

# BUTTNER PROPERTIES, INC.

PROPERTY DEVELOPMENT • REAL ESTATE INVESTMENT • PROPERTY MANAGEMENT  
600 West Grand Avenue, Oakland, California 94612  
Telephone (510) 832-3456 • Facsimile (510) 465-4670  
Email: Buttner@value.net

November 13, 2014

Alameda County Environmental Health Services  
Local Oversight Program  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**RECEIVED**

*By Alameda County Environmental Health at 11:50 am, Nov 17, 2014*

Attention: Ms. Dilan Roe, LOP Program Manager

RE: 2250 Telegraph Avenue  
Oakland, California

Dear Ms. Roe:

The Groundwater Monitoring Report (October 2014), 2250 Telegraph Ave., Oakland, California dated November 2014 ("Report") was prepared by our consultant, Fugro Consultants, Inc. ("Fugro"), who we believe to be experienced and qualified to advise us in a technical area that requires a high degree of professional expertise. Therefore we have relied upon Fugro's assistance, knowledge and expertise in their preparation of the Report. I am unaware of any material inaccuracy in the information in the Report or of any violation of government guidelines that are applicable to the Report. Accordingly, I am not aware of any reason to question the conclusions and recommendations contained in the Report.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1).

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

We would appreciate for being able to set up a meeting with you to discuss the data and moving the Site to closure.

Sincerely,

*Marianne Robison*

Marianne Robison  
President

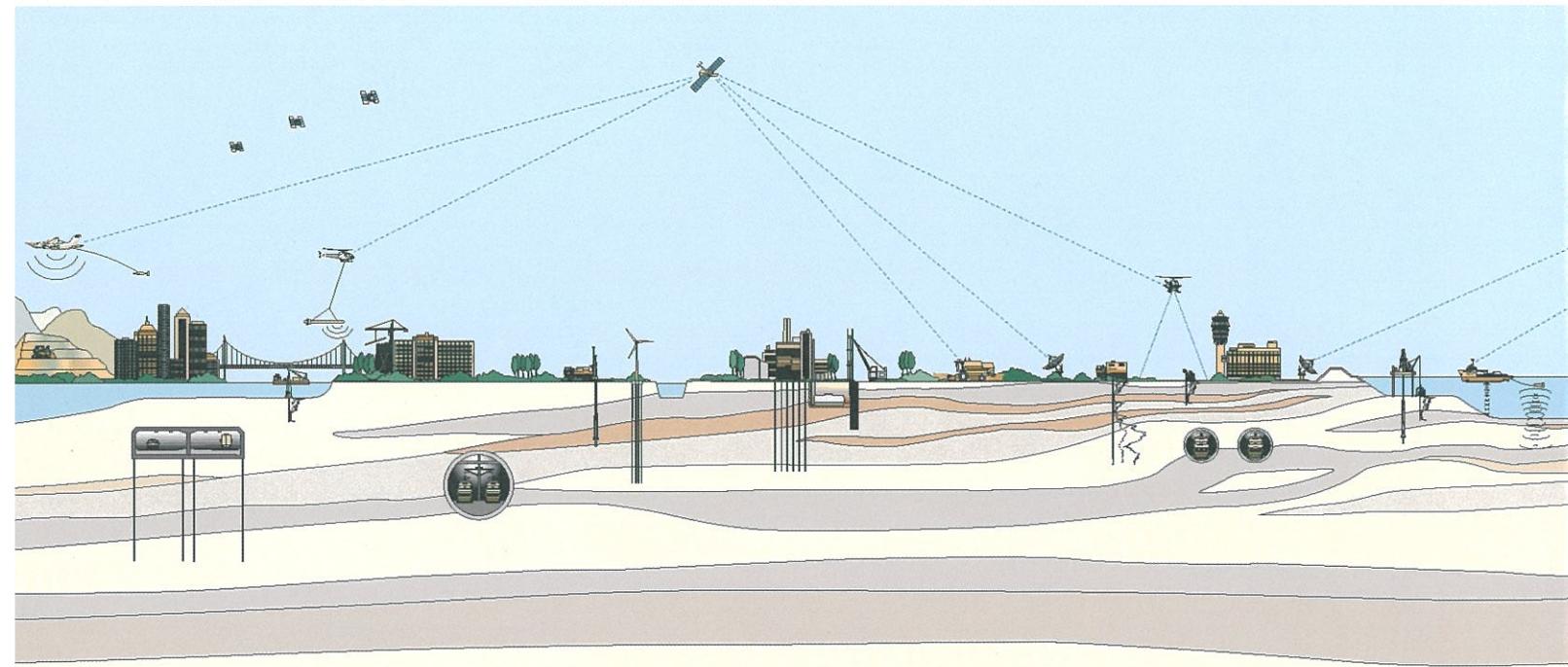
FUGRO CONSULTANTS, INC.



**GROUNDWATER MONITORING REPORT  
OCTOBER 2014 EVENT  
2250 TELEGRAPH AVENUE  
OAKLAND, CALIFORNIA**

Prepared for:  
**BUTTNER PROPERTIES**

November 2014  
Fugro Project No. 04.72140060





## FUGRO CONSULTANTS, INC.

1000 Broadway, Suite 440  
Oakland, California 94607  
Tel: (510) 268-0461  
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November 13, 2014  
Project No. 04.72140060

Buttner Properties  
600 West Grand Avenue  
Oakland, California 94612

Attention: Ms. Marianne Robison

Subject: Groundwater Monitoring Report - October 2014 Event  
Fuel Leak Case No. RO0000359, GeoTracker Global ID T0600100431,  
Dave's Station, 2250 Telegraph Avenue, Oakland, California

Dear Ms. Robison:

Fugro Consultants, Inc., (Fugro) was retained by Buttner Properties, as a Responsible Party (RP), to prepare this report, which documents and records the results of a recent groundwater monitoring event for the 2250 Telegraph Avenue property (Site). The groundwater monitoring event and limited research regarding municipal wells in the Site vicinity was requested by Alameda County Environmental Health (ACEH) during a July 18, 2014 meeting attended by the RP and Fugro to discuss the Pathway to Closure and Low-Threat Underground Storage Tank (UST) Case Closure Policy (LTCP) of the San Francisco Regional Water Quality Control Board (SFRWQCB). Based on our knowledge of the Site data and the results of the services described herein we believe sufficient data exists to consider the Site for closure.

### BACKGROUND

Three USTs associated with a former service station were removed from the Site in 1990 under the observation of Fugro staff. Source removal activities conducted in 1990 removed about 500 cubic yards of gasoline impacted soil, and source removal activities conducted in 1994 removed about 70 cubic yards of waste-oil and gasoline impacted soils. Four monitoring wells (MW-1 through MW-4), located onsite, have been monitored since 1994. Two wells (MW-5 and MW-6) located in areas within the West Grand Avenue right-of-way, down and cross-gradient of the former UST improvements, have been monitored since 1997. During 2009, a soil vapor survey was completed. In 2011, two additional wells (MW-7 and MW-8) were installed, and added to the monitoring program. The Site location is shown on the Vicinity Map - Plate 1, and the Site Plan is presented on Plate 2.

In November 2011, Fugro submitted a Corrective Action Plan (CAP) to provide framework for the remediation at the Site. The CAP was approved by Alameda County Environmental Health (ACEH) in a letter dated November 8, 2012.



In accordance with the CAP the hazardous building materials present on Site in the old service station building were abated by appropriately licensed professionals under contract to the Responsible Party (RP). In January 2013, the old station building, automotive chemicals and debris were removed from the property in preparation for remediation activities.

In June 2013, Applied Water Resources (AWR) completed two excavations within the vicinity of the former waste oil UST area and the former gasoline UST area. During the excavations approximately 975 cubic yards (cy) was removed from the site, as well as approximately 4,000 gallons of groundwater. All waste was transported to licensed disposal facilities, under manifest. The maximum detected concentrations remaining in soil between the ground surface and 10 feet below the ground surface (bgs) include the following:

- Total volatile hydrocarbons as gasoline (TVHg) at 33 milligram per kilogram (mg/kg),
- Benzene at 0.62 mg/kg,
- Ethylbenzene at 1.5 mg/kg,
- m,p-Xyelene at 3 mg/kg, and
- naphthalene at 1.7 mg/kg.

All of these concentrations are below the LTCP *Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health* as presented on Table 1 of the LTCP.

Prior to backfill placement, an oxygen release compound (ORC) was placed in the excavation to assist in the break-down of contaminants. The excavations were then backfilled with clean fill which was compacted in 12 inch lifts to 90% relative compaction.

Well MW-4 was destroyed during the June 2013 excavation activities because its' location was within the footprint of the remedial excavation. On January 6, 2014, AWR attempted to install a new well (MW-4a) at well MW-4's previous location, however, reportedly the design specifications could not be met during the installation and the boring was abandoned. On January 7, 2014, well MW-4a was successfully installed to 25 feet below ground surface (bgs) at a location southeast of former well MW-4, downgradient of the excavation. On January 10, 2014, AWR developed well MW-4a by surging and purging. Following the installation and development of well MW-4a, a groundwater monitoring event was performed by AWR in January 2014.

## GROUNDWATER MONITORING – OCTOBER 2014

Fugro conducted this monitoring event on October 9, 2014. Prior to sampling, the depth to groundwater was measured in all onsite and offsite wells. Fugro's field personnel purged wells MW-1 and MW-4a through MW-8 of approximately three casing volumes of water using either a bailer or a peristaltic pump. Well, MW-3 was purged dry using a bailer and is known to

be a slow recharging well. Well MW-2 was not sampled for this event due to historic concerns regarding its integrity.

During the purge process, Fugro recorded water quality parameter readings of water removed from each well using an YSI 6920 flow through cell probe. Purge water was monitored for changes in pH, conductivity, temperature, dissolved oxygen (DO), oxygen reducing potential (ORP), and turbidity. Measurements are presented on the well sampling forms which are presented in Appendix A.

Wells MW-1, MW-3, and MW-8 were each sampled with a clean disposable bailer, all other wells were sampled using a peristaltic pump. With the exception of wells MW-3 and MW-8, each well was sampled once water levels stabilized to within 80% of the initial water level measurement. Well MW-3 was purged dry at approximately 9 AM and was left to recharge throughout the day before sampling was attempted at 4 PM. Groundwater recharge in well MW-3 historically has been slow. Well MW-3 was sampled at 79% recharge. Well MW-8 was purged at 3:15 PM and was sampled at 4:40 PM when it had recharged to about 71% of its initial water level.

During this groundwater monitoring event, Fugro's field personnel noticed petroleum hydrocarbon odor during purging and sampling of wells MW-1, MW-3, MW-4a, MW-6, and MW-8; however, no free product was observed. No odors were observed during purging and sampling activities conducted for wells MW-5 and MW-7.

All groundwater samples were retained in glass containers pre-cleaned by the laboratory in accordance with Environmental Protection Agency (EPA) protocols. The containers were placed in an ice-filled cooler and kept chilled, pending delivery to the laboratory.

The samples for this event were submitted under chain-of-custody documentation to Curtis & Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services for hazardous waste and water testing in accordance with the approved monitoring program. A sample from each well was analyzed for all of the following constituents:

- Total volatile hydrocarbons as gasoline (TVHg) and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) using EPA Methods 5030/8260b;
- Total extractable petroleum hydrocarbons as diesel and motor oil (TEHd and TEHmo) using EPA Methods 8015m, with silica gel cleanup;
- Naphthalene and Lead scavengers (1,2-dichloroethane and 1,2-dibromoethane) using EPA Method 5030/8260b; and
- Five fuel oxygenates (MTBE, TBA, DIPE, ETBE, and TAME) using EPA Method 8260b.

Well sampling forms and the laboratory analytical report, are presented in Appendices A and B, respectively. Groundwater elevation data and the analytical test results are summarized

in Table 1. DO measurements collected since 2005 have been included in this table as requested by ACEH.

The historic groundwater flow directions for this Site are presented in the Rose Diagram on Plate 2. The gradient for this event was 0.003 feet/feet<sup>1</sup> directed towards the south-southwest. Groundwater was generally encountered at higher elevations during this event compared to the January 2014 monitoring event by AWR.

The top of casing elevation of well MW-4a was surveyed on January 17, 2014, however, the survey data provided for top of casing elevation does not appear to be consistent with elevations on record for the Site. As such, the well elevation for well MW-4a was not included in gradient calculations.

## QUALITY CONTROL AND DATA VALIDATION

The objectives of Fugro's QA/QC and data validation program are to obtain and present accurate, precise, and complete data. The QA/QC and data validation program for this groundwater monitoring event are documented below.

To assess the completeness of the data reported by the laboratory, Fugro checked 100 percent of the laboratory report and found that all requested tests were completed. Therefore, the chemical report is considered to be complete.

To assess the accuracy of the laboratory data, Fugro reviewed the laboratory reports to confirm compliance with the laboratory's own QA/QC limits. For this sampling event Curtis and Tompkins, Ltd, QA/QC reporting indicated no exceptions to compliance with their own QA/QC limits. Except for naphthalene, Curtis and Tompkins, Ltd. noted no QA/QC problems for EPA Methods and their internal reporting of surrogate recovery was within their noted acceptable ranges. Curtis and Tompkins, Ltd, QA/QC reporting indicated that naphthalene was reported above the acceptable range for surrogate recovery. This type of QA/QC issue might suggest an over-estimation of the contaminant concentration, if a concentration was detected. However, naphthalene was not detected during this sampling event, therefore the results of the elevated surrogate recovery is not considered a concern for this event.

To assess the accuracy of the water quality measurements, Fugro checked that field meter was calibrated prior to arriving at the site. The meter used for this event was an YSI 6920 provided to Fugro by Equipco. Fugro staff confirmed that the instrument calibration form included with the shipment showed that the instrument had been calibrated by Equipco prior to shipment to Fugro.

To assess if the field measurements are representative Fugro checked that the measurements appeared representative of existing conditions. Fugro field staff recorded and

then double checked all measurements recorded. Once back at the office the data was tabulated and compared to previous measurements and all data appeared representative.

Based on our review of the field measurement QA/QC protocols and findings; Fugro judges that the data recorded and presented herein are valid and representative of site conditions.

## DISCUSSION OF RESULTS

Contaminant concentrations detected in well MW-6 are not, in our opinion associated with the on-site release. Information regarding results for well MW-6 are presented herein for context only, and as directed by ACEH for this event.

Analyses detected TVHg during this event in groundwater samples obtained from wells MW-1, MW-3, MW-6, and MW-8 at concentrations ranging from 160 micrograms per liter ( $\mu\text{g}/\text{L}$ ) to 1,200  $\mu\text{g}/\text{L}$ . Concentrations of TVHg are showing an overall reduction (see Chart 1). The highest concentration that could reasonably be associated with the release from this Site is 1,200  $\mu\text{g}/\text{L}$  TVHg detected in well MW-8 located just beyond the Site southern boundary.

TEHd was detected in groundwater samples collected in wells MW-6 and MW-8 at concentrations ranging from 180  $\mu\text{g}/\text{L}$  to 83  $\mu\text{g}/\text{L}$ , respectively. Concentrations of TEHd are showing an overall reduction (see Chart 2). The highest concentration that could reasonably be associated with the release from this Site is 83  $\mu\text{g}/\text{L}$  detected in well MW-8.

Analysis detected no TEHmo in any of the samples collected.

No concentrations of BTEX were detected in groundwater samples obtained from wells MW-1, MW-3, MW-4a, MW-5, MW-6, and MW-7. Analysis detected benzene, toluene, ethylbenzene, and total xylenes in well MW-8 at concentrations of 1.1  $\mu\text{g}/\text{L}$ , 1.1  $\mu\text{g}/\text{L}$ , 7.5  $\mu\text{g}/\text{L}$ , and 3.2  $\mu\text{g}/\text{L}$ , respectively. Concentrations of benzene in well MW-3 shows a reduction compared to the January 2014 event. (see Chart 3).

No concentrations of naphthalene were detected in any of the samples analyzed.

Analysis detected 1,2-dichloroethane (1,2-DCA) in MW-4a at a concentration of 15  $\mu\text{g}/\text{L}$ .

Analysis detected MTBE in MW-4a at a concentration of 1.9  $\mu\text{g}/\text{L}$ . MTBE was not detected in any other samples analyzed. MTBE was not a compound used at the Site. The presence of MTBE suggests the Site may be impacted by an offsite source or may be a laboratory artifact.

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<sup>1</sup> Data based on current measurements in wells MW-1 through MW-5.

Review of historical groundwater data shows that groundwater concentrations detected in well MW-6 do not correspond well with data detected on-site. For instance, the Rose diagram shown on Plate 2 indicates that historical groundwater flow has been toward the east-southeast toward well MW-5, which defines the down gradient limits of the groundwater plume. Well MW-5 is approximately 65 feet from the source area and has shown no impact to date due to contaminants of concern. Well MW-6 is located approximately 60 feet south of the source area within Grand Avenue. In 2009, Fugro conducted a utility survey to identify preferential contaminant flow paths. An East Bay Municipal Utilities pipeline was identified buried as deep as 9.5 feet bgs within Grand Avenue. The presence of this pipeline and the historical operation of four gasoline service stations at the intersection of Telegraph and Grand Avenues suggests that concentrations detected in water from well MW-6 are more likely associated with other local releases that traveled along the pipeline bedding material. Concentrations of TVHg and TEHd detected in groundwater from well MW-6 are not consistent with the distribution of contaminants at the Site. For instance, well MW-6 has consistently shown elevated concentrations of TVHg and TEHd while showing no benzene, which was historically present in Site groundwater. In addition groundwater samples collected closer to the source area have contained lower concentrations of TVHg and TEHd. The presence of the preferential flow path, known operations of former and active gasoline stations around the Site, and differences in contaminant composition and concentrations strongly suggest that concentrations detected in well MW-6 are not associated with releases at the Site. These facts also suggest that groundwater contamination in well MW-8 may also be effected by off-site sources.

### **WELL SURVEY**

Fugro completed well surveys at the Site in 2004 and 2009. In 2009, the well survey included a search and ground trothing for wells located within about 1,000 feet of the Site. We did not identify any wells which may be within an area of concern downgradient of the Site.

In June 2014, a well survey report was prepared and submitted to the Regional Water Quality Control Board's (RWQCB) GeoTracker database for the site located at 2200 Telegraph Avenue (directly south of the Site). This survey covers a 2000 foot radius and the nearest well was located about 1,300 feet in a similar flow direction from the Site. No other wells used for a municipal purpose were identified within a reasonable distance of concern from the Site. . This well survey information and findings would in our opinion serve to cover the area downgradient of the 2250 Telegraph Avenue Site adequately, and since no further study was required at the Chevron site, no additional study of risk to municipal wells appears warranted at this time.

### **REPORTING REQUIREMENTS**

In accordance with reporting requirements, Fugro has uploaded a PDF copy of this report to the ACEH ftp website. We have also sent electronic copies of all attached tables in a Microsoft excel format to ACEH. Copies of required report, tables, and site plans have also been uploaded to the Regional Water Quality Control Board's (RWQCB) GeoTracker database.

## LOW-THREAT CLOSURE

The information contained in this report, along with the more than 20 years of Site data, strongly suggest that sufficient data exists upon which to determine that the Site represents a low risk to further water quality degradation in the area. The September 17, 2014 letter from the State Water Resources Control Board to Buttner Properties makes this same finding (the State Board letter is presented as Appendix C). As such, it would seem reasonable that the Site would qualify for regulatory closure under the RWQCB Low-Threat Underground Storage Tank Case Closure Policy. Fugro has attached a completed LTCP Checklist for the site in Appendix D and has referenced applicable previous reports that present pertinent data to substantiate that the Site data satisfies the requirements for case closure.

If you have any questions regarding the content of this report, please call the undersigned at (510) 267-4401.

Sincerely,  
FUGRO CONSULTANTS, INC.



Jeriann Alexander, PE.,REPA  
Principal Engineer



JNA:jna

Attachments: Table 1 - Summary of Groundwater Elevation  
Table 2 - Water Quality and Chemical Concentration Data  
Plate 1 – Vicinity Map  
Plate 2 – Site Plan with Groundwater Elevation Contours for October 2014  
Plate 4 – TVHg Concentrations  
Plate 5 – TEHd-Concentrations  
Plate 6 – TEHmo Concentrations  
Chart 1 – TVHg Concentration vs Time  
Chart 2 – TEHd Concentration vs Time  
Chart 3 – Benzene Concentration vs Time  
Appendix A – Well Sampling Forms  
Appendix B – Analytical Report and Chain-of-Custody Documentation  
Appendix C – State Water Resources Control Board September 17 Letter  
Appendix D – Low Threat Closure Policy Check List

Copies Submitted: (PDF) Addressee  
(PDF) Mr. Tim Robison, Ph.D.  
(PDF) Alameda County Environmental Health FTP website  
(PDF) Regional Water Quality Control Board GeoTracker database

## TABLES













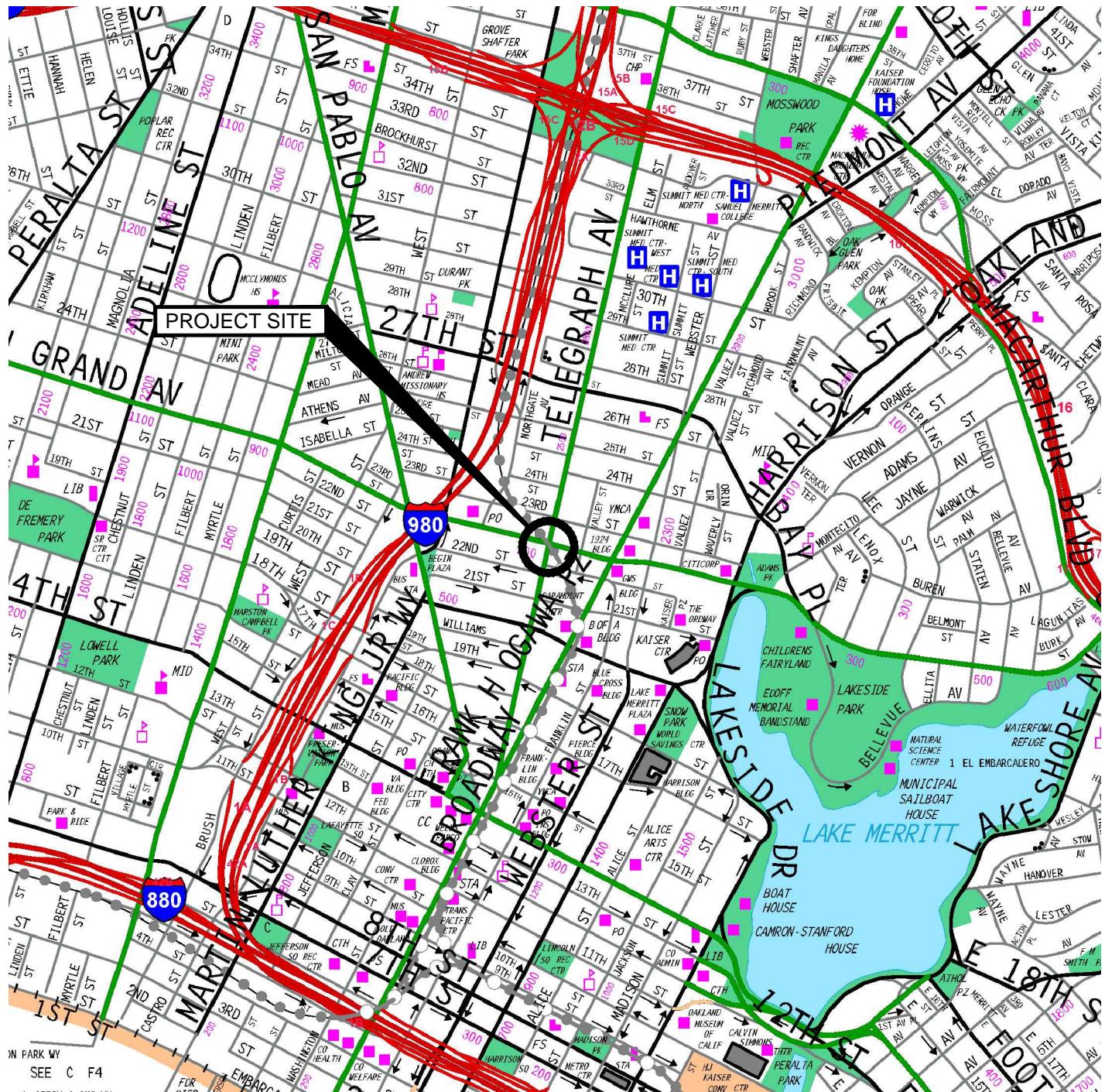




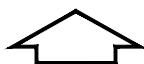
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## PLATES

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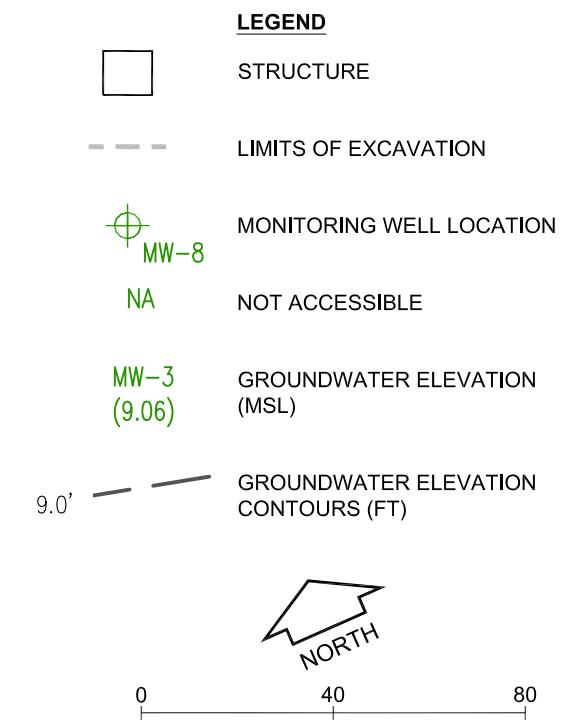
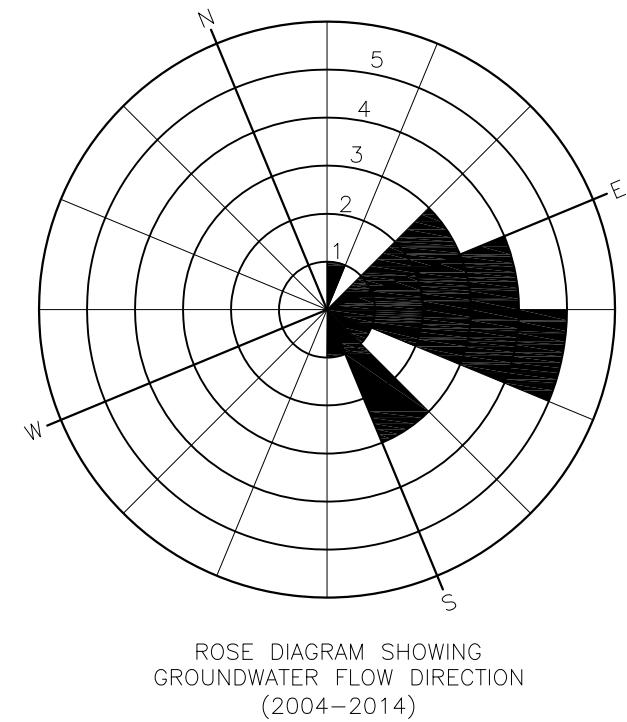
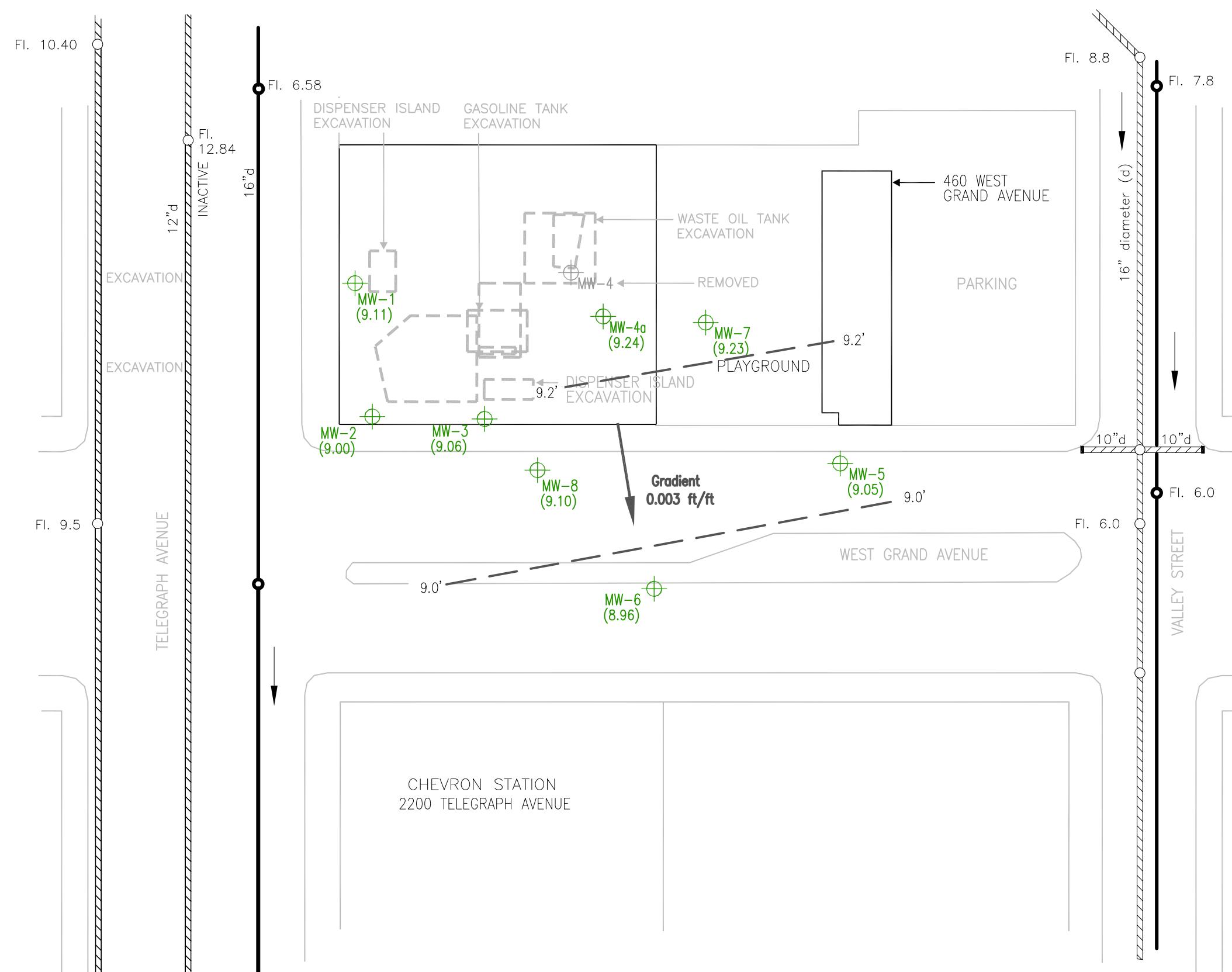
**SOURCE:** This Site Vicinity Map is based on The Thomas Guide Digital Edition 2003, Bay Area Metro, Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara Counties.



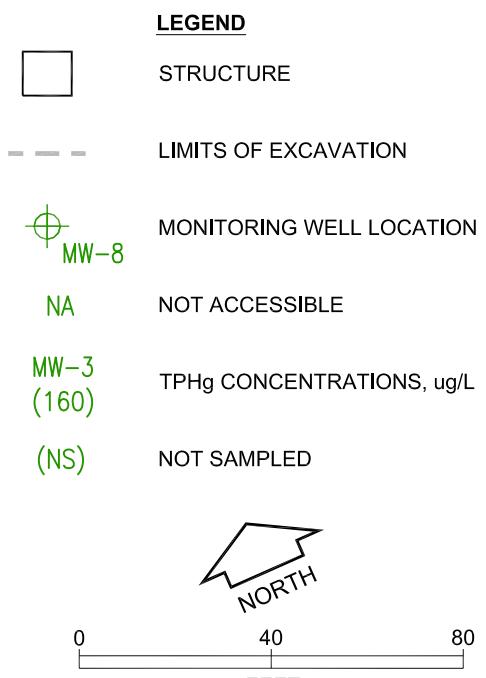
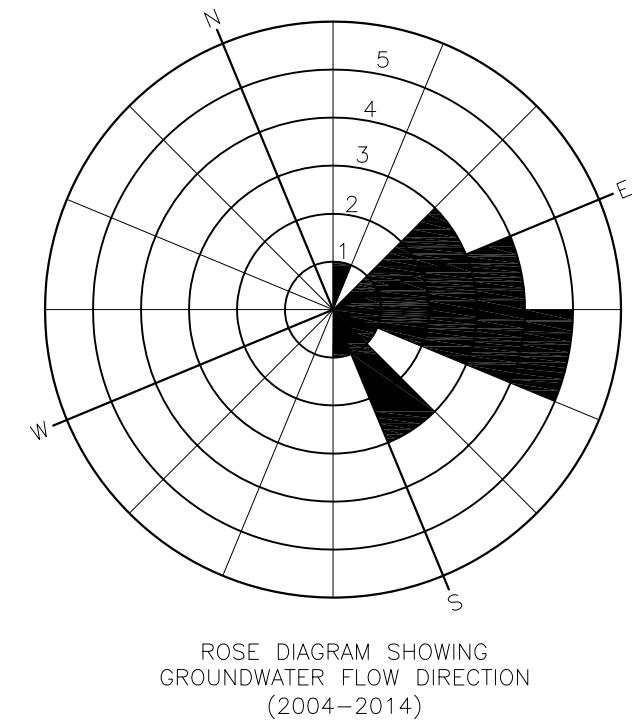
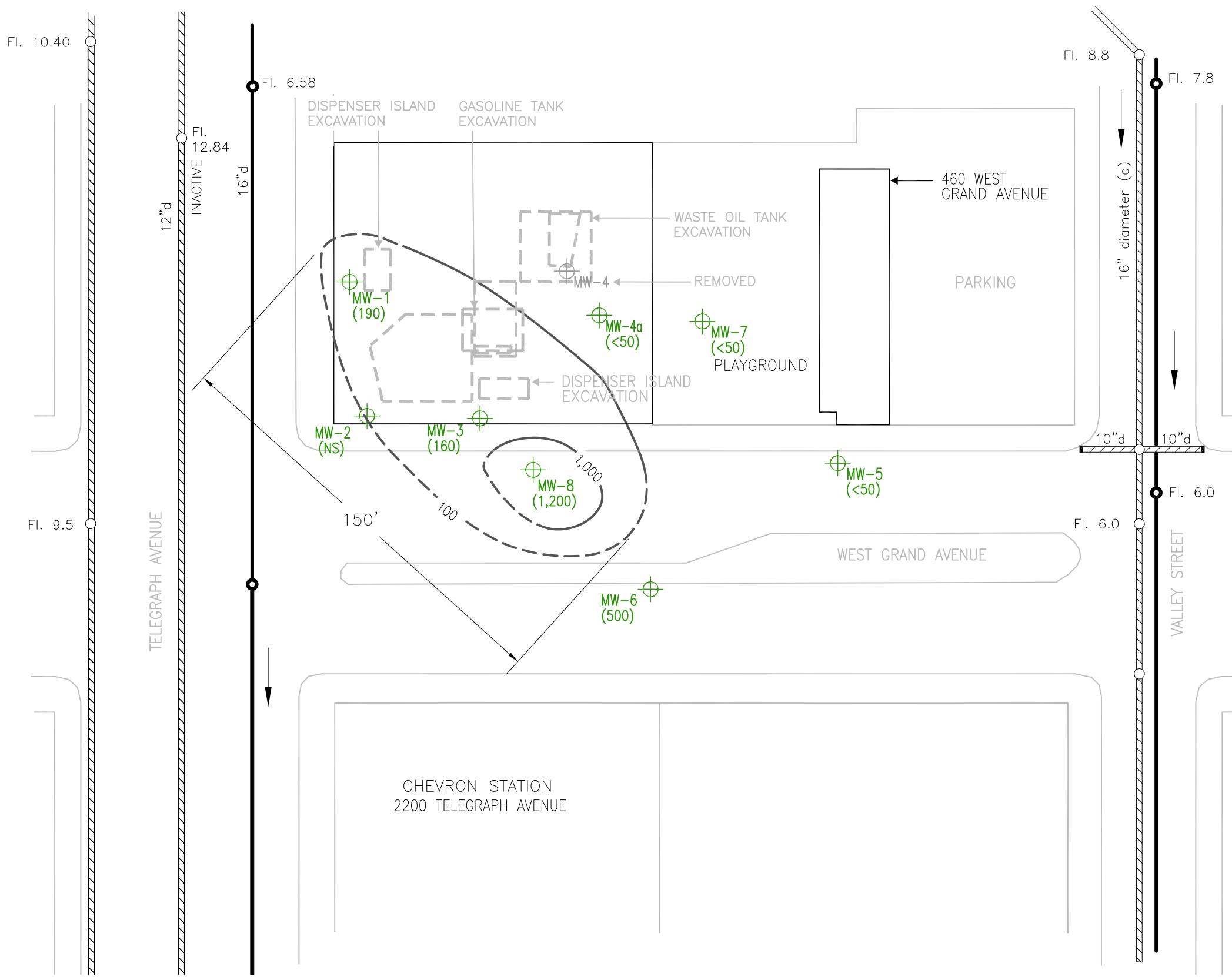
0 1500 3000 FEET

**VICINITY MAP**  
2250 Telegraph Avenue  
Oakland, California

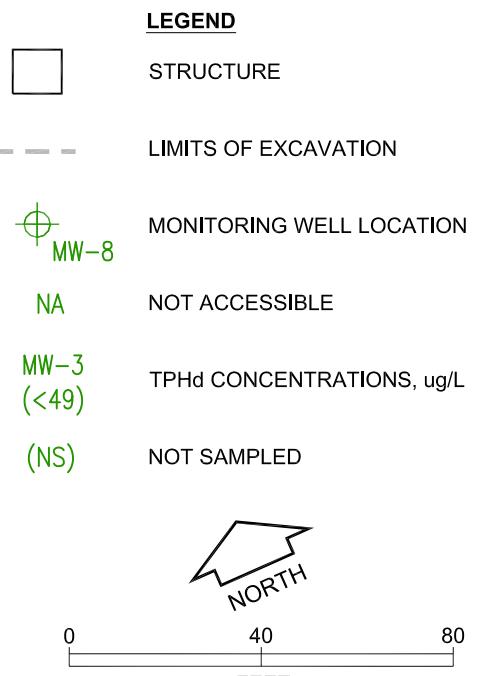
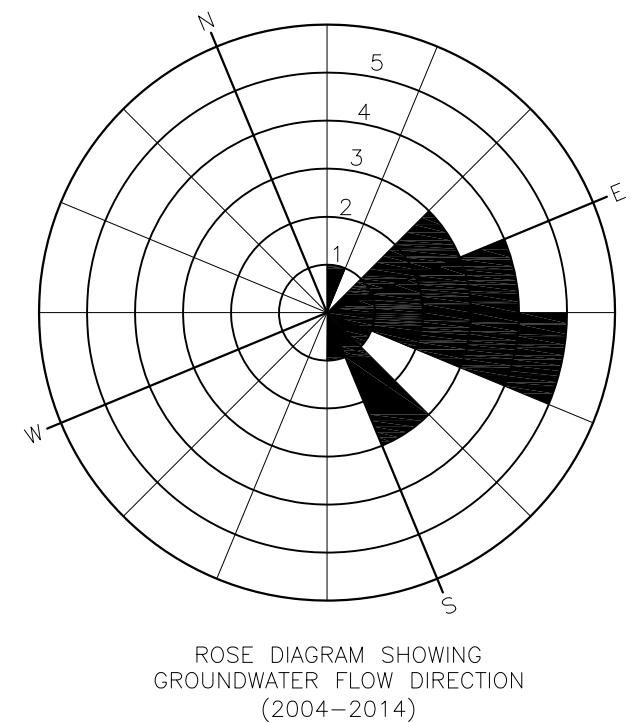
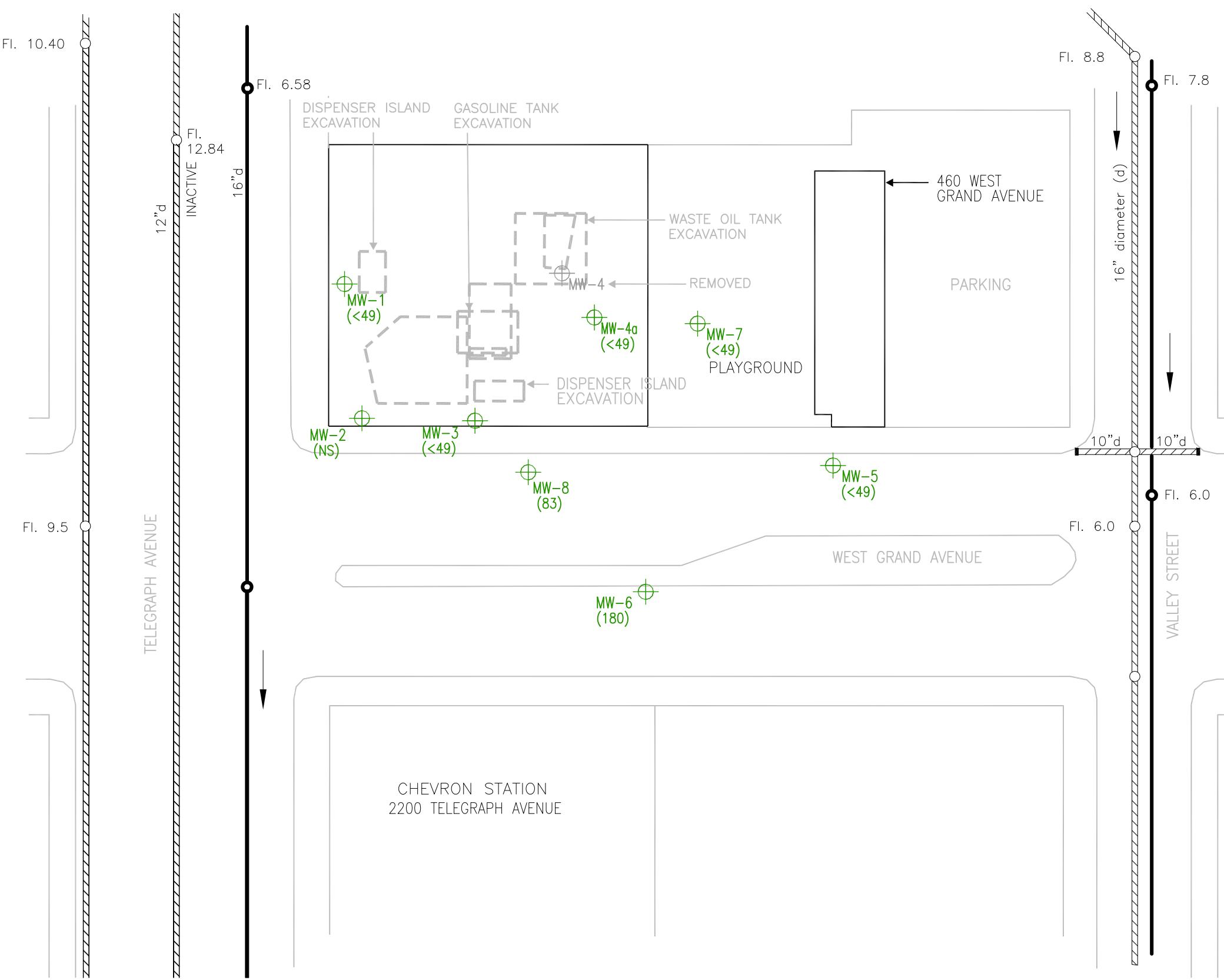
PLATE 1



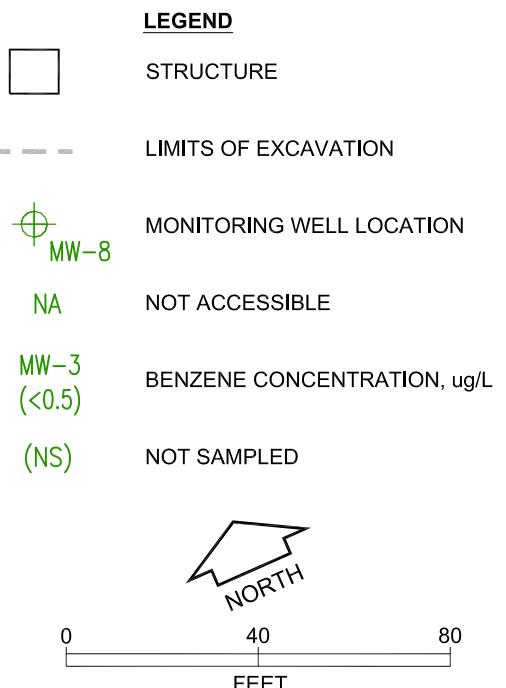
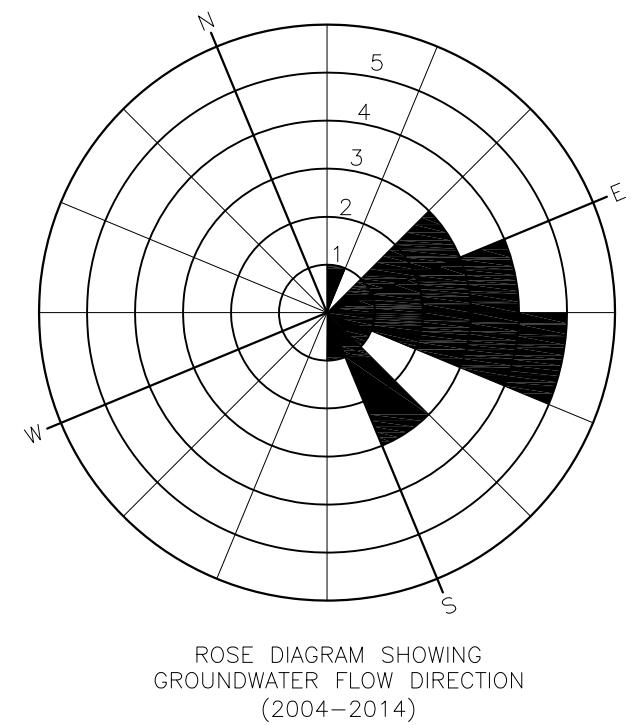
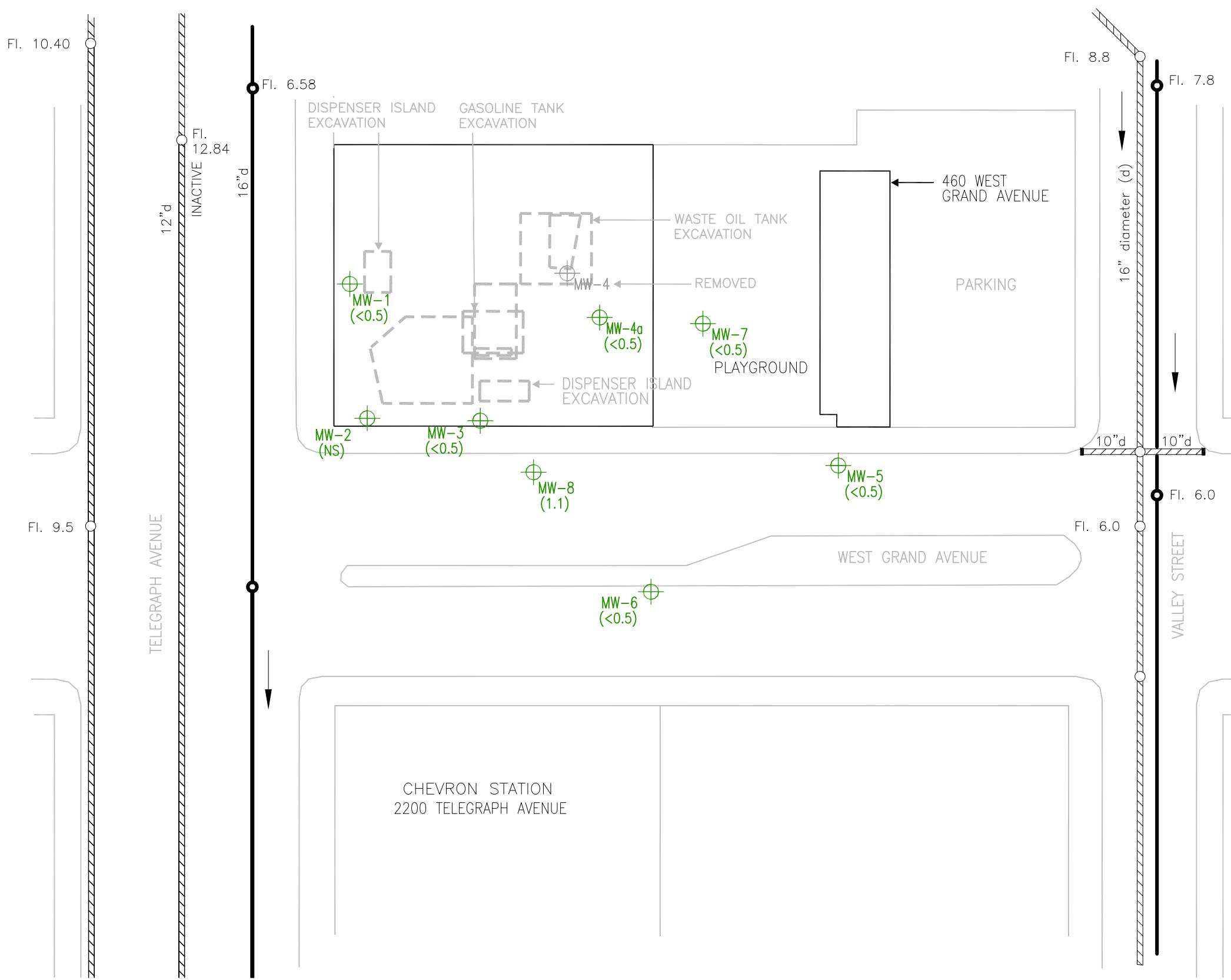
**SITE PLAN**  
**GROUNDWATER ELEVATIONS - OCTOBER 2014**  
2250 Telegraph Avenue  
Oakland, California



**TPHg CONCENTRATIONS - OCTOBER 2014**  
2250 Telegraph Avenue  
Oakland, California



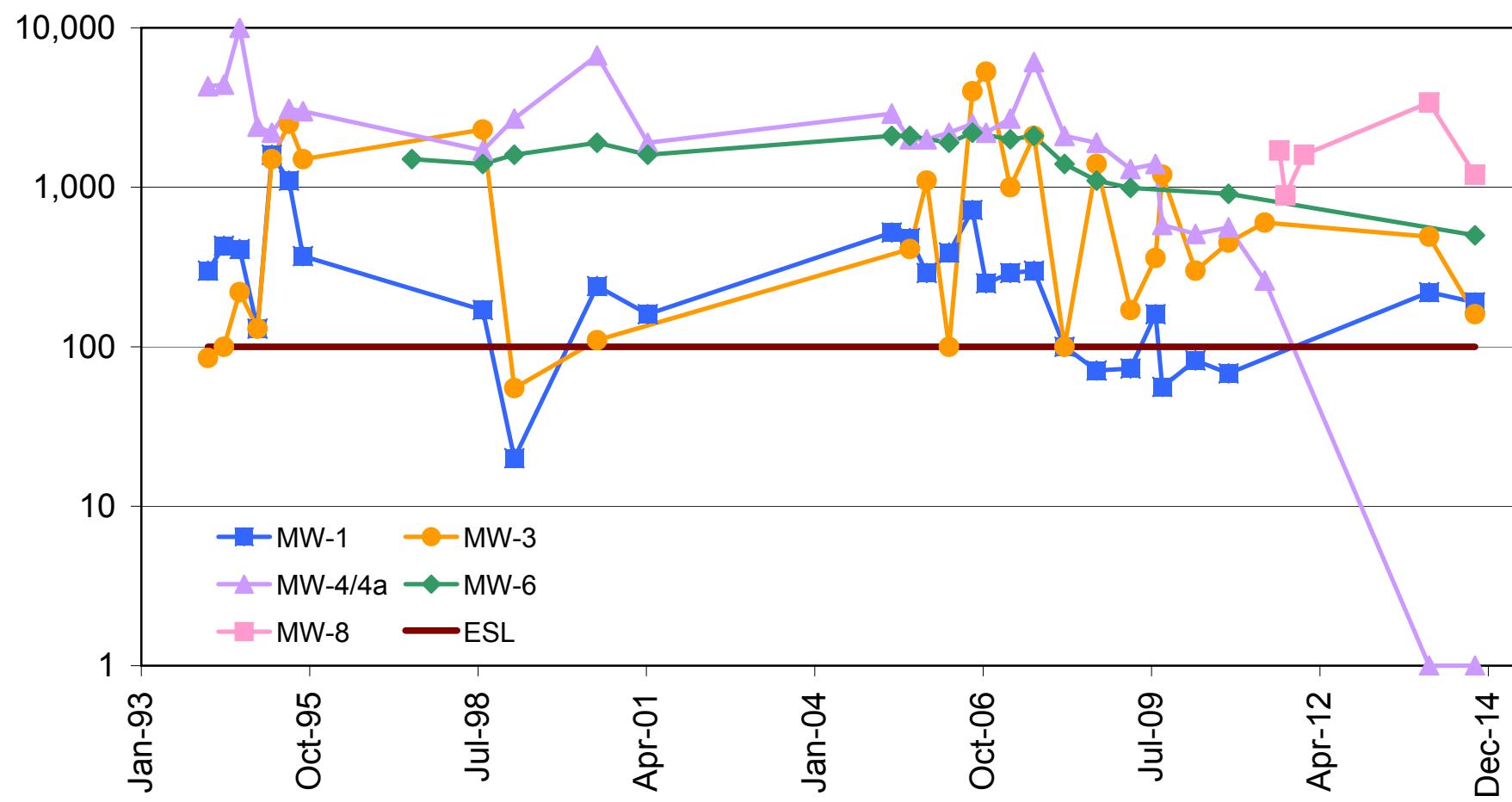
**TPHd CONCENTRATIONS - OCTOBER 2014**  
2250 Telegraph Avenue  
Oakland, California



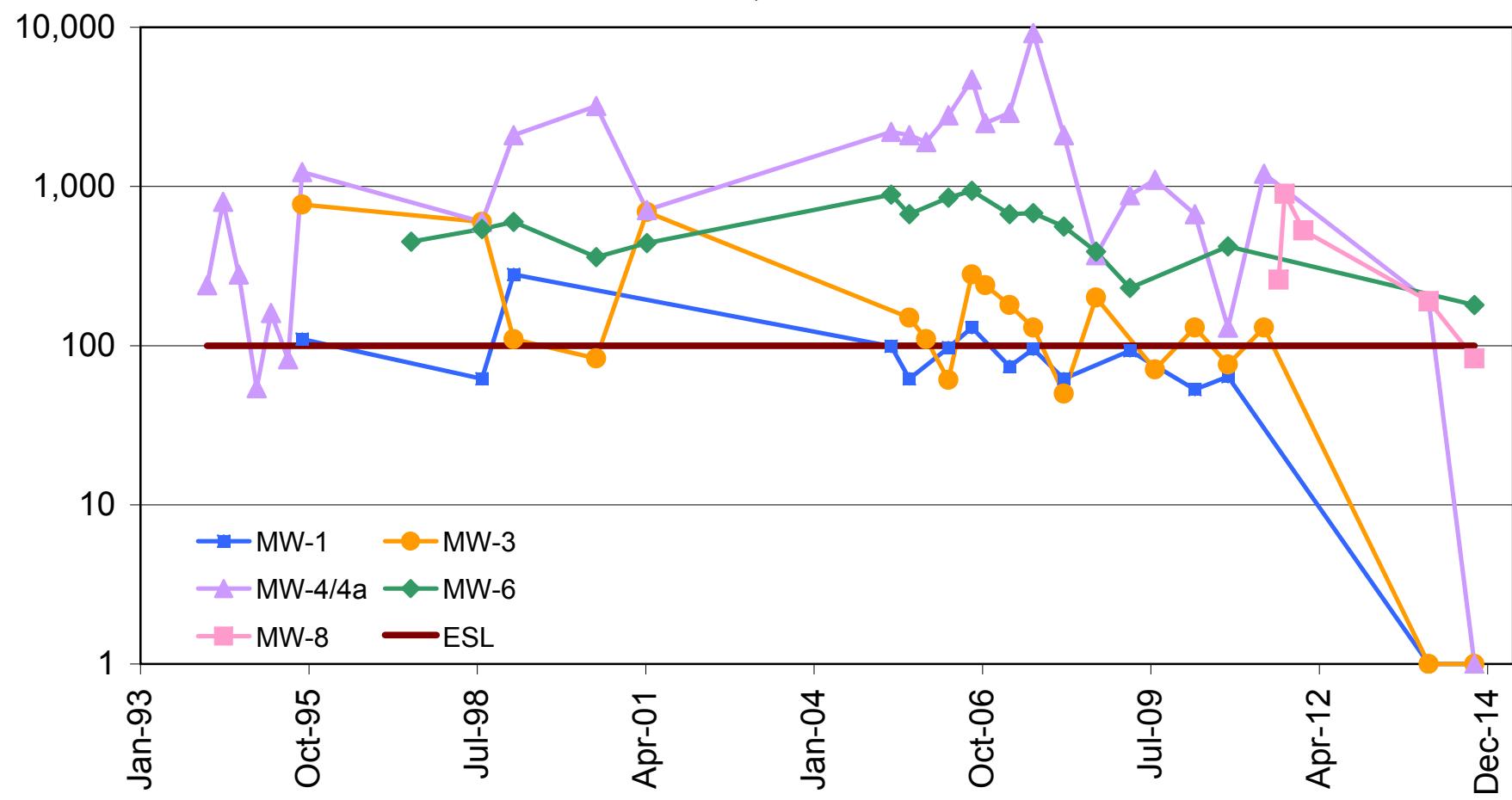
**BENZENE CONCENTRATIONS - OCTOBER 2014**  
2250 Telegraph Avenue  
Oakland, California

## CHARTS

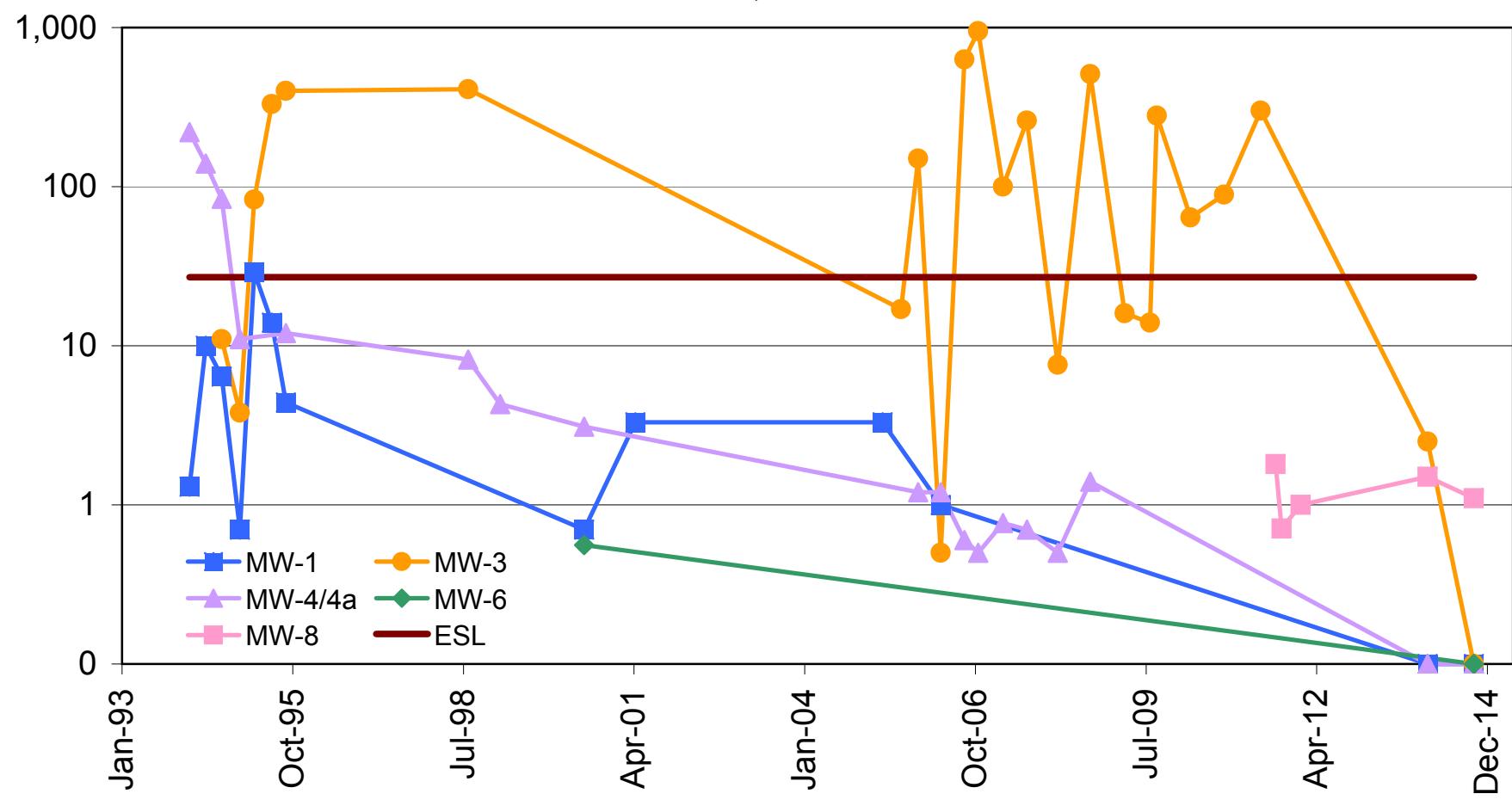
**Chart 1**  
**Concentration of TPHg vs. Time**  
**2250 Telegraph Ave**  
**Oakland, California**



**Chart 2**  
**Concentration of TPHd vs. Time**  
**2250 Telegraph Ave**  
**Oakland, California**



**Chart 3**  
**Concentration of Benzene vs. Time**  
**2250 Telegraph Ave**  
**Oakland, California**



**APPENDIX A  
WELL SAMPLING FORMS**



## ES-F50 WELL SAMPLING FORM

mw-2  
11.53 ft  
⑦ 36 hrs

PROJECT NAME: Buttner  
PROJECT NO.: 04.72140060  
SAMPLED BY: MDANNA  
DATE: October 9, 2014  
WEATHER: sunny warm

WELL NO.: MW-1  
WELL CASING DIAMETER: 2"  
TOC ELEVATION: -00.56- 21.03

TOTAL DEPTH OF CASING (BTOC): 15.2 FEET

CALCULATED PURGE VOLUME: 1.6 gallons  
(feet of water \* casing dia<sup>2</sup> \* .0408 \* # of Volumes)DEPTH TO GROUNDWATER (BTOC): 11.92 FEET  
TIME: 0734 HRS

FREE PRODUCT:

FEET OF WATER IN WELL: 3.28 FEET

PURGE METHOD:

MEASUREMENT METHOD: ELECTRONIC SOUNDER or OTHER

No  
Peristaltic Pump

## FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY ( $\mu$ MHOS/CM)	TDS (g/L)	ORP (mV)	DO (mg/l)	COMMENTS (odor, color, ...)
0.58	0834	22.0	7.20	0.929	47.9	-76.8	7.11	Clear Hydrocarbon odor
0.28	0838	23.03	7.15	0.957	4.9	-17.3	7.24	slight.
1.22	0843	22.81	7.19	0.938	20.7	-21.5	7.45	No shear

CALCULATED DEPTH TO WATER @ 80% RECHARGE 12.57  
(Total depth of casing - (feet of water in well \* 0.80))

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOC): 11.91

DTW GREATER THAN 80%? (circle) YES

NO OKAY TO SAMPLE? (circle) YES

SAMPLING METHOD: Peristaltic Pump. Bailev TIME SAMPLED: 16:10

CONTAINERS / PRESERVATIVE: 3 / HCL  
40 ML VOA2 / no preservative  
500 mL Amber

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- TEHd, TEHmo (8015 w/ Silica gel)  
 TVHg, BTEX, MTBE (8260)  
 Lead Scavengers and Naphthalene (8260)  
 Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE)  
 Title 22/CAM 17 Metals (6010/7000)

- Pesticides (8080)  
PCBs (8080)  
Sulfate (300.0)  
Nitrate (300.0)  
Fe<sup>2+</sup> - Field Filtered

MISC FIELD OBSERVATION: YSI 6820, rented and Calibrated by EquipCo

Equipment	Serial No.	Calibration
Conductivity		Completed by EquipCo
pH		
Turbidity		
Temperature		



### ES-F50 WELL SAMPLING FORM

PROJECT NAME: Buttner  
 PROJECT NO.: 04.721400 CEO  
 SAMPLED BY: MDANNA  
 DATE: October 9, 2014  
 WEATHER: Sunny, Warm

WELL NO.: MW-2  
 WELL CASING DIAMETER: 2"  
 TOC ELEVATION: 20.53

TOTAL DEPTH OF CASING (BTOC): 15.2 FEET

CALCULATED PURGE VOLUME:  
(feet of water \* casing dia<sup>2</sup> \*.0408 \* # of Volumes) gallons

DEPTH TO GROUNDWATER (BTOC): 11.53 FEET

TIME: 0730 HRS

FREE PRODUCT:

FEET OF WATER IN WELL: FEET

PURGE METHOD:

MEASUREMENT METHOD: ELECTRONIC SOUNDER OR OTHER

### FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY ( $\mu$ MHOS/CM)	TDS (g/L)	ORP (mV)	DO (mg/l)	COMMENTS (odor, color, ...)
Downhole (Pre-Purge)								

CALCULATED DEPTH TO WATER @ 80% RECHARGE  
(Total depth of casing - (feet of water in well \* 0.80))

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOC):

DTW GREATER THAN 80%? (circle) YES NO

OKAY TO SAMPLE? (circle) YES NO

SAMPLING METHOD:

TIME SAMPLED:

CONTAINERS / PRESERVATIVE:

40 ML

LITER

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- TEHd, TEHmo (8015 w/ Silica gel)
- TVHg, BTEX, MTBE (8260)
- Lead Scavengers and Naphthalene (8260)
- Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE)
- Title 22/CAM 17 Metals (6010/7000)

- Pesticides (8080)
- PCBs (8080)
- Sulfate (300.0)
- Nitrate (300.0)
- Fe<sup>2+</sup> - Field Filtered

MISC FIELD OBSERVATION: MP-20DT Micro Purge Basic Flow Cell - Rented and Calibrated from EquipCo

Well Not Sampled or Purged

Equipment	Serial No.	Calibration
Conductivity		
pH		
Turbidity		
Temperature		



## ES-F50 WELL SAMPLING FORM

PROJECT NAME: Buttner  
 PROJECT NO.: 04.72140060  
 SAMPLED BY: MDANNA  
 DATE: October 9, 2014  
 WEATHER: Sunny, Warm

WELL NO.: MW-3  
 WELL CASING DIAMETER: 2"  
 TOC ELEVATION: 48.97 19.44'

TOTAL DEPTH OF CASING (BTOC): 14.35 FEET  
 DEPTH TO GROUNDWATER (BTOC): 10.38 FEET  
 TIME: HRS 0738  
 FEET OF WATER IN WELL: 7.97 FEET

CALCULATED PURGE VOLUME:  
 (feet of water \* casing dia<sup>2</sup> \* .0408 \* # of Volumes) 3.9 gallons

FREE PRODUCT:

No  
 Peristaltic Pump

MEASUREMENT METHOD: ELECTRONIC SOUNDER or OTHER

## FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY (µMHOS/CM)	TDS (g/L)	ORP (mV)	DO mg/L	COMMENTS (odor, color, ...)
Downhole (Pre-Purge)	0903	21.19	7.05	1.057	260.1	-46.1	5.42	orange brown.
1.3	0906	20.06	6.90	0.907	34.8	-28.2	4.49	light cloudy slight Hydrocarbon odor
2.6	0912	20.48	6.85	0.777	4.8	-1.8	3.89	clear/H/C odor
3.7	0921	21.7	6.94	1.043	12.7	3.30	1.84	clear/HCO
Purged Dry @ 3.7 gal								

CALCULATED DEPTH TO WATER @ 80% RECHARGE 10.04  
 (Total depth of casing - (feet of water in well \* 0.80))

HOC Hydrocarbon  
 odor

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOC): 12.03

DTW GREATER THAN 80%? (circle) YES

NO

OKAY TO SAMPLE?

(circle)

YES

NO

SAMPLING METHOD: peristaltic pump

Disposal, Barter

TIME SAMPLED: 16.20

CONTAINERS / PRESERVATIVE:

3 / HCL  
40 ML VOA

2 / no preservative  
500 mL Amber

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- TEHd, TEHmo (8015 w/ Silica gel)
- TVHg, BTEX, MTBE (8260)
- Lead Scavengers and Naphthalene (8260)
- Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE)
- Title 22/CAM 17 Metals (6010/7000)

- Pesticides (8080)
- PCBs (8080)
- Sulfate (300.0)
- Nitrate (300.0)
- Fe<sup>2+</sup> - Field Filtered

MISC FIELD OBSERVATION: YSI 6820, rented and Calibrated by EquipCo

① initial reading when cell is full

Equipment	Serial No.	Calibration
Conductivity		Completed by EquipCo
pH		
Turbidity		
Temperature		



## ES-F50 WELL SAMPLING FORM

PROJECT NAME: Buttner  
PROJECT NO.: 04.72190060  
SAMPLED BY: MDANNA  
DATE: October 9, 2014  
WEATHER: Sunny

WELL NO.: MW-4a  
WELL CASING DIAMETER: 2"  
TOC ELEVATION: 21.89

TOTAL DEPTH OF CASING (BTOC): 25.2 FEET

CALCULATED PURGE VOLUME: 7.2 gallons  
(feet of water \* casing dia<sup>2</sup> \* .0408 \* # of Volumes)

DEPTH TO GROUNDWATER (BTOC): 10.44 FEET

FREE PRODUCT:

TIME: 0742 HRS

No

FEET OF WATER IN WELL: 14.76 FEET

PURGE METHOD:

Peristaltic Pump

MEASUREMENT METHOD: ELECTRONIC SOUNDER or OTHER

## FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY (µMHOs/cm)	TDS (g/L)	ORP (mV)	DO (mg/l)	COMMENTS (odor, color, ...)
Downhole (Pre-Purge) 2.4	1129 2218	7.23	1.134	156.9	-70.7	7.12		
4.8	1133 21.77	6.93	1.196	40.5	-50.3	2.51		clear, HCO
7.2	1148 21.09	6.88	1.141	23.9	-28.3	1.36		"
	1207 01.77	6.85	1.117	2.0	-1.6	0.51		clear, no odor

CALCULATED DEPTH TO WATER @ 80% RECHARGE 13.39

(Total depth of casing - (feet of water in well \* 0.80))

HCO = Hydrocarbon odor

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOC): 11.54

DTW GREATER THAN 80%? (circle) YES (circle) NO

OKAY TO SAMPLE? (circle) YES (circle) NO

SAMPLING METHOD: Peristaltic Pump

TIME SAMPLED: 1220

CONTAINERS / PRESERVATIVE: 3 / HCL  
40 ML VOA

2 / no preservative  
500 mL Amber

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> TEHd, TEHmo (8015 w/ Silica gel)                   | <input type="checkbox"/> Pesticides (8080)                 |
| <input checked="" type="checkbox"/> TVHg, BTEX, MTBE (8260)                            | <input type="checkbox"/> PCBs (8080)                       |
| <input checked="" type="checkbox"/> Lead Scavengers and Naphthalene (8260)             | <input type="checkbox"/> Sulfate (300.0)                   |
| <input checked="" type="checkbox"/> Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE) | <input type="checkbox"/> Nitrate (300.0)                   |
| <input checked="" type="checkbox"/> Title 22/CAM 17 Metals (6010/7000)                 | <input type="checkbox"/> Fe <sup>2+</sup> - Field Filtered |

MISC FIELD OBSERVATION: YSI 6820, rented and Calibrated by EquipCo

① Initial fill up of flow cell  
② Air bubbles into flow cell fixed after ①

Equipment	Serial No.	Calibration
Conductivity		Completed by EquipCo
pH		
Turbidity		
Temperature		



## ES-F50 WELL SAMPLING FORM

PROJECT NAME: Buttner  
 PROJECT NO.: 04.721400 C00  
 SAMPLED BY: MDANNA  
 DATE: October 9, 2014  
 WEATHER: Sunny, Warm

WELL NO.: MW-5  
 WELL CASING DIAMETER: 2"  
 TOC ELEVATION: 16.02 1Ce. 49

TOTAL DEPTH OF CASING (BTOC): 17.05 FEET

CALCULATED PURGE VOLUME: 4.7 gallons  
 (feet of water \* casing dia<sup>2</sup> \* .0408 \* # of Volumes)

DEPTH TO GROUNDWATER (BTOC): 7.44 FEET  
 TIME: 0750 HRS

FREE PRODUCT:

FEET OF WATER IN WELL: 9.61 FEET

PURGE METHOD:

MEASUREMENT METHOD: ELECTRONIC SOUNDER or OTHER

No  
 Peristaltic Pump

## FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY (µMHOS/CM)	TDS (g/L)	ORP (mV)	DO (mg/l)	COMMENTS (odor, color, ...)
Downhole (Pre-Purge)	1416	22.05	7.03	0.2605	94.3	94.5	3.00	Brown
1.56	1423	21.72	6.30	0.1113	151.0	111.7	0.87	cloudy, No odor/ sheen
3.13	1428	21.71	6.48	0.1112	38.7	105.5	0.73	clear
4.7	1435	21.77	6.59	0.111	19.5	106.5	0.68	clear "

CALCULATED DEPTH TO WATER @ 80% RECHARGE 9.36  
 (Total depth of casing - (feet of water in well \* 0.80))

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOC): 7.44

DTW GREATER THAN 80%? (circle) YES NO OKAY TO SAMPLE? (circle) YES NO

SAMPLING METHOD: Peristaltic Pump

TIME SAMPLED: 1445

CONTAINERS / PRESERVATIVE: 3 / HCL  
 40 ML VOA

2 / no preservative  
 500 mL Amber

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> TEHd, TEHmo (8015 w/ Silica gel)                   | <input type="checkbox"/> Pesticides (8080)                 |
| <input checked="" type="checkbox"/> TVHg, BTEX, MTBE (8260)                            | <input type="checkbox"/> PCBs (8080)                       |
| <input checked="" type="checkbox"/> Lead Scavengers and Naphthalene (8260)             | <input type="checkbox"/> Sulfate (300.0)                   |
| <input checked="" type="checkbox"/> Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE) | <input type="checkbox"/> Nitrate (300.0)                   |
| <input type="checkbox"/> Title 22/CAM 17 Metals (6010/7000)                            | <input type="checkbox"/> Fe <sup>2+</sup> - Field Filtered |

MISC FIELD OBSERVATION: YSI 6820, rented and Calibrated by EquipCo

① initial fill up of flow cell

Equipment	Serial No.	Calibration
Conductivity		Completed by EquipCo
pH		
Turbidity		
Temperature		



## ES-F50 WELL SAMPLING FORM

PROJECT NAME: Bultner  
 PROJECT NO.: 04.721900c0  
 SAMPLED BY: MDANNA  
 DATE: October 9, 2014  
 WEATHER: Overcast

WELL NO.: MW-6  
 WELL CASING DIAMETER: 2"  
 TOC ELEVATION: 10.00 18.81'

TOTAL DEPTH OF CASING (BTOP): 18.96 FEET

CALCULATED PURGE VOLUME:  
(feet of water \* casing dia<sup>2</sup> \* .0408 \* # of Volumes) 4.46 gallons

DEPTH TO GROUNDWATER (BTOP): 9.44 9.85 FEET

TIME: 00:55 HRS 0842

FREE PRODUCT:

FEET OF WATER IN WELL: 9.11 FEET

PURGE METHOD:

MEASUREMENT METHOD: ELECTRONIC SOUNDER or OTHER

4.46 gallons

No

peristaltic pump  
low flow

## FIELD MEASUREMENTS

GALLONS REMOVED	TIME	Temp	pH	CONDUCTIVITY (µMHOES/CM)	TDS (g/L)	ORP (mV)	DO (mg/l)	COMMENTS (odor, color, ...)
Downhole (Pre-Purge)	1000	22.26	7.15	0.946	950.4	-115.0	0.94	gray
1.48	1004	22.91	7.14	0.971	155.9	-116.5	0.54	cloudy HCO
2.96	1009	23.15	7.13	0.978	46.7	-116.1	0.36	" "
4.46	1014	23.22	7.10	0.982	16.0	-115.8	0.31	" "

CALCULATED DEPTH TO WATER @ 80% RECHARGE

(Total depth of casing - (feet of water in well \* 0.80))

see note (2)

HCO = Hydrocarbon  
odor

DEPTH TO GROUNDWATER BEFORE SAMPLING (BTOP):

DTW GREATER THAN 80%? (circle) YES NO OKAY TO SAMPLE? (circle) YES NO

SAMPLING METHOD: Peristaltic pump.

TIME SAMPLED: 1035

CONTAINERS / PRESERVATIVE: 3 / HCL  
40 ML VOA

2 / no preservative  
500 mL Amber

Poly

OTHER

ANALYSES: (Note if any samples are field filtered)

- TEHd, TEHmo (8015 w/ Silica gel)
- TVHg, BTEX, MTBE (8260)
- Lead Scavengers and Naphthalene (8260)
- Five Fuel Oxygenates (MTBE, TAME, ETBE, TBA, DIPE)
- Title 22/CAM 17 Metals (6010/7000)

- Pesticides (8080)
- PCBs (8080)
- Sulfate (300.0)
- Nitrate (300.0)
- Fe <sup>2+</sup> - Field Filtered

MISC FIELD OBSERVATION: YSI 6820, rented and Calibrated by EquipCo

(2) Low Flow Principle - PTC start 9.7 ft  
(1) initial fill up of filter cell finish 10.1 ft

Equipment	Serial No.	Calibration
Conductivity		Completed by EquipCo
pH		
Turbidity		
Temperature		





**APPENDIX B**  
**ANALYTICAL REPORT AND CHAIN OF CUSTODY DOCUMENTATION**



**Curtis & Tompkins, Ltd.**

Analytical Laboratories, Since 1878



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

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

**Laboratory Job Number 261583  
ANALYTICAL REPORT**

Fugro West Inc.  
1000 Broadway  
Oakland, CA 94607

Project : 609.004  
Location : Buttner  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
MW-1	261583-001
MW-3	261583-002
MW-4A	261583-003
MW-5	261583-004
MW-6	261583-005
MW-7	261583-006
MW-8	261583-007
TRIP	261583-008

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 signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature:

Date: 10/20/2014

Isabelle Choy  
Project Manager  
isabelle.choy@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

**CASE NARRATIVE**

Laboratory number: **261583**  
Client: **Fugro West Inc.**  
Project: **609.004**  
Location: **Buttner**  
Request Date: **10/09/14**  
Samples Received: **10/09/14**

This data package contains sample and QC results for seven water samples, requested for the above referenced project on 10/09/14. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B):**

No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

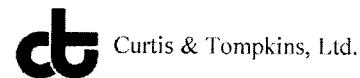
No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B):**

High RPD was observed for naphthalene in the BS/BSD for batch 216356; this analyte was not detected at or above the RL in the associated samples. No other analytical problems were encountered.



## COOLER RECEIPT CHECKLIST



Login # 261583 Date Received 10/9/14 Number of coolers 1  
 Client PUCR20 Project 609.004

Date Opened 10/9 By (print) PJ (sign) J  
 Date Logged in 10/9 By (print) u (sign) u

1. Did cooler come with a shipping slip (airbill, etc) \_\_\_\_\_ YES NO  
 Shipping info \_\_\_\_\_

2A. Were custody seals present? ....  YES (circle) on cooler  on samples  NO  
 How many \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

2B. Were custody seals intact upon arrival? \_\_\_\_\_ YES NO N/A

3. Were custody papers dry and intact when received? \_\_\_\_\_ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? \_\_\_\_\_ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe) \_\_\_\_\_

Bubble Wrap  
 Cloth material

Foam blocks  
 Cardboard

Bags  
 Styrofoam

None  
 Paper towels

7. Temperature documentation: \* Notify PM if temperature exceeds 6°C

Type of ice used:  Wet  Blue/Gel  None Temp(°C) 3.8°

Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? \_\_\_\_\_ YES NO  
 If YES, what time were they transferred to freezer? \_\_\_\_\_

9. Did all bottles arrive unbroken/unopened? \_\_\_\_\_ YES NO

10. Are there any missing / extra samples? \_\_\_\_\_ YES NO

11. Are samples in the appropriate containers for indicated tests? \_\_\_\_\_ YES NO

12. Are sample labels present, in good condition and complete? \_\_\_\_\_ YES NO

13. Do the sample labels agree with custody papers? \_\_\_\_\_ YES NO

14. Was sufficient amount of sample sent for tests requested? \_\_\_\_\_ YES NO

15. Are the samples appropriately preserved? \_\_\_\_\_ YES NO N/A

16. Did you check preservatives for all bottles for each sample? \_\_\_\_\_ YES NO N/A

17. Did you document your preservative check? \_\_\_\_\_ YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? \_\_\_\_\_ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? \_\_\_\_\_ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? \_\_\_\_\_ YES NO N/A

21. Was the client contacted concerning this sample delivery? \_\_\_\_\_ YES NO

If YES, Who was called? \_\_\_\_\_ By \_\_\_\_\_ Date: \_\_\_\_\_

## COMMENTS

10) Received 3VOAs labeled 'tmp' Not on coc



Curtis & Tompkins, Ltd.

### Detections Summary for 261583

Results for any subcontracted analyses are not included in this summary.

Client : Fugro West Inc.  
Project : 609.004  
Location : Buttner

Client Sample ID : MW-1                         Laboratory Sample ID :                         261583-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	190	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B

Client Sample ID : MW-3                         Laboratory Sample ID :                         261583-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	160	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B

Client Sample ID : MW-4A                         Laboratory Sample ID :                         261583-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
MTBE	1.9		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
1,2-Dichloroethane	15		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B

Client Sample ID : MW-5                         Laboratory Sample ID :                         261583-004

No Detections

Client Sample ID : MW-6                         Laboratory Sample ID :                         261583-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	500	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	180	Y	49	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : MW-7                         Laboratory Sample ID :                         261583-006

No Detections

Client Sample ID : MW-8

Laboratory Sample ID :

261583-007

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	1,200	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	83	Y	49	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	1.1		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Toluene	1.1		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Ethylbenzene	7.5		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
m,p-Xylenes	3.2		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B

Y = Sample exhibits chromatographic pattern which does not resemble standard

Page 2 of 2

28.0

### Total Volatile Hydrocarbons

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14
Diln Fac:	1.000		

Field ID: MW-1 Batch#: 216407  
 Type: SAMPLE Analyzed: 10/14/14  
 Lab ID: 261583-001

Analyte	Result	RL
Gasoline C7-C12	190 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	118	77-128

Field ID: MW-3 Batch#: 216407  
 Type: SAMPLE Analyzed: 10/15/14  
 Lab ID: 261583-002

Analyte	Result	RL
Gasoline C7-C12	160 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

Field ID: MW-4A Batch#: 216407  
 Type: SAMPLE Analyzed: 10/15/14  
 Lab ID: 261583-003

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	115	77-128

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

### Total Volatile Hydrocarbons

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14
Diln Fac:	1.000		

Field ID: MW-5 Batch#: 216554  
 Type: SAMPLE Analyzed: 10/17/14  
 Lab ID: 261583-004

Analyte	Result	RL
Gasoline C7-C12	ND	50
<b>Surrogate</b>		
Bromofluorobenzene (FID)	112	77-128

Field ID: MW-6 Batch#: 216554  
 Type: SAMPLE Analyzed: 10/17/14  
 Lab ID: 261583-005

Analyte	Result	RL
Gasoline C7-C12	500 Y	50
<b>Surrogate</b>		
Bromofluorobenzene (FID)	119	77-128

Field ID: MW-7 Batch#: 216407  
 Type: SAMPLE Analyzed: 10/15/14  
 Lab ID: 261583-006

Analyte	Result	RL
Gasoline C7-C12	ND	50
<b>Surrogate</b>		
Bromofluorobenzene (FID)	111	77-128

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

### Total Volatile Hydrocarbons

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14
Diln Fac:	1.000		

Field ID: MW-8                          Batch#: 216554  
 Type: SAMPLE                              Analyzed: 10/17/14  
 Lab ID: 261583-007

Analyte	Result	RL
Gasoline C7-C12	1,200 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	120	77-128

Type: BLANK                              Batch#: 216407  
 Lab ID: QC761604                        Analyzed: 10/14/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	77-128

Type: BLANK                              Batch#: 216554  
 Lab ID: QC762182                        Analyzed: 10/17/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	77-128

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

## Batch QC Report

**Total Volatile Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC761603	Batch#:	216407
Matrix:	Water	Analyzed:	10/14/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	920.7	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

## Batch QC Report

**Total Volatile Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Field ID:	MW-1	Diln Fac:	1.000
MSS Lab ID:	261583-001	Batch#:	216407
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14

Type: MS Analyzed: 10/14/14  
 Lab ID: QC761605

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	193.1	2,000	1,994	90	74-120
<b>Surrogate</b>					
Bromofluorobenzene (FID)	124	77-128			

Type: MSD Analyzed: 10/15/14  
 Lab ID: QC761606

Analyte	Spiked	Result	%REC	Limits	RPD Lim
Gasoline C7-C12	2,000	1,904	86	74-120	5 27
<b>Surrogate</b>					
Bromofluorobenzene (FID)	124	77-128			

RPD= Relative Percent Difference

## Batch QC Report

**Total Volatile Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC762181	Batch#:	216554
Matrix:	Water	Analyzed:	10/17/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,059	106	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	112	77-128

## Batch QC Report

**Total Volatile Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8015B
Field ID:	MW-6	Batch#:	216554
MSS Lab ID:	261583-005	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/17/14
Diln Fac:	1.000		

Type: MS Lab ID: QC762183

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	496.1	2,000	2,487	100	74-120
<b>Surrogate</b>					
Bromofluorobenzene (FID)	122	77-128			

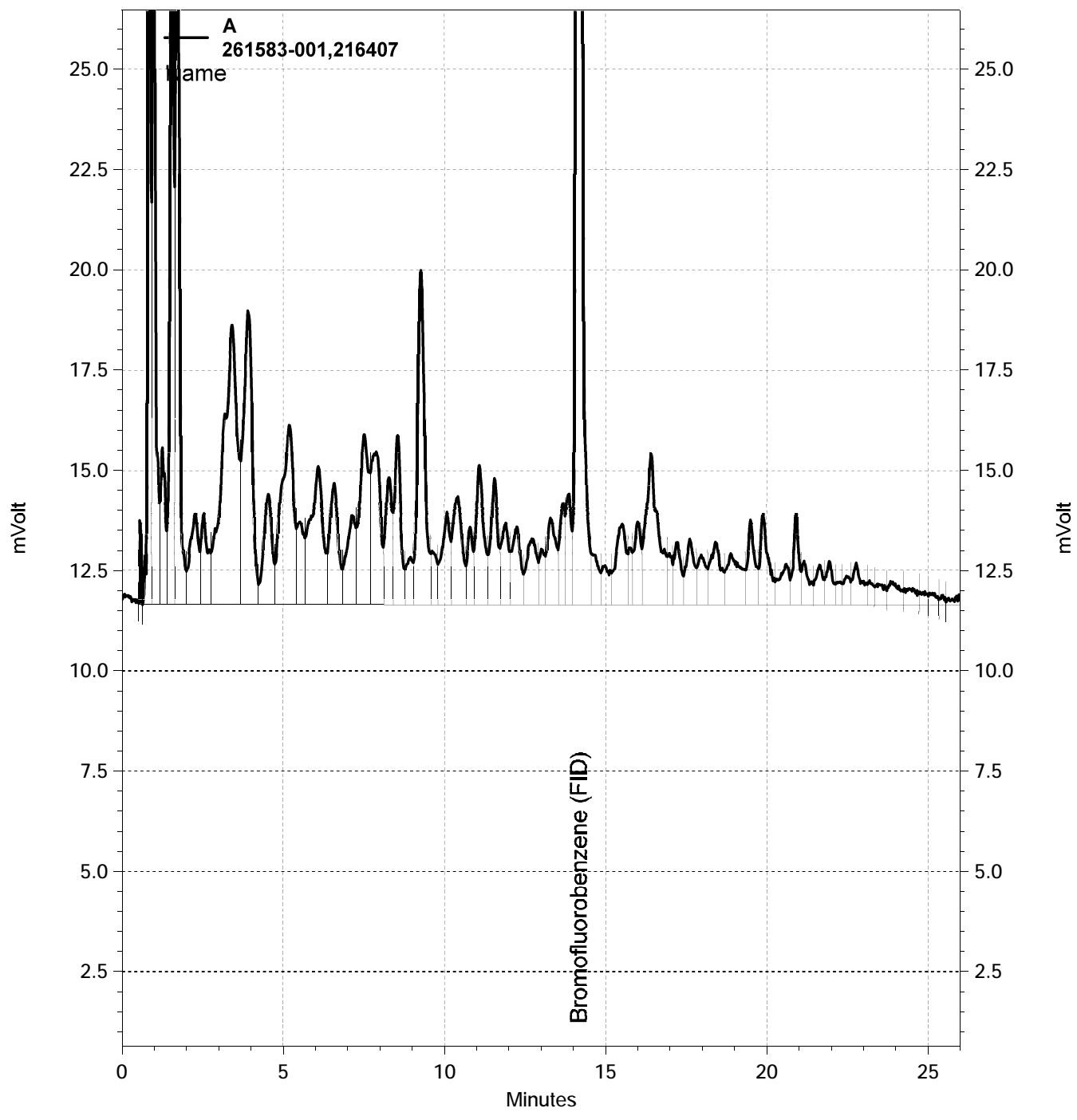
Type: MSD Lab ID: QC762184

Analyte	Spiked	Result	%REC	Limits	RPD Lim
Gasoline C7-C12	2,000	2,522	101	74-120	1 27
<b>Surrogate</b>					
Bromofluorobenzene (FID)	119	77-128			

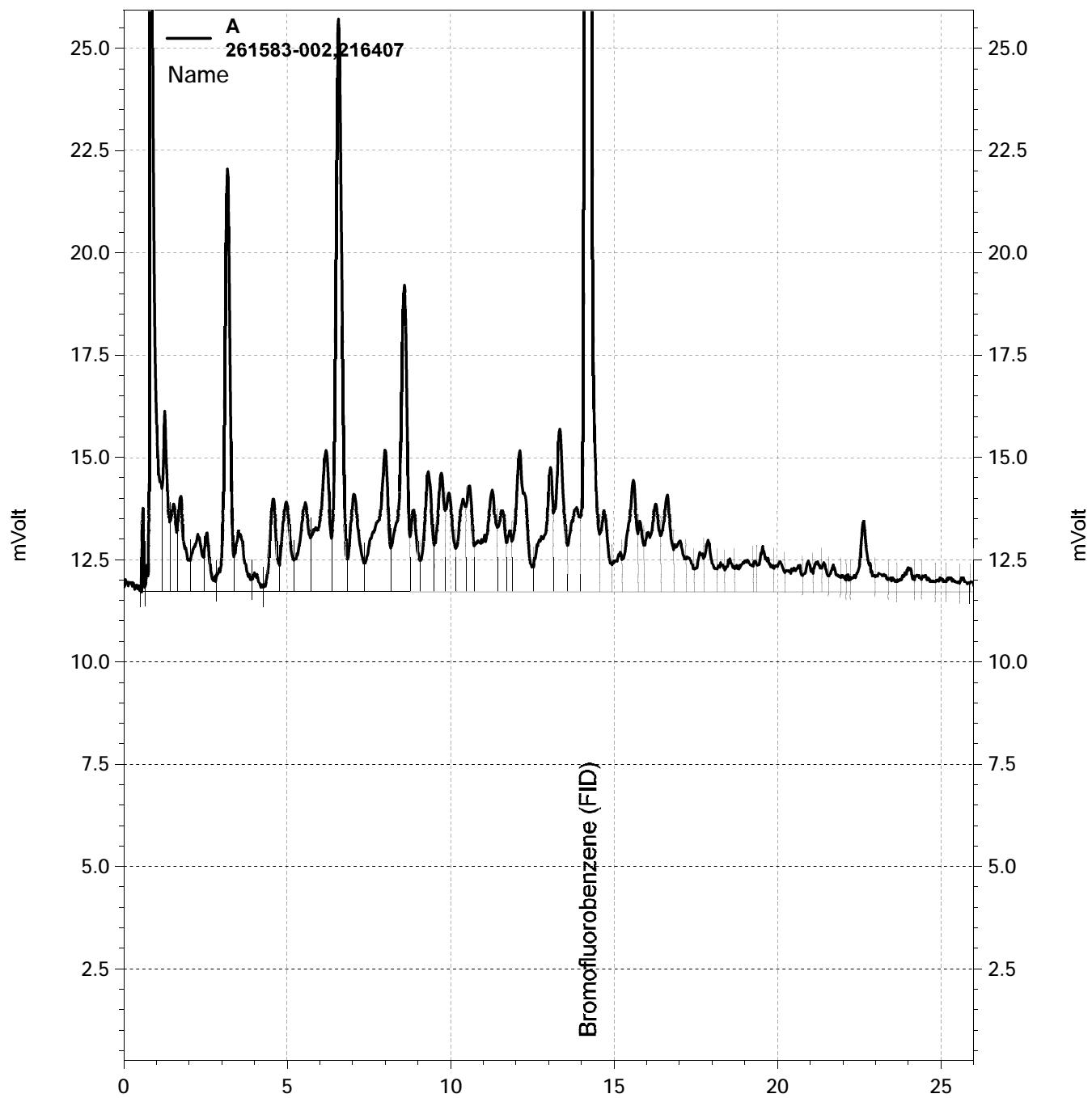
RPD= Relative Percent Difference

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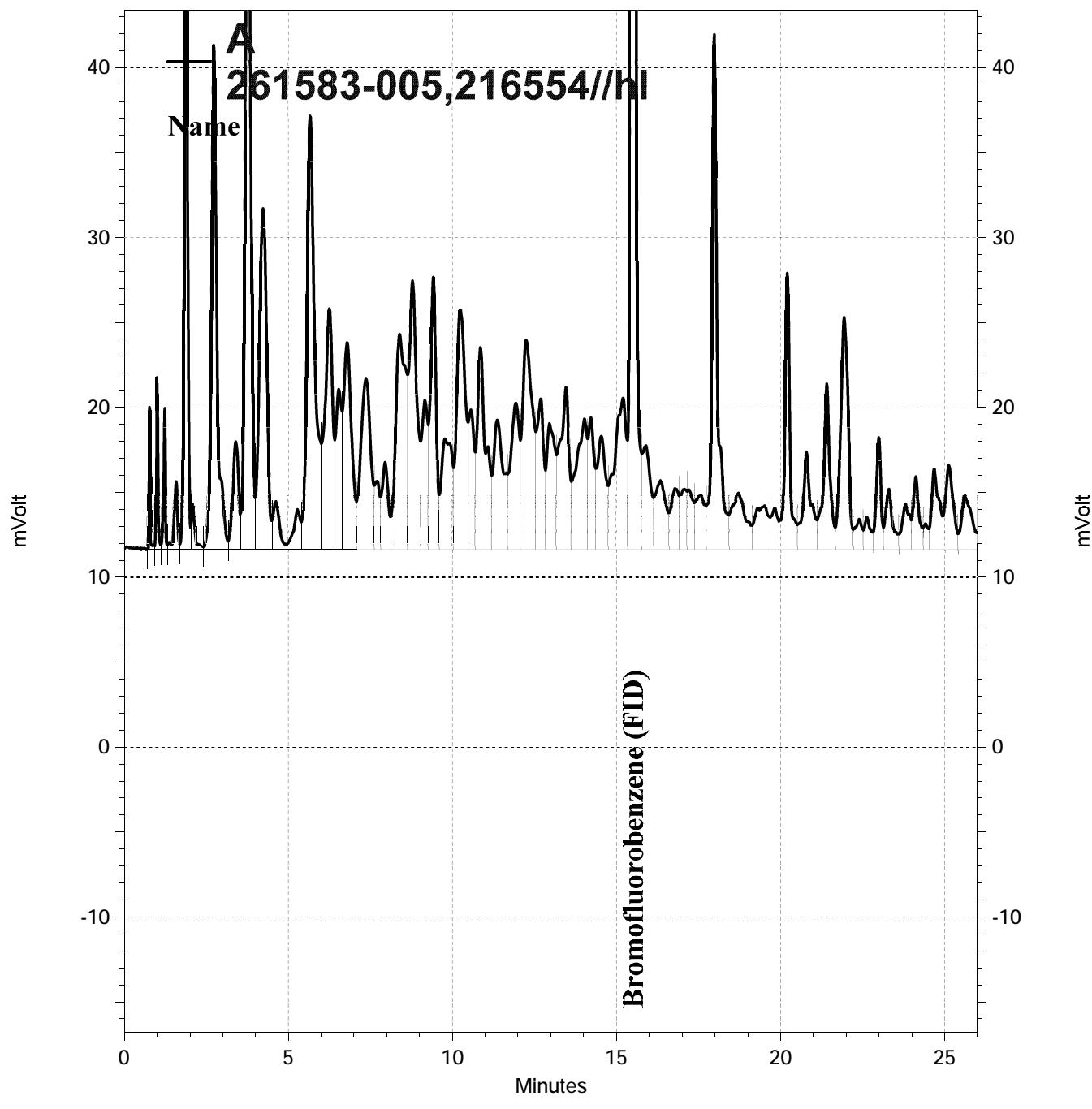
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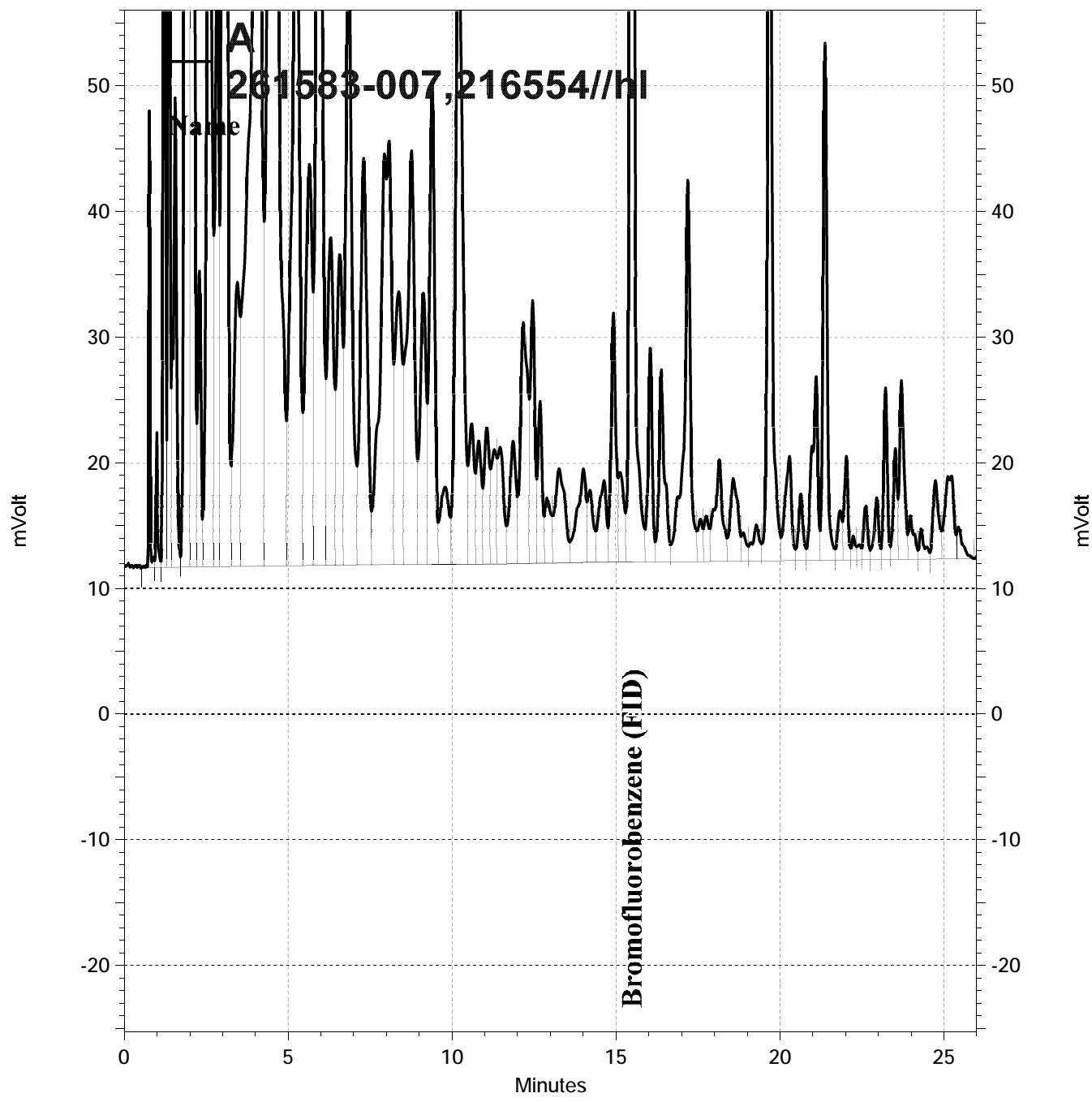
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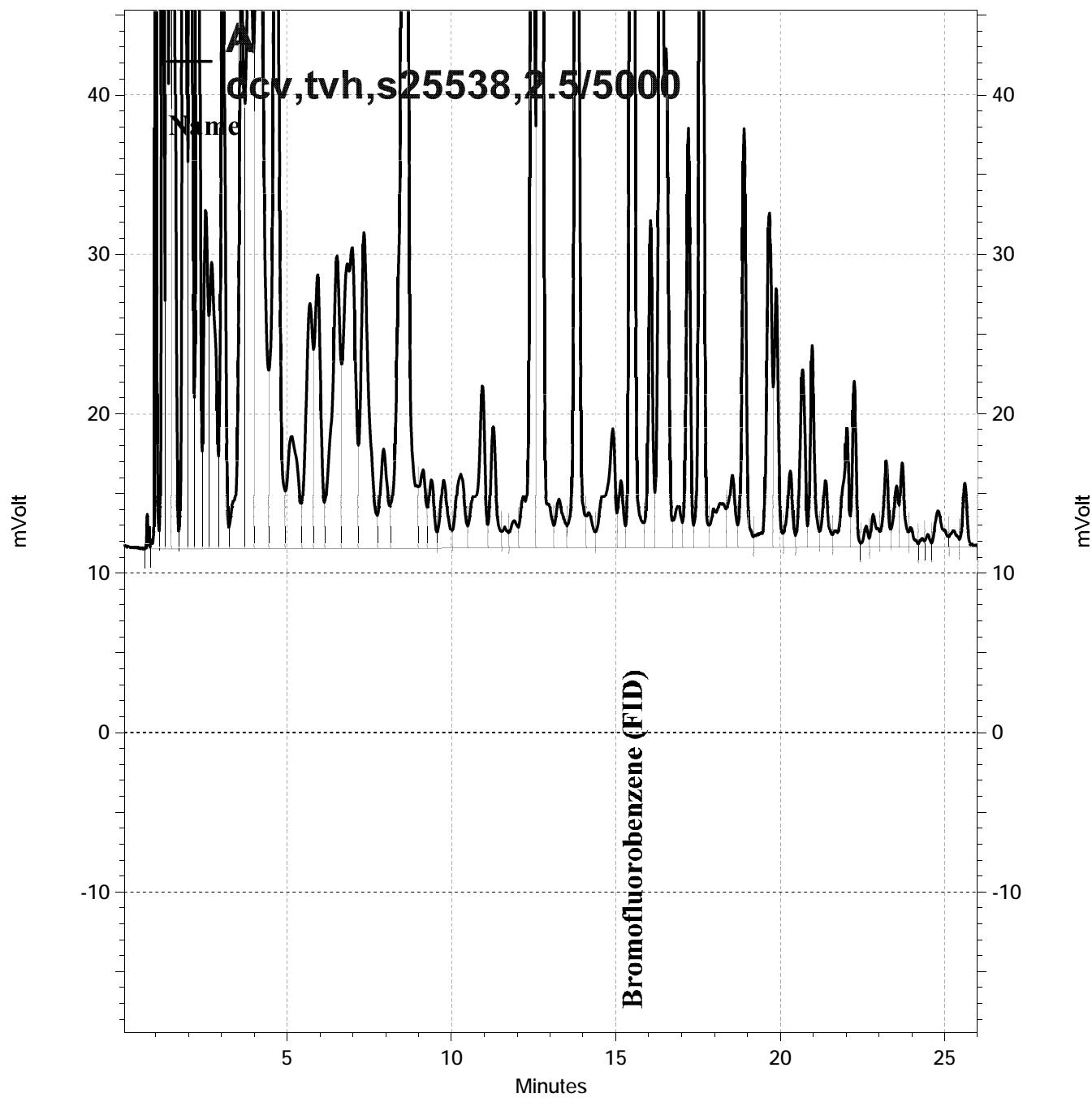
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**Total Extractable Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 3520C
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14
Diln Fac:	1.000	Prepared:	10/10/14
Batch#:	216320	Analyzed:	10/13/14

Field ID: MW-1 Lab ID: 261583-001  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	91	66-129

Field ID: MW-3 Lab ID: 261583-002  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	92	66-129

Field ID: MW-4A Lab ID: 261583-003  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	71	66-129

Field ID: MW-5 Lab ID: 261583-004  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	87	66-129

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected  
 RL= Reporting Limit

**Total Extractable Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 3520C
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/09/14
Units:	ug/L	Received:	10/09/14
Diln Fac:	1.000	Prepared:	10/10/14
Batch#:	216320	Analyzed:	10/13/14

Field ID: MW-6 Lab ID: 261583-005  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	180 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	89	66-129

Field ID: MW-7 Lab ID: 261583-006  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	77	66-129

Field ID: MW-8 Lab ID: 261583-007  
 Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	83 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	97	66-129

Type: BLANK Cleanup Method: EPA 3630C  
 Lab ID: QC761266

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	107	66-129

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected

RL= Reporting Limit

## Batch QC Report

**Total Extractable Hydrocarbons**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 3520C
Project#:	609.004	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	216320
Units:	ug/L	Prepared:	10/10/14
Diln Fac:	1.000	Analyzed:	10/13/14

Type: BS Cleanup Method: EPA 3630C  
 Lab ID: QC761267

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,522	61	61-120

Surrogate	%REC	Limits
o-Terphenyl	74	66-129

Type: BSD Cleanup Method: EPA 3630C  
 Lab ID: QC761268

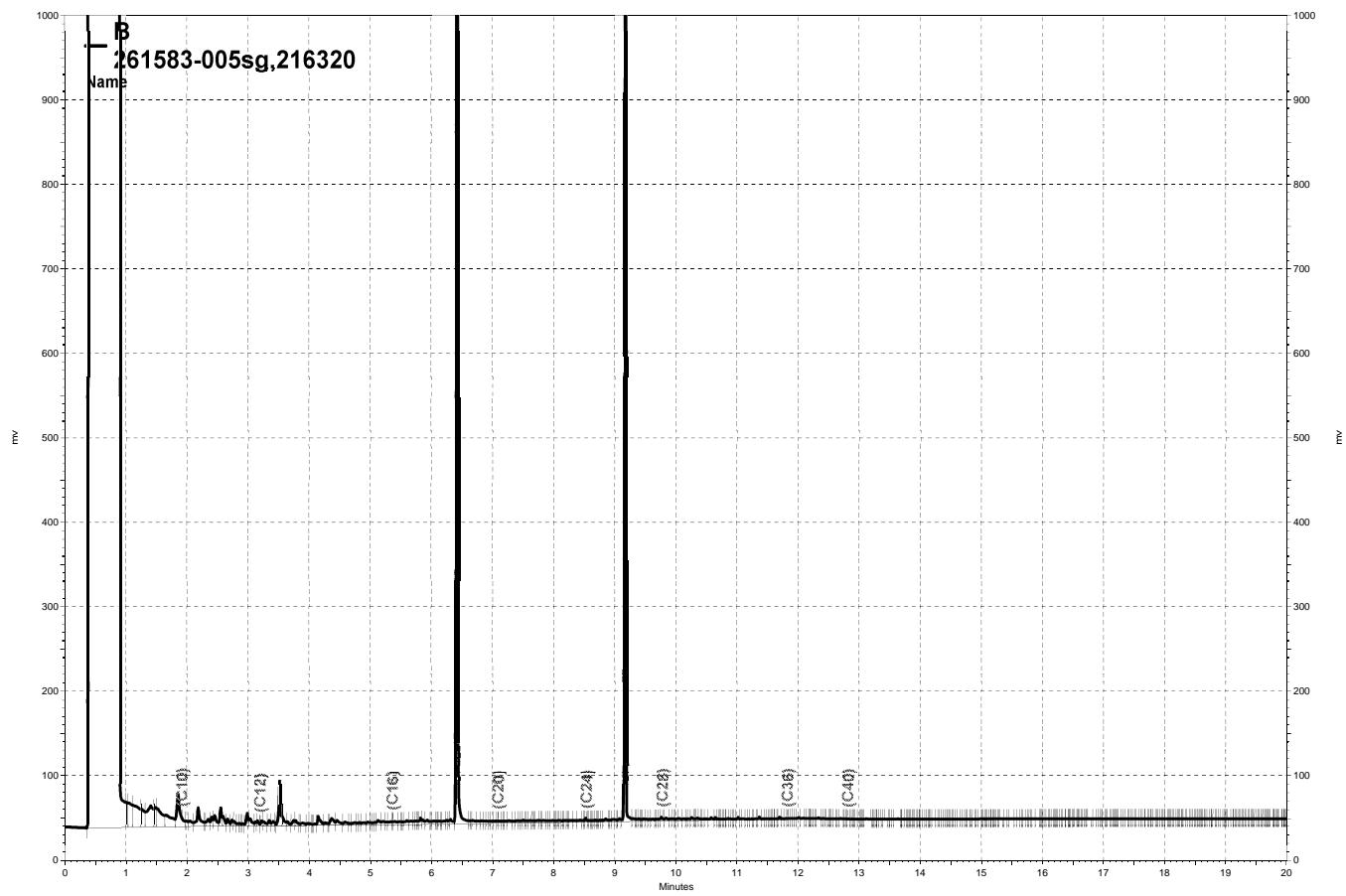
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,153	86	61-120	34	45

Surrogate	%REC	Limits
o-Terphenyl	100	66-129

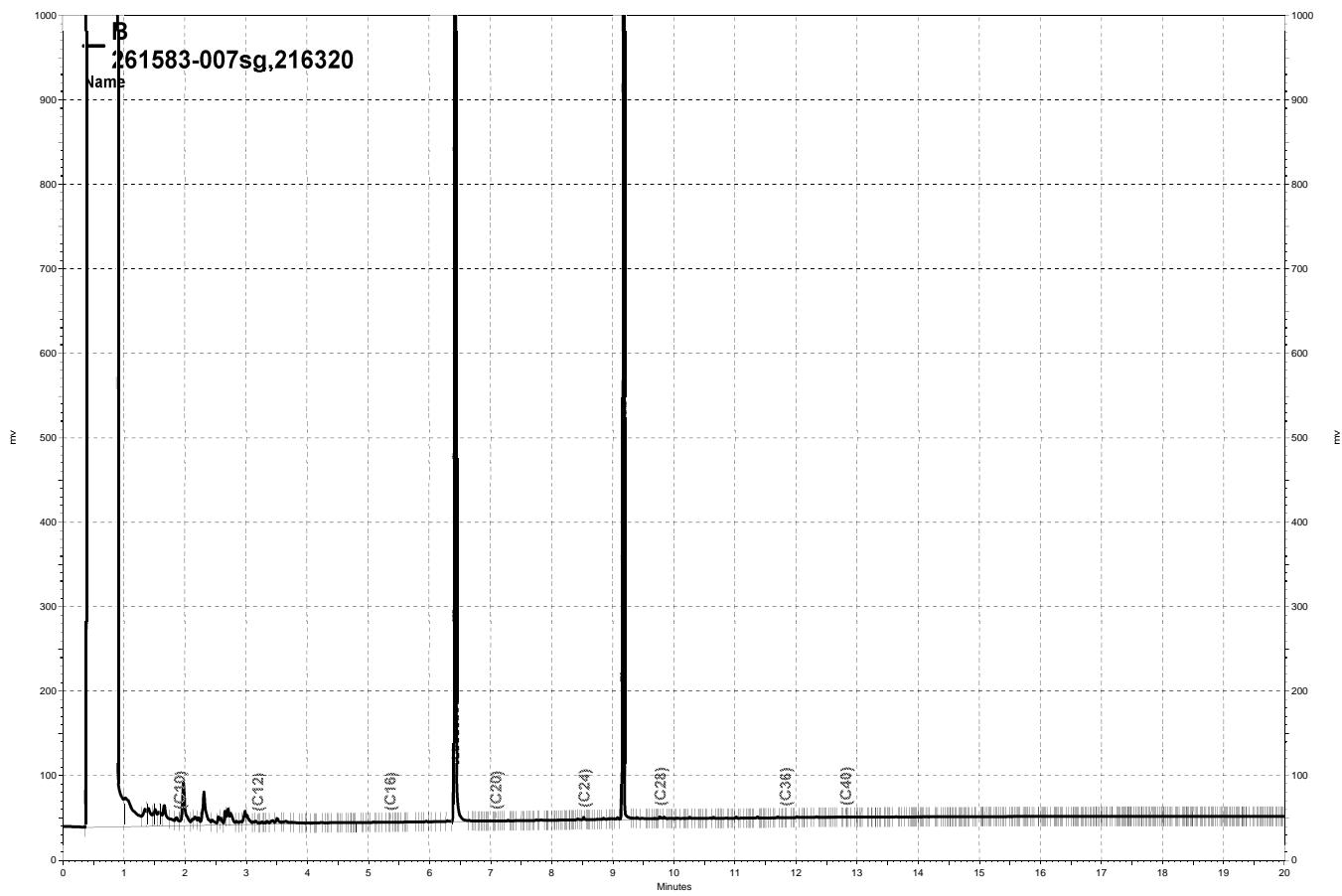
RPD= Relative Percent Difference

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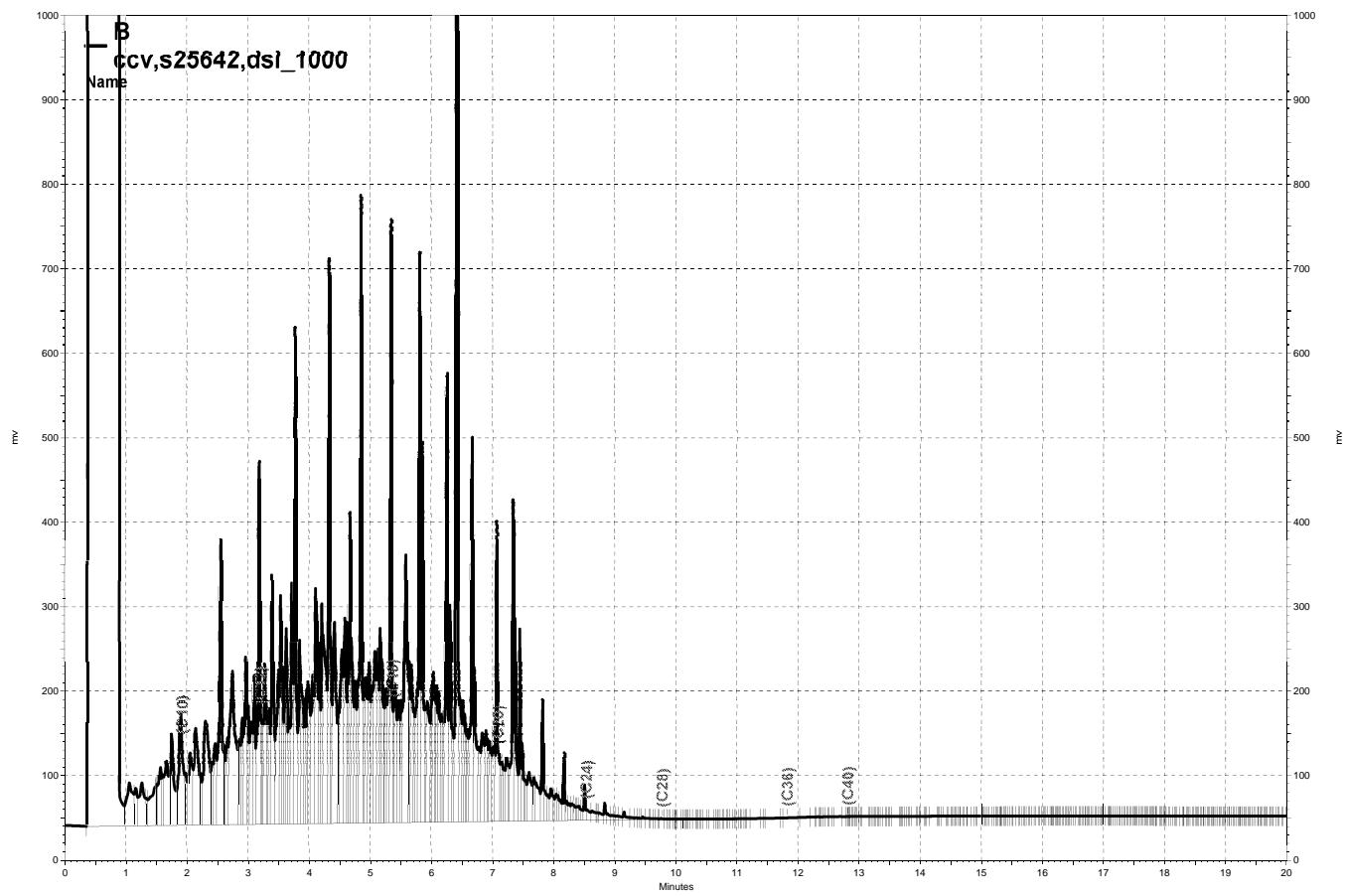
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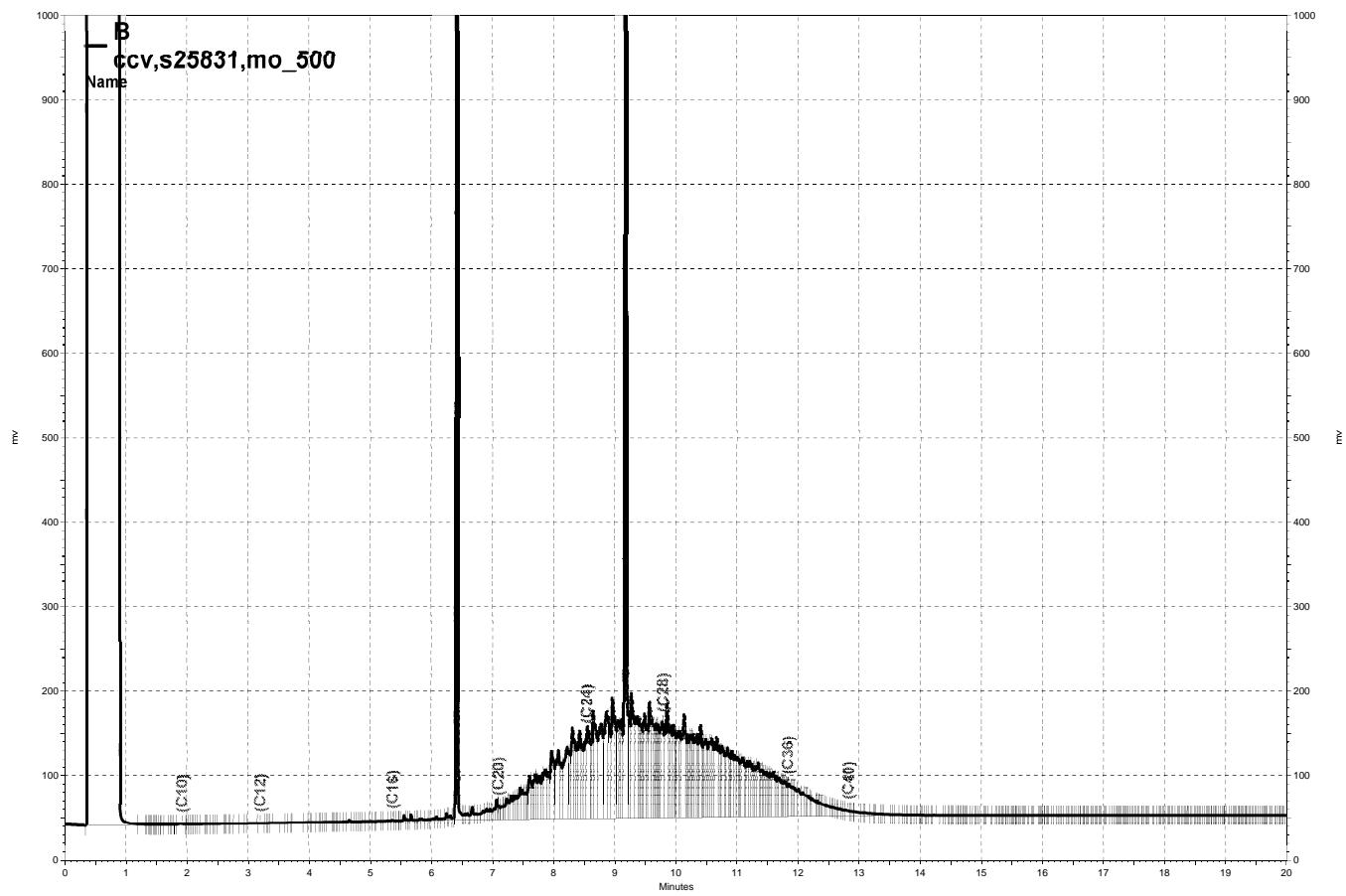
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**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	216356
Lab ID:	261583-001	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/13/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	89	80-120
Bromofluorobenzene	108	80-120

ND= Not Detected

RL= Reporting Limit

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12.1

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	216356
Lab ID:	261583-002	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/13/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	88	80-120
Bromofluorobenzene	108	80-120

ND= Not Detected

RL= Reporting Limit

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13.1

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-4A	Batch#:	216356
Lab ID:	261583-003	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/13/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	1.9	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	15	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	89	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected

RL= Reporting Limit

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	216532
Lab ID:	261583-004	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/17/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	96	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

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15.1

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-6	Batch#:	216489
Lab ID:	261583-005	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/16/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected

RL= Reporting Limit

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16.1

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-7	Batch#:	216356
Lab ID:	261583-006	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/13/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	89	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected

RL= Reporting Limit

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17.1

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Field ID:	MW-8	Batch#:	216489
Lab ID:	261583-007	Sampled:	10/09/14
Matrix:	Water	Received:	10/09/14
Units:	ug/L	Analyzed:	10/16/14
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	1.1	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	1.1	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	7.5	0.5
m,p-Xylenes	3.2	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit

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18.1

## Batch QC Report

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	216356
Units:	ug/L	Analyzed:	10/13/14
Diln Fac:	1.000		

Type: BS Lab ID: QC761405

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	62.50	53.25	85	37-151
MTBE	12.50	11.58	93	64-121
Isopropyl Ether (DIPE)	12.50	9.730	78	56-124
Ethyl tert-Butyl Ether (ETBE)	12.50	11.30	90	61-122
1,2-Dichloroethane	12.50	13.47	108	77-137
Benzene	12.50	12.63	101	80-124
Methyl tert-Amyl Ether (TAME)	12.50	11.30	90	65-120
Toluene	12.50	11.91	95	80-122
1,2-Dibromoethane	12.50	11.96	96	80-120
Ethylbenzene	12.50	11.40	91	80-124
m,p-Xylenes	25.00	23.02	92	80-122
o-Xylene	12.50	11.72	94	77-120
Naphthalene	12.50	10.31	82	58-136

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-136
1,2-Dichloroethane-d4	98	75-139
Toluene-d8	91	80-120
Bromofluorobenzene	104	80-120

Type: BSD Lab ID: QC761406

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	62.50	61.56	98	37-151	14	30
MTBE	12.50	12.73	102	64-121	10	20
Isopropyl Ether (DIPE)	12.50	10.70	86	56-124	10	20
Ethyl tert-Butyl Ether (ETBE)	12.50	12.37	99	61-122	9	22
1,2-Dichloroethane	12.50	14.56	117	77-137	8	20
Benzene	12.50	13.93	111	80-124	10	20
Methyl tert-Amyl Ether (TAME)	12.50	12.36	99	65-120	9	22
Toluene	12.50	12.81	103	80-122	7	20
1,2-Dibromoethane	12.50	12.73	102	80-120	6	20
Ethylbenzene	12.50	12.23	98	80-124	7	20
m,p-Xylenes	25.00	24.67	99	80-122	7	20
o-Xylene	12.50	12.53	100	77-120	7	20
Naphthalene	12.50	12.86	103	58-136	22 *	20

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	90	80-120
Bromofluorobenzene	104	80-120

\*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

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19.1

## Batch QC Report

**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761407	Batch#:	216356
Matrix:	Water	Analyzed:	10/13/14
Units:	ug/L		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	89	80-120
Bromofluorobenzene	111	80-120

ND= Not Detected

RL= Reporting Limit

**Batch QC Report**
**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC761920	Batch#:	216489
Matrix:	Water	Analyzed:	10/16/14
Units:	ug/L		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	107	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected

RL= Reporting Limit

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21.1

**Batch QC Report**
**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	216489
Units:	ug/L	Analyzed:	10/16/14
Diln Fac:	1.000		

Type: BS Lab ID: QC761921

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	62.50	57.36	92	37-151
MTBE	12.50	11.78	94	64-121
Isopropyl Ether (DIPE)	12.50	12.19	98	56-124
Ethyl tert-Butyl Ether (ETBE)	12.50	11.93	95	61-122
1,2-Dichloroethane	12.50	12.47	100	77-137
Benzene	12.50	12.55	100	80-124
Methyl tert-Amyl Ether (TAME)	12.50	11.82	95	65-120
Toluene	12.50	12.04	96	80-122
1,2-Dibromoethane	12.50	12.02	96	80-120
Ethylbenzene	12.50	12.31	98	80-124
m,p-Xylenes	25.00	24.63	99	80-122
o-Xylene	12.50	12.88	103	77-120
Naphthalene	12.50	12.08	97	58-136

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC761922

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	62.50	62.49	100	37-151	9	30
MTBE	12.50	12.96	104	64-121	10	20
Isopropyl Ether (DIPE)	12.50	13.66	109	56-124	11	20
Ethyl tert-Butyl Ether (ETBE)	12.50	13.01	104	61-122	9	22
1,2-Dichloroethane	12.50	13.17	105	77-137	5	20
Benzene	12.50	13.76	110	80-124	9	20
Methyl tert-Amyl Ether (TAME)	12.50	12.81	102	65-120	8	22
Toluene	12.50	13.49	108	80-122	11	20
1,2-Dibromoethane	12.50	13.31	106	80-120	10	20
Ethylbenzene	12.50	14.07	113	80-124	13	20
m,p-Xylenes	25.00	27.47	110	80-122	11	20
o-Xylene	12.50	14.38	115	77-120	11	20
Naphthalene	12.50	12.35	99	58-136	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

Page 1 of 1

22.1



**Batch QC Report**
**BTXE & Oxygenates**

Lab #:	261583	Location:	Buttner
Client:	Fugro West Inc.	Prep:	EPA 5030B
Project#:	609.004	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC762103	Batch#:	216532
Matrix:	Water	Analyzed:	10/17/14
Units:	ug/L		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
Toluene	ND	0.5
1,2-Dibromoethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Naphthalene	ND	2.0

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-136
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected

RL= Reporting Limit

**APPENDIX C**  
**STATE WATER RESOURCES CONTROL BOARD SEPTEMBER 17, 2014 LETTER**



EDMUND G. BROWN JR.  
GOVERNOR



MATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

## State Water Resources Control Board

### REVIEW SUMMARY REPORT – ADDITIONAL WORK THIRD REVIEW – SEPTEMBER 2014

#### Agency Information

Agency Name: Alameda County Environmental Health Department (County)	Address: 1131 Harbor Bay Parkway Alameda, CA 94502
Agency Caseworker: Keith Nowell	Case No.: RO0000359

#### Case Information

USTCF Claim No.: 4127	GeoTracker Global ID: T0600100431
Site Name: Dave's Station	Site Address: 2250 Telegraph Avenue Oakland, CA 94612
Responsible Party: Bill & Mariann Robinson	Address: Private Address
USTCF Expenditures to Date: \$817,846	Number of Years Case Open: 23

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0600100431](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0600100431)

#### Summary

The Low-Threat Underground Storage Tank (UST) Case Closure Policy (Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Policy. This case meets all of the required criteria of the Policy.

Highlights of the case follow:

This Site is a paved vacant lot. An unauthorized release was reported in May 1991. Approximately 975 cubic yards of impacted soil were excavated, 4,000 gallons of contaminated groundwater were removed from the UST basin, and 440 pounds of oxygen releasing compound was placed in the UST excavation in June 2013. Since 1994, nine groundwater monitoring wells have been installed and monitored; one well has been abandoned. According to groundwater data, water quality objectives have been achieved or nearly achieved.

The petroleum release is limited to the soil and shallow groundwater. According to data available in GeoTracker, there are no public water supply wells or surface water bodies within 250 feet of the defined plume boundary. No other water supply wells have been identified within 250 feet of the defined plume boundary in files reviewed. The unauthorized release is located within the service area of a public water system, as defined in the Policy. The affected shallow groundwater is not currently being used as a source of drinking water, and it is highly unlikely that the affected shallow groundwater will be used as a source of drinking water in the foreseeable future. Other designated beneficial uses of impacted groundwater are not threatened, and it is highly unlikely that they will be, considering these factors in the context of the site setting. Remaining petroleum hydrocarbon constituents are limited and stable, and concentrations are decreasing. Corrective actions have been implemented and additional

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

1001 I Street, Sacramento, CA 95814 | Mailing Address: P.O. Box 100, Sacramento, Ca 95812-0100 | [www.waterboards.ca.gov](http://www.waterboards.ca.gov)



EDMUND G. BROWN JR.  
GOVERNOR



MATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

## State Water Resources Control Board

September 17, 2014

BUTTNER PROPERTIES, INC.  
600 GRAND AVE W  
OAKLAND, CA 94612

THIRD REVIEW SUMMARY REPORT FOR CLAIM NUMBER: 4127; SITE ADDRESS:  
2250 TELEGRAPH AVE, OAKLAND

The UST Cleanup Fund has completed our review of your claim. A copy of our Review Summary Report, including our recommendations for your site, has been transmitted to your regulatory agency caseworker and we are enclosing a copy for your information. Please note that the Fund's recommendations are based on our review of information contained in the Fund's case files, data currently in the GeoTracker database and any other sources of information that were readily available to Fund staff at the time the review was conducted. Consequently, they do not reflect any information that may have recently been submitted by your consultant to the regulatory agency.

The Fund's recommendations, as a result of the review process, do not relieve you of any responsibilities or activities for which you have been directed to conduct by the local regulatory agency responsible for oversight of your case.

If you have any questions regarding the attached information, please call me at (916) 341-5684 or Pat G. Cullen at (916) 916-341-5735.

Sincerely,

A handwritten signature in blue ink that reads "Robert H. Cullen Jr." followed by a handwritten signature that appears to read "Robert H. Trommer".

Robert Trommer  
Senior Engineering Geologist  
Chief, Technical Review Unit  
Underground Storage Tank Cleanup Fund

Enclosure

corrective actions are not necessary. Any remaining petroleum hydrocarbon constituents do not pose a significant risk to human health, safety or the environment.

#### Rationale for Closure under the Policy

- General Criteria: The case meets all eight Policy general criteria.
- Groundwater Specific Criteria: Fails – TPH is undefined in the downgradient direction.
- Vapor Intrusion to Indoor Air: The case meets Policy Criterion 2a by Scenario 3a. The maximum benzene concentration in groundwater is less than 100 micrograms per liter ( $\mu\text{g}/\text{L}$ ). The minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 milligrams per kilogram (mg/kg) of TPH.
- Direct Contact and Outdoor Air Exposure: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial use, and the concentration limits for a Utility Worker are not exceeded. There are no soil sample results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be used as a surrogate for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Policy Table 1. Therefore, the estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

#### Recommendation

Based on a telephone conference call between the State Board and the County on September 15, 2014, the following tasks were determined to be completed in order to move this case toward closure:

- One additional complete round of groundwater sampling (including specifically monitoring well MW-6);
- Include naphthalene to the list of analytes; and
- Conduct a well survey using the Alameda County Public Works data base in order to determine if there are any drinking water wells still in use in a downgradient direction.

Pending favorable results of these tasks the case should be in line for closure.

  
Kirk Larson, P.G.  
Engineering Geologist  
Technical Review Unit  
(916) 341-5663

Date

  
Robert Trommer, C.H.G.  
Senior Engineering Geologist  
Chief, Technical Review Unit  
(916) 341-5684

Date

**APPENDIX D**  
**LOW THREAT CLOSURE POLICY CHECKLIST**

Site Name: Dave's Station  
Site Address: 2250 Telegraph Avenue, Oakland, CA

**Site meets the criteria of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.<sup>1</sup>**

**General Criteria**

General criteria that must be satisfied by all candidate sites:

**Is the unauthorized release located within the service area of a public water system?**

Yes  No

**Does the unauthorized release consist only of petroleum?**

Yes  No

**Has the unauthorized ("primary") release from the UST system been stopped?**

Yes  No

**Has free product been removed to the maximum extent practicable?**

Yes  No  NA

**Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?**

[See Fugro 2011 Corrective Action Plan](#)

Yes  No

**Has secondary source been removed to the extent practicable?**

Yes  No

[See AWR 2013 Site Remediation Completion Report](#)

**Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?**

Yes  No

**Does nuisance as defined by Water Code section 13050 exist at the site?**

Yes  No

**Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?**

Yes  No

**Media-Specific Criteria**

Candidate sites must satisfy all three of these media-specific criteria:

**1. Groundwater:**

To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites:

**Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?**

Yes  No  NA

**Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?**

Yes  No  NA

If YES, check applicable class:  1  2  3  4  5

<sup>1</sup> Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

Site Name: Dave's Station  
Site Address: 2250 Telegraph Avenue Oakland, CA

<p><b>For sites with releases that have not affected groundwater, do mobile constituents (leachate, vapors, or light non-aqueous phase liquids) contain sufficient mobile constituents to cause groundwater to exceed the groundwater criteria?</b></p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
<p><b>2. Petroleum Vapor Intrusion to Indoor Air:</b> The site is considered low-threat for vapor intrusion to indoor air if site-specific conditions satisfy all of the characteristics of one of the three classes of sites (a through c) or if the exception for active commercial fueling facilities applies.</p> <p><b>Is the site an active commercial petroleum fueling facility?</b> Exception: Satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.</p> <p>a. <b>Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all of the applicable characteristics and criteria of scenario 4?</b> If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <span style="border: 1px solid red; padding: 2px;">Appx A</span></p> <p>b. <b>Has a site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency?</b></p> <p>c. <b>As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?</b></p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
<p><b>3. Direct Contact and Outdoor Air Exposure:</b> The site is considered low-threat for direct contact and outdoor air exposure if site-specific conditions satisfy one of the three classes of sites (a through c).</p> <p>a. <b>Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?</b> <span style="border: 1px solid red; padding: 2px;">See AWR 2013 Site Remediation Completion Report and Appx A</span></p> <p>b. <b>Are maximum concentrations of petroleum constituents in soil less than levels that a site specific risk assessment demonstrates will have no significant risk of adversely affecting human health?</b></p> <p>c. <b>As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?</b></p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA