Khatri, Paresh, Env. Health

From: Douglas W. Lovell [doug_lovell@streamborn.com]
Sent: Saturday, November 21, 2009 12:02 PM
To: Khatri, Paresh, Env. Health
Subject: 4401 Market St, Oakland
Attachments: Draft Fact Sheet (21 Nov 2009).doc; DRAFT_RO#0000132 _ResponseToAlamedaCountyCommentsDated24Sep2009_2009-11-18.pdf; 2009.9.24 ACDEH Comments.pdf

Paresh

I have attached the draft fact sheet. You may provide comments back to us for edit or you may take control of the fact sheet and finalize it yourself.

I have also attached a draft of our response to your 24 Sep 2009 letter (also attached). Streamborn is currently obtaining the RP's certification for this report and we have a few days to make potential changes. Please review this draft report and let us know if we need to make any changes to address your outstanding questions/issues.

Please contact me with any questions or comments.

Regards

Doug
--
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California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Secretary for Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
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http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

FACT SHEET

Status of Environmental Cleanup

Fuel Leak Case No RO0000132
Global ID No. T0600100430

4401 Market Street, Oakland
Alameda County

December 2009

This notification is being provided to nearby landowners and residents/occupants as well as other interested persons. It describes site background, past work to investigate, next steps for cleanup, and the Water Board's oversight process for the site, and how you can obtain more information

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Background

The subject site is located approximately three miles north of downtown Oakland. The surrounding land use is mixed residential and commercial. The site is currently operated as an automotive repair facility.

The structure at 4401 Market Street was reportedly constructed in 1943 and operated as a gasoline station until the 1970s. The details of the underground tank installations are not available. In June 1990, one 1,000-gallon underground gasoline tank and three 500-gallon underground gasoline tanks were removed from the southeast portion of the site. During tank removal, soil samples were collected from beneath the tanks and associated piping and petroleum contamination was discovered.

The East Bay Municipal Utilities District serves the site and surrounding area with water - the local groundwater is not used for domestic or industrial purposes.

Site Investigations

The Alameda County Health Care Services Agency, as the local implementing agency and representative of the San Francisco Bay Regional Water Quality Control Board, oversees investigation and cleanup activities at the site. From 1994 to 2009; soil, groundwater, and soilgas investigations were completed at the site and surrounding area. These investigations characterized the hydrogeology, subsurface conditions, and the nature, extent, and fate of the petroleum contamination.

Subsurface conditions at the site typically consist of (1) silt and clay with varying amounts of sand, starting at the ground surface and extending to a depth of approximately18 feet, overlying (2) sand with varying amounts of gravel, clay, and silt. The sand stratum extends to a depth of at least 25 feet (the maximum depth that has been explored).

Groundwater occurs at a depth of approximately 13 feet and fluctuates up and down about 1 foot seasonally. The groundwater gradient is directed toward the southwest.

Site investigations have revealed a zone of soil contamination beneath the former tanks that extends vertically from the base of the tanks to the groundwater table and underlying smear zone (from approximately 7 to 15 feet deep). Downgradient (southwest) of the former tanks, soil contamination generally coincides with the groundwater table/smear zone (soil contamination starts at a depth of approximately 12 feet and extends to a depth of approximately 15 feet). This soil contamination extends laterally up to ±90 feet downgradient of the former tanks. The soil contamination likely extends beneath the neighboring property at 903 44th Street.

For additional information, contact: Water Board project manager Marcia Liao at (510) 622-2377 [email mliao@waterboards.ca.gov], Responsible Party project manager Douglas Lovell at (510) 528-4234 [email doug@streamborn.com].

Contaminated soil has caused localized groundwater contamination. Groundwater contamination extends slightly deeper than soil contamination. Available data indicates that the groundwater plume is not migrating and groundwater concentrations are generally decreasing with time. Natural attenuation mechanisms, primarily biodegradation, will eventually decrease contaminant concentrations to below laboratory detection limits - the contamination will eventually abate entirely.

The primary chemicals of concern are total petroleum hydrocarbons as gasoline (TPH-gasoline) and benzene. In soil, TPH-gasoline and benzene have been measured at concentrations below applicable environmental screening levels. In groundwater, TPH-gasoline and benzene have been measured at concentrations slightly above environmental screening levels for drinking water, but below other applicable screening levels. In soilgas, benzene has been measured at concentrations below environmental screening levels for vapor inhalation in a residential setting.

Even though groundwater concentrations exceed drinking water criteria, there are no nearby wells intercepting the contamination and the likelihood of installing new, shallow domestic wells is very low.

Remedial actions completed at the site consist of removing the underground tanks. During tank removal, the contaminated soil that was excavated was replaced in the excavation.

Proposed Plans for the Site

No further soil and groundwater investigation and remediation is planned. The source of contamination - the former tanks - has been removed. The site has been adequately characterized and the groundwater contaminant plumes are either stable or decreasing with time. The site data have demonstrated that, with time, contaminant concentrations will likely abate entirely.

The site is proposed for case closure.

Alameda County Oversight

Alameda County oversees more than 3,000 site cleanup cases, including more than 2,000 cases related to leaking fuel tanks.

Alameda County staff direct investigation and cleanup work and set cleanup standards under Water Code authority. Responsible Parties (e.g. past operators) propose specific measures, perform the actual work, and submit technical reports documenting task completion.

As part of this process, Alameda County circulates key documents, such as draft cleanup plans, to interested persons and provides an opportunity for comment on these documents. Interested persons include other agencies, local officials, non-profit organizations, and interested landowners and residents/occupants in the site vicinity.

Availability of Documents

Reports, workplans, and similar documents, along with laboratory analytical data, are available from the Geotracker database. To access the documents and data, point your Internet browser to the following address:

http://geotracker.swrcb.ca.gov/profile_report.asp?global_id=T060010043

California Regional Water Quality Control Board

San Francisco Bay Region

1515 Clay Street, Suite 1400, Oakland, California 94612
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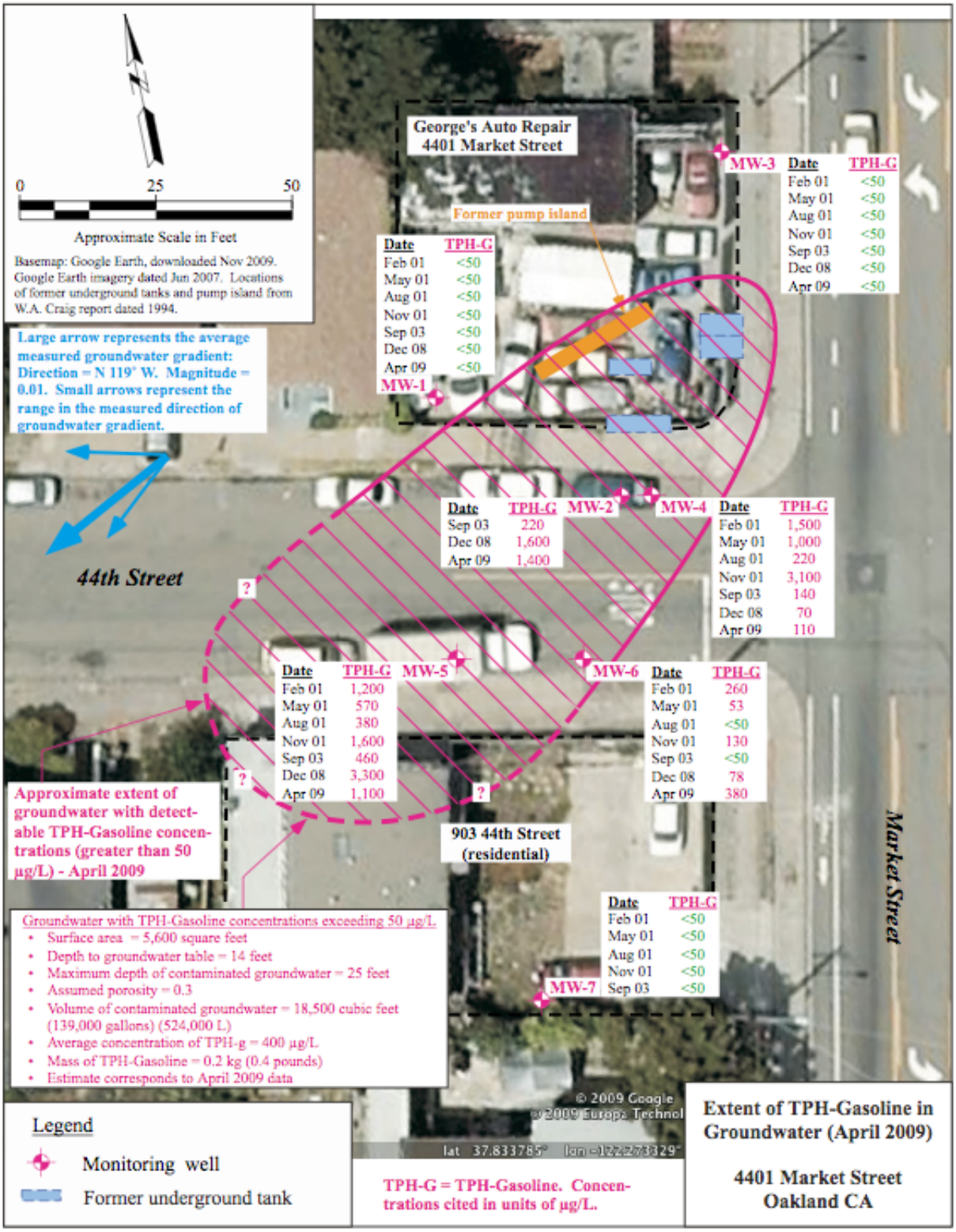
0
25
50
Approximate Scale in Feet
Basemap: Google Earth, downloaded Nov 2009. Google Earth imagery dated Jun 2007. Locations of former underground tanks and pump island from W.A. Craig report dated 1994.
George's Auto Repair
4401 Market Street
Former pump island
Large arrow represents the average measured groundwater gradient: Direction = N 119° W. Magnitude = 0.01. Small arrows represent the range in the measured direction of groundwater gradient.
44th Street
Market Street
903 44th Street (residential)
MW-1
Date TPH-G
Feb 01 <50
May 01 <50
Aug 01 <50
Nov 01 <50
Sep 03 <50
Dec 08 <50
Apr 09 <50
MW-2
Date TPH-G
Sep 03 220
Dec 08 1,600
Apr 09 1,400
MW-3
Date TPH-G
Feb 01 <50
May 01 <50
Aug 01 <50
Nov 01 <50
Sep 03 <50
Dec 08 <50
Apr 09 <50
MW-4
Date TPH-G
Feb 01 1,500
May 01 1,000
Aug 01 220
Nov 01 3,100
Sep 03 140
Dec 08 70
Apr 09 110
MW-5
Date TPH-G
Feb 01 1,200
May 01 570
Aug 01 380
Nov 01 1,600
Sep 03 460
Dec 08 3,300
Apr 09 1,100
MW-6
Date TPH-G
Feb 01 260
May 01 53
Aug 01 <50
Nov 01 130
Sep 03 <50
Dec 08 78
Apr 09 380
MW-7
Date TPH-G
Feb 01 <50
May 01 <50
Aug 01 <50
Nov 01 <50
Sep 03 <50
Approximate extent of groundwater with detectable TPH-Gasoline concentrations (greater than 50 µg/L) - April 2009
Groundwater with TPH-Gasoline concentrations exceeding 50 µg/L
• Surface area = 5,600 square feet
• Depth to groundwater table = 14 feet
• Maximum depth of contaminated groundwater = 25 feet
• Assumed porosity = 0.3
• Volume of contaminated groundwater = 18,500 cubic feet (139,000 gallons) (524,000 L)
• Average concentration of TPH-g = 400 µg/L
• Mass of TPH-Gasoline = 0.2 kg (0.4 pounds)
• Estimate corresponds to April 2009 data
© 2009 Google
© 2009 Europa Technol
lat 37.833785° lon -122273329°
Legend
Monitoring well
Former underground tank
TPH-G = TPH-Gasoline. Concentrations cited in units of µg/L.
Extent of TPH-Gasoline in Groundwater (April 2009)
4401 Market Street
Oakland CA

STREAMBORN

510.528.4234
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Casimiro Damele
3750 Victor Avenue
Oakland CA 94619

18 November 2009

Project No. P257

Letter Report
Response to Alameda County Comments Dated 24 September 2009
4401 Market Street
Oakland CA
Fuel Leak Case No. RO 0000132

Dear Mr. Damele (hardcopy):

This letter report has been prepared in response to the Alameda County Health Care Services Agency letter dated 24 September 2009 (ACHCSA 2009b). The Alameda County letter requested additional interpretation regarding groundwater contamination at the site, along with clarification of other items.

EXTENT OF RESIDUAL GROUNDWATER CONTAMINATION

Elevated to slightly elevated concentrations of TPH-gasoline and benzene, and to a lesser degree ethylbenzene and xylenes, persist in wells MW2, MW4, MW5, and MW6 (Table 5, Figures 7 through 10).

Since December 2008, groundwater concentrations have been significantly higher than those previously measured in September 2003 (groundwater monitoring was suspended from September 2003 to December 2008). The increase since 2008 is best explained by examining groundwater elevations; the groundwater elevations in September 2003 were near historic lows whereas the groundwater elevations since December 2008 have been near historic highs (Figure 6). This indicates that most of the soil contamination is present within a smear zone - the smear zone is estimated to be approximately two feet thick, at a depth coincident with the normal/typical groundwater table (depth = ±13 feet). Whenever groundwater elevations drop below the smear zone, groundwater no longer contacts (significantly) contaminated soil and dissolved contaminant concentrations decrease accordingly. The aforementioned site conceptual model is relatively common at petroleum release sites with similar subsurface conditions.

Figure 7 presents our interpretation of the current (April 2009) lateral extent of TPH-gasoline in groundwater. Figure 8 provides a similar interpretation for benzene. We conclude the following regarding the extent of groundwater contamination associated with the former tanks at 4401 Market Street:

- Groundwater with detectable TPH-gasoline concentrations currently extends downgradient (southwest) a distance of approximately 90 feet

from the former tanks. The contaminant plume likely extends beneath the neighboring property at 903 44th Street.

The mass of dissolved TPH-contamination is approximately 0.4 pounds.

- Groundwater with detectable benzene concentrations currently extends downgradient (southwest) a distance of approximately 70 feet from the former tanks. The contaminant plume may extend a slight distance beneath the neighboring property at 903 44th Street, but does not likely extend beneath the residential structure and/or yard.

  The mass of dissolved benzene contamination is approximately 0.006 pounds.

- Both the TPH-gasoline and benzene plumes are either stable or decreasing with time (Figures 9 and 10).

DETAILED EXAMINATION OF SELECTED GROUNDWATER MEASUREMENTS/OBSERVATIONS IN 1999

In April 1999 and July 1999, Streamborn completed 9 direct-push borings (B8 through B16, Figure 4). Soil samples were collected during drilling and analyzed for TPH-gasoline, BTEX, and fuel oxygenates (Table 10). Temporary casings were installed in the open boreholes and groundwater samples were collected without purging (the samples were likely turbid and the analytical results could have been unrepresentatively elevated due to the included soil particles) (Table 11). Field observations were recorded for soil and groundwater (Table 12).

Remarkable results from this investigation included the following:

- In boring B10, free phase product (presumably gasoline) was observed (Table 11) and elevated concentrations of TPH-gasoline (1,300 mg/kg) and BTEX (benzene = 12 mg/kg) were measured in the soil sample collected at a depth of 15-15.5 feet (Table 10).

  Well MW-5 was subsequently installed next to boring B10 (Figure 4). The well screen straddled the groundwater table (Table 3). Subsequent free phase product monitoring did not reveal detectable product (Table 6).

  Groundwater monitoring in well MW-5 has revealed elevated TPH-gasoline and benzene concentrations (Table 5), consistent with the soil results measured in boring B10.

- In boring B15, the groundwater sample from the temporary well casing measured TPH-gasoline = 5,100 µg/L, with BTEX below detection (Table 11). The laboratory noted that the TPH-gasoline result did not match the standard (Table 11). Although we have not examined the laboratory chromatogram for this sample, the measured TPH-gasoline concentration could have been attributable to an isolated compound (or isolated compounds).

The three soil samples collected from boring B15 (11.5-12 feet, 15-15.5 feet, 17.5-18 feet) were nondetect for TPH-gasoline and BTEX (Table 10).

Well MW-7 was subsequently installed within 10 feet of boring B10 (Figure 4). Monitoring of well MW-7 has not detected TPH-gasoline or BTEX (Table 5).

Recognizing that the groundwater measurement of 5,100 µg/L TPH-gasoline from boring B15 was from a temporary casing (without purging), recognizing that BTEX was not detected in the same groundwater sample, recognizing that the soil samples from boring B15 were nondetect, and recognizing that the adjacent well MW-7 has not detected TPH-gasoline or BTEX; we conclude that the 5,100 µg/L measurement is anomalous and unrepresentative. In particular, we do not believe the elevated measurement signifies any kind of "hot spot", nor do we believe the elevated measurement signifies migration of the groundwater contaminant plume toward boring B15.

POTENTIAL CONTAMINATION IMPACTS TO OFFSITE PROPERTIES

As indicated on Figures 7 and 8, we estimate that the TPH-gasoline and benzene plumes have migrated onto the downgradient property at 903 44th Street. We estimate that the TPH-gasoline plume has migrated beneath the lawn and residential structure at 903 44th Street. We estimate that the benzene plume has migrated beneath the sidewalk, but not beneath the lawn and structure.

According to our site conceptual model, we believe the contamination originally spread from the former tank area (at 4401 Market Street) as a relatively thin (vertical) zone, coincident with the groundwater table (depth = ±13 feet). With time, this thin zone was smeared vertically as the groundwater table fluctuated up and down seasonally.

Accordingly, we would not expect to find significant contamination above the groundwater table at 903 44th Street. Starting near the groundwater table (depth = ±12 feet), and extending about 3 feet vertically (depth = ±15 feet), we would expect to find the highest soil contamination. We would expect soil contamination to decrease significantly with depth, with detectable soil contamination likely extending no deeper than ±19 feet.

Groundwater contamination would mimic the soil contamination. The highest groundwater concentrations would be found near the groundwater table and the concentrations would attenuate rapidly with depth.

Give this conceptual model, we expect potential human and environmental exposure would be limited to the following:

- Vapor migration from contaminated soil and groundwater to indoor air and subsequent human inhalation of the vapors.

- Direct contact of construction workers with contaminated soil and/or groundwater if a deep (greater than ±10 feet) excavation was to be performed.
- Contaminated groundwater contact with environmental receptors if contaminated groundwater was to be discharged to the stormwater sewer (for example, as part of a construction dewatering project).
- Ingestion of contaminated groundwater if a domestic well was to be installed - drinking water scenario.

As mandated by Alameda County, Streamborn completed a soilgas investigation in June 2009 (Tables 7 and 8) (Streamborn 2009c). The investigation measured very small concentrations of benzene in soilgas, with resulting insignificant vapor inhalation risks.

The remaining three exposure scenarios have been addressed via the comparison of Environmental Screening Levels (ESLs) to the measured soil and groundwater concentrations (Tables 5 and 10). With the exception of the drinking water scenario, measured soil and groundwater concentrations are below applicable Environmental Screening Levels.

The site and surrounding area are served by a municipal source of drinking water (East Bay Municipal Water District). Streamborn previously conducted a sensitive receptor survey (Streamborn 2001d) and determined that no water wells exist proximal to the soil and groundwater contamination. It is highly unlikely that water wells will be constructed in the future given the availability of municipal water and existing restrictions regarding water wells in urbanized areas of Oakland. Even if a domestic well was to be constructed, it is highly unlikely the well would be screened shallow enough to intercept the contaminated groundwater.

The fate of the soil and groundwater contamination at the site should also be integrated with the risk management decisions. Streamborn expects that natural attenuation mechanisms, primarily biodegradation, will (1) continue to limit the lateral and vertical extent of soil and groundwater contamination, and (2) eventually cause the contaminant concentrations to become nondetect. The temporal contaminant trends (Figures 9 and 10) support this conclusion; albeit somewhat complicated by the temporal water elevation trends (Figure 6).

Streamborn expects that within the not-too-distant future, the limits of detectable contamination will shrink to the point that only the former tank area at 4401 Market Street and the adjacent portion of 44th Street are impacted.

CONCLUSIONS AND RECOMMENDATIONS

We conclude the following and recommend the following:

- Contamination from the former tanks at 4401 Market Street currently exists at the area of the former tanks and extends downgradient (southwest) less than approximately 100 feet. The contamination extends a slight distance onto 903 44th Street; otherwise,

contamination is confined to 4401 Market Street and the adjacent street itself (44th Street).

- Residual contamination presents no significant risk to human health or the environment. The neighboring property at 903 44th Street is not at significant risk unless the property owner were to install a shallow domestic well - a potential event with very low probability.
- Residual soil and groundwater concentrations are decreasing with time and are expected to become nondetect in the foreseeable future.
- Consideration should be given to recording a "Deed Notification" for the properties at 4401 Market Street and 903 44th Street. The "Deed Notification" would describe the nature and extent of contamination and warn against the potential human health and environmental risks of conducting deep excavations or installing domestic wells.
- Alameda County should close the contamination case for 4401 Market Street.
- Pending case closure, the monitoring wells should be sampled once-per-year, in March/April. The samples should be analyzed for TPH-gasoline/BTEX/fuel oxygenates.

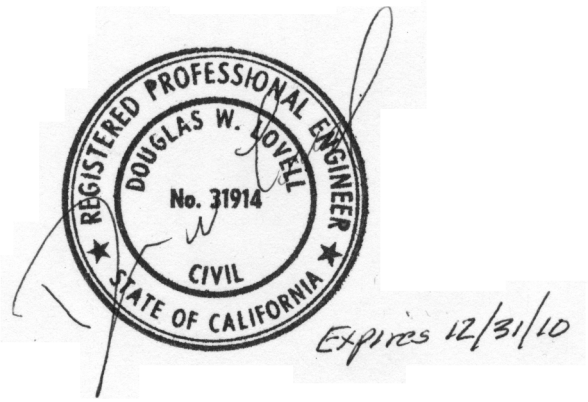
Streamborn previously filed the "List of Landowners Form" with Alameda County (Attachment 1). A draft fact sheet, as part of the public notification process, has been forwarded to Paresh Khatri/Alameda County Health Care Services Agency under separate cover.

Please contact us with any questions or comments.

Sincerely,

STREAMBORN

Douglas W. Lovell, PE
Geoenvironmental Engineer



Attachments

cc: Paresh Khatri/Alameda County Health Care Services Agency, Alameda CA (ecopy)

Electronic Submission: This report was uploaded to Geotracker (http://geotracker.swrcb.ca.gov/). This report was also uploaded to the Alameda County server.

Table 1 (Page 1 of 3)

Environmental Chronology

4401 Market Street, Oakland CA

Date	Activities Performed By	Description
Unknown	Unknown	• Four underground gasoline tanks (one 1,000-gallon and three 500-gallon tanks) were installed. • W.A. Craig reported that the structure at 4401 Market Street was constructed in 1943 and used as a gasoline station until the 1970s.
22 June 1990	Environmental Bio-Systems	• The 4 underground gasoline tanks were removed. Removal of the fuel dispensers, product piping, and pump island was not documented. Soil excavated during tank removal was reused to backfill the excavations. • Soil samples were collected from below the tanks. Samples of the excavated soil were also collected. Soil samples were analyzed for TPH-gasoline and BTEX. Soil sampling indicated a release of gasoline.
6 September 1990	W.A. Craig	• Two trenches were excavated to depths of approximately 5 feet in the vicinity of the former dispenser island. • Contaminated soil was observed during excavation but no laboratory analyses were performed. The excavated soil was reused to backfill the trenches.
27 and 28 October 1994	W.A. Craig	• Seven borings were drilled to depths of approximately 25 feet at and near 4401 Market Street (SB1, SB2, SB3, SB4, MW1, MW2, and MW3); three of the borings were completed as monitoring wells (MW1, MW2, and MW3). Soil samples were collected during drilling. • Free product, presumably gasoline, was observed in boring SB2, located near the southwest corner of 4401 Market Street. • Soil samples were analyzed for TPH-gasoline and BTEX.
8 November 1994	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline and BTEX.
14 February 1995	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline and BTEX.
7 June 1995	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline and BTEX.
29 August 1995	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline and BTEX.
8 December 1995	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline and BTEX.
7 March 1996	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline, BTEX, and MtBE.
19 June 1996	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline, BTEX, and MtBE.
20 December 1996	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline, BTEX, and MtBE.
12 June 1997	W.A. Craig	• Groundwater monitoring was conducted for wells MW1, MW2, and MW3. • Samples were analyzed for TPH-gasoline, BTEX, and MtBE.
31 March 1999	Streamborn	• Groundwater levels measured in wells MW1, MW2, and MW3.
April and July 1999	Streamborn	• Nine borings were drilled to depths of approximately 20 feet near 4401 Market Street (B8 through B16). Free product, presumably gasoline, was observed in boring B10, located on the south side of 44th Street, adjacent to 903 44th Street. Soil samples were collected during drilling. Groundwater samples were collected from temporary casings installed in the borings. The borings were grouted upon completion of groundwater sampling. • Soil samples and groundwater samples were analyzed for TPH-gasoline, BTEX, and fuel oxygenates.
4-5 January 2001	Streamborn	• Four monitoring wells (MW4, MW5, MW6, and MW7) were installed to depths of approximately 25 feet near 4401 Market Street. Soil samples were collected during drilling. • Soil samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • An elevation survey was performed for the newly-installed monitoring wells.

Table 1 (Page 2 of 3)

Environmental Chronology

4401 Market Street, Oakland CA

Date	Activities Performed By	Description
1 February 2001	Streamborn	• Wells MW4, MW5, MW6, and MW7 were developed. • Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6, and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
9 March 2001	Streamborn	• Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
23 April 2001	Streamborn	• Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
30 May 2001	Streamborn	• Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
19 June 2001	Streamborn	• Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
19 July 2001	Streamborn	• Water levels were measured in MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
22 August 2001	Streamborn	• Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
29 November 2001	Streamborn	• Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7.
29 September 2003	Streamborn	• Groundwater samples were collected from wells MW1, MW3, MW4, MW5, MW6 and MW7. Samples were analyzed for TPH-Gasoline, BTEX, and fuel oxygenates. • Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, MW6, and MW7. • Wells MW4, MW5, and MW6 were monitored for free product; no free product was detected.
21 November 2008	Streamborn	• Wells MW1, MW2, MW3, MW4, MW5, and MW6 were redeveloped by surging with a surge block and pumping with a submersible pump. • We could not contact the property owner of 903 44th Street and obtain permission to access well MW7.
15 December 2008	Streamborn	• Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, and MW6. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, MW5, and MW6. Samples were analyzed for TPH-Gasoline/BTEX/fuel oxygenates (EPA Method 8260). • We could not contact the property owner of 903 44th Street and obtain permission to access well MW7.
14 April 2009	Streamborn	• Water levels were measured in wells MW1, MW2, MW3, MW4, MW5, and MW6. • Groundwater samples were collected from wells MW1, MW2, MW3, MW4, MW5, and MW6. Samples were analyzed for TPH-Gasoline/BTEX/fuel oxygenates (EPA Method 8260). • Streamborn repeatedly attempted to contact the property owner of 903 44th Street where well MW7 is located. The property owner did not respond to our inquires.

Table 1 (Page 3 of 3)

Environmental Chronology

4401 Market Street, Oakland CA

Date	Activities Performed By	Description
29 June 2009	Streamborn	• Six borings (SG1 through SG6) were drilled to depths of approximately 6.5 feet at/near 4401 Market Street. • Soilgas implants were installed in each borehole at a depth of approximately 5.7 feet. Teflon tubing (3/16" ID, 1/4" OD) lead from the implant to the ground surface. The boreholes were backfilled with sand, dry bentonite, and hydrated bentonite and allowed to equilibrate for at least two hours prior to collecting soilgas samples. • A soilgas purge test was conducted in one of the boreholes (SG3) to determine the purge volume appropriate for sampling. The results of the purge test indicated that approximately two sand-pack volumes (sand-pack volume = volume of the voids in the interval of the sand pack) should be purged prior to sampling. This corresponded to a purge time of approximately 4.2 minutes at the purge flowrate = 0.167 liters/minute. • Soilgas samples were collected from each of the six implants. The samples were collected after purging two sand-pack volumes. The samples were collected using 1-liter summa canisters at the sampling flowrate = 0.167 liters/minute. Air Toxics (Folsom CA) analyzed the soilgas samples for volatile organic compounds (EPA Method Modified TO-15). • During soilgas sampling, a shroud was placed on the ground surface, over each borehole. A tracer gas (2-propanol or isopropyl alcohol also known as "rubbing alcohol") was introduced inside the shroud prior to and during purging and sampling. This activity was performed to determine whether soilgas samples contained atmospheric air (for example, due to short-circuiting or leakage along the outside of the implant tubing). Very low concentrations of the tracer gas were detected in each of the six soilgas samples; probably as a result of cross-contamination that occurred when the sample tubing was threaded through the shroud. • After each soilgas sample was collected; a vacuum leak check was performed on the sample train, including the implant tubing connection. The leak check consisted of applying a vacuum of approximately 27 inches Hg for a period of approximately five minutes. No leaks were detected. • The implant tubing was pulled and the borings were grouted. The asphalt concrete pavement was patched at the two sampling locations within the street.

General Note

(a) TPH = total petroleum hydrocarbons. BTEX = benzene, toluene, ethylbenzene, and xylenes. MtBE = methyl tert-butyl ether.

Table 2 (Page 1 of 2)

Bibliography

4401 Market Street, Oakland CA

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Table 3

Groundwater Level and Gradient Data Since 2001

4401 Market Street, Oakland CA

Location	MW1		MW2		MW3		MW4		MW5		MW6		MW7		Groundwater Gradient	
Casing Diameter (inches)	2		2		2		2		2		2		2			
Ground Surface	Elev = 998.74		Elev = 998.07		Elev = 999.64		Elev = 998.18		Elev = 997.78		Elev = 998.02		Elev = 999.12			
Measuring Point	**TOC N Side, Elev = 998.22**		**TOC N Side, Elev = 997.73**		**TOC N Side, Elev = 998.90**		**TOC N Side, Elev = 997.87**		**TOC N Side, Elev = 997.33**		**TOC N Side, Elev = 997.50**		**TOC N Side, Elev = 998.69**			
Intercepted Interval	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev	Depth	Elev		
	19 to 25.5	972.9 to 979.7	19 to 27.5	970.6 to 979.1	19 to 27.5	972.1 to 980.6	9 to 25	973.2 to 989.2	9 to 25	972.8 to 988.8	9 to 25	973.0 to 989.0	9 to 25	974.1 to 990.1	Direction	Magnitude
1 February 2001	13.77	984.45	13.21	984.52	14.01	984.89	13.22	984.65	13.14	984.19	13.31	984.19	14.76	983.93		
9 March 2001	12.54	985.68	12.30	985.43	13.32	985.58	12.28	985.59	11.70	985.63	12.54	984.96	13.94	984.75		
23 April 2001	14.01	984.21	13.36	984.37	14.15	984.75	13.05	984.82	13.30	984.03	13.39	984.11	14.63	984.06		
30 May 2001	14.74	983.48	NM	NM	14.67	984.23	13.93	983.94	14.14	983.19	14.17	983.33	15.79	982.90	N 138° W	0.01
19 June 2001	14.83	983.39	13.93	983.80	14.67	984.23	15.47	982.40	14.29	983.04	14.34	983.16	15.87	982.82		
19 July 2001	15.04	983.18	14.51	983.22	14.84	984.06	14.73	983.45	14.48	982.85	14.47	983.03	15.99	982.70		
22 August 2001	15.03	983.19	14.48	983.25	14.83	984.07	14.63	983.24	14.58	982.75	14.57	982.93	16.15	982.54	N 143° W	0.01
29 November 2001	12.59	985.63	12.01	985.72	12.66	986.24	12.78	985.09	11.05	986.28	11.42	986.08	12.94	985.75		
29 September 2003	15.05	983.17	14.50	983.23	14.94	983.96	14.53	983.34	14.53	982.80	14.52	982.98	16.19	982.50	N 131° W	0.01
15 December 2008	13.12	985.10	12.25	985.48	13.05	985.85	12.39	985.48	12.24	985.09	12.05	985.45	NM	NM	N 88° W	0.01
14 April 2009	13.33	984.89	12.51	985.22	13.16	985.74	12.63	985.24	12.56	984.77	12.34	985.16	NM	NM	N 97° W	0.01
Total Depth (last measurement)	24.6		24.6		24.6		24.5		24.9		24.8		24.6		Ave = N 119° W	Ave = 0.01

General Notes

(a) Measurements are cited in units of feet, referenced to a site-specific datum (NOT Mean Sea Level).

(b) TOC = top of PVC casing. N = north. Measuring points are the top of PVC casing, north side.

(c) The depth to water and total depth were measured relative to the top of PVC casing.

(d) The depth of the intercepted interval was measured relative to the ground surface and corresponds to the sand pack interval.

Table 4

Groundwater Purging and Sampling Information Since 2001

4401 Market Street, Oakland CA

Location	Sample Date	Sample Type	Dissolved Oxygen (mg/L)	pH	Specific Conductance (µS/cm)	Temper-ature (˚C)	ORP (mV)	Turbidity and Color	Purge Method	Purge Duration (minutes)	Volume Purged (gallons)	Purged Dry ?	Standing Water Casing Volumes Removed
MW1	1 Feb 2001	GB	3.1	6.7	530	18.3	-210	Clear, none	SP	9	±5	**Yes**	±3
	30 May 2001	GB	1.0	6.8	560	24.2	30	Clear, none	SP	40	±5	**Yes**	±3
	22 Aug 2001	GB	3.0	6.9	510	20.4	50	Clear, none	SP	8	±5	**Yes**	±3
	29 Nov 2001	GB	NM	6.7	480	20.9	-170	Clear, none	SP	15	±4	**Yes**	±2
	29 Sep 2003	GB	1.6	6.3	520	21.5	130	Clear, none	SP	15	±5	**Yes**	±3
	15 Dec 2008	GB	1.0	6.6	410	18.0	80	Clear, none	SP	9	±6	no	±3
	14 Apr 2009	GB	1.1	6.5	400	17.5	180	Clear, none	SP	18	±7	no	±4
MW2	29 Sep 2003	GB	1.6	6.6	560	21.9	-80	Clear, none	SP	20	±5	no	±3
	15 Dec 2008	GB	1.1	6.6	590	18.5	-60	Clear, none	SP	11	±6	no	3
	14 Apr 2009	GB	1.1	6.1	610	19.5	-80	Clear, none	SP	27	±7	no	±4
MW3	1 Feb 2001	GB	5.0	6.7	370	17.4	-230	Clear, none	SP	4	±5	no	±3
	30 May 2001	GB	5.8	7.0	390	23.6	60	Clear, none	SP	26	±5	**Yes**	±3
	22 Aug 2001	GB	4.5	7.1	370	21.5	90	Cloudy, brown	SP	6	±5	**Yes**	±3
	29 Nov 2001	GB	NM	6.8	330	19.3	20	Clear, none	SP	10	±6	**Yes**	±3
	29 Sep 2003	GB	4.5	6.6	370	19.6	190	Clear, none	SP	10	±5	**Yes**	±3
	15 Dec 2008	GB	3.0	6.6	390	17.6	100	Clear, none	SP	9	±6	no	±3
	14 Apr 2009	GB	4.6	6.1	400	19.4	220	Clear, none	SP	28	±7	no	±4
MW4	1 Feb 2001	GB	5.2	6.8	580	18.2	-210	Cloudy, gray	SP	47	±15	**Yes**	±9
	30 May 2001	GB	1.5	6.8	700	22.8	20	Clear, none	SP	23	±6	**Yes**	±3
	22 Aug 2001	GB	2.1	6.9	540	21.2	-20	Clear, none	SP	5	±5	no	±3
	29 Nov 2001	GB	NM	6.7	550	19.5	-170	Clear, none	SP	16	±5	**Yes**	±3
	29 Sep 2003	GB	1.5	6.5	560	22.4	30	Clear, none	SP	10	±5	no	±3
	15 Dec 2008	GB	1.0	6.6	500	18.8	-20	Clear, none	SP	9	±6	no	±3
	14 Apr 2009	GB	0.9	6.0	510	20.7	-20	Clear, none	SP	22	±6	no	±3
MW5	1 Feb 2001	GB	0.8	6.7	640	18.1	-250	Turbid, brown	SP	18	±20	no	±10
	30 May 2001	GB	1.2	7.0	630	19.6	20	Clear, none	SP	4	±6	no	±3
	22 Aug 2001	GB	2.2	7.0	600	20.0	-40	Clear, none	SP	5	±5	no	±3
	29 Nov 2001	GB	NM	6.9	610	19.6	-170	Clear, none	SP	8	±7	no	±3
	29 Sep 2003	GB	1.6	6.7	560	21.9	-60	Clear, none	SP	10	±5	no	±3
	15 Dec 2008	GB	0.8	6.7	690	18.5	-50	Translucent, gray	SP	6	±6	no	±3
	14 Apr 2009	GB	0.9	6.5	680	17.8	10	Clear, none	SP	23	±6	no	±3
MW6	1 Feb 2001	GB	2.8	6.7	510	18.7	-360	Opaque, brown	SP	23	±20	no	±11
	30 May 2001	GB	2.9	6.8	470	24.2	80	Turbid, brown	SP	5	±6	no	±3
	22 Aug 2001	GB	2.6	6.9	400	21.0	30	Turbid, green	SP	5	±5	no	±3
	29 Nov 2001	GB	NM	6.8	390	19.5	-160	Clear, none	SP	8	±7	no	±3
	29 Sep 2003	GB	2.1	6.6	470	25.5	180	Clear, none	SP	10	±5	no	±3
	15 Dec 2008	GB	2.0	6.6	440	18.9	140	Translucent, brown	SP	6	±6	no	±3
	14 Apr 2009	GB	2.3	7.1	450	16.8	130	Clear, none	SP	14	±6	no	±3
MW7	1 Feb 2001	GB	3.0	6.8	430	16.1	-200	Cloudy, brown	SP	25	±17	no	±11
	30 May 2001	GB	3.1	6.8	500	23.6	60	Clear, none	SP	5	±5	no	±3
	22 Aug 2001	GB	4.6	6.9	420	19.3	20	Turbid, gray	SP	5	±5	no	±3
	29 Nov 2001	GB	NM	6.7	400	19.2	0	Clear, none	SP	6	±6	no	±3
	29 Sep 2003	GB	2.4	6.3	410	19.0	180	Clear, none	SP	10	±4	no	±3

General Notes

(a) ORP = oxidation/reduction potential.

(b) NM = not measured.

(c) Entries in this table correspond to the end of purging (time of sampling).

(d) SP = submersible purge pump.

(e) GB = grab sample collected using a Teflon bailer fitted with a bottom-emptying device.

Table 5 (Page 1 of 2)

Groundwater Analytical Data from Monitoring Wells

4401 Market Street, Oakland CA

Location	Sample Date	Sampled By	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Methyl Tert-Butyl Ether (µg/L)	Tert-Butyl-Alcohol (µg/L)	Other Fuel Oxygenates (µg/L)
MW1	8 Nov 1994	W.A. Craig	54	<0.5	<0.5	<0.5	1.2	NA	NA	NA
	14 Feb 1995	W.A. Craig	71	<0.5	<0.5	<0.5	0.97	NA	NA	NA
	7 Jun 1995	W.A. Craig	540	0.6	<0.5	1.7	1.3	NA	NA	NA
	29 Aug 1995	W.A. Craig	440	<0.5	<0.5	1.3	1.1	NA	NA	NA
	8 Dec 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 Mar 1996	W.A. Craig	77	<0.5	<0.5	<0.5	<0.5	44	NA	NA
	19 Jun 1996	W.A. Craig	500	<0.5	<0.5	0.85	0.36	84	NA	NA
	20 Dec 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	28	NA	NA
	12 Jun 1997	W.A. Craig	190	<0.5	<0.5	<0.5	<0.5	12	NA	NA
	1 Feb 2001	Streamborn	<50	<0.5	<0.5	<0.5	1.1	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0
	22 Aug 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	100	<5.0 to <10
	29 Nov 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <1.0
	15 Dec 2008	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5	<0.5 to <250
MW2	8 Nov 1994	W.A. Craig	20,000	1,400	960	980	4,600	NA	NA	NA
	14 Feb 1995	W.A. Craig	8,600	380	210	410	2,000	NA	NA	NA
	7 Jun 1995	W.A. Craig	6,200	500	78	270	1,200	NA	NA	NA
	29 Aug 1995	W.A. Craig	4,100	330	61	210	980	NA	NA	NA
	8 Dec 1995	W.A. Craig	9,400	360	190	440	2,000	NA	NA	NA
	7 Mar 1996	W.A. Craig	12,000	790	170	440	2,000	18	NA	NA
	19 Jun 1996	W.A. Craig	9,000	520	82	350	1,500	<5.0	NA	NA
	20 Dec 1996	W.A. Craig	13,000	830	180	410	2,200	<16	NA	NA
	12 Jun 1997	W.A. Craig	5,100	320	32	190	880	<36	NA	NA
	29 Sep 2003	Streamborn	220	5.5	<0.5	2.1	9.1	<0.5	24	DIPE = 1.3 Others = <0.5
	15 Dec 2008	Streamborn	1,600	43	<0.5	53	150	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	1,400	37	<0.5	30	120	<0.5	10	<0.5 to <250
MW3	8 Nov 1994	W.A. Craig	<50	0.71	0.84	1.2	5.8	NA	NA	NA
	14 Feb 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 Jun 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	1.6	NA	NA	NA
	29 Aug 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	8 Dec 1995	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
	7 Mar 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	19 Jun 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	20 Dec 1996	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	12 Jun 1997	W.A. Craig	<50	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA
	1 Feb 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	22 Aug 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	14	<5.0 to <10
	29 Nov 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <1.0
	15 Dec 2008	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <250
MW4	1 Feb 2001	Streamborn	1,500	58	1.3	83	320	<5.0	16	<5.0 to <10
	30 May 2001	Streamborn	1,000	19	<0.5	50	3.4	<5.0	23	<5.0 to <10
	22 Aug 2001	Streamborn	220	<0.5	<0.5	3.2	2.7	<5.0	8.8	<5.0 to <10
	29 Nov 2001	Streamborn	3,100	110	<5.0	120	410	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	140	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <1.0
	15 Dec 2008	Streamborn	70	1.1	<0.5	2.8	4.4	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	110	2.5	<0.5	3.2	8.1	<0.5	<5.0	<0.5 to <250

Table 5 (Page 2 of 2)

Groundwater Analytical Data from Monitoring Wells

4401 Market Street, Oakland CA

Location	Sample Date	Sampled By	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Methyl Tert-Butyl Ether (µg/L)	Tert-Butyl-Alcohol (µg/L)	Other Fuel Oxygenates (µg/L)
MW5	1 Feb 2001	Streamborn	1,200	57	1.8	45	160	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	570	20	<0.5	26	22	<5.0	<5.0	<5.0 to <10
	22 Aug 2001	Streamborn	380	19	0.67	31	17	<5.0	<5.0	<5.0 to <10
	29 Nov 2001	Streamborn	1,600	73	2.1	78	180	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	460	2.6	<0.5	0.69	<1.0	<0.5	<5.0	<0.5 to <1.0
	15 Dec 2008	Streamborn	3,300	53	1.1	58	110	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	1,100	32	<0.5	24	23	<0.5	<5.0	<0.5 to <250
MW6	1 Feb 2001	Streamborn	260	8.0	<0.5	22	23	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	53	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	22 Aug 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	29 Nov 2001	Streamborn	130	5.7	<0.5	1.6	5.0	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <1.0
	15 Dec 2008	Streamborn	78	<0.5	<0.5	<0.5	<1.0	<0.5	<20	<0.5 to <100
	14 Apr 2009	Streamborn	380	1.8	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <250
MW7	1 Feb 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	30 May 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	22 Aug 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	29 Nov 2001	Streamborn	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	<5.0 to <10
	29 Sep 2003	Streamborn	<50	<0.5	<0.5	<0.5	<1.0	<0.5	<5.0	<0.5 to <1.0

Environmental Screening Level (ESL) - Groundwater IS a potential source of drinking water.

California Maximum Contaminant Levels (MCL)		1.0	150	300	1,750	13		
Risk-Based Goal for Carcinogenic Effects (10^{-6} excess lifetime cancer risk)		0.35		3.2		38		
California Office of Environmental Health Hazard Assessment - Public Health Goals (PHG)		0.15	150	300	1,800	13		
Taste and Odor Thresholds	100	170	40	30	20	5		
California Department of Health Services Notification Level							12	

Environmental Screening Level (ESL) - Groundwater IS NOT a potential source of drinking water.

Volatilization from Groundwater and Subsequent Vapor Intrusion, Residential Scenario	Directly Measure Soilgas	540	380,000	170,000	160,000	24,000	Directly Measure Soilgas	
Estuarine Surface Water - Gross Contamination Ceiling Value (Odors, etc.)	5,000	2,000	40	30	530	180	50,000	
Environmental Screening Level - Estuarine Surface Water - Chronic Habitat Aquatic Toxicity	210	46	130	43	100	8,000	18,000	
Environmental Screening Level - Estuarine Surface Water - Bioaccumulation/Human Consumption		71	200,000	29,000				

General Notes

(a) TPH = total petroleum hydrocarbons. MtBE = methyl tert-butyl ether. DIPE = di-isopropyl ether.

(b) NA = not analyzed.

(c) Environmental Screening Levels from: *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - November 2007, Revised May 2008)*. Prepared by San Francisco Bay Regional Water Quality Control Board, Oakland CA. 27 May 2008. http://www.waterboards.ca.gov/sanfranciscobay/esl.shtml

Table 6

Free Product Thickness in Monitoring Wells MW4, MW5, and MW6

4401 Market Street, Oakland CA

Date	MW4 (feet)	MW5 (feet)	MW6 (feet)
1 February 2001	<0.005	<0.005	<0.005
9 March 2001	<0.005	<0.005	<0.005
23 April 2001	<0.005	<0.005	<0.005
30 May 2001	<0.005	<0.005	<0.005
19 June 2001	<0.005	<0.005	<0.005
19 July 2001	<0.005	<0.005	<0.005
22 August 2001	<0.005	<0.005	<0.005
29 November 2001	<0.005	<0.005	<0.005

General Note

(a) Free product monitoring was performed using a Water Mark Interface meter: Model H.OIL.

Table 7

Analytical Results from Soilgas Sampling

4401 Market Street, Oakland CA

Location	Sample Date	Sample Interval (feet)	Purge Flowrate (liter/min)	Purge Volume (liter)	Purge Volume (sand-pack volumes)	Sample Flowrate (liter/min)	Sample Volume (liter)	Approximate Depth to Groundwater (feet)	2-Propanol (µg/m^3)	Benzene (µg/m^3)	Toluene (µg/m^3)	Ethyl-benzene (µg/m^3)	Total Xylenes (µg/m^3)	PCE (µg/m^3)	Acetone (µg/m^3)	2-Butanone (µg/m^3)	Carbon Disulfide (µg/m^3)	1,2,4-Trimethyl-benzene (µg/m^3)	1,3,5-Trimethyl-benzene (µg/m^3)	Other Volatile Organic Compounds (EPA Method TO-15) (µg/m^3)
SG1	29 June 2009	4.3-6.0	0.167	0.704	2	0.167	1	13.7	100	5.6	16	8.8	44	170	80	11	<3.8	13	<6.8	Tetrahydrofuran = 7.2 Chloroform = 34 4-Methyl-2-pentanone = 8.7 Others <3.0 to <59
SG2	29 June 2009	5.1-6.6	0.167	0.704	2	0.167	1	13.7	44	11	83	75	254	120	89	16	12	16	7.0	Carbon Disulfide = 12 Hexane = 32 Tetrahydrofuran = 6.4 Cyclohexane = 6.3 2,2,4-Trimethylpentane = 23 Heptane = 23 Others <3.0 to <59
SG2 Laboratory Duplicate	29 June 2009	5.1-6.6	0.167	0.704	2	0.167	1	13.7	47	11	85	83	267	130	93	14	13	17	<14	Carbon Disulfide = 13 Hexane = 30 2,2,4-Trimethylpentane = 22 Heptane = 22 Others <6.4 to <120
SG3	29 June 2009	4.8-6.4	0.167	0.704	2	0.167	1	13.7	190	5.1	29	6.2	29.7	29	72	13	4.6	16	<6.1	Carbon Disulfide = 4.6 Ethanol = 17 Hexane = 7.8 Tetrahydrofuran = 18 Heptane = 6.6 4-Methyl-2-pentanone = 7.6 Others <2.7 to <53
SG4	29 June 2009	5.1-6.7	0.167	0.704	2	0.167	1	13.7	95	15	130	26	128	<9.1	110	31	10	40	17	Carbon Disulfide = 10 Hexane = 36 Cyclohexane = 6.6 2,2,4-Trimethylpentane = 38 Heptane = 38 4-Methyl-2-pentanone = 17 Propylbenzene = 8.6 Others <3.0 to <57
SG5	29 June 2009	5.0-6.6	0.167	0.704	2	0.167	1	13.7	87	16	90	19	86	<12	70	15	34	40	11	Carbon Disulfide = 34 1,3-Butadiene = 4.4 Hexane = 48 Tetrahydrofuran = 9.5 Chloroform = 22 Heptane = 27 4-Methyl-2-pentanone = 22 Others <3.8 to <74
SG6	29 June 2009	5.0-6.5	0.167	0.704	2	0.167	1	13.7	2,400 (1)	5.9	21	6.8	37.7	<8.2	32	7.4	40	10	<5.9	Carbon Disulfide = 40 Hexane = 66 Cyclohexane = 16 Heptane = 22 4-Methyl-2-pentanone = 10 Others <2.7 to <52
Environmental Screening Level - Shallow Soilgas (vapor intrusion), Residential Exposure										84	63,000	980	21,000	410						Chloroform = 460
California Human Health Screening Level (CHHSL) - Shallow Soilgas (vapor intrusion), Residential Land Use										36.2	135,000		315,000	180						

General Notes

(a) 2-Propanol = Isopropyl alcohol or "rubbing alcohol". 2-Propanol was used as the tracer gas during purging and sampling.

(b) PCE = Tetrachloroethene. 2-Butanone = Methyl ethyl ketone.

(c) Environmental Screening Levels from: *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - November 2007, Revised May 2008).* Prepared by San Francisco Bay Regional Water Quality Control Board, Oakland CA. 27 May 2008. www.waterboards.ca.gov/sanfranciscobay/esl.shtml

(d) California Human Health Screening Level (CHHSL) from: *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties*. Prepared by California Environmental Protection Agency. January 2005.

Footnote

(1) Result exceeded the instrument calibration range.

Table 8

Theoretical Proportion of the Shroud Atmosphere that was Measured in Each Soilgas

4401 Market Street, Oakland CA

Location	Sample Date	2-Propanol Concentration Measured Inside the Shroud		2-Propanol Concentrations Measured in the Soilgas Sample		Theoretical Proportion of Shroud Atmosphere that was Measured in Soilgas Sample
		ppbv	$\mu g/m^3$	ppbv	$\mu g/m^3$	Proportion
SG1	29 June 2009	350,000	860,000	42	100	1×10^{-4}
SG2	29 June 2009	360,000	882,000	18	44	5×10^{-5}
SG3	29 June 2009	340,000	833,000	78	190	2×10^{-4}
SG4	29 June 2009	305,000	747,000	39	95	1×10^{-4}
SG5	29 June 2009	70,000	172,000	36	87	5×10^{-4}
SG6	29 June 2009	245,000	600,000	960 (1)	2,400 (1)	4×10^{-3}

General Notes

(a) 2-Propanol = Isopropyl alcohol or "rubbing alcohol".

(b) 2-Propanol was used as the tracer gas during soilgas purging and sampling. A cloth was soaked in 2-Propanol and the cloth was placed inside a metal liner. The liner had been previously drilled with multiple holes. The liner (containing the soaked cloth) was then placed inside the shroud. The atmosphere inside the shroud was monitored in the field using an organic vapor meter.

(c) Organic vapor meter = Mini Rae 2000 organic vapor monitor fitted with a 10.6 eV photoionization detector, calibrated to 100 ppm v/v isobutylene.

(d) The shroud consisted of a clear rectangular plastic storage container (12" x 9" x 6"). The lip of the storage container, where the container contacted the ground surface, was fitted with weather stripping. Two bulkhead fittings were installed in the side of the container. Teflon tubing (3/16" ID x 1/4" OD) was threaded through the bulkhead fittings. One tube consisted of the sample tube (leading from the implant). The other tube was used to monitor the shroud environment. A plug (nail) was inserted inside the tubing when the tubing was not in use.

(e) During purging and sampling, multiple measurements of the atmosphere inside the shroud were made - the concentration cited in this table represents the average. In general, the measurements were consistent and did not vary significantly.

(d) Theoretical Proportion of Shroud Atmosphere that was Measured in Soilgas Sample = (2-Propanol Concentration Measured in the Soilgas Sample) ÷ (2-Propanol Concentration Measured Inside the Shroud).

Footnote

(1) Result exceeded the instrument calibration range.

Table 9

Soil Analytical Data Collected During Tank Removal - Representing Soil That Was Not Overexcavated (not removed)

4401 Market Street, Oakland CA

Location	Sample Depth (feet)	Location Description	Sample Date	Sample Type	TPH-Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)
S2	±8.5	±2-feet below invert of middle 500-gallon gasoline tank	22 June 1990	Grab (liner)	360	0.99	12	9.5	53
S3	±7.5	±2-feet below invert of southern 500-gallon gasoline tank	22 June 1990	Grab (liner)	160	1.2	2.5	2.8	13
S4	±8	±2-feet below invert at non-fill end of 1,000-gallon gasoline tank	22 June 1990	Grab (liner)	210	3.3	9.4	7.6	32
S5	±8	±2-feet below invert at fill end of 1,000-gallon gasoline tank	22 June 1990	Grab (liner)	870	3.2	24	20	110
S6	±8.5	±2-feet below invert of northern 500-gallon gasoline tank	22 June 1990	Grab (liner)	730	5	24	26	140
S8	±15	±8.5-feet below inverts and midway between the two northern 500-gallon gasoline tanks	22 June 1990	Grab (liner)	260	3.7	14	7.1	33

General Note

(a) TPH = total petroleum hydrocarbons.

Table 10

Soil Analytical Data from Borings and Monitoring Wells

4401 Market Street, Oakland CA

Location	Sample Depth (feet)	Sample Date	TPH-Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MtBE (mg/kg)	Other Fuel Oxygenates (mg/kg)
SB1	10 to 10.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	15 to 15.5	27 October 1994	72	<0.01	0.13	0.21	0.18	NM	NM
	20 to 20.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
SB2	10 to 10.5	27 October 1994	40	0.079	0.034	0.43	4.7	NM	NM
	15 to 15.5	27 October 1994	19	0.46	0.041	0.31	4.2	NM	NM
	20 to 20.5	27 October 1994	5.7	0.006	<0.005	0.010	0.079	NM	NM
SB3	10 to 10.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	15 to 15.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	19.5 to 20	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
SB4	10 to 10.5	28 October 1994	<1	<0.005	0.005	0.006	0.016	NM	NM
	15 to 15.5	28 October 1994	220	<0.01	0.60	0.46	0.93	NM	NM
	19.5 to 20	28 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
MW1	10 to 10.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	15 to 15.5	27 October 1994	<1	<0.005	<0.005	0.005	<0.005	NM	NM
	20 to 20.5	27 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
MW2	10 to 10.5	28 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	15 to 15.5	28 October 1994	97	1.5	1.4	2.3	12	NM	NM
	20 to 20.5	28 October 1994	2.0	<0.005	0.009	0.016	0.062	NM	NM
MW3	10 to 10.5	28 October 1994	1.1	<0.005	0.006	<0.005	0.010	NM	NM
	15 to 15.5	28 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
	20 to 20.5	28 October 1994	<1	<0.005	<0.005	<0.005	<0.005	NM	NM
B8	11.5 to 12	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
B9	11.5 to 12	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	8 April 1999	110	<0.62	<0.62	<0.62	<0.62	<0.62	NM
B10	11.5 to 12	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	8 April 1999	1,300	12	22	25	100	<3.1	NM
B11	11.5 to 12	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	8 April 1999	140	<0.62	<0.62	1.8	8.9	<0.62	NM
B12	11.5 to 12	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	8 April 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
B13	11.5 to 12	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
B14	11.5 to 12	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	9 July 1999	3.6	<0.005	<0.005	<0.005	0.036	<0.005	NM
	21 to 21.5	9 July 1999	2.1	<0.005	<0.005	0.059	0.32	<0.005	NM
B15	11.5 to 12	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	17.5 to 18	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
B16	11.5 to 12	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	15 to 15.5	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
	19.5 to 20	9 July 1999	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NM
MW4	12.5 to 13	5 January 2001	25	<0.62	<0.62	<0.62	<0.62	<0.005	<0.005 to <0.010
	14 to 14.5	5 January 2001	29	<0.62	<0.62	<0.62	<0.62	<0.023	<0.023 to <0.046
	15.5 to 16	5 January 2001	140	<3.1	<3.1	<3.1	5.3	<0.023	<0.023 to <0.046
MW5	12.5 to 13	4 January 2001	120	<3.1	<3.1	<3.1	9.2	<0.019	<0.019 to <0.038
	14 to 14.5	4 January 2001	560	<1.2	<1.2	8.5	43	<0.023	<0.023 to <0.045
	15.5 to 16	4 January 2001	93	<0.62	0.79	1.3	7.6	<0.022	<0.022 to <0.043
MW6	12.5 to 13	4 January 2001	91	<0.62	<0.62	1.0	1.3	<0.016	<0.016 to <0.038
	14 to 14.5	4 January 2001	200	<3.1	<3.1	<3.1	<3.1	<0.020	<0.020 to <0.040
MW7	10 to 10.5	5 January 2001	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005 to <0.010
	15 to 15.5	5 January 2001	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005 to <0.010
Environmental Screening Level - Direct Exposure to Soil, Residential Scenario (including child pica behavior)			110	0.12	63	2.3	31	30	
Environmental Screening Level - Direct Exposure to Soil, Construction Worker Scenario			4,200	12	650	210	420	2,000	

General Notes

(a) TPH = total petroleum hydrocarbons. MtBE = methyl tert-butyl ether. NM = not measured.

(b) Environmental Screening Levels from: *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater (Interim Final - November 2007, Revised May 2008)*. Prepared by San Francisco Bay Regional Water Quality Control Board, Oakland CA. 27 May 2008. http://www.waterboards.ca.gov/sanfranciscobay/esl.shtml

Table 11

Groundwater Analytical Data from Temporarily-Screened Boreholes

4401 Market Street, Oakland CA

Boring Number	Depth to Water (feet)	Sample Date	Purged?	TPH-Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	MtBE (µg/L)
B8	±13	8 April 1999	No	<50	<0.5	<0.5	<0.5	<0.5	<5
B9	±14	8 April 1999	No	850	9.5	2.4	3.5	48	<5
B10	±13	8 April 1999	No	Free product observed floating on groundwater. No sample collected.					
B11	±18	8 April 1999	No	2,600	34	4.6	92	440	<10
B12	±13	8 April 1999	No	<50	<0.5	<0.5	<0.5	<0.5	<5
B13	±15	9 July 1999	No	<50	<0.5	<0.5	<0.5	<0.5	<5
B15	±15	9 July 1999	No	5,100 (1)	<5	<5	<5	<5	<50
B16	±21	9 July 1999	No	<50	<0.5	<0.5	<0.5	<0.5	6.5

General Note

(a) TPH = total petroleum hydrocarbons. MtBE = Methyl tertiary Butyl Ether.

(b) Depths measured from the adjacent ground surface.

Footnote

(1) Laboratory reported that hydrocarbon found in gasoline range does not match their gasoline standard.

Table 12

Field Observations from Borings

4401 Market Street, Oakland CA

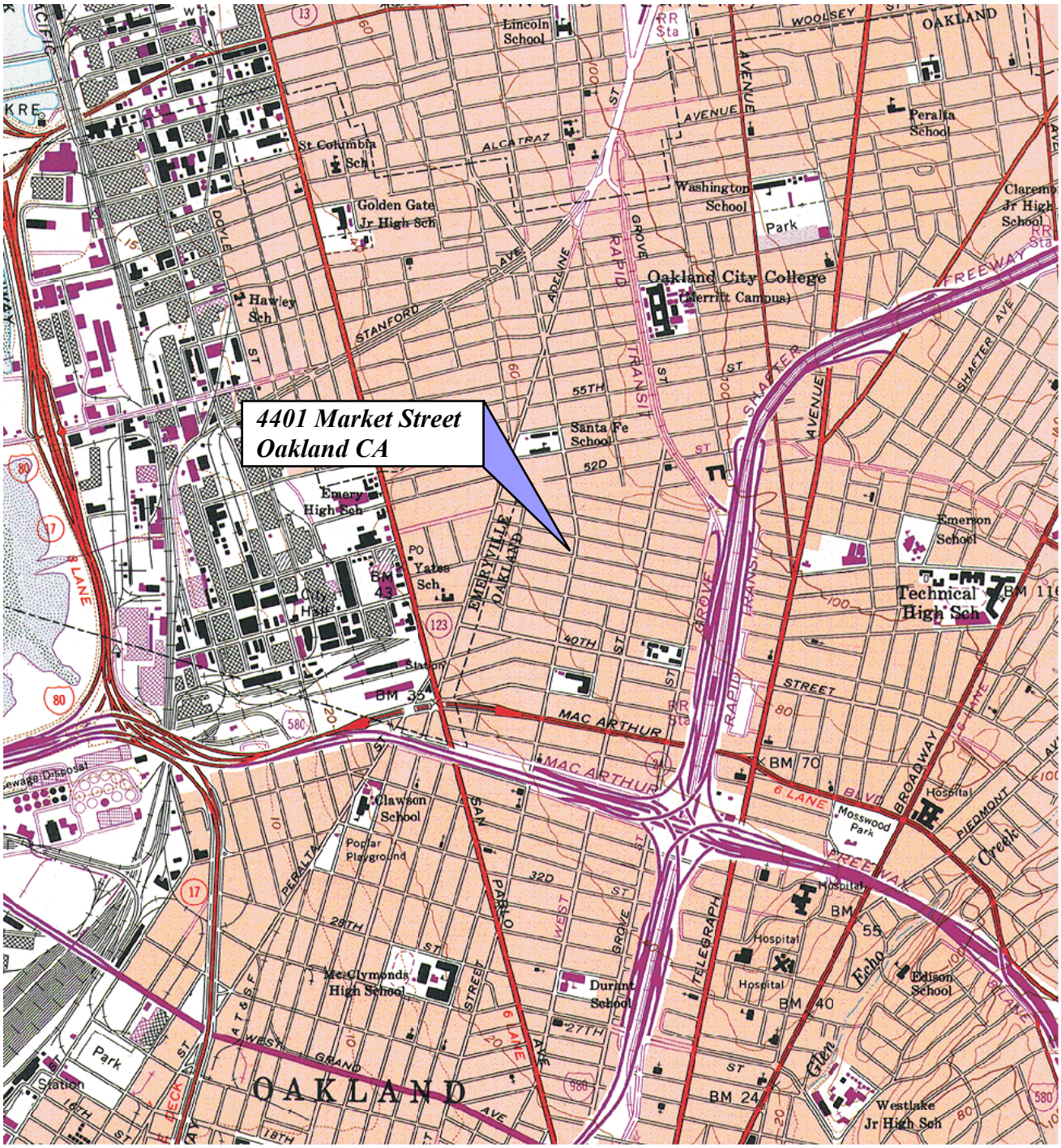
Boring Number	Date Performed	Total Depth (feet)	Depth to Water (feet)	Lithology	Depth Interval (feet), Organic Vapor Meter Measurement (OVM) (ppm v/v), Observations of Chemical Odor and Chemical Staining in Soil	Observations of Chemical Odor and Sheen in Groundwater
B8	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 16': OVM <5, no odor or staining	No odor, no sheen
B9	8 April 1999	±16	±14	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 14': OVM <5, no odor or staining ±14.5': OVM = 5, slight gasoline odor, no staining	Slight gasoline odor, no sheen
B10	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 13': OVM <5, no odor or staining ±13': OVM = 580, strong gasoline odor, no staining ±15': OVM = 850, strong gasoline odor, no staining	±1 inch of gasoline floating on groundwater (as observed in a 1/2-inch diameter bailer.
B11	8 April 1999	±19	±18	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±18': Fat Clay (CH) ±18' to ±19+': Lean Clay (CL)	±1' to 15': OVM <5, no odor or staining ±15': OVM = 520, strong gasoline odor, no staining ±18': OVM = 180, strong gasoline odor, no staining	Strong gasoline odor, no sheen
B12	8 April 1999	±16	±13	±1' to ±5': Lean Clay (CL) ±5' to ±7': Silt (ML) ±7' to ±16+': Fat Clay (CH)	±1' to 16': OVM <5, no odor or staining	No odor, no sheen
B13	9 July 1999	±20	±15	±1' to ±8': Lean Clay (CL) ±8' to ±19.5': Fat Clay (CH) ±19.5' to ±20+': Clayey Sand (SC)	±1' to 2±1': OVM <5, no odor or staining	No odor, no sheen
B14	9 July 1999	±24	Dry	0' to ±8': Lean Clay (CL) ±8' to ±20.5': Fat Clay (CH) ±20.5' to ±24+': Clayey Sand (SC)	0' to 19': OVM <5, no odor or staining ±19.5': OVM = 230, moderate gasoline odor, no staining ±20.5': OVM = 80, moderate gasoline odor, no staining ±21.5': OVM = 30, moderate gasoline odor, no staining	Dry hole. No groundwater sample collected.
B15	9 July 1999	±20	±15	0' to ±8': Lean Clay (CL) ±8' to ±17': Fat Clay (CH) ±17' to ±20+': Clayey Sand (SC)	0' to 18': OVM <5, no odor or staining ±18': OVM = 140, strong gasoline odor, no staining ±19.5': OVM = 250, strong gasoline odor, no staining	Strong petroleum odor, no sheen
B16	9 July 1999	±24	±21	±1' to ±9.5': Lean Clay (CL) ±9.5' to ±13': Clayey Sand (SC) ±13' to ±19': Lean Clay (CL) ±19' to ±21': Clayey Sand (SC) ±21' to ±23': Clayey Gravel (GC) ±23' to ±24+': Clayey Sand (SC)	±1' to 24': OVM <5, no odor or staining	No odor, no sheen

General Notes

(a) All depths measured from the adjacent ground or pavement surface.

(b) Organic vapor meter screening performed by placing the suction inlet of the organic vapor meter next to freshly exposed soil. Organic vapor meter = Thermo Environmental Instruments, Model 580B, equipped with 10.2 eV photoionization detector, calibrated to 100 ppm v/v isobutylene.

(c) The depth to groundwater was measured in each temporarily-cased boring approximately 10 minutes following the conclusion of soil sampling. Reliable (stabilized) measurements of the depth to groundwater were not obtained and the stabilized depth to groundwater is likely shallower than our measurements indicate.



Basemap: U.S. Geological Survey, 7.5 Minute Quadrangle, Oakland West CA, 1959 (Photorevised 1980).

0 0.5 1

Approximate Scale in Miles

0 2,000 4,000

Approximate Scale in Feet

N

Figure 1

Location Map (USGS)

4401 Market Street
Oakland CA

STREAMBORN

Basemap: Google Earth, downloaded Nov 2009. Imagery dated Jun 2007.

0 0.5 1

Approximate Scale in Miles

0 2,000 4,000

Approximate Scale in Feet

Figure 2

Location Map (Google Earth)

4401 Market Street
Oakland CA

STREAMBORN

Figure 3

Site Map

4401 Market Street
Oakland CA

STREAMBORN

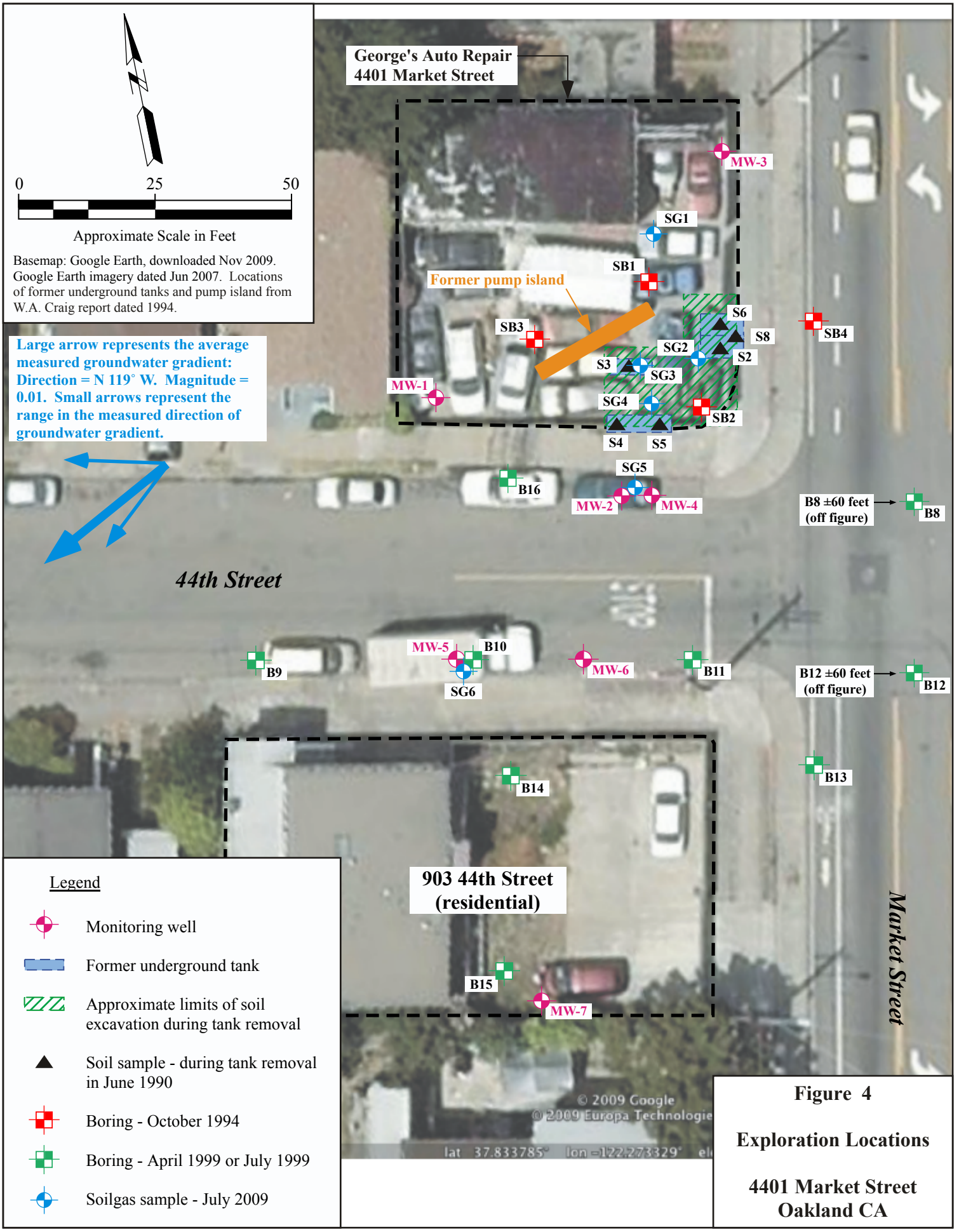


Figure 4

Exploration Locations

4401 Market Street
Oakland CA

STREAMBORN

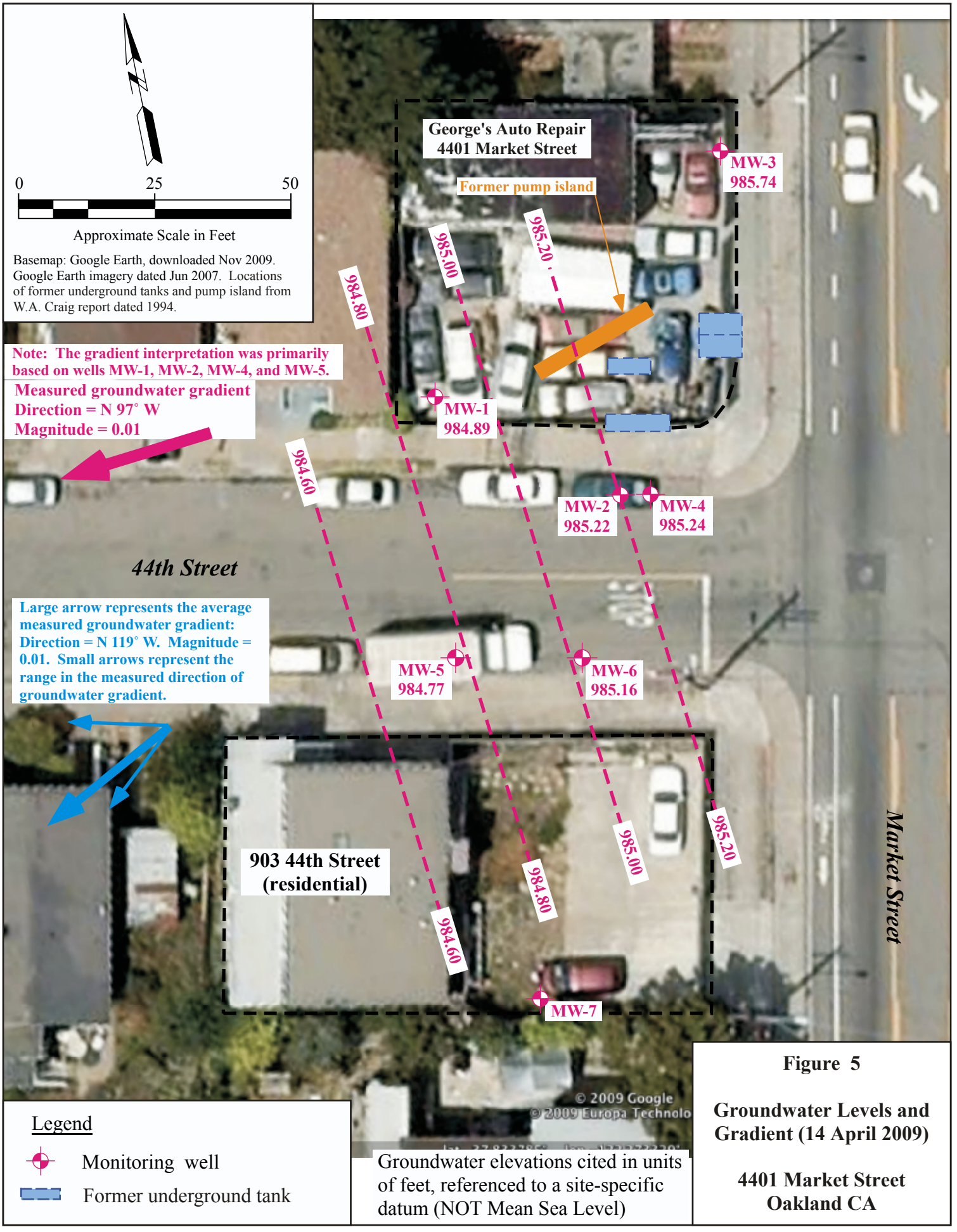


Figure 5

Groundwater Levels and Gradient (14 April 2009)

4401 Market Street
Oakland CA

STREAMBORN

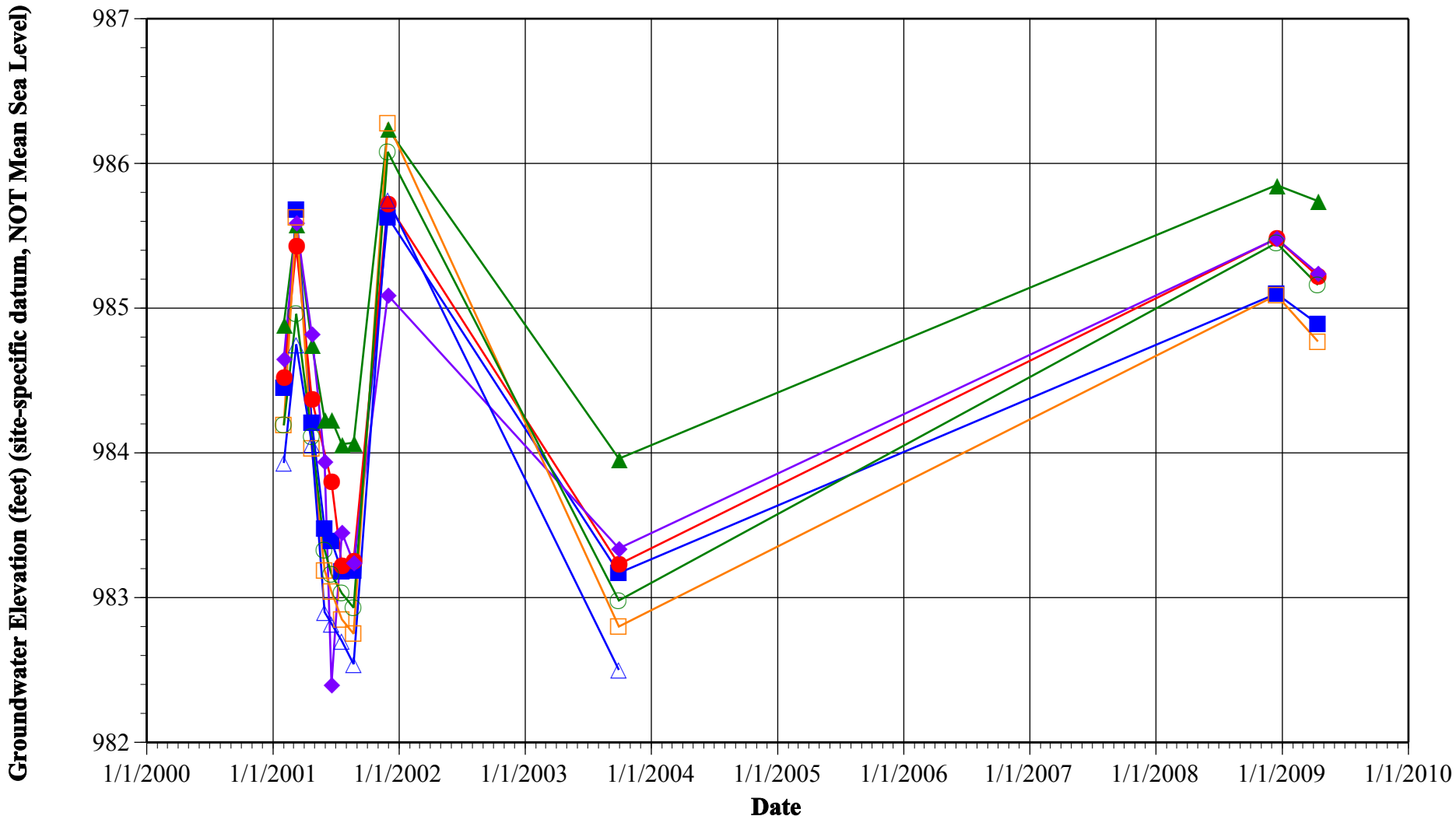


Figure 6

Hydrographs for the Monitoring Wells Since 2001

4401 Market Street Oakland CA

Groundwater elevations cited in units of feet, referenced to a site-specific datum (NOT Mean Sea Level)

STREAMBORN

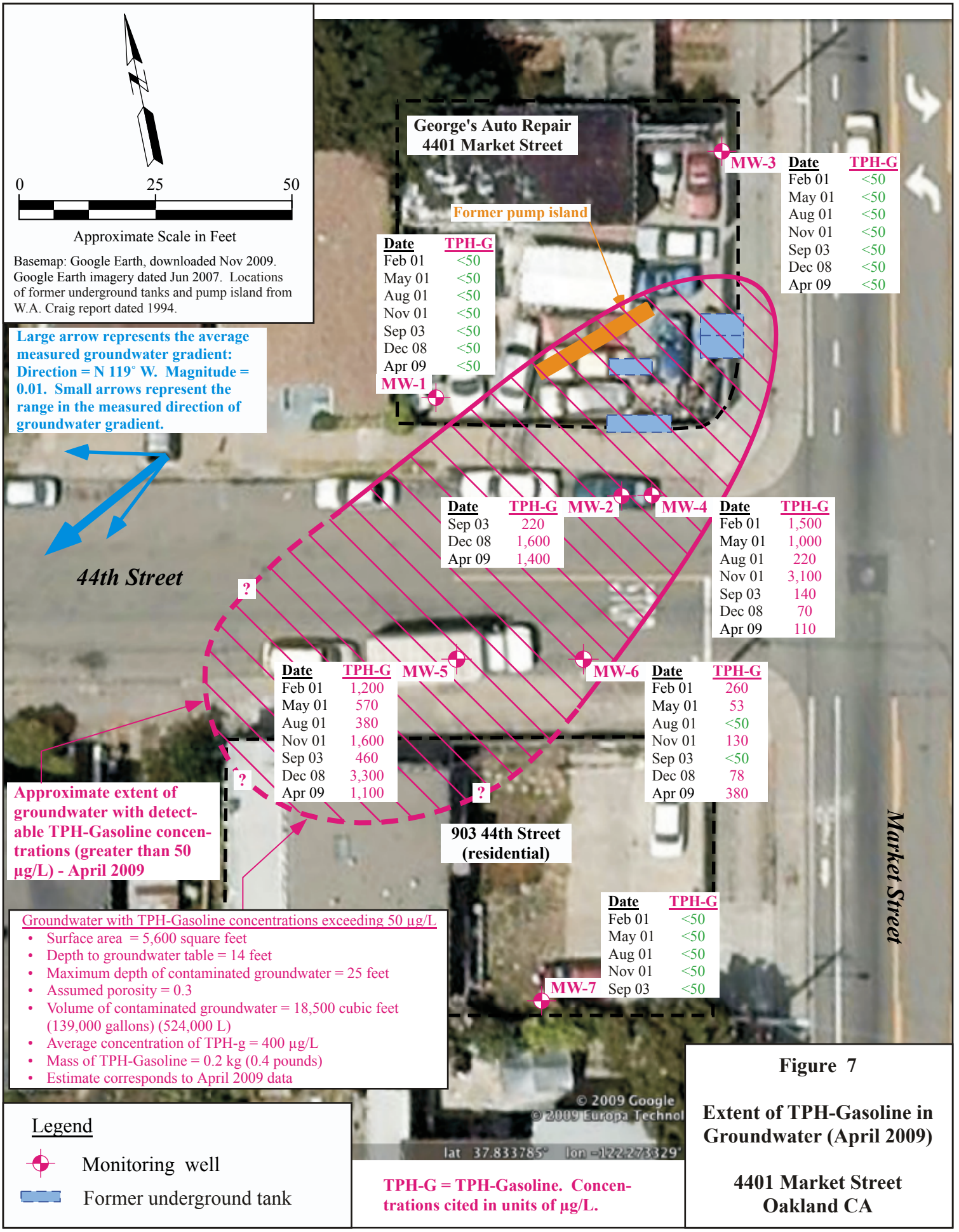


Figure 7

Extent of TPH-Gasoline in Groundwater (April 2009)

4401 Market Street
Oakland CA

STREAMBORN

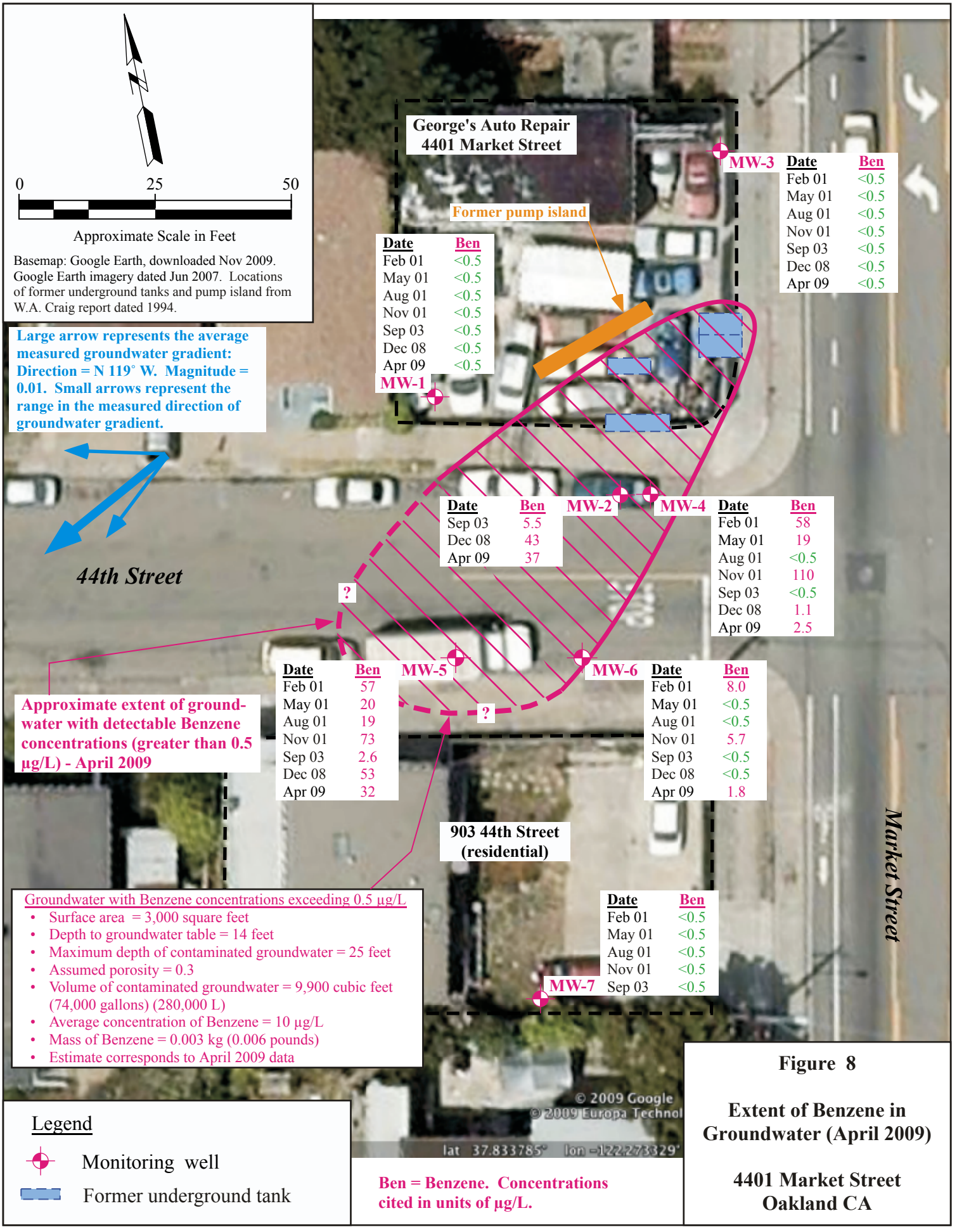


Figure 8

Extent of Benzene in Groundwater (April 2009)

4401 Market Street
Oakland CA

STREAMBORN

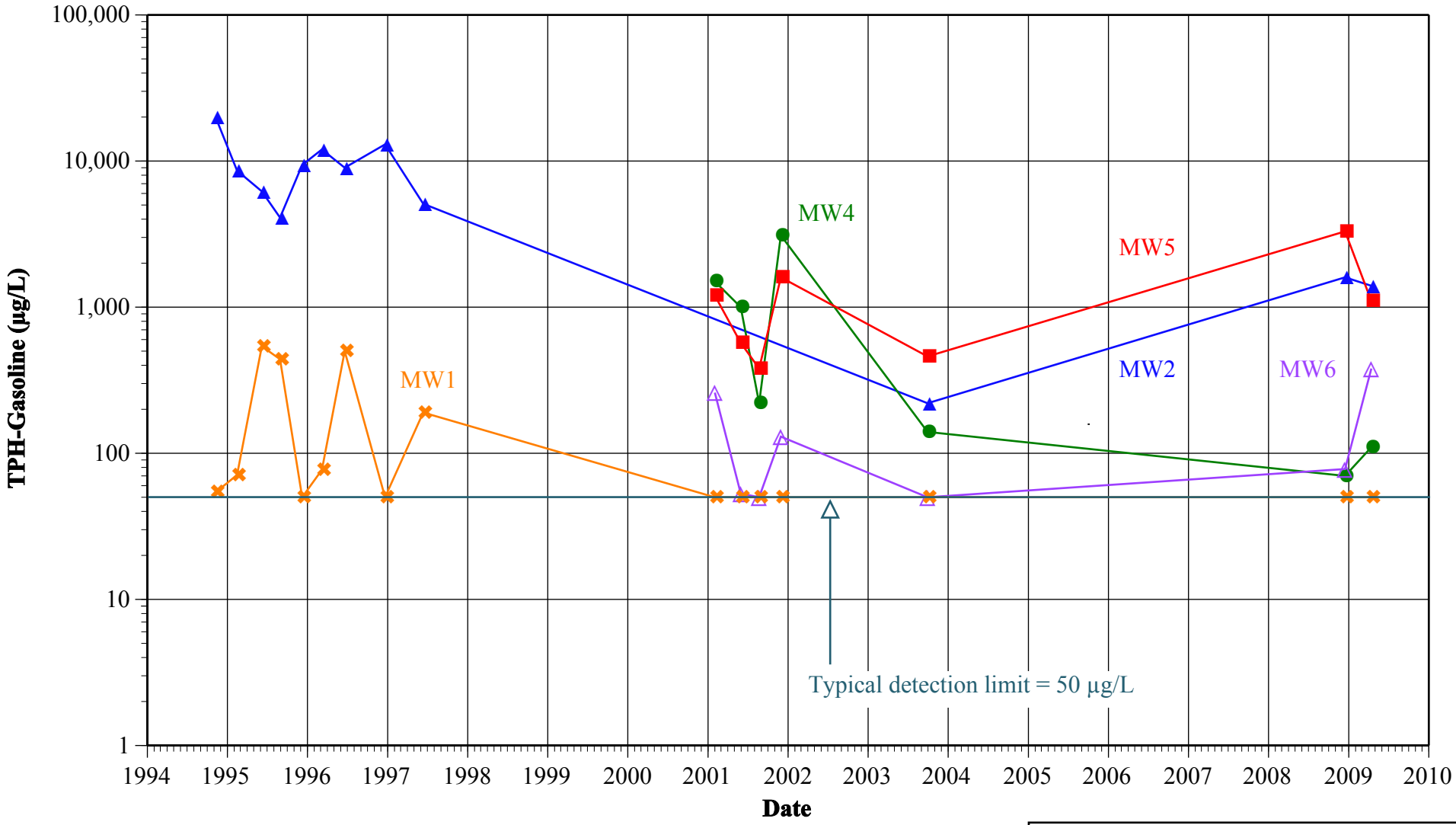


Figure 9

TPH-Gasoline Versus Time in Wells MW1, MW2, MW4, MW5, and MW6

4401 Market Street
Oakland CA

Nondetectable concentrations have been plotted at the detection limit of 50 µg/L. Wells MW3 and MW7 are not shown because they have histroically had nondetectable TPH-gasoline concentrations.

STREAMBORN

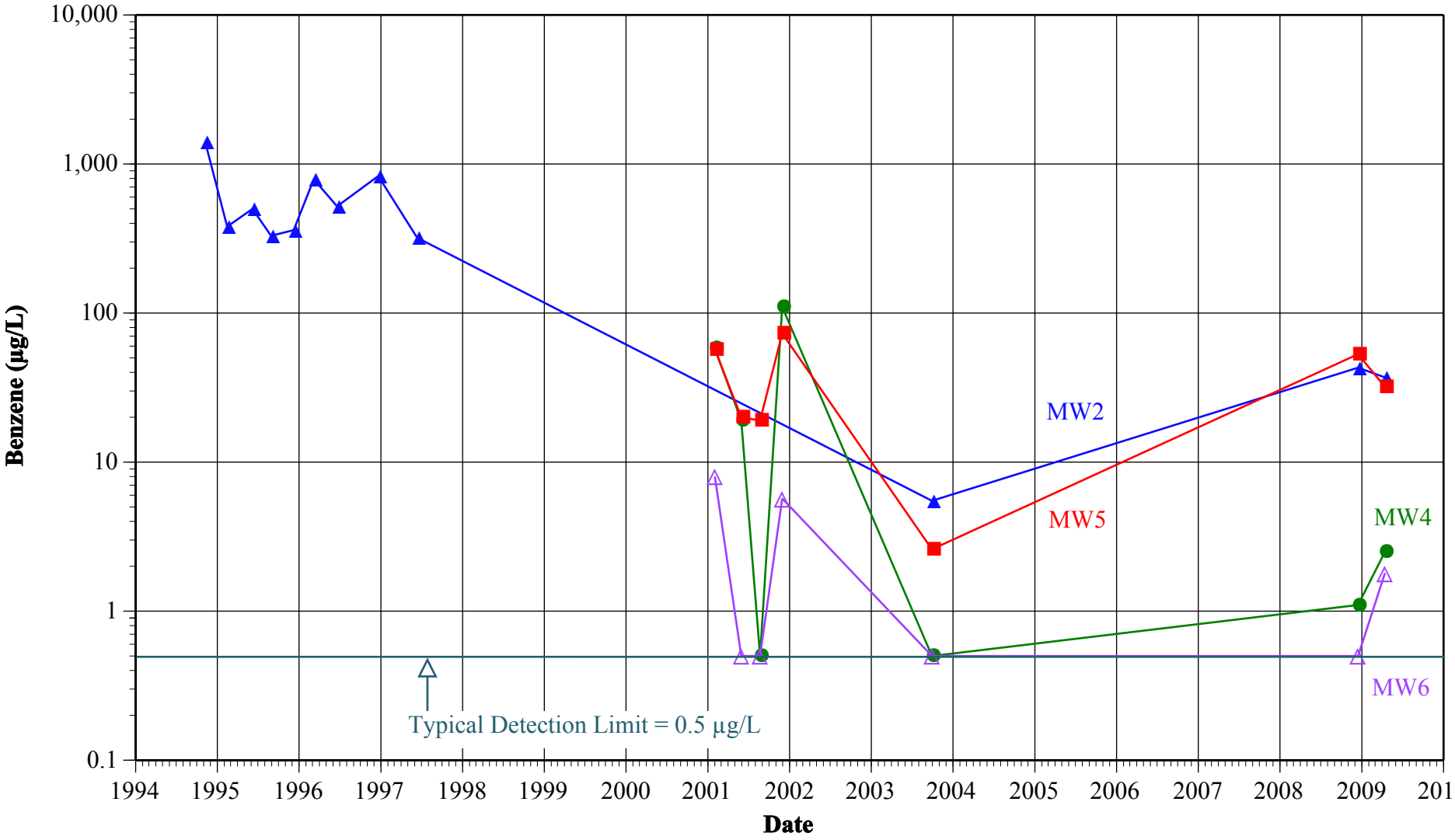


Figure 10

Benzene Versus Time in Wells MW2, MW4, MW5, and MW6

4401 Market Street
Oakland CA

Nondetectable concentrations have been plotted at the detection limit of 0.5 µg/L. Wells MW1, MW3, and MW7 are not shown because they have histroically had nondetectable benzene concentrations.

STREAMBORN

ATTACHMENT 1

Landowner Notification Form

LIST OF LANDOWNERS FORM

County of Alameda
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

CERTIFIED LIST OF RECORD FEE TITLE OWNERS FOR:

Site Name: ARCO

Address: 4401 Market Street

City, State, Zip: Oakland, CA 94608

Record ID #: RO0000132

Please fill out item 1 if there are multiple site landowners (attach an extra sheet if necessary). *If you are the sole site landowner, skip item 1 and fill out item 2.*

1. In accordance with Section 25297.15(a) of Chapter 6.7 of the California Health & Safety Code, I, _____ (name of primary responsible party), certify that the following is a complete list of current record fee title owners and their mailing addresses for the above site:

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

2. In accordance with Section 25297.15(a) of Chapter 6.7 of the California Health & Safety Code, I Casimiro Damele, certify that I am the sole landowner for the above site.

Sincerely,

Casimiro Damele CASIMIRO DAMELE 10-21-09

Signature of Primary Responsible Party | Printed Name | Date | E-mail Address

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 24, 2009

Casimiro Damele
3750 Victor Avenue
Oakland, CA 94619

Subject: Fuel Leak Case No. RO0000132 and GeoTracker Global ID T0600100430, ARCO, 4401 Market Street, Oakland, CA 94608

Dear Mr. Damele:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site including the recently submitted document entitled, "Letter Report, Soilgas Sampling," dated August 25, 2009, which was prepared by Streamborn for the subject site. The report summarized soil vapor sampling conducted on and off-site to evaluate potential contaminant (i.e. benzene) volatilization to indoor air. Benzene was detected in all soil vapor samples at concentrations ranging from 5.1 microgram per cubic meter ($\mu g/m^3$) to 16 $\mu g/m^3$ below the residential land-use Environmental Screening Level (ESL) of 84 $\mu g/m^3$ listed in the California Regional Water Quality Control Board's Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Final – May 2008 document and the California Human Health Screening Level (CHHSL) of 36.2 $\mu g/m^3$ promulgated by the California Department of Toxic Substances Control. Based on a review of the analytical data in the above-mentioned report and case file, potential contamination volatilization from the subsurface to indoor air does not appear to be a completed exposure pathway and case closure evaluation for your site appears appropriate. However, ACEH is concerned that the groundwater contamination plume appears to extend across the street towards and/or underneath residential properties. Also at time of case closure consideration, landowner notification and public participation will be required.

At this time, ACEH request that you address the following technical comments, perform the proposed work, and send us the technical reports requested below.

TECHNICAL COMMENTS

1. **Groundwater Contaminant Plume Figures** – Currently, the site figures do not adequately depict the extent of the hydrocarbon contaminant groundwater plume and it is not clear whether the contaminant plume extends underneath residential properties on the south side of 44th Street. Please prepare extended site maps, which utilize aerial photographs as base maps for your site, and accurately depict the groundwater contaminant plume (TPH-g and benzene) in relation to neighboring structures and site features in the report due by the date specified below. Also, please use dashed lines in locations where the extent of contamination is inferred or unknown.

2. **Potential Risk to Off-Site Properties** – As mentioned above, the groundwater contaminant plume appears to extend underneath off-site residential properties. Although soil vapor sampling analytical results did not detect benzene above the CHHLs or ESLs, it is not stated whether TPH-g detected in groundwater is adversely affecting off-site properties. Please clarify and/or justify that the groundwater contaminant plume (TPH-g and benzene) are not adversely impacting off-site properties. Also, elevated concentrations of TPH-g (5,100 µg/L) were detected in off-site boring B15 in July 1999. Please discuss these results and determine whether the contaminant plume is posing a potential risk to off-site properties in a report due by the date specified below.

3. **Public Notification Fact Sheet** – At time of corrective action or case closure, public notification to potentially affected stakeholders in the vicinity of the site is required. This is achieved through mailing of a fact sheet. At this time, please prepare a fact sheet that describes the property, the site history including site characterization and cleanup conducted, discusses the residual contamination left in-place and any potential risks thereof, and illustrates the extent of the soil and groundwater contamination. Please submit a draft fact sheet (in MS Word format) incorporating the above-mentioned comments, including the requested revised site figure(s), due by the date specified below. Once the final fact sheet is approved and mailed, public comments on the proposed action will be accepted for a period of thirty days.

4. **Landowner Notification** – As you may be aware, an investigation resulting from underground storage tank leaks was performed at the subject property to which you are named as the primary or active responsible party. Pursuant to Section 25297.15 (a), Alameda County Environmental Health (ACEH), the local agency, shall not consider cleanup or site closure proposals from the primary or active responsible party, issue a closure letter, or make a determination that no further action is required with respect to a site upon which there was an unauthorized release of hazardous substances from an underground storage tank subject to this chapter unless all current record owners of fee title to the site of the proposed action have been notified of the proposed action by the primary or active responsible party. ACEH is required to notify the primary or active responsible party of their requirement to certify in writing to the local agency that the notification requirement in the above-mentioned regulation has been satisfied and to provide the local agency with a complete mailing list of all record fee title owners.

   To satisfy the above-mentioned requirement, please complete the enclosed "List of Landowners Form," and mail it back to ACEH within thirty (30) days from the date of this letter. Also your comments, if any, must be considered prior to the proposed cleanup or closure. Please respond within 30 days from the date of this letter for your comments to be considered.

TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Paresh Khatri), according to the following schedule:

- **October 26, 2009** – Landowner Notification Form

- **November 24, 2009** – Soil and Water Investigation Report Addendum, including Draft Fact Sheet.

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 777-2478 or send me an electronic mail message at paresh.khatri@acgov.org.

Sincerely,

Digitally signed by Paresh Khatri
DN: cn=Paresh Khatri, o=Alameda County Environmental Health, ou=Local Oversight Program, email=Paresh.Khatri@acgov.org, c=US
Date: 2009.09.24 13:16:28 -07'00'

Paresh C. Khatri
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Juli A. Brady, Streamborn, P.O. Box 8330, Berkeley, CA 94707-8330
Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032 (*sent via electronic mail to lgriffin@oaklandnet.com*)
Donna Drogos, ACEH (*sent via electronic mail to donna.drogos@acgov.org*)
Paresh Khatri, ACEH (*sent via electronic mail to paresh.khatri@acgov.org*)
GeoTracker
File

LIST OF LANDOWNERS FORM

County of Alameda
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

CERTIFIED LIST OF RECORD FEE TITLE OWNERS FOR:

Site Name: ARCO

Address: 4401 Market Street

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Record ID #: RO0000132

Please fill out item 1 if there are multiple site landowners (attach an extra sheet if necessary). *If you are the sole site landowner,* skip item 1 and fill out item 2.

1. In accordance with Section 25297.15(a) of Chapter 6.7 of the California Health & Safety Code, I, _____ (name of primary responsible party), certify that the following is a complete list of current record fee title owners and their mailing addresses for the above site:

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

   Name: _____

   Address: _____

   City, State, Zip: _____

   E-mail Address: _____

2. In accordance with Section 25297.15(a) of Chapter 6.7 of the California Health & Safety Code, I _____, certify that I am the sole landowner for the above site.

Sincerely,

Signature of Primary Responsible Party	Printed Name	Date	E-mail Address