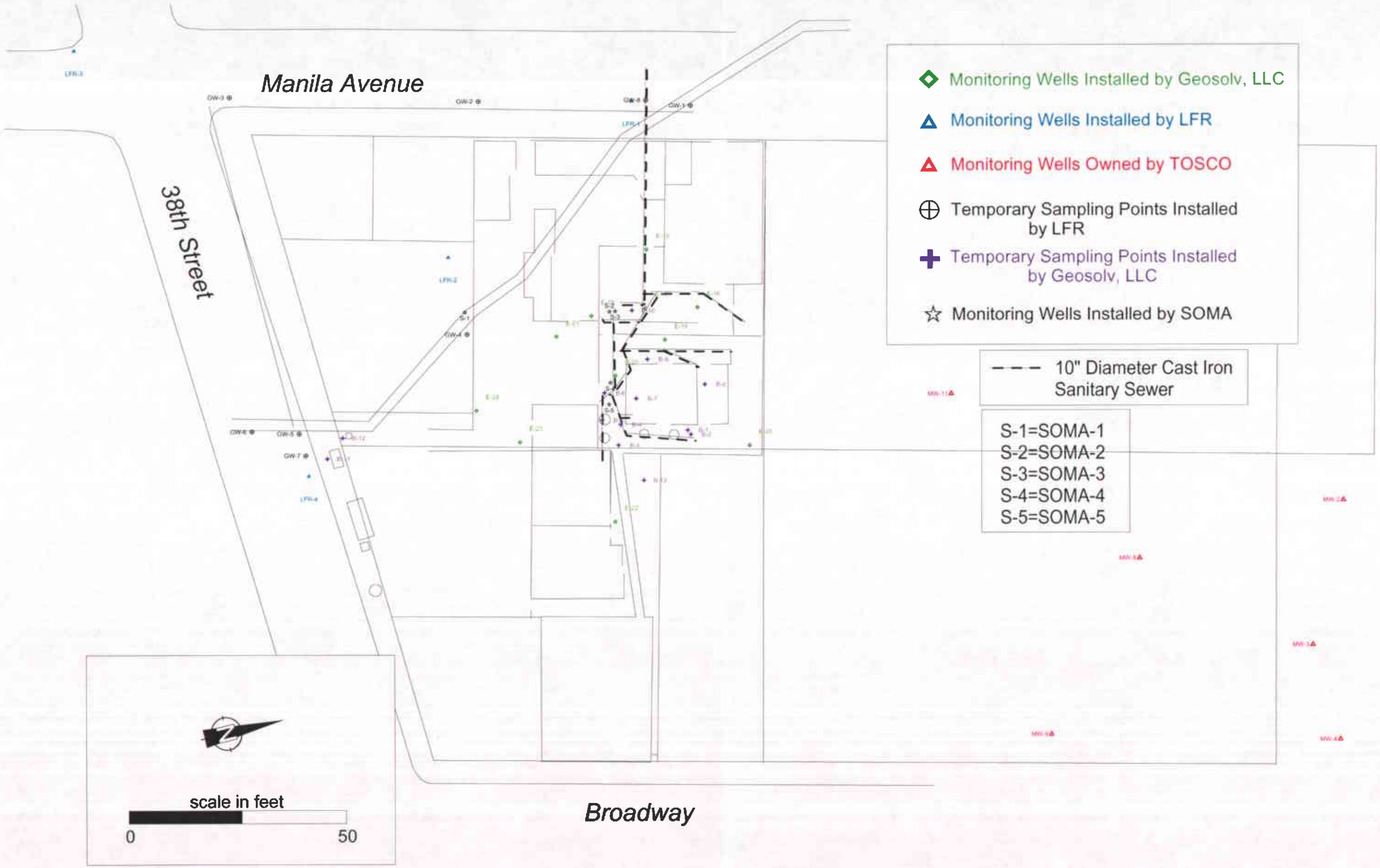


Figure 2: Location of Groundwater Monitoring Wells

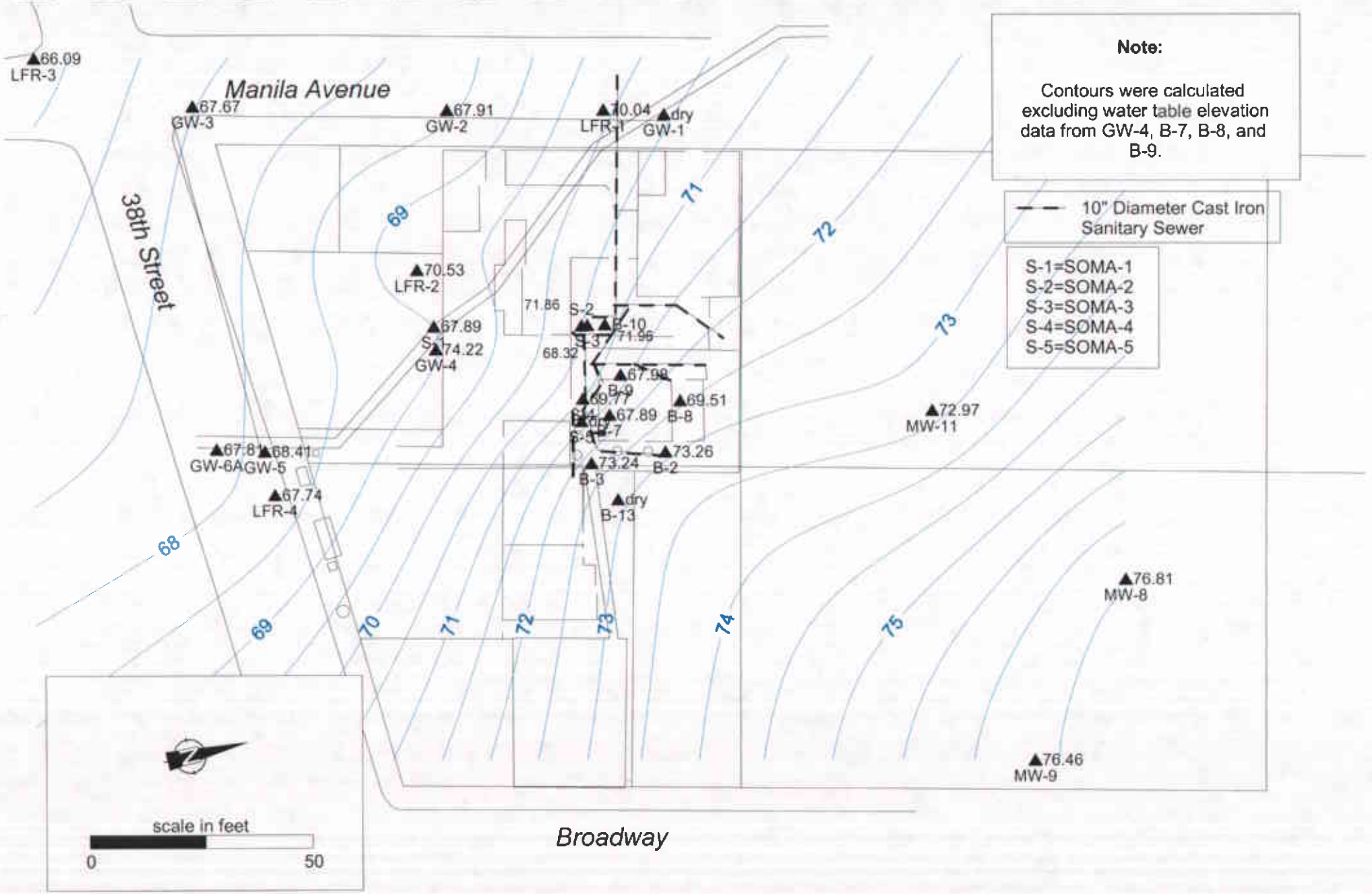


Figure 3 Groundwater Elevation Contour Map, October 18, 2001

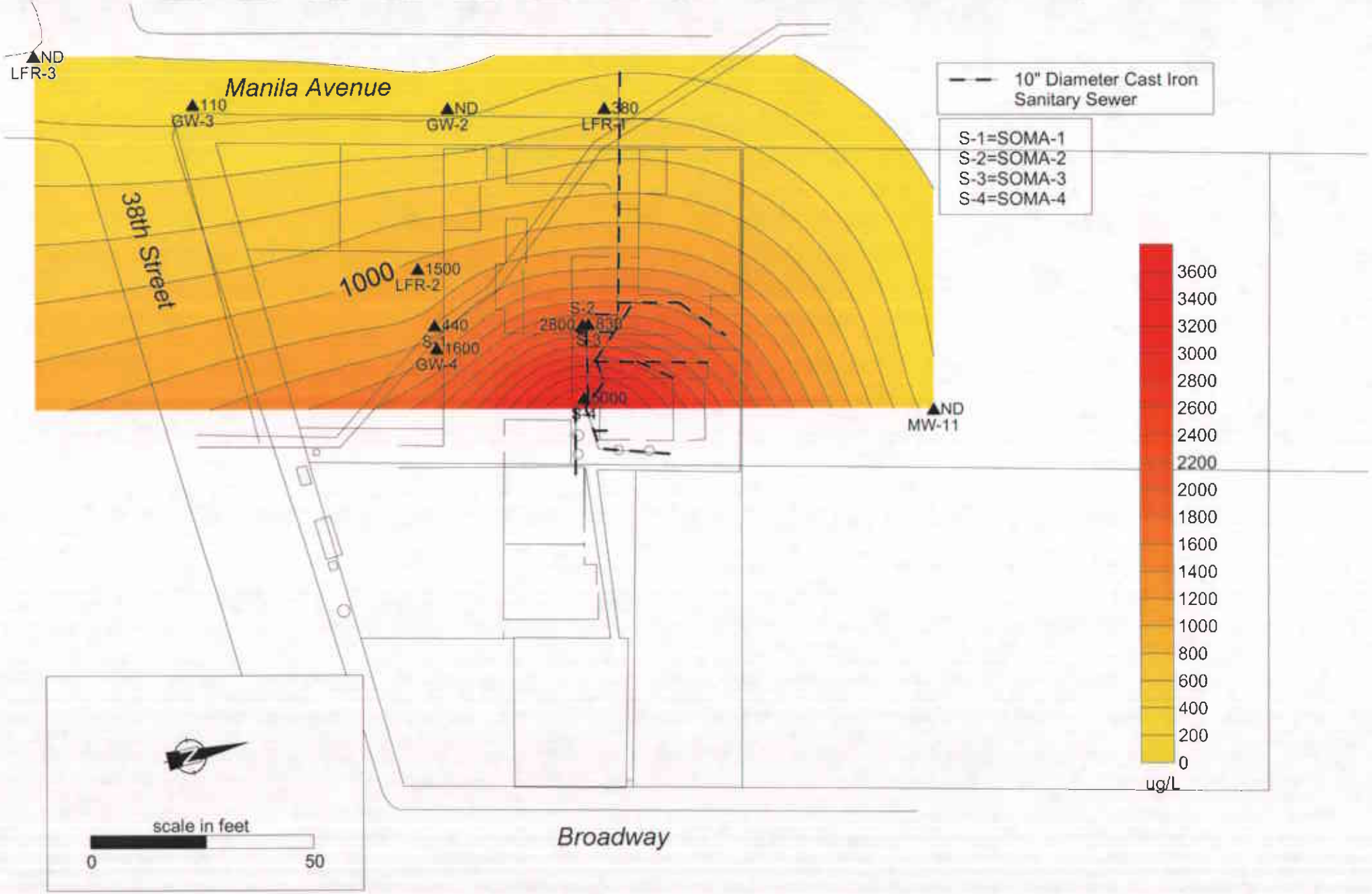


Figure 4: THP-g Concentration Contour Map In Groundwater, Fourth Quarter, 2001

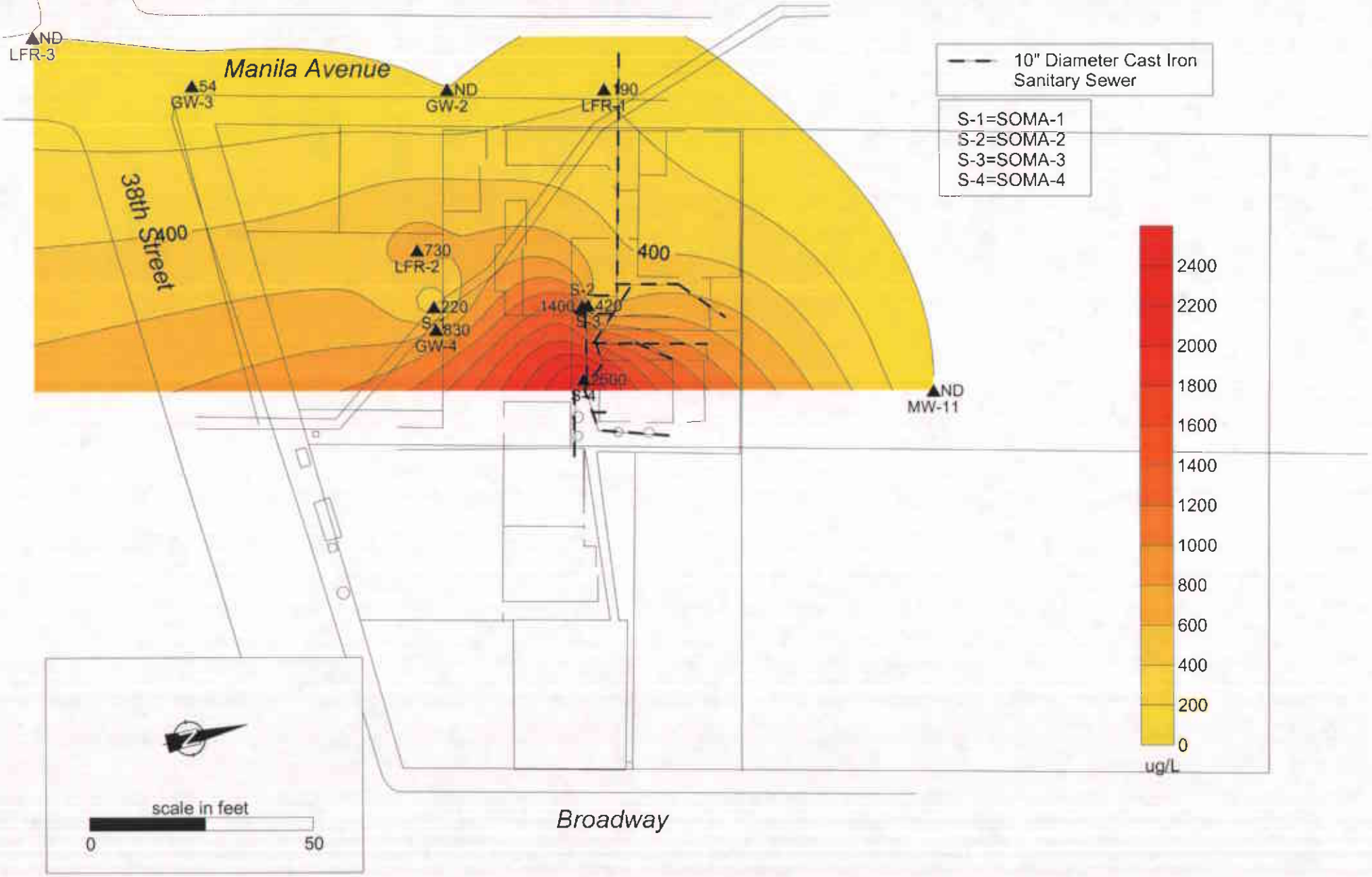


Figure 5: THP-ss Concentration Contour Map In Groundwater, Fourth Quarter, 2001

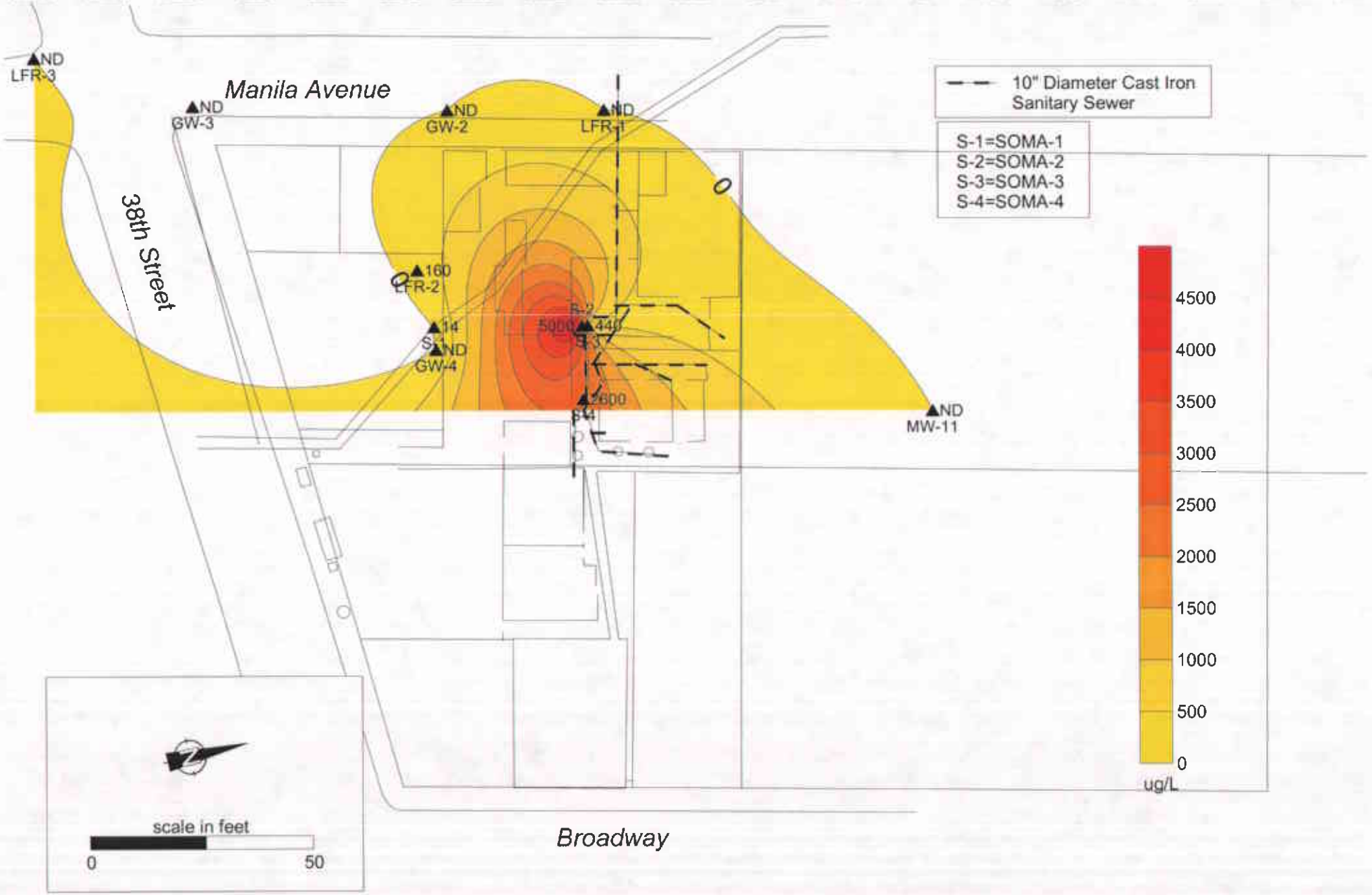


Figure 6: Cis-1,2-DCE Concentration Contour Map In Groundwater, Fourth Quarter, 2001

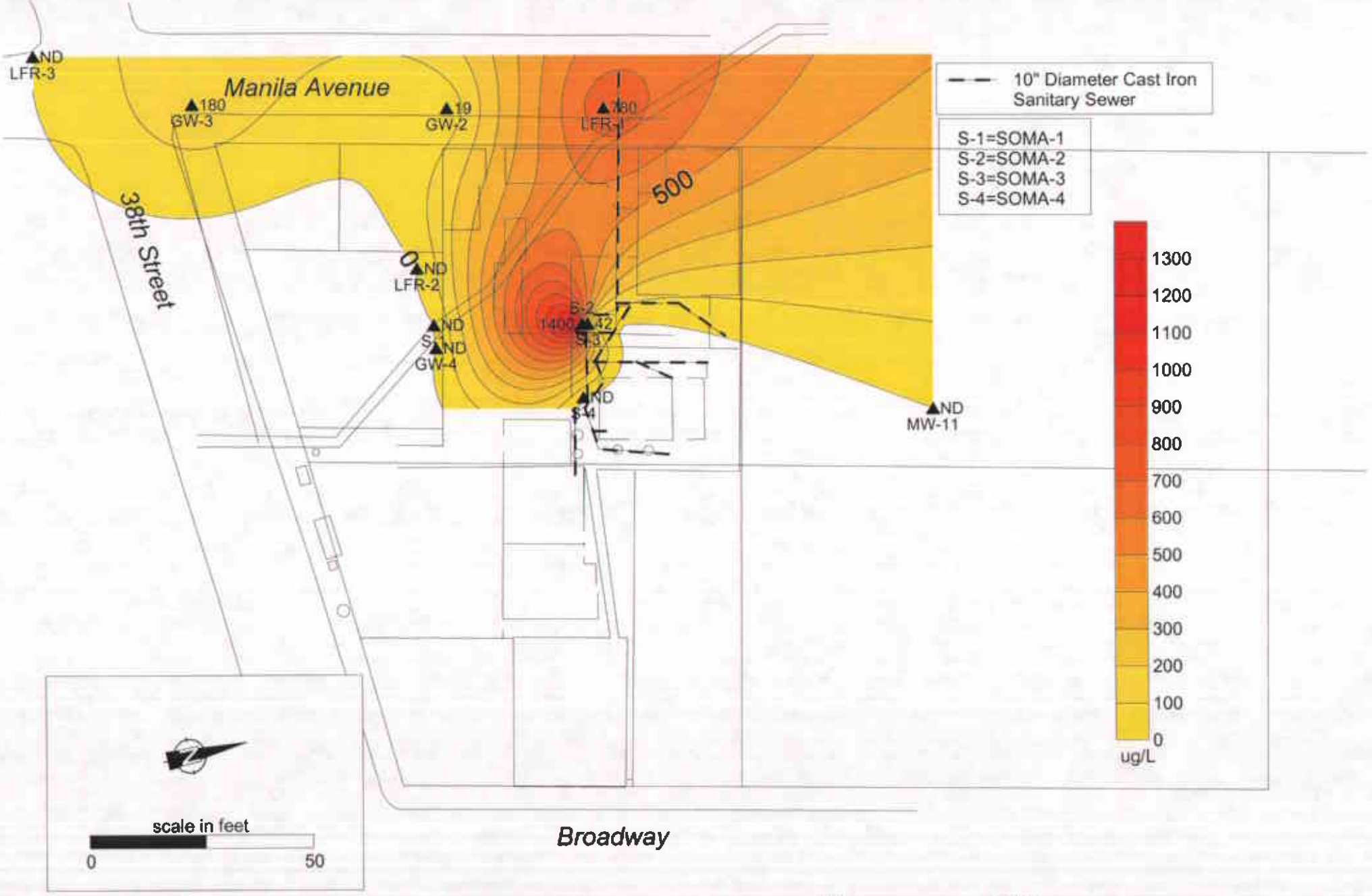


Figure 7: Tetrachloroethene Concentration Contour Map In Groundwater, Fourth Quarter, 2001

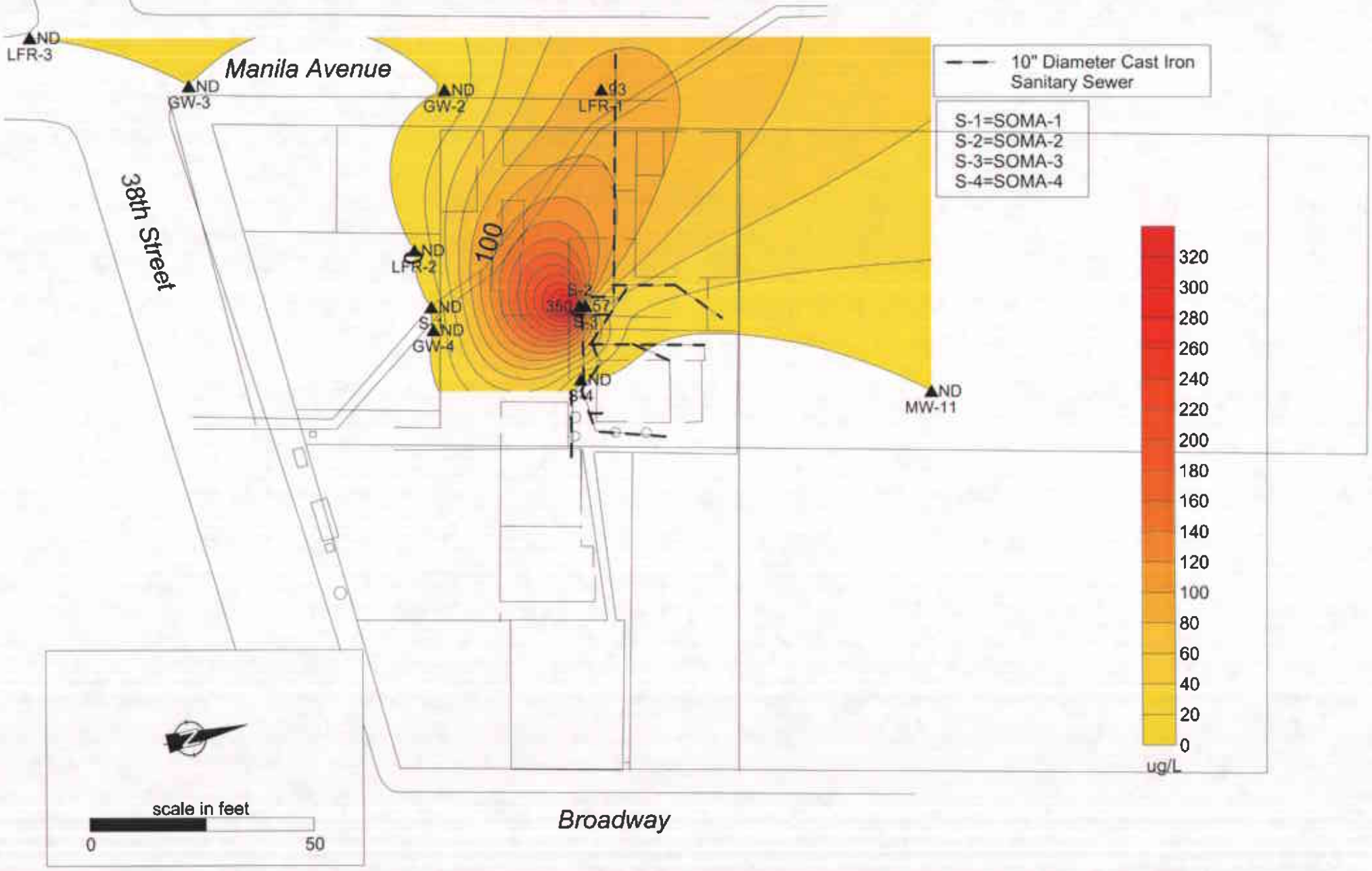


Figure 8: Trichloroethene Concentration Contour Map In Groundwater, Fourth Quarter, 2001

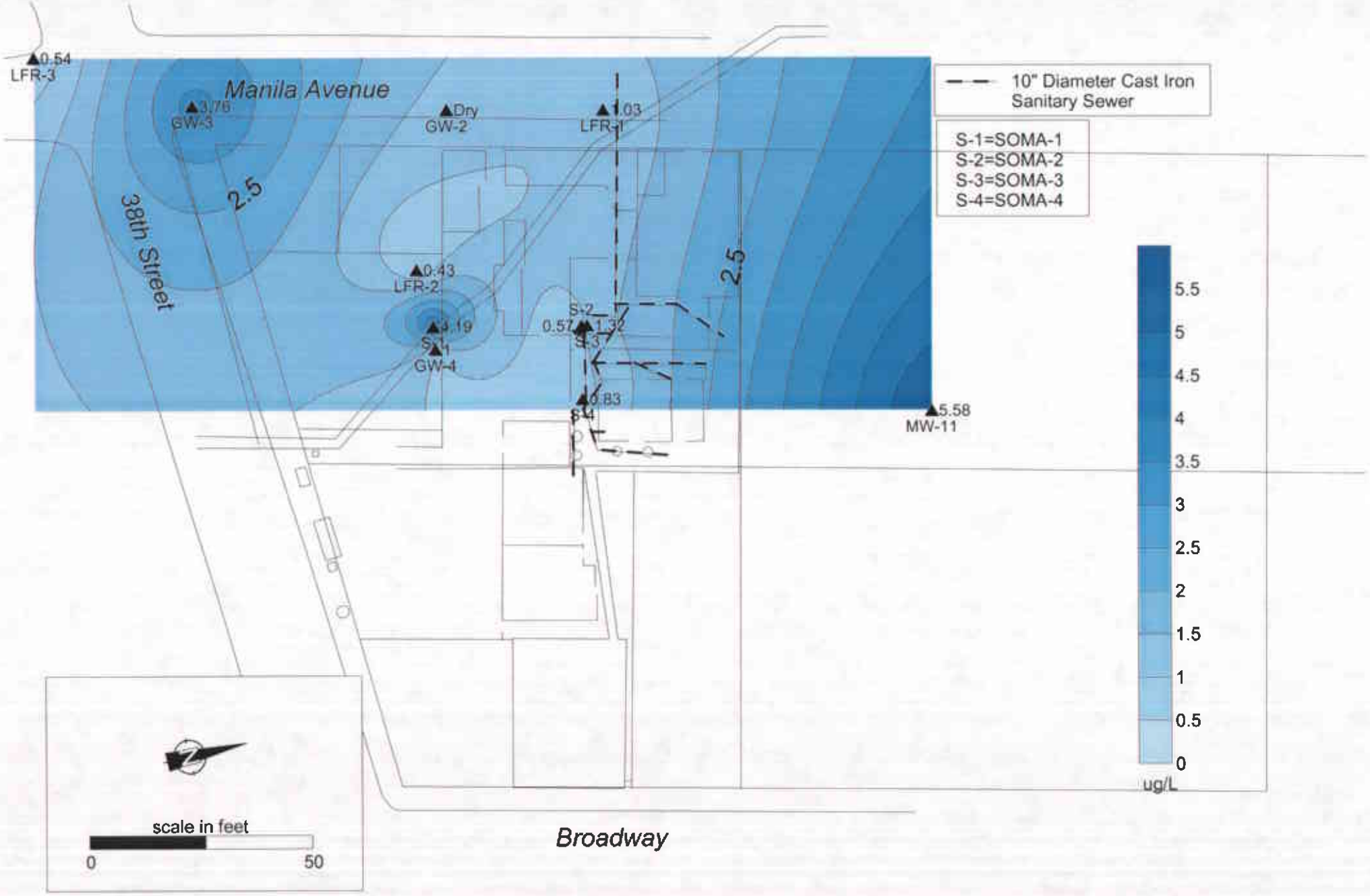


Figure 9: Dissolved Oxygen Concentration Contour Map In Groundwater, Fourth Quarter, 2001

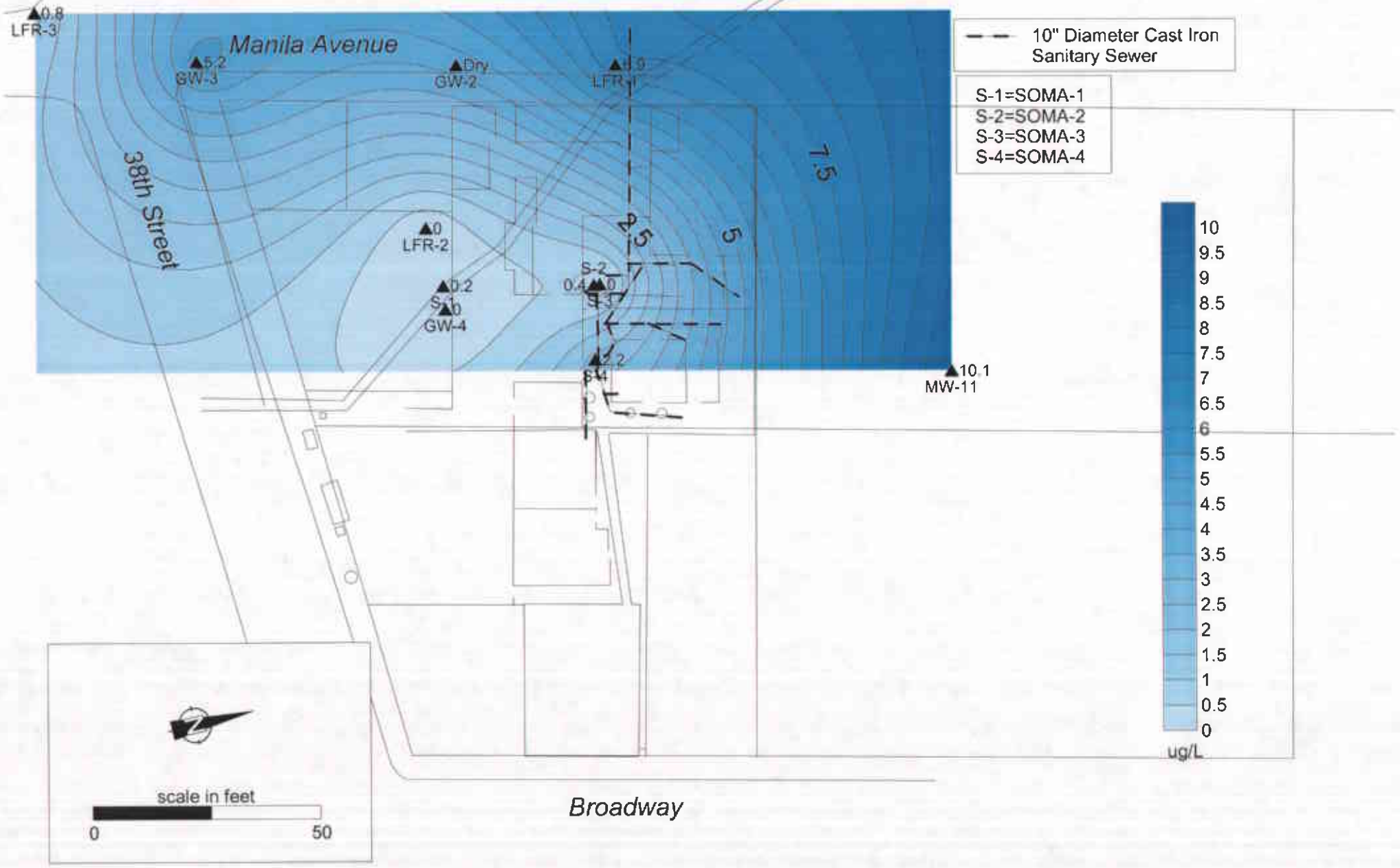


Figure 10: Nitrate Concentration Contour Map In Groundwater, Fourth Quarter, 2001

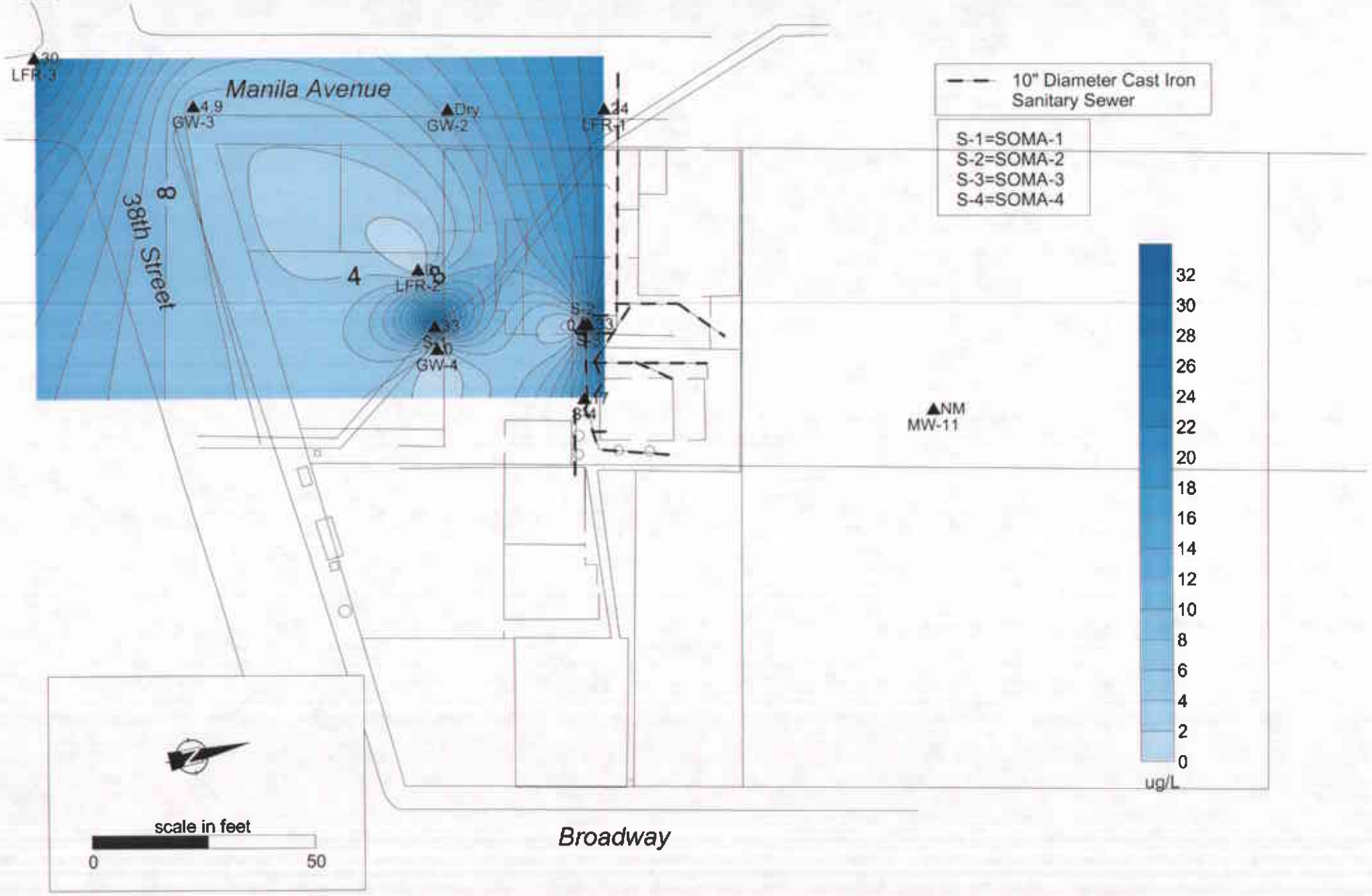


Figure 11: Sulfate Concentration Contour Map In Groundwater, Fourth Quarter, 2001

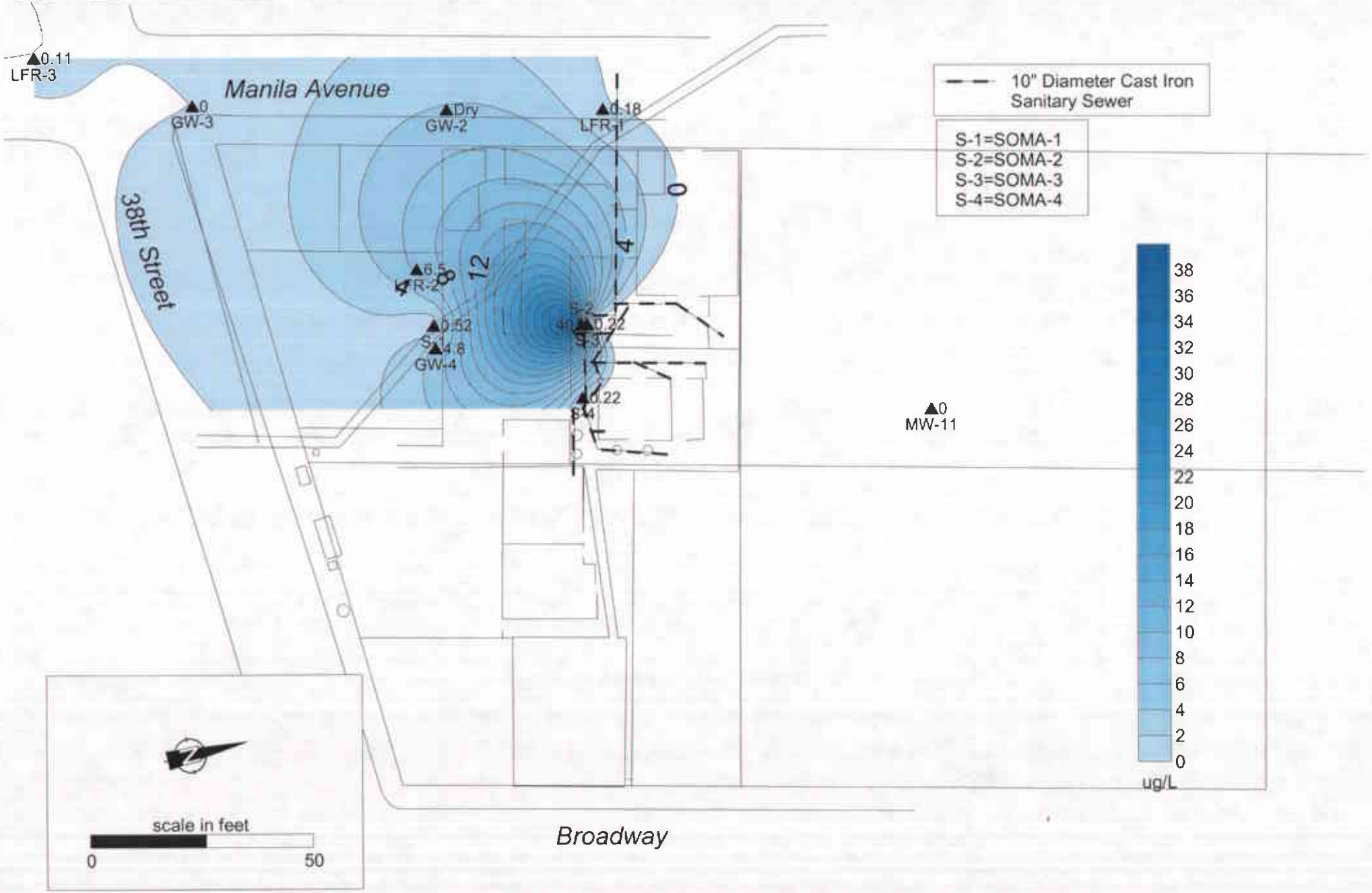


Figure 12: Ferrous Ion Concentration Contour Map In Groundwater, Fourth Quarter, 2001

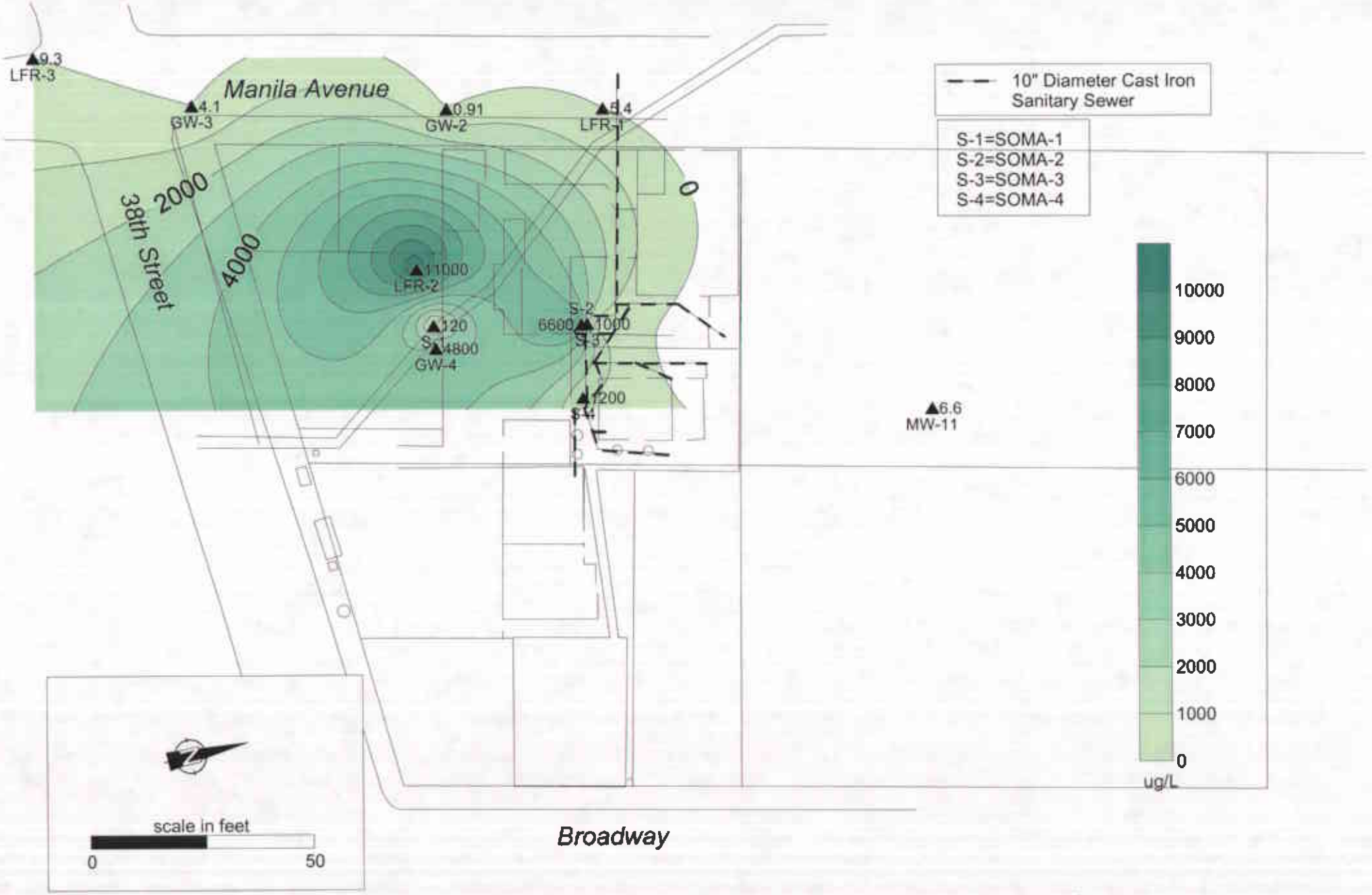


Figure 13: Methane Concentration Contour Map In Groundwater, Fourth Quarter, 2001

APPENDIX A

LABORATORY REPORTS, CHAIN OF CUSTODY FORMS

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:

SOMA Environmental Engineering Inc.
2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Date: 08-NOV-01
Lab Job Number: 154891
Project ID: 2511
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: Paul Prendergast
Project Manager

Reviewed by:
Operations Manager

CA ELAP # 1459

Curtis & Tompkins, Ltd.

Laboratory Number: **154891**
Client: **Soma Environmental Engineering, Inc.**
Project Name: **Glovatorium**
Project #: **2511**
Receipt Date: **10/22/01**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for eleven water samples received from the above referenced project on October 22nd, 2001. The samples were received cold and intact.

Total Volatile Hydrocarbons (EPA 8015M):

The recoveries for the bromofluorobenzene surrogates in several samples were outside the acceptable QC limits due to coelution of sample hydrocarbons with this surrogate. No other analytical problems were encountered.

Volatile Organic Compounds (EPA 8260B):

No analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page 1 of 1

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 154891

Sampler: Naser Pakrou
Report To: Naser Pakrou
Company: SOMA Env. Eng.
Telephone: 925 244 6600
Fax: 925 244 6601

Project No: 2511
Project Name: Clovatonium
Project P.O.:
Turnaround Time: Standard

Analyses: TPH dsl, TPH gas, BTEX, MTBE, VOCs (8260)

	Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Field Notes
-1		SOMA-2	10/19/1:30		✓		4	✓				
-2		SOMA-3	10/19 2:32									
-3	Calscience	SOMA-4	10/19 3:30									
-4		GW-4	10/19/10:15									
-5		SOMA-1	10/19/9:20									
-6		LFR-2	10/18/4:15									
-7		LFR-3	10/18/3:25									
-8		MW-11	10/19/11:35									
-9		LFR-1	10/18/1:45									
-10		GW-3	10/19/10:10									
-11		GW-2	10/19 9:00		✓		✓	✓				

Notes:

☑ Received ☐ On Ice
☑ Cold ☐ Ambient ☑ Intact

Preservation Correct?
☐ Yes ☐ No ☐ N/A

Signature

RELINQUISHED BY:	RECEIVED BY:
Naser Pakrou 10/22 11:15 DATE/TIME	10/22/01 DATE/TIME 1155
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	8015B(M)
Matrix:	Water	Batch#:	67383
Units:	ug/L	Received:	10/22/01
Diln Fac:	1.000	Analyzed:	10/25/01

Field ID: SOMA-2 Lab ID: 154891-001
Type: SAMPLE Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	2,800 H	50
Stoddard Solvent C7-C12	1,400	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	59-135
Bromofluorobenzene (FID)	138	60-140

Field ID: SOMA-3 Lab ID: 154891-002
Type: SAMPLE Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	830 H	50
Stoddard Solvent C7-C12	420	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	105	59-135
Bromofluorobenzene (FID)	131	60-140

Field ID: SOMA-4 Lab ID: 154891-003
Type: SAMPLE Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	5,000 H	50
Stoddard Solvent C7-C12	2,500	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	59-135
Bromofluorobenzene (FID)	185 *	60-140

Field ID: GW-4 Lab ID: 154891-004
Type: SAMPLE Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	1,600 H Y	50
Stoddard Solvent C7-C12	830	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	59-135
Bromofluorobenzene (FID)	160 *	60-140

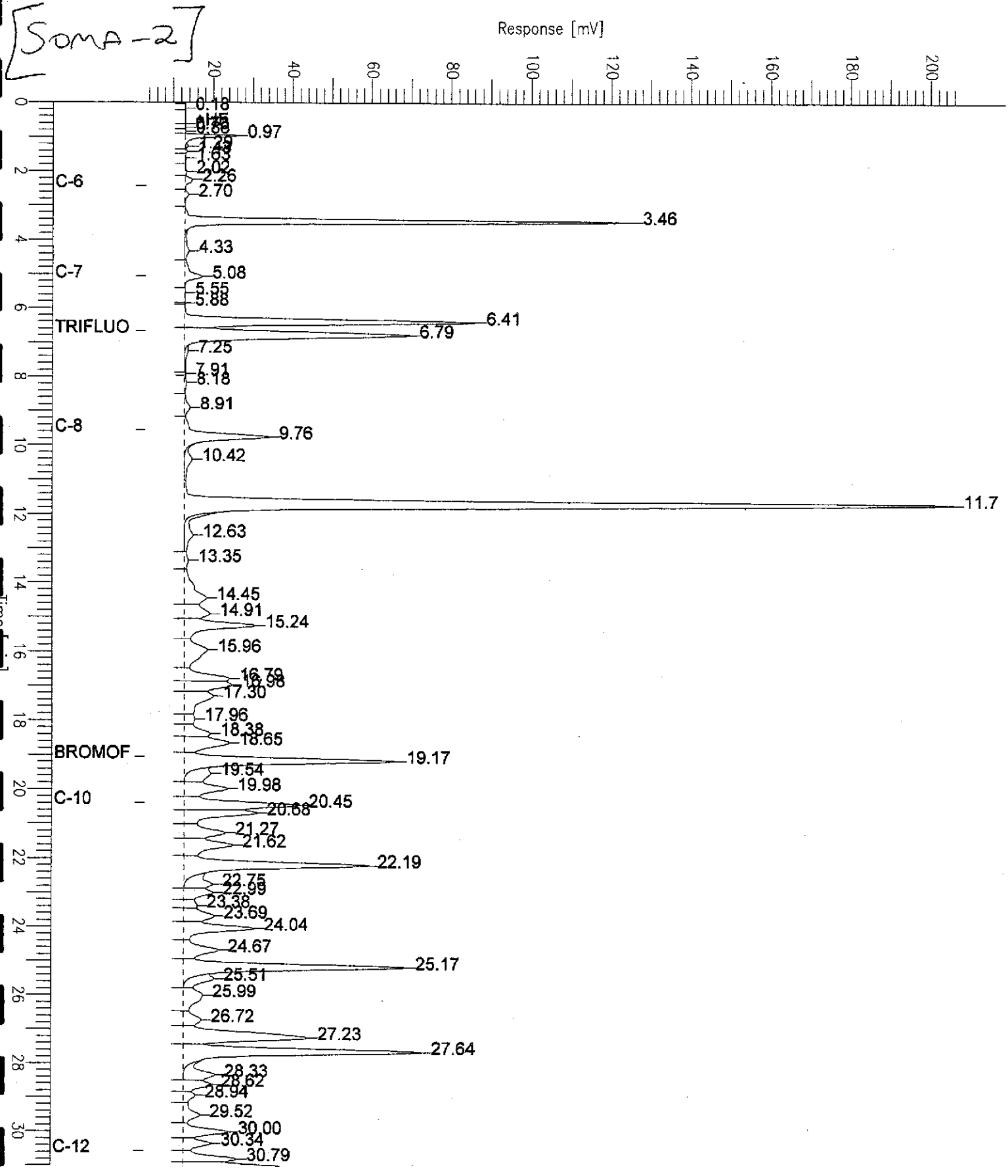
*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
Z= Sample exhibits unknown single peak or peaks
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 154891-001,67383,+STODD
FileName : G:\GC05\DATA\298G008.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 3 mV

Sample #: B1 Page 1 of 1
Date : 10/26/01 12:10 PM
Time of Injection: 10/25/01 11:47 AM
Low Point : 3.19 mV High Point : 206.07 mV
Plot Scale: 202.9 mV

[SOMA-2]

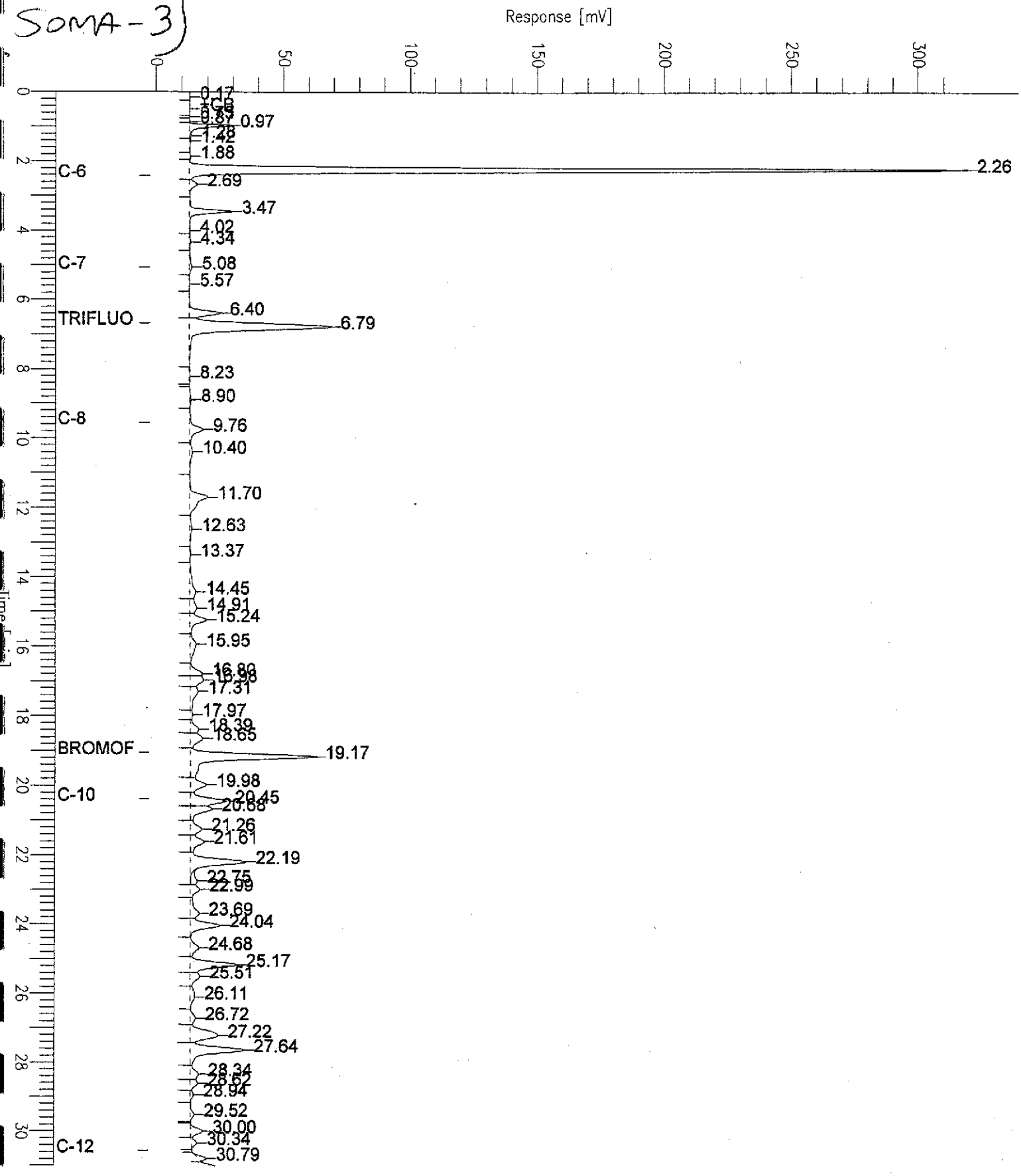


Chromatogram

Sample Name : 154891-002,67383,+STODD
FileName : G:\GC05\DATA\298G009.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: -2 mV

Sample #: B1 Page 1 of 1
Date : 10/25/01 01:04 PM
Time of Injection: 10/25/01 12:33 PM
Low Point : -2.48 mV High Point : 319.54 mV
Plot Scale: 322.0 mV

SOMA-3

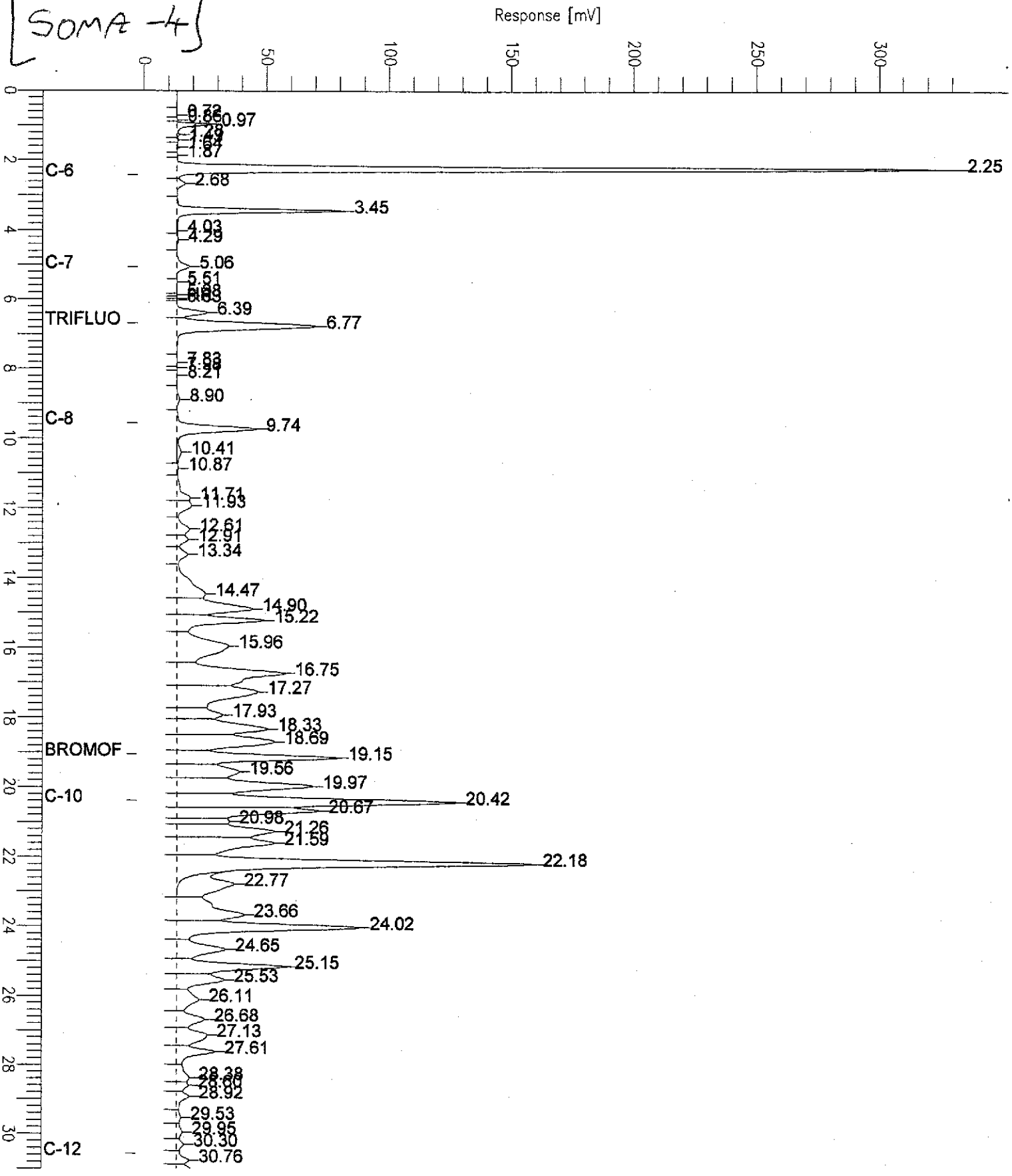


Chromatogram

Sample Name : 154891-003,67383,+STODD
FileName : G:\GC05\DATA\298G021.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: -3 mV

Sample #: B1 Page 1 of 1
Date : 10/26/01 12:10 PM
Time of Injection: 10/25/01 09:41 PM
Low Point : -2.64 mV High Point : 332.25 mV
Plot Scale: 334.9 mV

[SOMA -4]

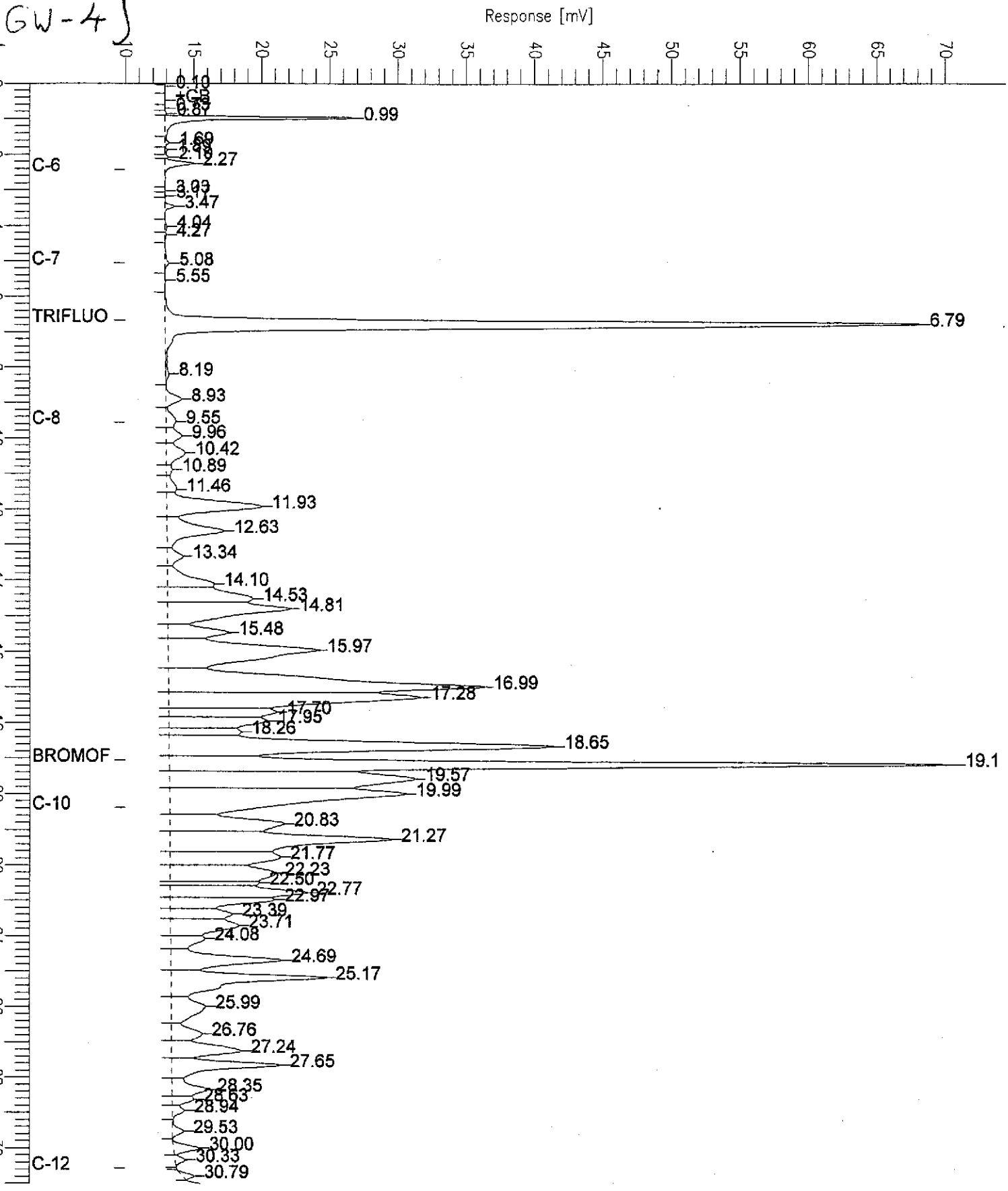


Chromatogram

Sample Name : 154891-004,67383,+STODD
FileName : G:\GC05\DATA\298G010.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 10 mV

Sample #: B1 Page 1 of 1
Date : 10/25/01 01:51 PM
Time of Injection: 10/25/01 01:20 PM
Low Point : 9.94 mV High Point : 70.71 mV
Plot Scale: 60.8 mV

[GW-4]



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	8015B(M)
Matrix:	Water	Batch#:	67383
Units:	ug/L	Received:	10/22/01
Diln Fac:	1.000	Analyzed:	10/25/01

Field ID: SOMA-1 — Lab ID: 154891-005
Type: SAMPLE — Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	440 H Y	50
Stoddard Solvent C7-C12	220	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	59-135
Bromofluorobenzene (FID)	123	60-140

Field ID: LFR-2 — Lab ID: 154891-006
Type: SAMPLE — Sampled: 10/18/01

Analyte	Result	RL
Gasoline C7-C12	1,500 H Y	50
Stoddard Solvent C7-C12	730	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	169 *	60-140

Field ID: LFR-3 — Lab ID: 154891-007
Type: SAMPLE — Sampled: 10/18/01

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

Surrogate	%REC	Limits
Trifluorotoluene (FID)	101	59-135
Bromofluorobenzene (FID)	109	60-140

Field ID: MW-11 — Lab ID: 154891-008
Type: SAMPLE — Sampled: 10/18/01

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

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	59-135
Bromofluorobenzene (FID)	108	60-140

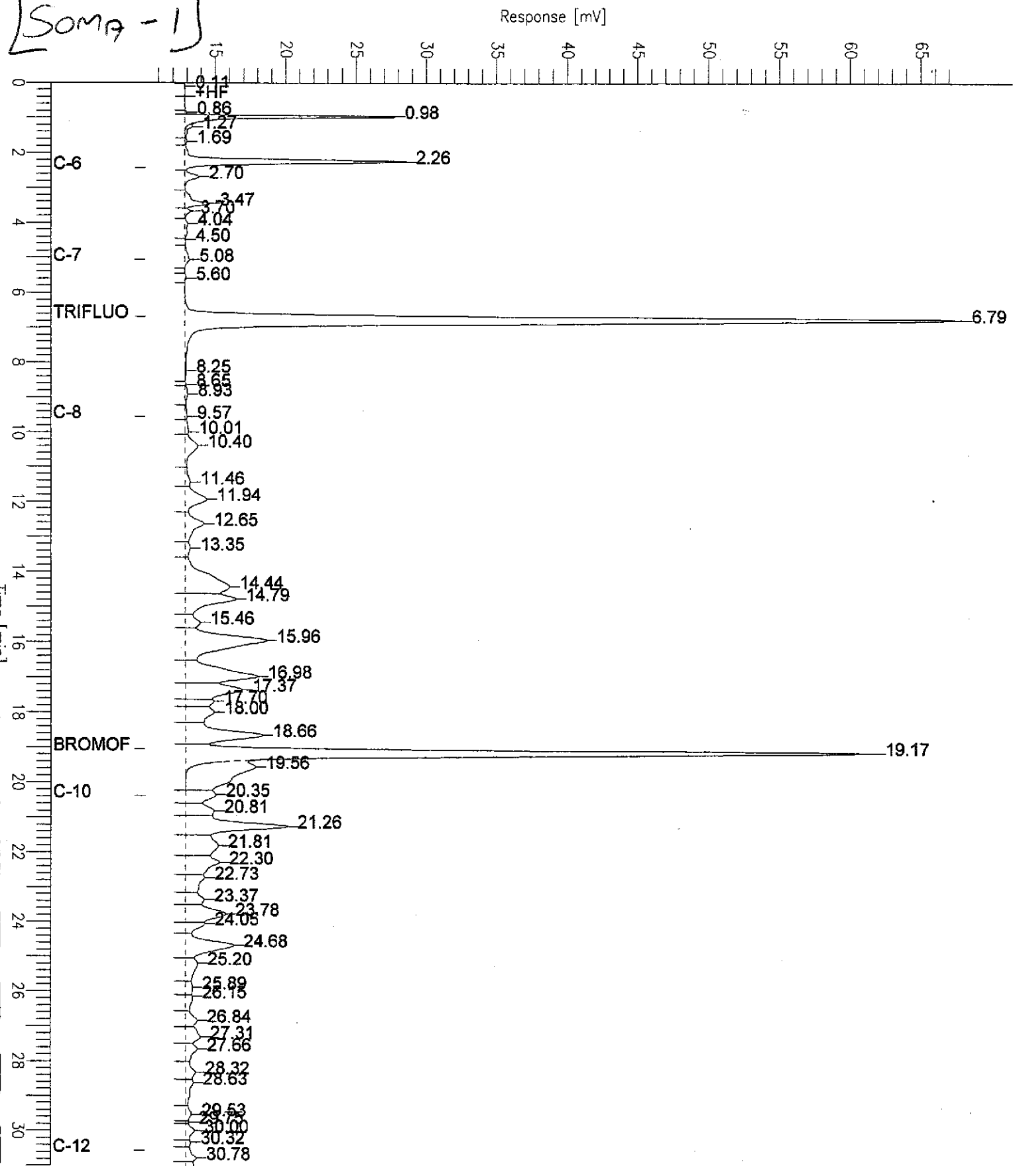
*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
Z= Sample exhibits unknown single peak or peaks
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 154891-005,67383,+STODD
FileName : G:\GC05\DATA\298G011.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 10 mV

Sample #: B1 Page 1 of 1
Date : 10/26/01 12:10 PM
Time of Injection: 10/25/01 02:06 PM
Low Point : 10.07 mV High Point : 67.94 mV
Plot Scale: 57.9 mV

[Soma - 1]

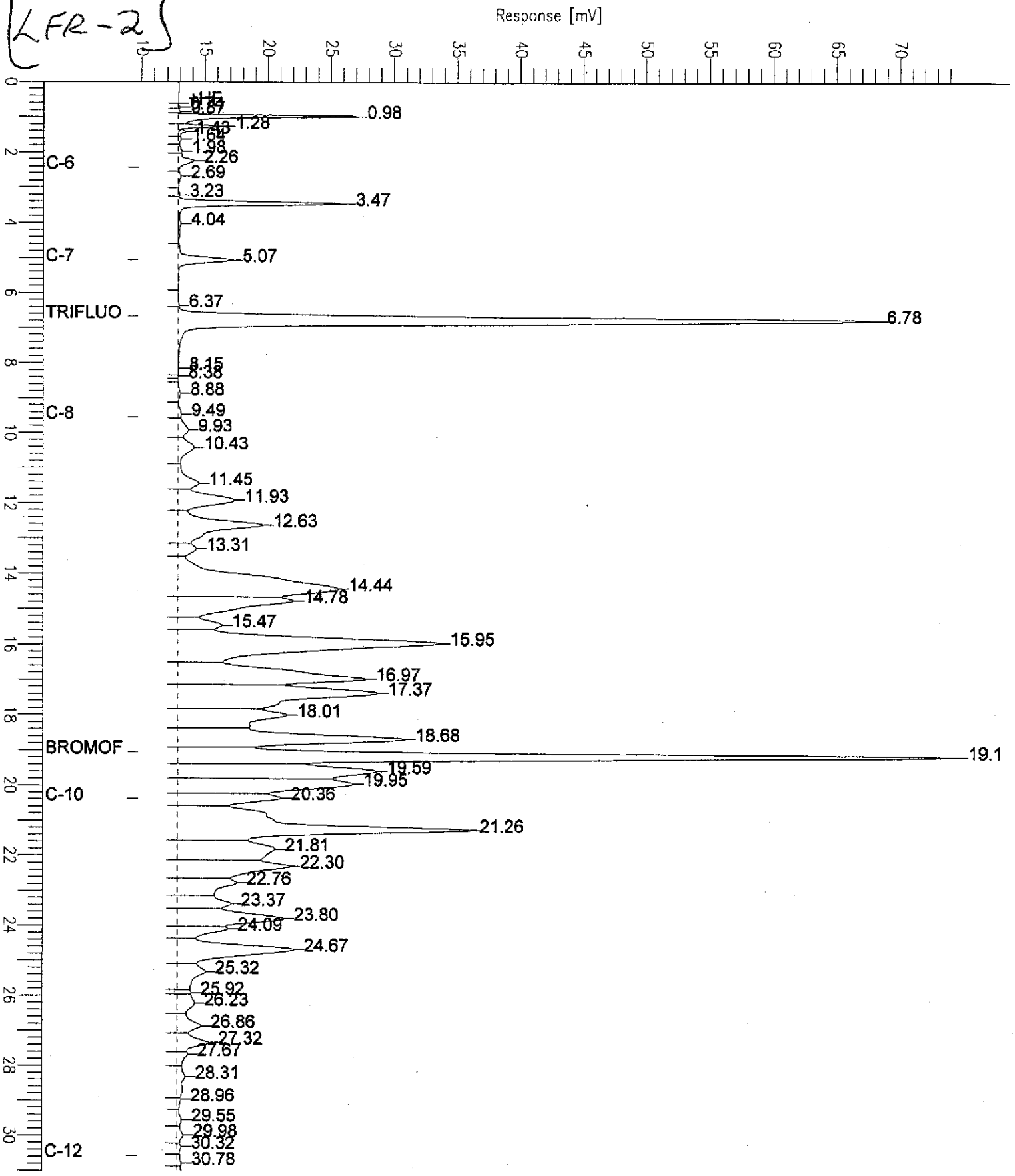


Chromatogram

Sample Name : 154891-006,67383,+STODD
FileName : G:\GC05\DATA\298G012.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 10 mV

Sample #: B1 Page 1 of 1
Date : 10/26/01 12:10 PM
Time of Injection: 10/25/01 02:52 PM
Low Point : 9.74 mV High Point : 74.68 mV
Plot Scale: 64.9 mV

[LFR-2]



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	8015B(M)
Matrix:	Water	Batch#:	67383
Units:	ug/L	Received:	10/22/01
Diln Fac:	1.000	Analyzed:	10/25/01

Field ID: LFR-1 Lab ID: 154891-009
Type: SAMPLE Sampled: 10/18/01

Analyte	Result	RL
Gasoline C7-C12	380 Y Z	50
Stoddard Solvent C7-C12	190 Y Z	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	111	60-140

Field ID: GW-3 Lab ID: 154891-010
Type: SAMPLE Sampled: 10/19/01

Analyte	Result	RL
Gasoline C7-C12	110 Y Z	50
Stoddard Solvent C7-C12	54 Y Z	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	59-135
Bromofluorobenzene (FID)	114	60-140

Field ID: GW-2 Lab ID: 154891-011
Type: SAMPLE Sampled: 10/19/01

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

Surrogate	%REC	Limits
Trifluorotoluene (FID)	102	59-135
Bromofluorobenzene (FID)	108	60-140

Type: BLANK Lab ID: QC159862

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

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	59-135
Bromofluorobenzene (FID)	100	60-140

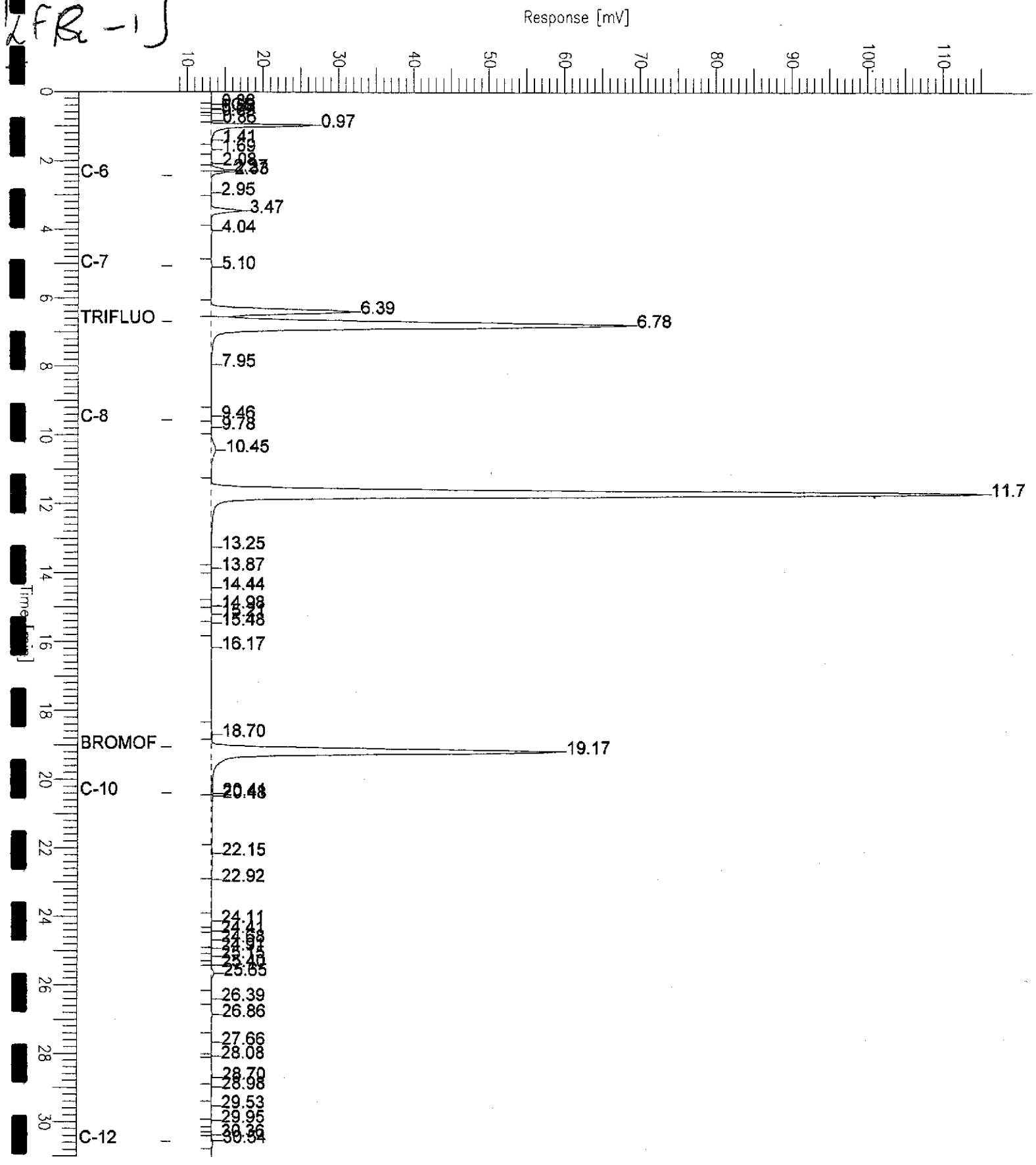
*= Value outside of QC limits; see narrative
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits fuel pattern which does not resemble standard
Z= Sample exhibits unknown single peak or peaks
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 154891-009,67383,+STODD
FileName : G:\GC05\DATA\298G018.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 8 mV

Sample #: B1 Page 1 of 1
Date : 10/25/01 07:57 PM
Time of Injection: 10/25/01 07:25 PM
Low Point : 8.01 mV High Point : 115.08 mV
Plot Scale: 107.1 mV

LFR-1J

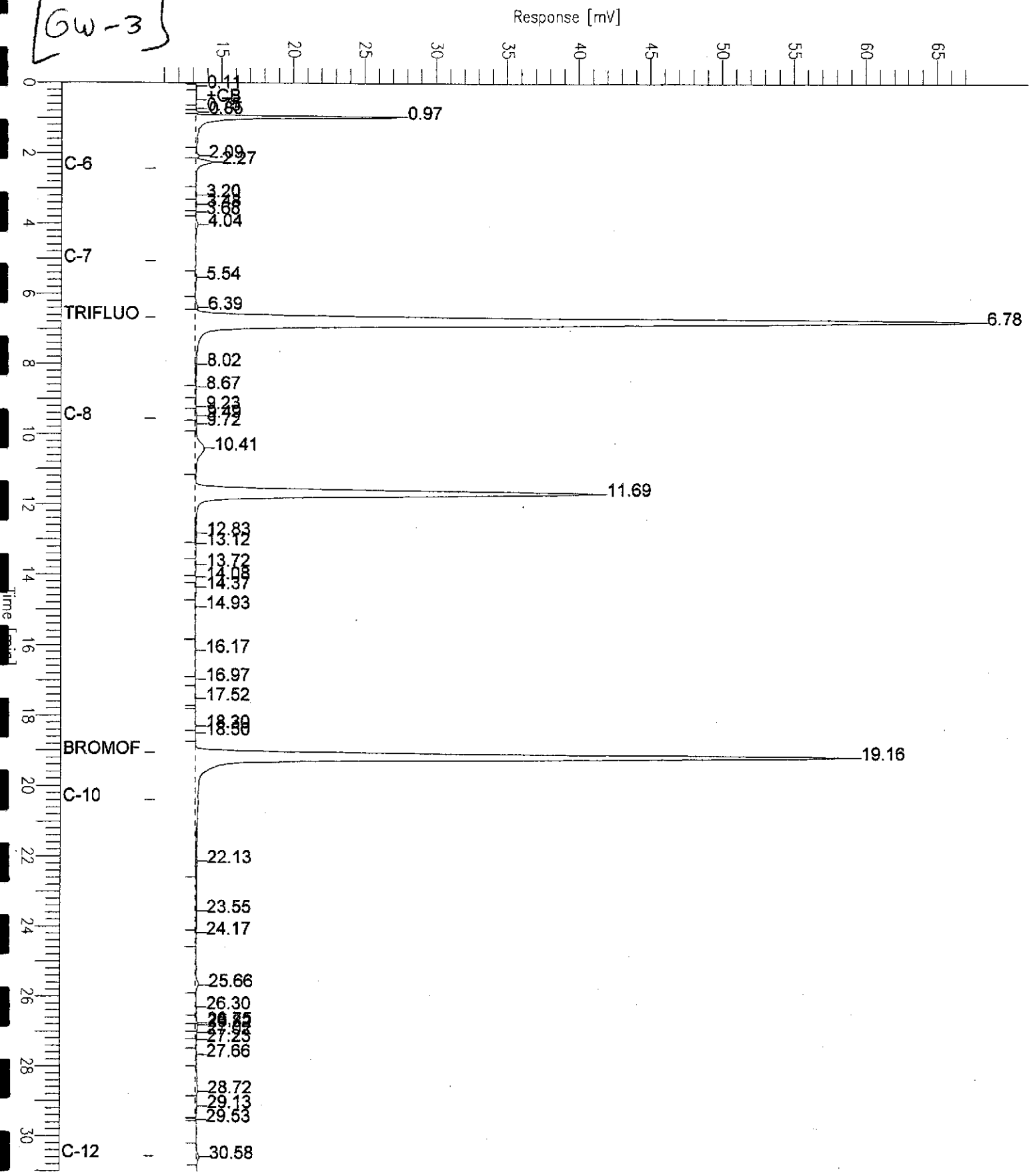


Chromatogram

Sample Name : 154891-010,67383,+STODD
FileName : G:\GC05\DATA\298G019.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 10 mV

Sample #: B1 Page 1 of 1
Date : 10/25/01 08:42 PM
Time of Injection: 10/25/01 08:11 PM
Low Point : 10.39 mV High Point : 67.88 mV
Plot Scale: 57.5 mV

[GW-3]

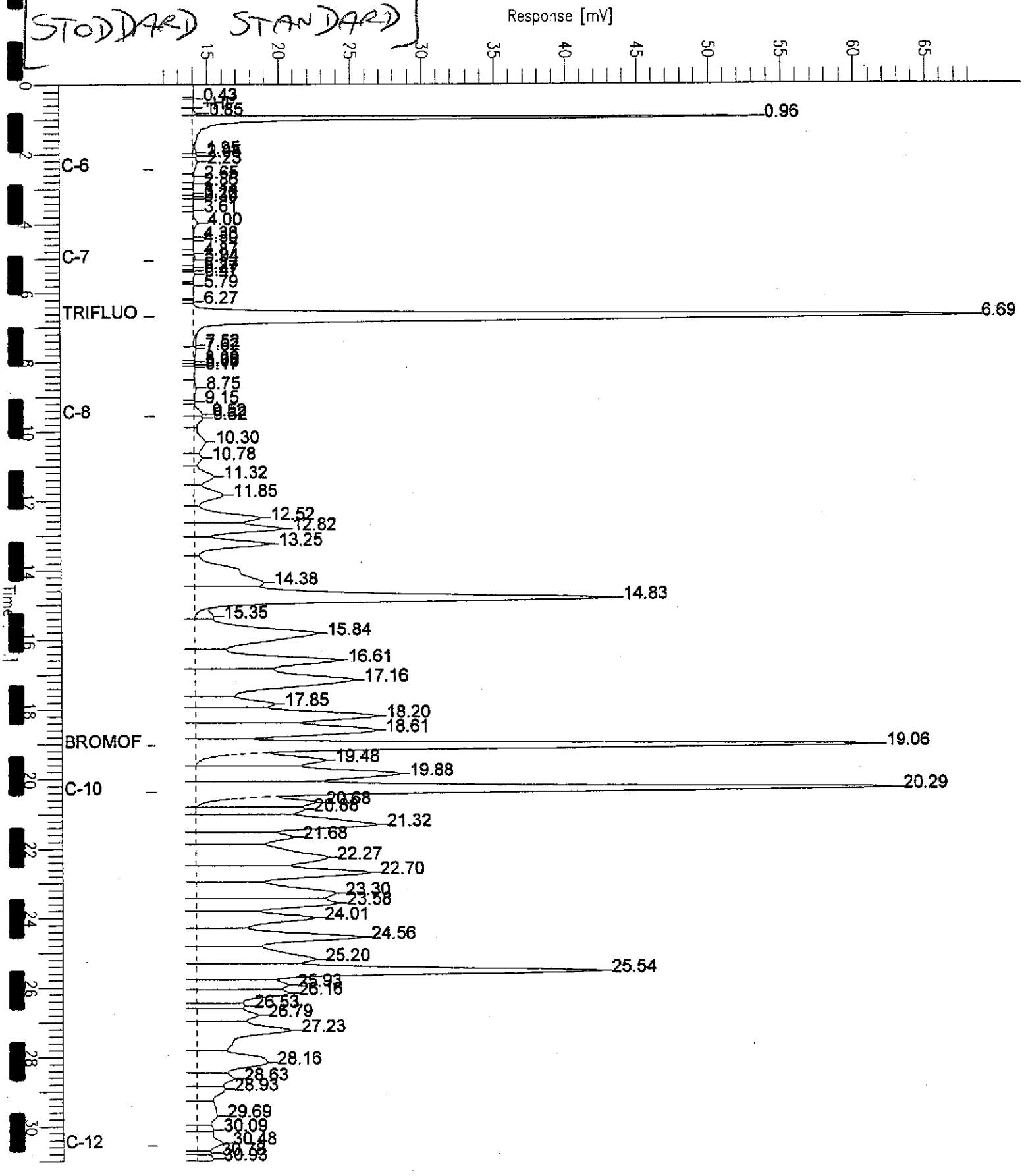


Chromatogram

Sample Name : CCV,STODD,67383,01WS1801,2.5/5000
FileName : G:\GC05\DATA\298G002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 31.00 min
Scale Factor: 1.0 Plot Offset: 11 mV

Sample #:
Date : 10/26/01 12:10 PM
Time of Injection: 10/25/01 07:23 AM
Low Point : 11.28 mV High Point : 68.22 mV
Plot Scale: 56.9 mV

[STODDARD STANDARD]

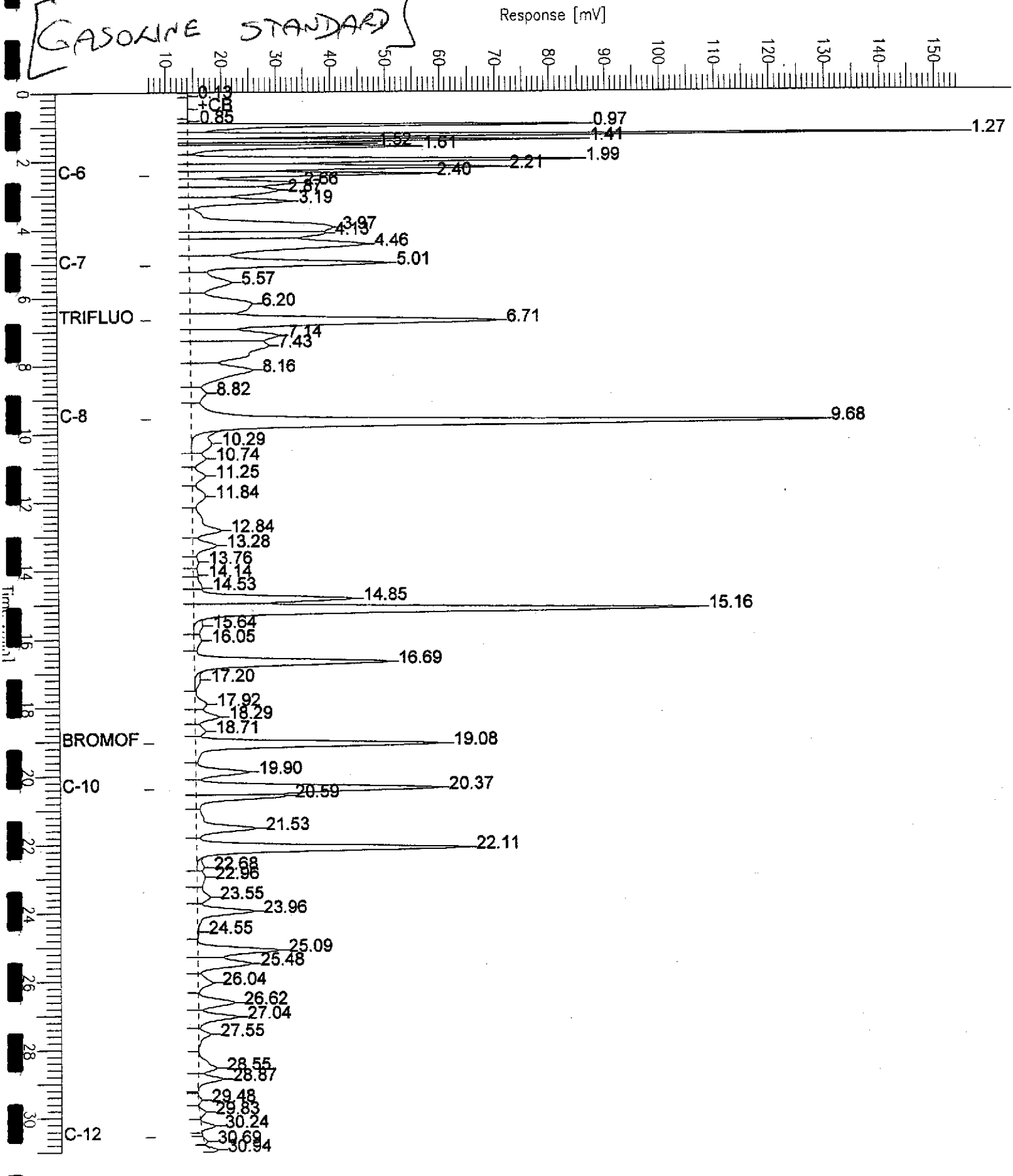


Chromatogram

ple Name : CCV/LCS,QC159863,67383,01WS2019,5/5000
eName : G:\GC05\DATA\298G004.raw
hod : TVHBTXE
tart Time : 0.00 min End Time : 31.00 min
cale Factor: 1.0 Plot Offset: 7 mV

Sample #:
Date : 10/25/01 09:18 AM
Time of Injection: 10/25/01 08:47 AM
Low Point : 6.97 mV High Point : 154.95 mV
Plot Scale: 148.0 mV

[GASOLINE STANDARD]



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC159863	Batch#:	67383
Matrix:	Water	Analyzed:	10/25/01
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,079	104	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	59-135
Bromofluorobenzene (FID)	106	60-140

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Batch#:	67383
MSS Lab ID:	154931-001	Sampled:	10/23/01
Matrix:	Water	Received:	10/23/01
Units:	ug/L	Analyzed:	10/26/01
Diln Fac:	1.000		

Type: MS Lab ID: QC159864

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	27.43	2,000	2,008	99	65-131

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	59-135
Bromofluorobenzene (FID)	113	60-140

Type: MSD Lab ID: QC159865

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,978	98	65-131	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	59-135
Bromofluorobenzene (FID)	114	60-140

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-2	Batch#:	67469
Lab ID:	154891-001	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	50.00		

Analyte	Result	RL
Freon 12	ND	500
Chloromethane	ND	500
Vinyl Chloride	ND	500
Bromomethane	ND	500
Chloroethane	ND	500
Trichlorofluoromethane	ND	250
Acetone	ND	1,000
Freon 113	ND	250
1,1-Dichloroethene	ND	250
Methylene Chloride	ND	1,000
Carbon Disulfide	ND	250
MTBE	ND	250
trans-1,2-Dichloroethene	ND	250
Vinyl Acetate	ND	2,500
1,1-Dichloroethane	ND	250
2-Butanone	ND	500
cis-1,2-Dichloroethene	5,000	250
2,2-Dichloropropane	ND	250
Chloroform	ND	250
Bromochloromethane	ND	500
1,1,1-Trichloroethane	ND	250
1,1-Dichloropropene	ND	250
Carbon Tetrachloride	ND	250
1,2-Dichloroethane	ND	250
Benzene	ND	250
Trichloroethene	350	250
1,2-Dichloropropane	ND	250
Bromodichloromethane	ND	250
Dibromomethane	ND	250
4-Methyl-2-Pentanone	ND	500
cis-1,3-Dichloropropene	ND	250
Toluene	ND	250
trans-1,3-Dichloropropene	ND	250
1,1,2-Trichloroethane	ND	250
2-Hexanone	ND	500
1,3-Dichloropropane	ND	250
Tetrachloroethene	1,400	250

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-2	Batch#:	67469
Lab ID:	154891-001	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	50.00		

Analyte	Result	RL
Dibromochloromethane	ND	250
1,2-Dibromoethane	ND	250
Chlorobenzene	ND	250
1,1,1,2-Tetrachloroethane	ND	250
Ethylbenzene	ND	250
m,p-Xylenes	ND	250
o-Xylene	ND	250
Styrene	ND	250
Bromoform	ND	250
Isopropylbenzene	ND	250
1,1,2,2-Tetrachloroethane	ND	250
1,2,3-Trichloropropane	ND	250
Propylbenzene	ND	250
Bromobenzene	ND	250
1,3,5-Trimethylbenzene	ND	250
2-Chlorotoluene	ND	250
4-Chlorotoluene	ND	250
tert-Butylbenzene	ND	250
1,2,4-Trimethylbenzene	ND	250
sec-Butylbenzene	ND	250
para-Isopropyl Toluene	ND	250
1,3-Dichlorobenzene	ND	250
1,4-Dichlorobenzene	ND	250
n-Butylbenzene	ND	250
1,2-Dichlorobenzene	ND	250
1,2-Dibromo-3-Chloropropane	ND	250
1,2,4-Trichlorobenzene	ND	250
Hexachlorobutadiene	ND	250
Naphthalene	ND	250
1,2,3-Trichlorobenzene	ND	250

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-122
1,2-Dichloroethane-d4	105	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	105	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-3	Batch#:	67469
Lab ID:	154891-002	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	5.000		

Analyte	Result	RL
Freon 12	ND	50
Chloromethane	ND	50
Vinyl Chloride	ND	50
Bromomethane	ND	50
Chloroethane	ND	50
Trichlorofluoromethane	ND	25
Acetone	ND	100
Freon 113	ND	25
1,1-Dichloroethene	ND	25
Methylene Chloride	ND	100
Carbon Disulfide	ND	25
MTBE	650	25
trans-1,2-Dichloroethene	ND	25
Vinyl Acetate	ND	250
1,1-Dichloroethane	ND	25
2-Butanone	ND	50
cis-1,2-Dichloroethene	440	25
2,2-Dichloropropane	ND	25
Chloroform	ND	25
Bromochloromethane	ND	50
1,1,1-Trichloroethane	ND	25
1,1-Dichloropropene	ND	25
Carbon Tetrachloride	ND	25
1,2-Dichloroethane	ND	25
Benzene	ND	25
Trichloroethene	57	25
1,2-Dichloropropane	ND	25
Bromodichloromethane	ND	25
Dibromomethane	ND	25
4-Methyl-2-Pentanone	ND	50
cis-1,3-Dichloropropene	ND	25
Toluene	ND	25
trans-1,3-Dichloropropene	ND	25
1,1,2-Trichloroethane	ND	25
2-Hexanone	ND	50
1,3-Dichloropropane	ND	25
Tetrachloroethene	42	25

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-3	Batch#:	67469
Lab ID:	154891-002	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	5.000		

Analyte	Result	RL
Dibromochloromethane	ND	25
1,2-Dibromoethane	ND	25
Chlorobenzene	ND	25
1,1,1,2-Tetrachloroethane	ND	25
Ethylbenzene	ND	25
m,p-Xylenes	ND	25
o-Xylene	ND	25
Styrene	ND	25
Bromoform	ND	25
Isopropylbenzene	ND	25
1,1,2,2-Tetrachloroethane	ND	25
1,2,3-Trichloropropane	ND	25
Propylbenzene	ND	25
Bromobenzene	ND	25
1,3,5-Trimethylbenzene	ND	25
2-Chlorotoluene	ND	25
4-Chlorotoluene	ND	25
tert-Butylbenzene	ND	25
1,2,4-Trimethylbenzene	28	25
sec-Butylbenzene	ND	25
para-Isopropyl Toluene	ND	25
1,3-Dichlorobenzene	ND	25
1,4-Dichlorobenzene	ND	25
n-Butylbenzene	ND	25
1,2-Dichlorobenzene	ND	25
1,2-Dibromo-3-Chloropropane	ND	25
1,2,4-Trichlorobenzene	ND	25
Hexachlorobutadiene	ND	25
Naphthalene	ND	25
1,2,3-Trichlorobenzene	ND	25

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	104	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	103	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-4	Batch#:	67469
Lab ID:	154891-003	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	25.00		

Analyte	Result	RL
Freon 12	ND	250
Chloromethane	ND	250
Vinyl Chloride	ND	250
Bromomethane	ND	250
Chloroethane	ND	250
Trichlorofluoromethane	ND	130
Acetone	ND	500
Freon 113	ND	130
1,1-Dichloroethene	ND	130
Methylene Chloride	ND	500
Carbon Disulfide	ND	130
MTBE	630	130
trans-1,2-Dichloroethene	ND	130
Vinyl Acetate	ND	1,300
1,1-Dichloroethane	ND	130
2-Butanone	ND	250
cis-1,2-Dichloroethene	2,600	130
2,2-Dichloropropane	ND	130
Chloroform	ND	130
Bromochloromethane	ND	250
1,1,1-Trichloroethane	ND	130
1,1-Dichloropropene	ND	130
Carbon Tetrachloride	ND	130
1,2-Dichloroethane	ND	130
Benzene	ND	130
Trichloroethene	ND	130
1,2-Dichloropropane	ND	130
Bromodichloromethane	ND	130
Dibromomethane	ND	130
4-Methyl-2-Pentanone	ND	250
cis-1,3-Dichloropropene	ND	130
Toluene	ND	130
trans-1,3-Dichloropropene	ND	130
1,1,2-Trichloroethane	ND	130
2-Hexanone	ND	250
1,3-Dichloropropane	ND	130
Tetrachloroethene	ND	130

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-4	Batch#:	67469
Lab ID:	154891-003	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	25.00		

Analyte	Result	RL
Dibromochloromethane	ND	130
1,2-Dibromoethane	ND	130
Chlorobenzene	ND	130
1,1,1,2-Tetrachloroethane	ND	130
Ethylbenzene	ND	130
m,p-Xylenes	ND	130
o-Xylene	ND	130
Styrene	ND	130
Bromoform	ND	130
Isopropylbenzene	ND	130
1,1,2,2-Tetrachloroethane	ND	130
1,2,3-Trichloropropane	ND	130
Propylbenzene	ND	130
Bromobenzene	ND	130
1,3,5-Trimethylbenzene	130	130
2-Chlorotoluene	ND	130
4-Chlorotoluene	ND	130
tert-Butylbenzene	ND	130
1,2,4-Trimethylbenzene	370	130
sec-Butylbenzene	ND	130
para-Isopropyl Toluene	ND	130
1,3-Dichlorobenzene	ND	130
1,4-Dichlorobenzene	ND	130
n-Butylbenzene	ND	130
1,2-Dichlorobenzene	ND	130
1,2-Dibromo-3-Chloropropane	ND	130
1,2,4-Trichlorobenzene	ND	130
Hexachlorobutadiene	ND	130
Naphthalene	ND	130
1,2,3-Trichlorobenzene	ND	130

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	103	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	102	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-4	Batch#:	67469
Lab ID:	154891-004	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-4	Batch#:	67469
Lab ID:	154891-004	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	9.6	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	103	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-1	Batch#:	67469
Lab ID:	154891-005	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	34	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	14	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	5.1	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	SOMA-1	Batch#:	67469
Lab ID:	154891-005	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	104	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-2	Batch#:	67469
Lab ID:	154891-006	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.429		

Analyte	Result	RL
Freon 12	ND	14
Chloromethane	ND	14
Vinyl Chloride	ND	14
Bromomethane	ND	14
Chloroethane	ND	14
Trichlorofluoromethane	ND	7.1
Acetone	ND	29
Freon 113	ND	7.1
1,1-Dichloroethene	ND	7.1
Methylene Chloride	ND	29
Carbon Disulfide	ND	7.1
MTBE	ND	7.1
trans-1,2-Dichloroethene	ND	7.1
Vinyl Acetate	ND	71
1,1-Dichloroethane	ND	7.1
2-Butanone	ND	14
cis-1,2-Dichloroethene	160	7.1
2,2-Dichloropropane	ND	7.1
Chloroform	ND	7.1
Bromochloromethane	ND	14
1,1,1-Trichloroethane	ND	7.1
1,1-Dichloropropene	ND	7.1
Carbon Tetrachloride	ND	7.1
1,2-Dichloroethane	ND	7.1
Benzene	ND	7.1
Trichloroethene	ND	7.1
1,2-Dichloropropane	ND	7.1
Bromodichloromethane	ND	7.1
Dibromomethane	ND	7.1
4-Methyl-2-Pentanone	ND	14
cis-1,3-Dichloropropene	ND	7.1
Toluene	ND	7.1
trans-1,3-Dichloropropene	ND	7.1
1,1,2-Trichloroethane	ND	7.1
2-Hexanone	ND	14
1,3-Dichloropropane	ND	7.1
Tetrachloroethene	ND	7.1

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-2	Batch#:	67469
Lab ID:	154891-006	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.429		

Analyte	Result	RL
Dibromochloromethane	ND	7.1
1,2-Dibromoethane	ND	7.1
Chlorobenzene	ND	7.1
1,1,1,2-Tetrachloroethane	ND	7.1
Ethylbenzene	ND	7.1
m,p-Xylenes	ND	7.1
o-Xylene	ND	7.1
Styrene	ND	7.1
Bromoform	ND	7.1
Isopropylbenzene	ND	7.1
1,1,2,2-Tetrachloroethane	ND	7.1
1,2,3-Trichloropropane	ND	7.1
Propylbenzene	ND	7.1
Bromobenzene	ND	7.1
1,3,5-Trimethylbenzene	ND	7.1
2-Chlorotoluene	ND	7.1
4-Chlorotoluene	ND	7.1
tert-Butylbenzene	ND	7.1
1,2,4-Trimethylbenzene	ND	7.1
sec-Butylbenzene	ND	7.1
para-Isopropyl Toluene	ND	7.1
1,3-Dichlorobenzene	ND	7.1
1,4-Dichlorobenzene	ND	7.1
n-Butylbenzene	ND	7.1
1,2-Dichlorobenzene	ND	7.1
1,2-Dibromo-3-Chloropropane	ND	7.1
1,2,4-Trichlorobenzene	ND	7.1
Hexachlorobutadiene	ND	7.1
Naphthalene	ND	7.1
1,2,3-Trichlorobenzene	ND	7.1

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	102	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	106	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-3	Batch#:	67469
Lab ID:	154891-007	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-3	Batch#:	67469
Lab ID:	154891-007	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	106	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	67469
Lab ID:	154891-008	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	67469
Lab ID:	154891-008	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-122
1,2-Dichloroethane-d4	103	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	106	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-1	Batch#:	67469
Lab ID:	154891-009	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	6.250		

Analyte	Result	RL
Freon 12	ND	63
Chloromethane	ND	63
Vinyl Chloride	ND	63
Bromomethane	ND	63
Chloroethane	ND	63
Trichlorofluoromethane	ND	31
Acetone	ND	130
Freon 113	ND	31
1,1-Dichloroethene	ND	31
Methylene Chloride	ND	130
Carbon Disulfide	ND	31
MTBE	ND	31
trans-1,2-Dichloroethene	ND	31
Vinyl Acetate	ND	310
1,1-Dichloroethane	ND	31
2-Butanone	ND	63
cis-1,2-Dichloroethene	ND	31
2,2-Dichloropropane	ND	31
Chloroform	ND	31
Bromochloromethane	ND	63
1,1,1-Trichloroethane	ND	31
1,1-Dichloropropene	ND	31
Carbon Tetrachloride	ND	31
1,2-Dichloroethane	ND	31
Benzene	ND	31
Trichloroethene	93	31
1,2-Dichloropropane	ND	31
Bromodichloromethane	ND	31
Dibromomethane	ND	31
4-Methyl-2-Pentanone	ND	63
cis-1,3-Dichloropropene	ND	31
Toluene	ND	31
trans-1,3-Dichloropropene	ND	31
1,1,2-Trichloroethane	ND	31
2-Hexanone	ND	63
1,3-Dichloropropane	ND	31
Tetrachloroethene	780	31

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	LFR-1	Batch#:	67469
Lab ID:	154891-009	Sampled:	10/18/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	6.250		

Analyte	Result	RL
Dibromochloromethane	ND	31
1,2-Dibromoethane	ND	31
Chlorobenzene	ND	31
1,1,1,2-Tetrachloroethane	ND	31
Ethylbenzene	ND	31
m,p-Xylenes	ND	31
o-Xylene	ND	31
Styrene	ND	31
Bromoform	ND	31
Isopropylbenzene	ND	31
1,1,2,2-Tetrachloroethane	ND	31
1,2,3-Trichloropropane	ND	31
Propylbenzene	ND	31
Bromobenzene	ND	31
1,3,5-Trimethylbenzene	ND	31
2-Chlorotoluene	ND	31
4-Chlorotoluene	ND	31
tert-Butylbenzene	ND	31
1,2,4-Trimethylbenzene	ND	31
sec-Butylbenzene	ND	31
para-Isopropyl Toluene	ND	31
1,3-Dichlorobenzene	ND	31
1,4-Dichlorobenzene	ND	31
n-Butylbenzene	ND	31
1,2-Dichlorobenzene	ND	31
1,2-Dibromo-3-Chloropropane	ND	31
1,2,4-Trichlorobenzene	ND	31
Hexachlorobutadiene	ND	31
Naphthalene	ND	31
1,2,3-Trichlorobenzene	ND	31

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	104	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	105	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-3	Batch#:	67469
Lab ID:	154891-010	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	2.000		

Analyte	Result	RL
Freon 12	ND	20
Chloromethane	ND	20
Vinyl Chloride	ND	20
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	10
Acetone	ND	40
Freon 113	ND	10
1,1-Dichloroethene	ND	10
Methylene Chloride	ND	40
Carbon Disulfide	ND	10
MTBE	ND	10
trans-1,2-Dichloroethene	ND	10
Vinyl Acetate	ND	100
1,1-Dichloroethane	ND	10
2-Butanone	ND	20
cis-1,2-Dichloroethene	ND	10
2,2-Dichloropropane	ND	10
Chloroform	ND	10
Bromochloromethane	ND	20
1,1,1-Trichloroethane	ND	10
1,1-Dichloropropene	ND	10
Carbon Tetrachloride	ND	10
1,2-Dichloroethane	ND	10
Benzene	ND	10
Trichloroethene	ND	10
1,2-Dichloropropane	ND	10
Bromodichloromethane	ND	10
Dibromomethane	ND	10
4-Methyl-2-Pentanone	ND	20
cis-1,3-Dichloropropene	ND	10
Toluene	ND	10
trans-1,3-Dichloropropene	ND	10
1,1,2-Trichloroethane	ND	10
2-Hexanone	ND	20
1,3-Dichloropropane	ND	10
Tetrachloroethene	180	10

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-3	Batch#:	67469
Lab ID:	154891-010	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	2.000		

Analyte	Result	RL
Dibromochloromethane	ND	10
1,2-Dibromoethane	ND	10
Chlorobenzene	ND	10
1,1,1,2-Tetrachloroethane	ND	10
Ethylbenzene	ND	10
m,p-Xylenes	ND	10
o-Xylene	ND	10
Styrene	ND	10
Bromoform	ND	10
Isopropylbenzene	ND	10
1,1,2,2-Tetrachloroethane	ND	10
1,2,3-Trichloropropane	ND	10
Propylbenzene	ND	10
Bromobenzene	ND	10
1,3,5-Trimethylbenzene	ND	10
2-Chlorotoluene	ND	10
4-Chlorotoluene	ND	10
tert-Butylbenzene	ND	10
1,2,4-Trimethylbenzene	ND	10
sec-Butylbenzene	ND	10
para-Isopropyl Toluene	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
n-Butylbenzene	ND	10
1,2-Dichlorobenzene	ND	10
1,2-Dibromo-3-Chloropropane	ND	10
1,2,4-Trichlorobenzene	ND	10
Hexachlorobutadiene	ND	10
Naphthalene	ND	10
1,2,3-Trichlorobenzene	ND	10

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	104	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	106	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-2	Batch#:	67469
Lab ID:	154891-011	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	19	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Field ID:	GW-2	Batch#:	67469
Lab ID:	154891-011	Sampled:	10/19/01
Matrix:	Water	Received:	10/22/01
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	110	80-122
1,2-Dichloroethane-d4	103	78-123
Toluene-d8	98	80-110
Bromofluorobenzene	103	80-115

D= Not Detected
L= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC160205	Batch#:	67469
Matrix:	Water	Analyzed:	10/29/01
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC160205	Batch#:	67469
Matrix:	Water	Analyzed:	10/29/01
Units:	ug/L		

Analyte	Result	RL
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-122
1,2-Dichloroethane-d4	100	78-123
Toluene-d8	96	80-110
Bromofluorobenzene	106	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC160206	Batch#:	67469
Matrix:	Water	Analyzed:	10/29/01
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC160206	Batch#:	67469
Matrix:	Water	Analyzed:	10/29/01
Units:	ug/L		

Analyte	Result	RL
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-122
1,2-Dichloroethane-d4	103	78-123
Toluene-d8	97	80-110
Bromofluorobenzene	104	80-115

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	154891	Location:	Glovatorium
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2511	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	67469
Units:	ug/L	Analyzed:	10/29/01
Diln Fac:	1.000		

Type: BS Lab ID: QC160203

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	50.00	53.87	108	74-132
Benzene	50.00	50.74	101	80-116
Trichloroethene	50.00	49.71	99	80-119
Toluene	50.00	52.25	105	80-120
Chlorobenzene	50.00	50.36	101	80-117

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-122
1,2-Dichloroethane-d4	97	78-123
Toluene-d8	100	80-110
Bromofluorobenzene	105	80-115

Type: BSD Lab ID: QC160204

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	50.00	52.53	105	74-132	3	20
Benzene	50.00	50.38	101	80-116	1	20
Trichloroethene	50.00	49.42	99	80-119	1	20
Toluene	50.00	50.65	101	80-120	3	20
Chlorobenzene	50.00	48.97	98	80-117	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	99	78-123
Toluene-d8	99	80-110
Bromofluorobenzene	100	80-115

RPD= Relative Percent Difference

MICROSEEPS

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203

San Ramon, CA 94583

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Sample Identification

Lab Sample #	Client Sample ID
P0110342-01	SOMA-2
P0110342-02	SOMA-3
P0110342-03	SOMA-4
P0110342-04	GW-4
P0110342-05	SOMA-1
P0110342-06	LFR-2
P0110342-07	LFR-3
P0110342-08	LFR-1
P0110342-09	MW-11
P0110342-10	GW-3
P0110342-11	GW-2

Approved By: Debbie Hallo

P0110-42

CHAIN - OF - CUSTODY RECORD

Phone: (412) 826-5245 | **Microseeps, Inc. - 220 William Pitt Way - Pittsburgh, PA 15238** | Fax No. : (412) 826-3433

Company : SOMO Env Eng
Co. Address : 2680 Bishop Dr. Suite 203. San Ramon CA
Proj. Manager: Mansour Sepehr
Proj. Location: Oakland
Proj. Number: 2511
Phone # : 9252414 6600 **Fax # :** 9252414 6601

Sampler's signature : Nasser Parsou

Results to : Mansour Sepehr

Invoice to : SOMO. Env. Eng

Cooler ID	Cooler Temp.

Sample ID	Sample Description	Date	Time	Comp.	Grab	# Cont.	Parameters Requested: CH4	Remarks
	water	10/19					✓	
SOMW-2			1:30		✓		✓	
SOMW3			2:32		✓		✓	
SOMW-4			3:30		✓		✓	
MW-4			10:15		✓		✓	
SOMW-1		↓	9:20		✓		✓	
LFR-2		10/18	4:15		✓		✓	
LFR-3			3:25		✓		✓	
LFR-1		↓	1.45		✓		✓	
MW-11		10/19	11:35		✓		✓	
GW-3			10:10		✓		✓	
GW-2		↓	9:0		✓		✓	

Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Nasser Parsou	SOMO. Env. Eng	10/19	3:30				
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Accompany Samples YELLOW COPY : Laboratory File PINK COPY : Submitter

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-01

Sample Description	Matrix	Sampled Date/Time	Received
SOMA-2	Water	19 Oct. 01 13:30	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	6600	0.015	ug/L	AM20GAX	bc	10/31/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-02

Sample Description	Matrix	Sampled Date/Time	Received
SOMA-3	Water	19 Oct. 01 14:32	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	1000	0.015	ug/L	AM20GAX	bc	10/31/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-03

Sample Description	Matrix	Sampled Date/Time	Received
SOMA-4	Water	19 Oct. 01 15:30	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	1200	0.015	ug/L	AM20GAX	bc	10/31/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-07

Sample Description	Matrix	Sampled Date/Time	Received
FR-3	Water	18 Oct. 01 15:25	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	9.3	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-04

Sample Description	Matrix	Sampled Date/Time	Received
GW-4	Water	19 Oct. 01 10:15	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	4800	0.015	ug/L	AM20GAX	bc	10/31/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-05

Sample Description	Matrix	Sampled Date/Time	Received
SOMA-1	Water	19 Oct. 01 9:20	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	120	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-06

Sample Description	Matrix	Sampled Date/Time	Received
LFR-2	Water	18 Oct. 01 16:15	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	11000	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-08

Sample Description	Matrix	Sampled Date/Time	Received
FR-1	Water	18 Oct. 01 13:45	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	5.4	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-09

Sample Description	Matrix	Sampled Date/Time	Received
MW-11	Water	19 Oct. 01 11:35	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	6.6	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-10

Sample Description	Matrix	Sampled Date/Time	Received
GW-3	Water	19 Oct. 01 10:10	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	4.1	0.015	ug/L	AM20GAX	bc	11/1/01

Order #: P0110342
Report Date: 11/02/01
Client Proj Name: Oakland CA 2511
Client Proj #: Oakland CA 2511

Client Name: Soma Environmental Engineering
Contact: Naser Pakrou
Address: 2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Lab Sample #: P0110342-11

Sample Description	Matrix	Sampled Date/Time	Received
GW-2	Water	19 Oct. 01 9:00	20 Oct. 01

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Methane	0.91	0.015	ug/L	AM20GAX	bc	11/1/01

APPENDIX B

Field Notes, Field Measured Physical and Chemical Parameter Values and DO Correction Tables

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou, Tony Perini

Well/Sample ID:	SoMW-1	TOC ELEV.	81.64 ft	Purge:	☑ Pump	☐ Bailer		
Dup:	—	Well Depth:	40 ft	Sample:	☐ Pump	☑ Bailer		
Blank:	—	DTW:	13.75 ft	Odor:	☑ No	☐ Yes	Describe:	
Purge Volume:	9 Gallons	Water Table Elev.:	67.89 ft	Sheen:	☑ No	☐ Yes	Describe:	
Well Diameter:	4 in	Height of Water:	26.25 ft	Color:	☑ No	☐ Yes	Describe:	

Laboratory:	Curtis & Tompkins		
Delivery:	10/19/01, Delivered by UPS		
Analysis/preservative:			
Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly

Alk, Cl-, Sulfate: 1 unpreserved poly L

10/19/01	DTW	VOLUME	TEMP (C)	COND (mS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization criteria: successive parameters within				+/-3%	+/- 10%	+/- 10 mV	+/- 10%	+/- 0.1	
				6/cm					
8:15									
8:17		0.1	17.92	.156	5.98	140	41.0	6.93	
8:20		0.3	17.98	0.156	5.60	140	65.0	6.85	
8:30		2.0	18.04	0.155	5.05	142	67.0	6.81	
8:35		3.0	18.08	0.154	4.99	144	388	6.80	
8:40		4.0	18.09	0.153	4.82	145	200	6.80	
8:50		5.0	18.11	0.149	4.86	148	390	6.78	
9:00		6.0	18.13	0.149	4.59	149	445	6.78	
9:15		9.00	18.15	0.146	4.19	151	337	6.77	
9:20	sampled.								

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.52	0.75	0.2		33	0.3
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
					Tony Perini

Well/Sample ID:	SOMA-2	Toc Elev:	81.39 ft	Purge:	☑ Pump	☐ Bailer		
Dup:	—	Well Depth:	20 ft	Sample:	☐ Pump	☑ Bailer		
Blank:	—	DTW:	9.53 ft	Odor:	☑ No	☐ Yes	Describe:	
Purge Volume:	4 gal	Water Table Elev.:	71.86 ft	Sheen:	☑ No	☐ Yes	Describe:	
Well Diameter:	2 in.	Height of Water:	10.47 ft	Color:	☑ No	☐ Yes	Describe:	

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate: 1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs	
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly	
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly	

10/19 S/M

TIME (stabilization for successive parameters within ...)	DTW	VOLUME	TEMP (F)	COND (uS/cm) +/- 3%	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	TURBIDITY (NTU) +/- 10%	pH +/- 0.1	COMMENTS
12:30 PM				S/M					
12:40		0.36 GAL	16.95	0.127	4.71	-12	999	6.92	
12:45		0.7 GAL	16.93	0.124	2.26	-44	373	6.88	
12:52		1 GAL	16.95	0.123	1.75	-68	60	6.88	
12:58		1.2 GAL	16.96	0.122	1.47	-74	26	6.87	
1:04		1.4 GAL	16.97	0.123	1.29	-78	12.5	6.88	
1:10		1.5 GAL	16.91	0.122	1.37	-80	320	6.88	
1:15		2.5	16.93	0.122	1.14	-84	200	6.87	
1:20		2.8	16.93	0.122	0.84	-87	57	6.87	
1:25		3.5	16.93	0.122	0.63	-89	43.6	6.87	
1:30	Sampled - 4.0		16.93	0.122	0.57	-89	49.2	6.87	

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	40	44	0.4	N.M	0.0	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
					Tony Perini

Well/Sample ID:	SOMA-3 Toc Elev	81.42 ft	Purge:	☑ Pump	☐ Bailer		
Dup:	—	Well Depth: 30 ft	Sample:	☐ Pump	☑ Bailer		
Blank:	—	DTW: 13.1 ft	Odor:	☑ No	☐ Yes	Describe:	
Purge Volume:	0.6 gal.	Water Table Elev.: 68.32 ft	Sheen:	☑ No	☐ Yes	Describe:	
Well Diameter:	3/4 in.	Height of Water: 16.9 ft	Color:	☑ No	☐ Yes	Describe:	

Laboratory: Curtis & Tompkins

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs
8260 (8010 list) & MtBE & BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly
		Ferrous Iron:	1 HCl Pres. Poly

Alk, Cl-, Sulfate: 1 unpreserved poly L

10/19/01

TIME	DTW	VOLUME	TEMP (°C)	COND (µS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization (3 successive parameters within					+/- 3%	+/- 10%	+/- 10mV	+/- 10%	+/- 0.1	
1:55 PM				S/m					
2 PM		0.1 GAL	17.32	0.155	3.24	-33	139	7.03	
2:05		0.2 GAL	17.18	0.158	2.11	-18	109	7.03	
2:09		0.3 GAL	17.16	0.160	1.90	-11	98	7.02	
2:14		0.4 GAL	17.15	0.162	1.70	-7	92.8	7.01	
2:19		0.5 GAL	17.12	0.160	1.50	-1	72	6.95	
2:25		0.6 GAL	17.09	0.158	1.32	2	61	6.91	
Sampled	2:32								

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.22	0.4	0.0		33	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou, Tony Perini

Well/Sample ID:	SOMA-4	TOC ELEV:	81.09 ft	Purge:	☑ Pump	☐ Bailer	
Dup:	—	Well Depth:	20 ft	Sample:	☐ Pump	☑ Bailer	
Blank:	—	DTW:	11.32 ft	Odor:	☑ No	☐ Yes	Describe:
Purge Volume:	0.9 Gal	Water Table Elev.:	69.77 ft	Sheen:	☑ No	☐ Yes	Describe:
Well Diameter:	2 in	Height of Water:	8.68 ft	Color:	☑ No	☐ Yes	Describe:

Laboratory: Curtis & Tompkins, LTD

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate: 1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs	
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly	
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly	

S/m.

TIME (Stabilization for successive parameters within 10%)	DTW	VOLUME	TEMP (°C)	COND (µS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
					+/- 10%	+/- 10 mV	+/- 10%	+/- 0.1	
2:45 PM				x10000					
2:52 PM		0.1 GAL	16.92	0.152	4.93	98	64.9	6.53	
2:56		0.2 GAL	16.88	0.153	1.88	92	35.9	6.49	
3:02		0.3 GAL	16.87	0.152	1.23	90	21.7	6.48	
3:08		0.4 GAL	16.87	0.148	0.99	89	11.4	6.50	
3:15		0.7 GAL	16.87	0.146	0.92	89	10.4	6.52	
3:20		0.9 GAL	16.88	0.145	0.83	88	10.5	6.53	
Sampled 3:30									

Results	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.22	0.26	2.2	NM	17	4
Dilution:						
Comments:						

(Results in mg/L)

Project #: 2511 Address: 2815 Broadway Date: 10/18/01-10/19/01

Project Name: Glovatorium Oakland, CA Sampler: Naser Pakrou

Tony Perini

Well/Sample ID: SOMA-5 TOC ELEV. 81.50 ft Purge: ☐ Pump ☐ Bailer

Dup: — Well Depth: 26 ft Sample: ☐ Pump ☐ Bailer

Blank: — DTW: DRY Odor: ☐ No ☐ Yes Describe:

Purge Volume: — Water Table Elev.: NA Sheen: ☐ No ☐ Yes Describe:

Well Diameter: 3/4 inch Height of Water: NA Color: ☐ No ☐ Yes Describe:

Laboratory:

Delivery:

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs
8260 (8010 list) & MtBE & BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly
		Ferrous Iron:	1 HCl Pres. Poly

Alk, Cl-, Sulfate: 1 unpreserved poly L

TIME	DTW	VOLUME	TEMP (°C)	COND (µS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization if 3 successive parameters within:				+/- 5%	+/- 10%	+/- 10 mV	+/- 10%	+/- 0.1%	
WELL WAS DRY									
NO Sampling AND NO Purging was performed on WELL									

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
					Tony Perini

Well/Sample ID:	LFR-1	TOC ELEV:	79.97 ft	Purge:	☑ Pump	☐ Bailer	
Dup:	—	Well Depth:	19 ft.	Sample:	☐ Pump	☑ Bailer	
Blank:	—	DTW:	9.93 ft	Odor:	☑ No	☐ Yes	Describe:
Purge Volume:	3 gal.	Water Table Elev.:	70.04 ft	Sheen:	☑ No	☐ Yes	Describe:
Well Diameter:	2 inch	Height of Water:	9.07 ft	Color:	☑ No	☐ Yes	Describe:

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate:	1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs		
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly		
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly		

TIME	DTW	VOLUME	TEMP (°C)	COND (µS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization Criteria: 3 Successive parameters within				+/- 3%	+/- 10%	+/- 10mV	+/- 10	+/- 0.1	
12:40 PM				S/m					
12:42		0.1 GAL	21.22	0.131	2.72	83	158	6.53	
12:45		0.4 GAL	21.28	0.134	2.12	89	44.3	6.52	
12:50		0.9 GAL	20.46	0.105	0.62	114	130	6.65	
12:52		1.3 GAL	20.75	0.659	1.08	115	136	6.76	
1:03 PM		2 GAL	20.85	0.645	1.29	119	136	6.76	
1:09 PM		3 GAL	~~20.85~~ 20.83	0.661	1.03	119	133	6.73	
1:45	Sampled.								

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.18	0.012	6.9	N.M.	24	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
					Tony Perini

Well/Sample ID:	LFR-2	Toc Elev.:	81.89 ft	Purge:	☑ Pump	☐ Bailer	
Dup:	—	Well Depth:	18.88 ft	Sample:	☐ Pump	☑ Bailer	
Blank:	—	DTW:	11.36 ft	Odor:	☑ No	☐ Yes	Describe:
Purge Volume:	5 gal.	Water Table Elev.:	70.53 ft	Sheen:	☑ No	☐ Yes	Describe:
Well Diameter:	2 in	Height of Water:	7.52 ft	Color:	☑ No	☐ Yes	Describe:

Laboratory: Curtis & Tompkins, Lto

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate:	1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs		
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly		
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly		

TIME (Stabilization for successive parameters within)	DTW	VOLUME	TEMP. (C)	COND. (S/m) ± 3%	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	TURBIDITY (NTU) ± 10%	pH ± 0.05 S.U.	COMMENTS
3:35				S/m					
3:37		0.1	19.57	0.114	2.44	-90	152	6.83	
3:43		0.6	19.45	0.113	0.66	-90	142	6.84	
3:48		1.2	19.48	0.106	0.64	-83	75.0	6.80	
3:55		2.2	19.45	0.104	0.64	-73	69.0	6.82	
4.00		3.0	20.04	0.105	0.48	-72	66.9	6.82	
4.07		4.0	19.58	0.108	0.45	-74	72.0	6.78	
4:15		5.00	19.56	0.109	0.43	-75	64.0	6.78	
4:15 sampled									

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	6.5	8.2	0.0		0.0	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou, Tony Perini

Well/Sample ID:	LFR-3	Toc Elev:	77.96 ft	Purge:	☑ Pump	☐ Bailer	
Dup:	—	Well Depth:	20.40 ft	Sample:	☐ Pump	☑ Bailer	
Blank:	—	DTW:	11.87 ft	Odor:	☑ No	☐ Yes	Describe:
Purge Volume:	4 gal	Water Table Elev.:	66.09 ft	Sheen:	☑ No	☐ Yes	Describe:
Well Diameter:	2 in.	Height of Water:	8.53 ft	Color:	☑ No	☐ Yes	Describe:

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate: 1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs	
8260 (8010 list) & MtBE & BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly	
		Ferrous Iron:	1 HCl Pres. Poly	

TIME (3 consecutive readings within 10% for Stabilization)	DTW	VOLUME	TEMP (°F)	COND (mS/cm) +/- 5%	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	TURBIDITY (NTU) +/- 10%	pH +/- 0.1 U	COMMENTS
2.42				mS/cm					
2.45	~~0~~	0.1g	21.8	0.681	2.32	148	>999	6.63	
2.50	~~0~~	0.5	21.82	0.630	1.28	143	251	6.63	
2.56		1.0	21.53	0.623	0.86	140	209	6.60	
3.01		1.5	21.50	0626	0.70	139	224	6.57	
3.06		2.0	21.41	0.634	0.61	138	221	6.55	
3.11		3.0	21.41	0.648	0.54	139	264	6.53	
3.16		4.0	21.39	0.645	0.54	139	250	6.50	
3:25	Sampled.								

Results	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.11	0.12	0.8	N.M.	30.0	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou, Tony Perini

Well/Sample ID:	GW-2	TOC Elev:	79.14 ft	Purge:	☑ Pump	☐ Bailer	
Dup:	—	Well Depth:	20 ft	Sample:	☐ Pump	☑ Bailer	
Blank:	—	DTW:	11.23 ft	Odor:	☑ No	☐ Yes	Describe:
Purge Volume:	0.8 gal.	Water Table Elev.:	67.91 ft	Sheen:	☑ No	☐ Yes	Describe:
Well Diameter:	1 Inch	Height of Water:	8.77 ft	Color:	☑ No	☐ Yes	Describe:

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate:	1 unpreserved poly L
Total Iron, Mangahese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs		
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly		
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly		

TIME (Stabilization if successive parameters within)	DTW	VOLUME	TEMP (°C)	COND (uS/cm) ± 3%	DO (mg/L) ± 10%	ORP (mV) ± 10mV	TURBIDITY (NTU) ± 10%	pH ± 0.1 unit	COMMENTS
11:50 AM				mS/cm					
11:54 AM		0.1 GAL	20.85	~~41.1~~ 0.911	9.17	157	0	6.74	
12 PM		0.3 GAL	21.18	~~29.4~~ 0.714	9.17	150	17.2	6.88	
12:~~18~~ PM		~~Not~~ 0.5 GAL	21.3	0.784	10.13	150	21.5	6.89	
12:22 PM		0.8 GAL	DRIED	0.786	9.97	148	21.4	6.84	
					not reliable				
sampled	10/19	9:00							

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
Dilution:		Not enough	Sample.			
Comments:						

(Results in mg/L)

Project #:	2511	**Address:**	2815 Broadway	**Date:**	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	**Sampler:**	Naser Pakrou
					Tony Perini

Well/Sample ID:	GW-3	TOC ELEV.	77.92 ft	**Purge:**	☑ Pump	☐ Bailer		
Dup:	—	**Well Depth:**	20 ft	**Sample:**	☐ Pump	☑ Bailer		
Blank:	—	**DTW:**	10.25 ft	**Odor:**	☑ No	☐ Yes	**Describe:**	
Purge Volume:	0.6 gal.	**Water Table Elev.:**	67.67 ft	**Sheen:**	☑ No	☐ Yes	**Describe:**	
Well Diameter:	1 Inch	**Height of Water:**	9.75 ft	**Color:**	☑ No	☐ Yes	**Describe:**	

Laboratory: Curtis & Tompkins, LTD

Delivery: 10/19/01 DELIVERED BY UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial	Alk, Cl-, Sulfate: 1 unpreserved poly L
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs	
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly	
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly	

TIME Stabilization if successive parameters within	DTW	VOLUME	TEMP (°C) +/- 10%	COND (uS/cm) +/- 10%	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	TURBIDITY (NTU) +/- 10%	pH +/- 0.1 pH	COMMENTS
10:18 2PM				mS/cm					
2:02 PM		0.1 GAL	21.74	0.685	4.60	62	27.4	6.93	
2:07 PM		0.3 GAL	22.45	0.650	4.09	94	19.1	6.79	
2:15 PM		0.4 GAL	22.55	0.561	3.48	130	27.3	6.67	
2:22 PM		0.6 GAL	22.56	0.590	3.76	131	18.3	6.84	
sampled	10/19	10:10							

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.0	0.0	5.2	N.M.	4.9	0.0
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	Address:	2815 Broadway	Date:	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	Sampler:	Naser Pakrou
					Tony Perini

Well/Sample ID:	GW-4	Toc Elev:	82.37 ft	Purge:	☑ Pump	☐ Bailer		
Dup:	—	Well Depth:	12 ft	Sample:	☐ Pump	☑ Bailer		
Blank:	—	DTW:	8.15 ft	Odor:	☑ No	☐ Yes	Describe:	
Purge Volume:	0.7 gal	Water Table Elev.:	74.22 ft	Sheen:	☑ No	☐ Yes	Describe:	
Well Diameter:	1 inch	Height of Water:	3.85 ft	Color:	☑ No	☐ Yes	Describe:	

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs
8260 (8010 list) & MtBE & BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly
		Ferrous Iron:	1 HCl Pres. Poly

Alk, Cl-, Sulfate: 1 unpreserved poly L

TIME 10/19/01	DTW	VOLUME	TEMP (°C)	COND (mS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization for groundwater parameters within:				+/- 3%	+/- 10%	+/- 10mV	+/- 10	+/- 0.1	
9:48				ms/cm					
9:50		0.1	18.31	0.906	1.56	-11	760	6.80	
9:55		0.3	18.54	0.72	2.20	-16	302	6.67	
10:00		0.4	18.51	0.717	2.33	-9	268	6.71	
10.05		0.5	18.41	0.728	1.43	-59	182	6.77	
10:10		0.7	18.36	0.732	1.00	-84	157	6.79	
10:15		Sampled.							

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	4.8	11.00	0.0		0.0	0.1
Dilution:						
Comments:						

(Results in mg/L)

Project #:	2511	**Address:**	2815 Broadway	**Date:**	10/18-19/01
Project Name:	Glovatorium		Oakland, CA	**Sampler:**	Naser Pakrou
					Tony Perini

Well/Sample ID:	MW-11	**TOC Elev:**	84.13 ft	**Purge:**	☑ Pump	☐ Bailer		
Dup:	—	**Well Depth:**	19 ft	**Sample:**	☐ Pump	☑ Bailer		
Blank:	—	**DTW:**	11.24 ft	**Odor:**	☑ No	☐ Yes	**Describe:**	
Purge Volume:	4 gal	**Water Table Elev.:**	72.89 ft	**Sheen:**	☑ No	☐ Yes	**Describe:**	
Well Diameter:	2 inch	**Height of Water:**	7.76 ft	**Color:**	☑ No	☐ Yes	**Describe:**	

Laboratory: Curtis & Tompkins, Ltd

Delivery: 10/19/01, Delivered by UPS

Analysis/preservative:

Sulfide:	1 Poly w/ $Zn(C_2H_3O_2)_2$ + NAOH	Disolved H_2:	1 Septum Vial
Total Iron, Manganese:	1 HNO_3 preserved poly	Dissolved Perm Gases:	2 Unpreserved VOAs
8260 (8010 list) & MtBE &		Cation & Anion w/ Nitrate & Nitrite:	1 Unpres. Poly and 1 H2SO4 Poly
BTEX & TPH-g & TPH-ss:	6 VOAs w/ HCL	Ferrous Iron:	1 HCl Pres. Poly

Alk, Cl-, Sulfate: 1 unpreserved poly L

TIME 10/19	DTW	VOLUME	TEMP (°C)	COND (mS/cm)	DO (mg/L)	ORP (mV)	TURBIDITY (NTU)	pH	COMMENTS
Stabilization if successive parameters within:				+/- 3%	+/- 10%	+/- 10 mV	+/- 10%	+/- 0.1	
10:50 AM				S/m					
10:51 AM		0.1 GAL	20.10	0.157	3.77	87	0	6.68	
10:56		0.2	20.40	0.136	4.87	119	0	6.44	
11:01		0.4	20.60	0	5.45	137	0.4	6.41	
11:07		0.6 GAL	20.69	0.131	5.48	141	0	6.41	
11:12		1.5	20.98	0.130	5.82	151	3.	6.42	
11:25		2.5	21.18	0.129	5.65	154	4.0	6.42	
11:30		4.00	21.25	0.130	5.58	155	4.4	6.41	
11:35	Sampled.								

Result	Ferrous Iron	Total Iron	Nitrate	Nitrite	Sulfate	Dissolved Manganese
	0.0	0.0	10.1	N.M		0
Dilution:						
Comments:						

(Results in mg/L)

OXYGEN SOLUBILITY AND CALIBRATION VALUE TABLES

TABLE A — Solubility of Oxygen in mg/L in Water Exposed to Air at 760 mm Hg Pressure

Temp °C	Chlorinity: 0 Salinity: 0	5.0 9.0	10.0 18.1	15.0 27.1	20.0 36.1	25.0 45.2
0.0	14.62	13.73	12.89	12.10	11.36	10.66
1.0	14.22	13.36	12.55	11.78	11.07	10.39
2.0	13.83	13.00	12.22	11.48	10.79	10.14
3.0	13.46	12.66	11.91	11.20	10.53	9.90
4.0	13.11	12.34	11.61	10.92	10.27	9.66
5.0	12.77	12.02	11.32	10.66	10.03	9.44
6.0	12.45	11.73	11.05	10.40	9.80	9.23
7.0	12.14	11.44	10.78	10.16	9.58	9.02
8.0	11.84	11.17	10.53	9.93	9.36	8.83
9.0	11.56	10.91	10.29	9.71	9.16	8.64
10.0	11.29	10.66	10.06	9.49	8.96	8.45
11.0	11.03	10.42	9.84	9.29	8.77	8.28
12.0	10.78	10.18	9.62	9.09	8.59	8.11
13.0	10.54	9.96	9.42	8.90	8.41	7.95
14.0	10.31	9.75	9.22	8.72	8.24	7.79
15.0	10.08	9.54	9.03	8.54	8.08	7.64
16.0	9.87	9.34	8.84	8.37	7.92	7.50
17.0	9.67	9.15	8.67	8.21	7.77	7.36
18.0	9.47	8.97	8.50	8.05	7.62	7.22
19.0	9.28	8.79	8.33	7.90	7.48	7.09
20.0	9.09	8.62	8.17	7.75	7.35	6.96
21.0	8.92	8.46	8.02	7.61	7.21	6.84
22.0	8.74	8.30	7.87	7.47	7.09	6.72
23.0	8.58	8.14	7.73	7.34	6.96	6.61
24.0	8.42	7.99	7.59	7.21	6.84	6.50
25.0	8.26	7.85	7.46	7.08	6.73	6.39
26.0	8.11	7.71	7.33	6.96	6.62	6.29
27.0	7.97	7.58	7.20	6.85	6.51	6.18
28.0	7.83	7.44	7.08	6.73	6.40	6.09
29.0	7.69	7.32	6.96	6.62	6.30	5.99
30.0	7.56	7.19	6.85	6.51	6.20	5.90
31.0	7.43	7.07	6.73	6.41	6.10	5.81
32.0	7.31	6.96	6.62	6.31	6.01	5.72
33.0	7.18	6.84	6.52	6.21	5.91	5.63
34.0	7.07	6.73	6.42	6.11	5.82	5.55
35.0	6.95	6.62	6.31	6.02	5.73	5.46
36.0	6.84	6.52	6.22	5.93	5.65	5.38
37.0	6.73	6.42	6.12	5.84	5.56	5.31
38.0	6.62	6.32	6.03	5.75	5.48	5.23
39.0	6.52	6.22	5.93	5.66	5.40	5.15
40.0	6.41	6.12	5.84	5.58	5.32	5.08
41.0	6.31	6.03	5.75	5.49	5.24	5.01
42.0	6.21	5.93	5.67	5.41	5.17	4.93
43.0	6.12	5.84	5.58	5.33	5.09	4.86
44.0	6.02	5.75	5.50	5.25	5.02	4.79
45.0	5.93	5.67	5.41	5.17	4.94	4.72

TABLE B — Calibration Values for Various Atmospheric Pressures and Altitudes

PRESSURE		ALTITUDE			CORRECTION
in. Hg	mm Hg	kPa	Feet	m	FACTOR (%)
30.23	768	102.3	-276	-84	101
29.92	760	101.3	0	0	100
29.61	752	100.3	278	85	99
29.33	745	99.3	558	170	98
29.02	737	98.3	841	256	97
28.74	730	97.3	1126	343	96
28.43	722	96.3	1413	431	95
28.11	714	95.2	1703	519	94
27.83	707	94.2	1995	608	93
27.52	699	93.2	2290	698	92
27.24	692	92.2	2587	789	91
26.93	684	91.2	2887	880	90
26.61	676	90.2	3190	972	89
26.34	669	89.2	3496	1066	88
26.02	661	88.2	3804	1160	87
25.75	654	87.1	4115	1254	86
25.43	646	86.1	4430	1350	85
25.12	638	85.1	4747	1447	84
24.84	631	84.1	5067	1544	83
24.53	623	83.1	5391	1643	82
24.25	616	82.1	5717	1743	81
23.94	608	81.1	6047	1843	80
23.62	600	80.0	6381	1945	79
23.35	593	79.0	6717	2047	78
23.03	585	78.0	7058	2151	77
22.76	578	77.0	7401	2256	76
22.44	570	76.0	7749	2362	75
22.13	562	75.0	8100	2469	74
21.85	555	74.0	8455	2577	73
21.54	547	73.0	8815	2687	72
21.26	540	71.9	9178	2797	71
20.94	532	70.9	9545	2909	70
20.63	524	69.9	9917	3023	69
20.35	517	68.9	10293	3137	68
20.04	509	67.9	10673	3253	67
19.76	502	66.9	11058	3371	66