**RECEIVED**
*By Alameda County Environmental Health at 3:41 pm, Jul 03, 2014*

June 19, 2014

Mr. Keith Nowell
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**Subject:** **Remedial Design and Implementation Plan**

**Site:** **76 Station No. 5191/5043**
**449 Hegenberger Road**
**Oakland, California**
**Fuel Leak Case No. RO0000219**

Dear Mr. Nowell;

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

If you have any questions or need additional information, please call:

Walter T. Sprague
Pacific Convenience & Fuel
7180 Koll Center Parkway, Suite 100
Pleasanton, California 94566
Tel: (925) 931-5714
Fax: (925) 905-2746
WSprague@pcandf.com

Sincerely,

**PACIFIC CONVENIENCE & FUEL**

**WALTER SPRAGUE**
Director of Retail Services

Attachment

# *Remedial Design and Implementation Plan*

## *76 Service Station No. 5191/5043*
## *449 Hegenberger Road*
## *Oakland, California*

*Alameda County Health Care Services Agency Fuel Leak Case No. RO0000219*

*San Francisco Bay, Regional Water Quality Control Board Case No. 01-1601*

*GeoTracker Global ID No.T0600101476*

*Antea Group Project No. I42705191*

*June 19, 2014*


*Prepared for:*
**Mr. Keith Nowell**
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

*Prepared by:*
**Antea®Group**
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Rancho Cordova, CA
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+1 800 477 7411

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## *Figures*



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# *Remedial Design and Implementation Plan*

## 1.0 INTRODUCTION

Antea™Group is pleased to submit this *Remedial Design and Implementation Plan* (RDIP) as requested by the Alameda County Health Care Services Agency (ACHCSA) in an email dated March 27, 2014 (**Appendix A**) for the referenced site in Oakland, California (**Figure 1**).

This RDIP details Antea Group's proposed shallow soil excavation in the southwest and eastern portions of the site. The goal of this proposed remedial action is to excavate the majority of the residual petroleum hydrocarbons in soil contributing to dissolved groundwater concentrations of total petroleum hydrocarbons - gasoline range organics (GRO), benzene, ethylbenzene, naphthalene, and methyl tertiary-butyl ether (MTBE).

## 2.0 SITE DESCRIPTION

The subject site is an operating 76 station located on the southwestern corner of Hegenberger Road and Edgewater Drive in Oakland, California **(Figure 1).** This site contains six fuel dispensers on two islands under a single canopy, three fuel underground storage tanks (USTs) on the north side of the site, a carwash facility on the west side of the site, and a station building in the central portion of the site. The current site features are shown on **Figure 2**. A summary of previous site assessment, environmental investigations, remedial activities, and sensitive receptors are presented in **Appendix B.**

## 3.0 GEOLOGY AND HYDROGEOLOGY

The following sections provide a summary of the regional and site-specific geologic and hydrogeologic setting.

### 3.1 Regional Geologic Setting

The site is located on the western portion of the East Bay Plain Subbasin near the Oakland Airport. This area is primarily underlain by bay mud and artificial fill.

### 3.2 Regional Hydrogeologic Setting

According to the California Department of Water Resources' (DWR) *California's Groundwater, Bulletin 118 – Update 2004,* the site is located in the Santa Clara Valley Groundwater Basin – East Bay Plain Subbasin. Groundwater bearing formations in the subbasin include the Early Pleistocene Santa Clara Formation, Late Pleistocene Alameda Formation, Early Holocene Temescal Formation, and artificial fill. East Bay Plain Subbasin has existing beneficial uses as irrigation, municipal, and domestic water supplies (DWR, 2004).

## 3.3 Site Geologic and Hydrogeologic Conditions

The site is underlain by Holocene-age bay mud. The bay mud typically consists of unconsolidated, saturated clay and sandy clay that is rich in organic material. The bay mud locally contains lenses and stringers of silt, well-sorted sand and gravel, and beds of peat. The most recent monitoring and sampling event was conducted at the site on March 4, 2014. The measured depth to groundwater ranged from 1.75 feet to 3.99 feet below top of casing (TOC). The groundwater flow direction was southeast with a hydraulic gradient of 0.02 foot per foot.

## 3.4 Sensitive Receptors

On April 24, 2006 TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, there are two irrigation wells and one industrial well located within one-half mile of the site. The nearest well, is an irrigation well located approximately 1,080 feet southeast of the site. The other irrigation well is located approximately 2,623 feet southeast of the site and the industrial well is located approximately 2,570 feet northeast of the site.

In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

# 4.0 SCHEDULE OF SITE WORK

Work on excavation area (A1) (**Figure 3**) will commence in the summer of 2014 once all preparations are complete. Work on excavation area (A2) is dependent on the stations planned demolition and reconstruction of the station building. The excavation in area A2 will take place after the station building is removed and before work on reconstruction begins. At this time, the start time for the demolition of the station building is unknown.

## 4.1 Groundwater Monitoring Wells

Antea Group submitted the *Work Plan – Well Destruction*, Dated May 8, 2014 to the ACHCSA. The work plan detailed the destruction of monitoring wells MW-12, MW-12A, and MW-17 before commencing the excavation of A1 and the destruction of monitoring wells MW-6 and MW-14 before commencing the excavation of A2 as depicted on **Figure 3**. The work plan was approved by ACHCSA in an e-mail dated June 2, 2014. The e-mail also recommended that monitoring well MW-10 be destroyed due to its proximity to A1. Antea Group has scheduled the destruction of monitoring wells MW-10, MW-12, MW-12A, and MW-17 to be completed on June 18, 2014 by pressure grouting the wells with neat cement. Monitoring wells MW-6 and MW-14 will be destroyed at a later date when the commencement of excavation A2 is scheduled.

During excavation activities on-site personnel will be instructed not to drive heavy equipment over well boxes or place out-riggers on the well boxes. A responsible person will be designated to be on-site to direct construction traffic to insure the well covers are not driven over during excavation activities.

Re-installation of shallow monitoring wells in the vicinity of excavation A1 will be discussed with ACHCSA upon the completion of the excavation.

## 4.2 On-Site Utility Encroachment

Antea Group will contact Underground Service Alert (USA) and contract a private utility locator at least 72 hours prior to the initiation of excavation activities in order to clear the proposed excavation area of underground utilities. Antea Group will additionally request that utilities identified within 10 feet of the excavation limits be physically exposed by the utility owner.

As depicted on **Figure 4**, electrical connections servicing the street lights and sprinkler system extend through the planned excavation A1 and electrical connections servicing the station building extend through the planned excavation A2. Prior to the start of excavation, a State of California licensed C-10 electrical contractor will perform disconnection and removal of electrical lines located within 10 feet of the proposed excavation areas.

## 4.3 Shoring and Security

Antea Group is currently in the process of determining the best method for shoring both excavations, A1 and A2. Antea Group is currently working with subcontractors to determine if addition investigation is necessary to determine shoring needs. If additional investigation is required, a work plan will be submitted to the ACHCSA as required. The excavations will be secured with temporary fencing around the entire work zone.

## 4.4 Dewatering Plan

Based on the depth of the excavation and historic ground water elevations indicated in the *Quarterly Summary Report, First Quarter 2014*, the excavation**s** will require dewatering. The average depth to water during the previous three years in excavation A2 (MW-6) has been 2.85 f**ee**t with a range of 2.9-8.4 f**ee**t; and, the average depth to water during the previous two years in excavation A1 (MW-12) has been 3.08 f**ee**t with a range of 3.35-4.4 f**ee**t. Based on a soil porosity of 30%, the approximated volumes to be de-watered from each excavation area are: 15,000 gallons from A1, and 74,000 gallons from A2. Based on lithology of the site being homogeneous across the site and the re-charge rate of MW-6 a constant pump rate of at least 0.5 gallons/minute will be maintained during excavation and backfilling activities after initial de-watering is complete. Based on this data, Antea Group anticipates that the excavations can be dewatered to twelve (12) feet effectively using a submersible or centrifugal pump. All extracted groundwater will be pumped into holding tanks on-site. The groundwater will be processed through carbon drums, sampled and discharged to the sanitary sewer or sampled and trucked off-site to an approved disposal facility.

## 4.5 Environmental Control Measures

A basic and site-specific storm water pollution prevention plan (SWPPP) will be prepared using best management practices (BMPs) such as those described in the *Construction Best Management Practice Handbook* prepared by the California Stormwater Quality Association (CASQA) in 2009. Antea Group will coordinate with Pacific Convenience and Fuels (PC&F) in determining the potential need to obtain a *Construction General Permit* for discharge..

Types of minimum techniques and practices defined in the SWPPP and implemented by the General Engineering Contractor may include the following:

- Berming down-sloping portions of the site with booms/sand/gravel bags;
- Installing stormwater control devices around the site perimeter;
- Protecting existing catch basins with booms/sand/gravel bags.

Dust control techniques will be implemented by the General Engineering Contractor at all times during the excavation, loading, and backfilling activities to prevent the formation and migration of visible dust. These techniques may include the following:

- Misting or spraying water at least twice daily to prevent formation of dust while excavating, loading, or backfilling;
- Controlling and monitoring excavation activities to minimize the generation of dust;
- Minimizing drop heights while loading transportation vehicles;
- Covering all trucks hauling soils or backfill materials, and requiring all trucks to maintain at least 2-feet of freeboard.
- Covering any stockpiles of clean fill material or top soils with weighted plastic;
- Sweep site daily if visible soil is on paved areas and being carried on public right-of-way.

Air monitoring will be performed to establish background air quality using a photoionization detector (PID) to measure ambient volatile organic compound (VOCs) concentrations, and a multi-gas lower explosive limit (LEL) detector to measure LEL, oxygen, carbon monoxide, and hydrogen sulfide. Antea Group will prepare an Air Monitoring Plan for use during excavation activities.

## 4.6 In-Situ Chemical Oxidation

To accelerate biodegradation of the dissolved hydrocarbon plume, Regenesis brand Oxygen Release Compound® (ORC®) will be added to the excavation backfill. ORC-A is a proprietary formulation of phosphate-intercalated magnesium peroxide that, when hydrated, produces controlled-release oxygen. Regenesis, the ORC-A manufacturer, recommends between 1% and 0.1% application by weight. We chose to use 1/3 of 0.1% (or 0.0333%). The excavation A1 is planned for approximately 316 yards, or approximately 380 tons (conversion factor of 1.2 ton/cy, rounded up). 0.0333% of 380 tons is approximately 250 lbs. The excavation A2 is planned for approximately 1,830 yards, or approximately 2,200 tons. 0.0333% of 2,200 tons is approximately 1,500 lbs. The

groundwater infiltration into the backfilled excavation will assist in the releasing of oxygen to the shallow aquifer. The amount of ORC-A used will be based upon the limits of the final excavations. The Material Safety Data Sheet for ORC-A® is attached as **Appendix C**.

## 4.7 Soil Sampling Plan

Confirmation soil samples will be collected at the final depth of the soil excavation and at accessible sidewalls. Confirmation samples will be collected at discrete locations using an approximate 20-foot by 20-foot grid for the bottom of each excavation area and approximately every 20 linear feet along the length of accessible excavation sidewalls staggering depths between 0-5 feet bgs and 5-10 feet bgs. Since the total depth of the excavation areas is greater than 4-feet deep, confirmation samples will be collected from the excavator bucket. Antea Group personnel will screen soil samples using a PID prior to submitting the samples for laboratory analyses.

Confirmation soil samples collected for laboratory analyses will be submitted to a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory for the following analyses:

- TPHg, BTEX, MTBE, tertiary-butyl alcohol (TBA), ethyl-tertiary-butyl ether (ETBE), tertiary-amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethylene dibromide (EDB), ethanol, 1,2-dichloroethane (1,2-DCA), and naphthalene by EPA Method 8260B.

## 4.8 Disposal of Waste and Truck Management

Waste hauling will be performed by a hauling contractor arranged by the General Engineering Contractor (GEC) that is licensed and permitted as required by the United Stated Environmental Protection Agency (EPA), Department of Transportation, and the State of California. Trucks will use only pre-planned and authorized routes established in a site-specific Traffic Control and Waste Transportation Plan, which will be completed upon the approval of this RDIP and include pedestrian safety procedures. Trucks used for the off-site transportation of impacted soil and debris will remain in clean, regularly swept areas, to the extent possible, to minimize the need to decontaminate the truck tires. Each loaded truck will be equipped to fully cover all soil and debris during transportation and leave the site with a completed manifest or bill of lading for transport of the soil to the assigned disposal facility, Republic Landfill in Livermore, CA. It is unknown at this time how many trucks the GEC is planning on using during the excavation activities. Antea Group does not plan to stockpile excavated soil on-site at this time.

## 5.0 REMARKS

The recommendations contained in this report represent Antea USA, Inc.'s professional opinions based upon the currently available information and are arrived at in accordance with currently accepted professional standards. This report is based upon a specific scope of work requested by the client. For any reports cited that were not generated by Delta or Antea Group, the data from those reports is used "as is" and is assumed to be accurate. Antea Group does not guarantee the accuracy of this data for the referenced work performed nor the inferences or conclusions stated in these reports. The contract between Antea USA, Inc. and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Antea USA, Inc.'s client and anyone else specifically identified in writing by Antea USA, Inc. as a user of this report. Antea USA, Inc. will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Antea USA, Inc. makes no express or implied warranty as to the contents of this report.

**Edward T. Weyrens, G.I.T.**
Project Professional
Antea Group

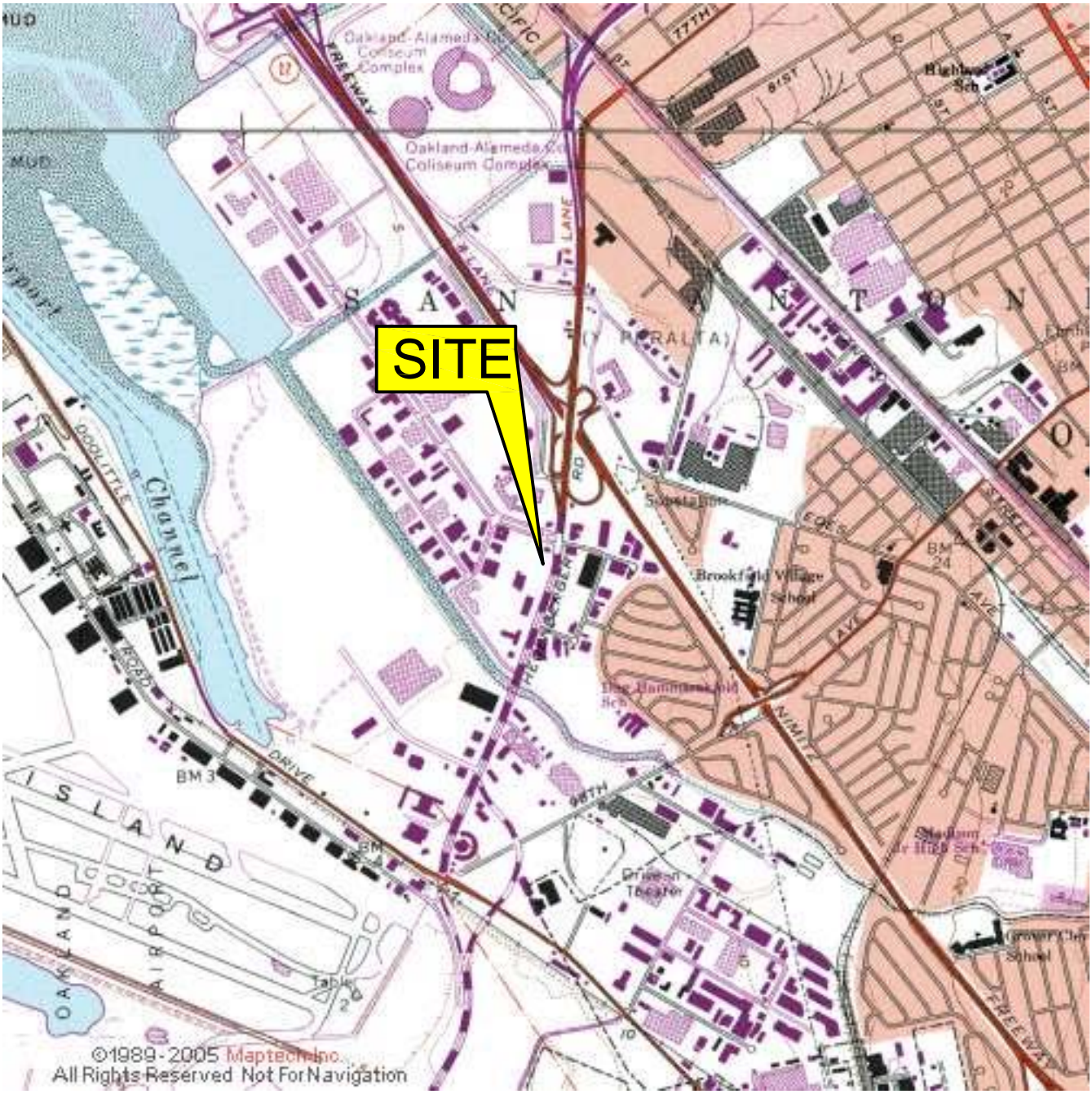
Reviewed by:

**Dennis S. Dettloff, P.G.**
Senior Project Manager
California Registered Professional Geologist No. 7480
Antea Group

PROFESSIONAL GEOLOGIST
DENNIS SHANNON DETTLOFF
No. 7480
STATE OF CALIFORNIA

cc: GeoTracker (upload)

# *Figures*




North

0 900 1800 FT

SCALE

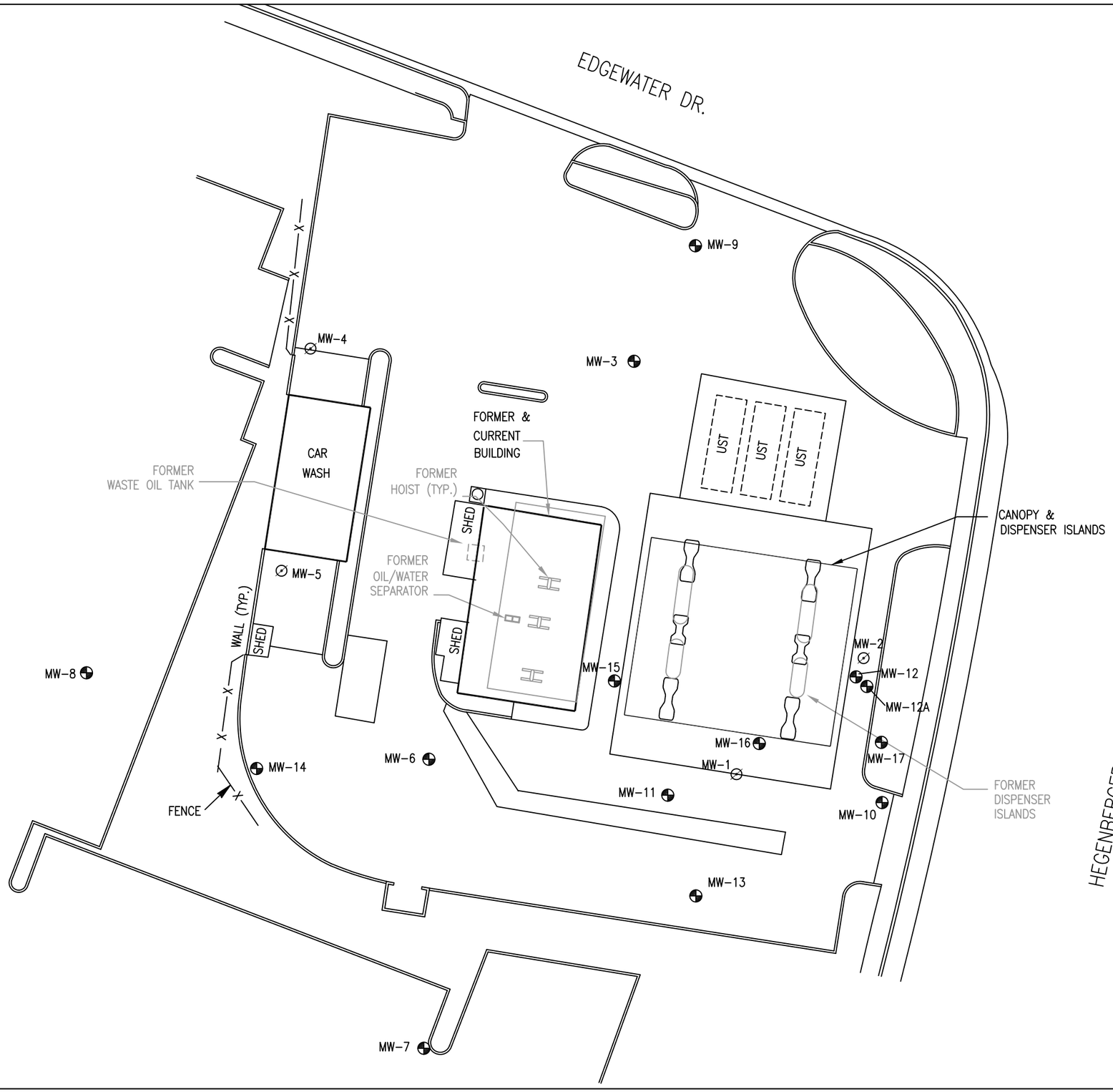
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, OAKLAND EAST QUADRANGLE (1973)

# FIGURE 1
## SITE LOCATION MAP

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

| PROJECT NO. | PREPARED BY | DRAWN BY |
|---|---|---|
| 142705191 | EW | DR/JH |
| DATE | REVIEWED BY | FILE NAME |
| 1/31/11 | DD | 5043-SiteLocator |

antea group




LEGEND

- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL

North

0 30

SCALE IN FEET

# FIGURE 2
## SITE PLAN

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

| PROJECT NO. | PREPARED BY | DRAWN BY |
|---|---|---|
| 142705191 | DD | JH |
| DATE | REVIEWED BY | FILE NAME |
| 5/26/11 | DD | 5191-SiteS |

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EDGEWATER DR.

HEGENBERGER RD.

MW-9
MW-4
MW-3
MW-5
MW-8
MW-7
MW-6
MW-14
MW-15
MW-16
MW-1
MW-11
MW-13
MW-10
MW-12
MW-12A
MW-17

CAR WASH

FORMER WASTE OIL TANK

FORMER & CURRENT BUILDING

FORMER HOIST (TYP.)

FORMER OIL/WATER SEPARATOR

FORMER DISPENSER ISLANDS

CANOPY & DISPENSER ISLANDS

UST

SHED

WALL (TYP.)

SW1 SW2 SW3 SW4 SW5 SW6 SW7 SW8 SW8(6)

FB1 FB2/RF1 FB3/RF2 FB4

FBSW1 FBSW2 FBSW3 FBSW4

WO1

UH-1 UH-2 UH-3

OWS-1

HS-4-E HS-4-S HS-4-W HS-4-N

B1 B2 B3 B4 B-4 B-5 B-6

P1 P2 P3 P4

D1/BD1 D2/BD2 BD3 BD4

S1 S2 S3 S4

HPB-1 HPB-2 HPB-3 HPB-4 HPB-5

SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10

FS-1

WE1 WE2 WE3

MW1SW1 MW1SW2

A1

A2

North

0 30

SCALE IN FEET

## LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW- MONITORING WELL
- MW- ABANDONED MONITORING WELL
- SB- SOIL BORING LOCATION (ANTEA GROUP 2013)
- HPB- SOIL BORING LOCATION (ANTEA GROUP 2012)
- B- BORING LOCATION
- SOIL SAMPLE LOCATION
- 1995 EXCAVATION AREA
- PROPOSED EXCAVATION AREA

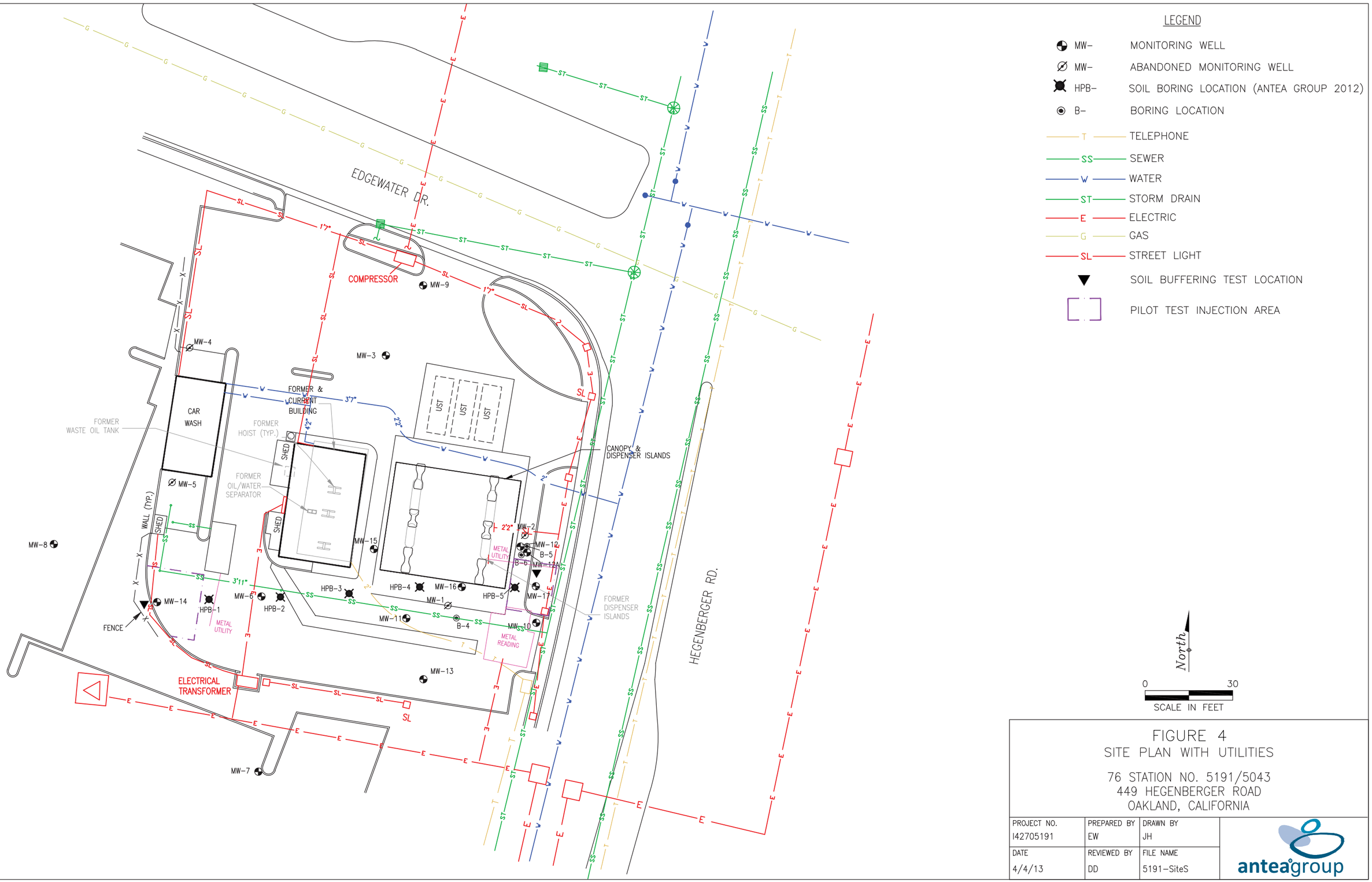
ADAPTED FROM A MORROW SURVEY ON 5/23/11 AND A SOIL SAMPLING REPORT AND CONTINUING GROUNDWATER INVESTIGATION BY KAPREALIAN ENGINEERING, INC., 6/2/95

# FIGURE 3
## SITE PLAN WITH PROPOSED EXCAVATIONS

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

| PROJECT NO. | PREPARED BY | DRAWN BY |
|---|---|---|
| 142705191 | JF | JH |
| DATE | REVIEWED BY | FILE NAME |
| 11/22/13 | DD | 5191-SiteS |

antea group




# FIGURE 4
## SITE PLAN WITH UTILITIES

76 STATION NO. 5191/5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

| PROJECT NO. | PREPARED BY | DRAWN BY |
|---|---|---|
| 142705191 | EW | JH |
| DATE | REVIEWED BY | FILE NAME |
| 4/4/13 | DD | 5191-SiteS |

antea group

# *Appendix A*

ACHCSA Email

## Dennis Dettloff

**From:** Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>
**Sent:** Thursday, March 27, 2014 7:21 AM
**To:** Dennis Dettloff
**Cc:** Nowell, Keith, Env. Health
**Subject:** RE: Fuel Leak Case RO219- UNOCAL #5043, 449 HEGENBERGER RD. OAKLAND

Hi Dennis:

Thanks for the reminder. Keith and I spoke about the status of the draft Fact Sheet yesterday and he will be sending you a word template by the end of the week for you to use to standardize your fact sheet. Once you have made the necessary changes please send it back to us for final review and we will then provide you with a list of recipients for your distribution.

Thanks,

**Dilan Roe, P.E.**
*Program Manager - Land Use & Local Oversight Program*
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502
510.567.6767; Ext. 36767
QIC: 30440
dilan.roe@acgov.org

PDF copies of case files can be reviewed/downloaded at:

*http://www.acgov.org/aceh/lop/ust.htm*

---

**From:** Dennis Dettloff [mailto:Dennis.Dettloff@anteagroup.com]
**Sent:** Wednesday, March 26, 2014 7:50 AM
**To:** Roe, Dilan, Env. Health; Nowell, Keith, Env. Health
**Cc:** Walter T. Sprague (wsprague@pcandf.com); ed.c.ralston@p66.com; Ed Weyrens; Josh Mahoney; Wendy Linck
**Subject:** FW: Fuel Leak Case RO219- UNOCAL #5043, 449 HEGENBERGER RD. OAKLAND
**Importance:** High

Good Morning:

I'm following up with you at this time to determine the status of the Draft Fact Sheet submittal? On February 18th I sent to Mr. Nowell the Draft Fact Sheet (attached) with the requested edits and asked if it was acceptable, or if he would like additional edits. As of today, I've yet to hear back from Mr. Nowell concerning the fact sheet.

In addition, as indicated in the email below, Alameda County Environmental Health (ACEH) was going to submit to Antea Group a distribution list for mailing to property owners and tenants in the vicinity of the site. As of today we have yet to receive the Final Fact Sheet and the distribution list. I know that you're busy and that is why I'm following up with you at this time, so that we can get back on track. Please provide the Final Fact Sheet and the distribution list at your earliest convenience. If there is anything that Antea Group can to do to assist you in this process, don't hesitate to let us know.

Best Regards,

**Dennis S. Dettloff, P.G.|Senior Project Manager| Antea Group**
Direct + 916 503 1261 | USA Toll Free 800 477 7411
Dennis.Dettloff@anteagroup.com | www.anteagroup.com

Member of Inogen® | www.inogenet.com


**From:** Roe, Dilan, Env. Health [mailto:Dilan.Roe@acgov.org]
**Sent:** Friday, February 14, 2014 5:16 PM
**To:** Walter T. Sprague (wsprague@pcandf.com)
**Cc:** Dennis Dettloff; Ed.C.Ralston@p66.com
**Subject:** Fuel Leak Case RO219- UNOCAL #5043, 449 HEGENBERGER RD. OAKLAND

Dear Mr. Sprague,

Alameda County Environmental Health (ACEH) staff has reviewed the Corrective Action Plan (CAP) dated November 22, 2013 prepared by Antea Group on your behalf in conjunction with the case files and the State water Resources Control Board's Low Threat Closure Policy. Based on the evaluation and comparison of three alternatives (Soil Excavation and Off-Site Disposal with Oxygen Release Compound (ORC) Amendment, Dual Phase Extraction, and In-Situ Chemical Oxidation) and taking into consideration the opportunity to conduct work concurrently with a planned site renovation in the Spring of 2014, Antea Group recommends implementing soil source excavation and ORC to help reduce remaining petroleum hydrocarbon and methyl tertiary butyl ether (MTBE) impact to the groundwater beneath and down-gradient of the site.

Based on our review, ACEH conditionally concurs with the proposed correction action plan concept presented in the CAP provided you address the technical comments and send us the reports listed below.

**Technical Comments**

1. **Remedial Design and Implementation Plan (RDIP).** Please prepare a RDIP providing details on the proposed soil excavation and ORC amendment activities described in the CAP. Items to address include but are not limited to the following:

   - Construction sequencing and schedule of excavation, site demolition and new station construction;
   - Plans of the existing and proposed redevelopment;
   - Groundwater monitoring well destruction, shallow monitoring well replacement, and protocols for protection of remaining onsite wells;
   - On-site utility encroachment;
   - Shoring and method of securing excavation during non-working hours;
   - Dewatering, including storage location, profiling, and disposal;

- Contingency for prevention of storm water infiltration into excavation(s);
- Dust suppression and odor control;
- Calculation of ORC quantity for application,
- Soil sampling, including sampling density of excavation and stockpiles, staggering sidewall confirmation sample collect to in the 0- to 5 feet below the ground surface (bgs) and the 5- to 10-foot bgs interval, excavation bottom sample density, sampling beneath existing piping runs and dispenser islands, and beneath the car wash structure;
- Disposal of excavation derived wastes, including estimated number of trucks, traffic control, pedestrian safety procedures, truck decontamination, site entry/ departure aprons, disposal facility identification;
- Soil stockpile placement and best management plans for stockpile(s);

2. **Public Participation** – Public participation is a requirement for the Corrective Action Plan process. The purpose of public participation is to facilitate communication and coordination with stakeholders potentially affected by or concerned with the proposed corrective actions at the site. Therefore you are required to notify affected stakeholders who live or own property in the surrounding area of the proposed corrective actions described in the Draft FS/CAP through the mailing of a Fact Sheet.

   ACEH requests that you revise the draft Fact Sheet dated December 6, 2013 to remove reference to Alternative #2 In Situ Chemical Oxidation. Please submit the revised draft Fact Sheet (in MS word format) via email correspondence to ACEH for review (Attn: Keith Nowell) by the date identified in the Technical Report section below. ACEH will review the draft Fact Sheet and provide a final Fact sheet and distribution list for mailing to property owners and tenants in the vicinity of the site. Following distribution f the Fact Sheet, please provide your personal certification by e-mail or letter, that the Fact Sheet was distributed by U.S. Mail to the attached mailing by the date identified in the Technical Report section below.

   Public comments on the proposed remediation will be accepted for a period of thirty days. Following the thirty day public comment period, and after the comments received (if any) have been addressed and the Corrective Action Implementation Plan approved by ACEH, the corrective actions may be implemented.

**Technical Report Request**

Please submit the following technical reports to the ACEH ftp site (Attention: Keith Nowell), and to the State Water Resources Control Board's Geotracker website, in accordance with the following specified file naming convention and schedule:

- **February 28, 2014–** Draft Fact Sheet (Word document)
- **March 14, 2014–** Certification of Fact Sheet Distribution (File name: RO0000219_CAPP_CERT_L_yyyy-mm-dd)
- **April 11, 2014 –** Remedial Design & Implementation Plan (File name: RO0000219_RDIP_R_yyyy-mm-dd)

Thank you for your cooperation. ACEH looks forward to working with you and your consultants to advance the case toward closure. Should you have any questions regarding this correspondence or your case, please call me at (510) 567-6764 or send an electronic mail message at keith.nowell@acgov.org.

Respectfully,

Keith Nowell

**Dilan Roe, P.E.**
*Program Manager - Land Use & Local Oversight Program*
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502
510.567.6767; Ext. 36767
QIC: 30440
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510.567.6767; Ext. 36767
QIC: 30440
dilan.roe@acgov.org

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*http://www.acgov.org/aceh/lop/ust.htm*

# *Appendix B*

Site Details and Previous Environmental Investigations

## PREVIOUS INVESTIGATION AND SITE HISTORY SUMMARY

October 1991 - Four soil samples were collected from the product pipe trenches at depths of approximately 3 feet below ground surface (bgs) during a dispenser island modification. The product pipe trenches were subsequently excavated to the groundwater depth at 4 to 4.5 feet bgs.

February 1992 - Three monitoring wells, MW-1 through MW-3, were installed at the site to depths ranging from 13.5 to 15 feet bgs.

August 1992 - Three additional monitoring wells, MW-4 through MW-6, were installed at the site to a depth of 13.5 feet bgs.

September 1994 - One 280-gallon waste-oil UST was removed from the site. The UST was made of steel, and no apparent holes or cracks were observed in the UST. One soil sample was collected from beneath the former UST at a depth of approximately 9 feet bgs. No petroleum hydrocarbons were reported.

January 1995 - Two additional monitoring wells, MW-9 and MW-10, were installed to depths of 13 and 15 feet bgs. In addition, monitoring wells MW-4 and MW-5 were destroyed by over-drilling the wells and backfilling with neat cement.

March 1995 - Two 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST were removed from the site. Groundwater was encountered in the tank cavity at a depth of approximately 8.5 feet bgs. Soil samples contained total petroleum hydrocarbons as diesel (TPHd) and benzene, and TPH as gasoline (TPHg). Approximately 125,000 gallons of groundwater were pumped from the site for remediation and properly disposed off-site. Four fuel dispenser islands and associated product piping were also removed. Based on the results of the confirmation samples, the product dispenser islands were over excavated to approximately 6 feet bgs.

March-April 1995 - During demolition activities of the former station building, soil samples were collected from two excavations, which were subsequently over excavated. Confirmation samples contained petroleum hydrocarbons. An additional area on the south side of the former station building was excavated based on photo-ionization detector (PID) readings. Two monitoring wells, MW-1 and MW-2, were destroyed in order to allow for over excavation activities to extend to an area adjacent to the dispenser islands in the southeastern quadrant of the site. The excavated areas were subsequently backfilled with clean-engineered fill.

April 1997 - Two additional monitoring wells, MW-7 and MW-8, were installed off-site to the south and east on the neighboring property to a depth of 13 feet bgs. In addition, monitoring well MW-3, which was damaged during site renovation activities, was fully drilled out and reconstructed in the same borehole.

October 2003 - Site environmental consulting responsibilities were transferred to TRC.

April 8-9, 2005 - TRC conducted a 24-hour dual phase extraction (DPE) test at the site using monitoring well MW-6. The 24-hour DPE test was only moderately successful at removing vapor-phase petroleum hydrocarbons from the subsurface; therefore, TRC recommended DPE no longer be considered a viable remedial alternative for the site.

October 2007 - Site environmental consulting responsibilities were transferred to Delta Consultants.

December 2009 - Delta advanced two borings, B-4 and B-5, to depths of 20 feet bgs and 32 feet bgs, respectively. Analytical results from the soil and groundwater samples collected from these two borings indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

June 2010 – Delta installed two 4-inch diameter monitoring/extraction wells, MW-11 and MW-12, and two 2-inch diameter monitoring wells, MW-12A and MW-13, at the site. Analytical results from the soil and groundwater samples collected from the MW-12 and MW-12A boring locations indicated that the soil and the groundwater were impacted by petroleum hydrocarbons at these locations.

May 2011 – Antea Group (formally Delta Consultants) installed four 2-inch diameter monitoring wells, MW-14 through MW-17, and advanced one soil boring, B-6, at the site. All four monitoring wells were installed with ten feet of screen from 3 feet bgs to 13 feet bgs. Analytical results of soil samples collected during the monitoring well installation reported TPHg concentrations ranging from 1.0 milligrams per kilogram (mg/kg) (MW-14d13) to 2,490 mg/kg (B-6d9), benzene concentrations ranging from 0.67 mg/kg (B-6d21) to 26.4 mg/kg (B-6d9), toluene concentrations ranging from 0.2 mg/kg (MW-14d10) to 73.9 mg/kg (B-6d9), ethylbenzene concentrations ranging from 0.037 mg/kg (MW-14d13) to 58.1 mg/kg (B-6d9), total xylenes concentrations ranging from 0.066 mg/kg (MW-14d13) to 230 mg/kg (B-6d9), methyl tertiary-butyl ether (MTBE) concentrations ranging from 0.015 mg/kg (MW-15d13) to 0.19 mg/kg (MW-15d8), tertiary-butyl alcohol (TBA) concentrations ranging from 0.014 mg/kg (MW-16d8 and B-6d21) to 0.16 mg/kg (MW-15d8), and lead concentrations ranging from 5.5 mg/kg (MW-16d13) to 16.3 mg/kg (MW-17d9). Diesel range organics (DRO) and DRO with silica gel concentrations were reported; however, all of the results did not match the laboratory standard for diesel. Concentrations of DRO ranged from 2.9 mg/kg (MW-17d13) to 258 mg/kg (B-6d14) and DRO with silica gel concentrations ranged from 2.5 mg/kg (MW-17d13) to 250 mg/kg (B-6d14).

March 2012 – Antea Group advanced five soil borings (HPB-1 through HPB-5) at the site. The borings were advanced using direct push technology. The borings were used to obtain a hydraulic profile of the substrate beneath the site. The data obtained during the investigation will be used to determine the best path forward in terms of remediation.

July 2013 – Antea Group advanced ten soil borings (SB-1 through SB-10) at the site. The borings were advanced using direct push technology. The borings were used to delineate petroleum hydrocarbon impacted soil around

monitoring well MW-6. Results of the investigation can be found in the *Site Investigation Report*, dated January 9, 2014.

**SENSITIVE RECEPTORS**

April 24, 2006, TRC completed a sensitive receptor survey for the site. According to the Department of Water Resources (DWR) records, three water supply wells are located within one-half mile of the site. The closest well is an irrigation well, reported to be, approximately 1,080 feet southeast of the site. In addition, two surface water bodies were observed within a one-half mile radius of the site. San Leandro Creek is located approximately 1,400 feet southwest of the site and flows into the San Leandro Bay. Elmhurst Creek is located approximately 2,220 feet north of the site and also flows into the San Leandro Bay.

Current Consultant: **Antea Group**

# *Appendix C*

Regenesis ORC Advanced® Material Safety and Data Sheet

**Oxygen Release Compound – Advanced (ORC *Advanced*™)**
**MATERIAL SAFETY DATA SHEET (MSDS)**

**Last Revised: June 24, 2010**

## Section 1 - Material Identification

**Supplier:**


REGENESIS

**1011 Calle Sombra**
**San Clemente, CA 92673**

| | |
|---|---|
| **Phone:** | **949.366.8000** |
| **Fax:** | **949.366.8090** |
| **E-mail:** | **info@regenesis.com** |


| | |
|---|---|
| **Chemical Description:** | A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$]. |
| **Chemical Family:** | Inorganic Chemical |
| **Trade Name:** | Advanced Formula Oxygen Release Compound (ORC *Advanced*™) |
| **Chemical Synonyms** | Calcium Hydroxide Oxide; Calcium Oxide Peroxide |
| **Product Use:** | Used to remediate contaminated soil and groundwater (environmental applications) |

## Section 2 – Composition

| CAS No. | Chemical |
|---|---|
| **682334-66-3** | **Calcium Hydroxide Oxide [$CaO(OH)_2$]** |
| **1305-62-0** | **Calcium Hydroxide [$Ca(OH)_2$]** |
| **7758-11-4** | **Dipotassium Phosphate ($HK_2O_4P$)** |
| **7778-77-0** | **Monopotassium Phosphate ($H_2KO_4P$)** |

| Section 3 – Physical Data | |
|---|---|
| **Form:** | Powder |
| **Color:** | White to Pale Yellow |
| **Odor:** | Odorless |
| **Melting Point:** | 527 °F (275 °C) – Decomposes |
| **Boiling Point:** | Not Applicable (NA) |
| **Flammability/Flash Point:** | NA |
| **Auto- Flammability:** | NA |
| **Vapor Pressure:** | NA |
| **Self-Ignition Temperature:** | NA |
| **Thermal Decomposition:** | 527 °F (275 °C) – Decomposes |
| **Bulk Density:** | 0.5 – 0.65 g/ml (Loose Method) |
| **Solubility:** | 1.65 g/L @ 68° F (20° C) for calcium hydroxide. |
| **Viscosity:** | NA |
| **pH:** | 11-13 (saturated solution) |
| **Explosion Limits % by Volume:** | Non-explosive |
| **Hazardous Decomposition Products:** | Oxygen, Hydrogen Peroxide, Steam, and Heat |
| **Hazardous Reactions:** | None |

## Section 4 – Reactivity Data

| | |
|---|---|
| **Stability:** | Stable under certain conditions (see below). |
| **Conditions to Avoid:** | Heat and moisture. |
| **Incompatibility:** | Acids, bases, salts of heavy metals, reducing agents, and flammable substances. |
| **Hazardous Polymerization:** | Does not occur. |

## Section 5 – Regulations

| | |
|---|---|
| **TSCA Inventory List:** | Listed |

**CERCLA Hazardous Substance (40 CFR Part 302)**

| | |
|---|---|
| **Listed Substance:** | No |
| **Unlisted Substance:** | Yes |
| **Reportable Quantity (RQ):** | 100 pounds |
| **Characteristic(s):** | Ignitibility |
| **RCRA Waste Number:** | D001 |

**SARA, Title III, Sections 302/303 (40 CFR Part 355 – Emergency Planning and Notification)**

| | |
|---|---|
| **Extremely Hazardous Substance:** | No |

**SARA, Title III, Sections 311/312 (40 CFR Part 370 – Hazardous Chemical Reporting: Community Right-To-Know**

| | |
|---|---|
| **Hazard Category:** | Immediate Health Hazard<br>Fire Hazard |
| **Threshold Planning Quantity:** | 10,000 pounds |

## Section 5 – Regulations (cont)

**SARA, Title III, Section 313 (40 CFR Part 372 – Toxic Chemical Release Reporting: Community Right-To-Know**

| | | |
|---|---|---|
| **Extremely Hazardous Substance:** | No | |
| **WHMIS Classification:** | C | Oxidizing Material<br>Poisonous and Infectious Material |
| | D | Material Causing Other Toxic Effects –<br>Eye and Skin Irritant |
| **Canadian Domestic Substance List:** | Not Listed | |

## Section 6 – Protective Measures, Storage and Handling

**Technical Protective Measures**

| | |
|---|---|
| **Storage:** | Keep in tightly closed container. Store in dry area, protected from heat sources and direct sunlight. |
| **Handling:** | Clean and dry processing pipes and equipment before operation. Never return unused product to the storage container. Keep away from incompatible products. Containers and equipment used to handle this product should be used exclusively for this material. Avoid contact with water or humidity. |

## Section 6 – Protective Measures, Storage and Handling (cont)

**Personal Protective Equipment (PPE)**

| | |
|---|---|
| **Engineering Controls:** | Calcium Hydroxide<br>ACGIH® TLV® (2000)<br>5 mg/m$^3$ TWA<br>OSHA PEL<br>Total dust–15 mg/m$^3$ TWA<br>Respirable fraction–<br>5 mg/m$^3$ TWA<br>NIOSH REL (1994)<br>5 mg/m$^3$ |
| **Respiratory Protection:** | For many conditions, no respiratory protection may be needed; however, in dusty or unknown atmospheres use a NIOSH approved dust respirator. |
| **Hand Protection:** | Impervious protective gloves made of nitrile, natural rubbber or neoprene. |
| **Eye Protection:** | Use chemical safety goggles (dust proof). |
| **Skin Protection:** | For brief contact, few precautions other than clean clothing are needed. Full body clothing impervious to this material should be used during prolonged exposure. |
| **Other:** | Safety shower and eyewash stations should be present. Consultation with an industrial hygienist or safety manager for the selection of PPE suitable for working conditions is suggested. |
| **Industrial Hygiene:** | Avoid contact with skin and eyes. |
| **Protection Against Fire & Explosion:** | NA |

## Section 7 – Hazards Identification

| | |
|---|---|
| **Emergency Overview:** | Oxidizer – Contact with combustibles may cause a fire. This material decomposes and releases oxygen in a fire. The additional oxygen may intensify the fire. |
| **Potential Health Effects:** | Irritating to the mucous membrane and eyes. If the product splashes in ones face and eyes, treat the eyes first. Do not dry soiled clothing close to an open flame or heat source. Any |

| | |
|---|---|
| | clothing that has been contaminated with this product should be submerged in water prior to drying. |
| **Inhalation:** | High concentrations may cause slight nose and throat irritation with a cough. There is risk of sore throat and nose bleeds if one is exposed to this material for an extended period of time. |
| **Eye Contact:** | Severe eye irritation with watering and redness. There is also the risk of serious and/or permanent eye lesions. |
| **Skin Contact:** | Irritation may occur if one is exposed to this material for extended periods. |
| **Ingestion:** | Irritation of the mouth and throat with nausea and vomiting. |

## Section 8 – Measures in Case of Accidents and Fire

| | |
|---|---|
| **After Spillage/Leakage/Gas Leakage:** | Collect in suitable containers. Wash remainder with copious quantities of water. |
| **Extinguishing Media:** | See next. |
| **Suitable:** | Large quantities of water or water spray. In case of fire in close proximity, all means of extinguishing are acceptable. |
| **Further Information:** | Self contained breathing apparatus or approved gas mask should be worn due to small particle size. Use extinguishing media appropriate for surrounding fire. Apply cooling water to sides of transport or storage vessels that are exposed to flames until the fire is extinguished. Do not approach hot vessels that contain this product. |
| **First Aid:** | After contact with skin, wash immediately with plenty of water and soap. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention. Consult an opthalmologist in all cases. |

## Section 8 – Measures in Case of Accidents and Fire

| | |
|---|---|
| **Eye Contact:** | Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases. |
| **Inhalation:** | Remove subject from dusty environment. Consult with a physician in case of respiratory symptoms. |

| | |
|---|---|
| **Ingestion:** | If the victim is conscious, rinse mouth and admnister fresh water. DO NOT induce vomiting. Consult a physician in all cases. |
| **Skin Contact:** | Wash affected skin with running water. Remove and clean clothing. Consult with a physician in case of persistent pain or redness. |
| **Special Precautions:** | Evacuate all non-essential personnel. Intervention should only be done by capable personnel that are trained and aware of the hazards associated with this product. When it is safe, unaffected product should be moved to safe area. |
| **Specific Hazards:** | Oxidizing substance. Oxygen released on exothermic decomposition may support combustion. Confined spaces and/or containers may be subject to increased pressure. If product comes into contact with flammables, fire or explosion may occur. |

## Section 9 – Accidental Release Measures

| | |
|---|---|
| **Precautions:** | Observe the protection methods cited in Section 3. Avoid materials and products that are incompatible with product. Immediately notify the appropriate authorities in case of reportable discharge (> 100 lbs). |
| **Cleanup Methods:** | Collect the product with a suitable means of avoiding dust formation. All receiving equipment should be clean, vented, dry, labeled and made of material that this product is compatible with. Because of the contamination risk, the collected material should be kept in a safe isolated place. Use large quantities of water to clean the impacted area. See Section 12 for disposal methods. |

## Section 10 – Information on Toxicology

**Toxicity Data**

| | |
|---|---|
| **Acute Toxicity:** | Oral Route, $LD_{50}$, rat, > 2,000 mg/kg (powder 50%)<br>Dermal Route, $LD_{50}$, rat, > 2,000 mg/kg (powder 50%)<br>Inhalation, $LD_{50}$, rat, > 5,000 mg/$m^3$ (powder 35%) |
| **Irritation:** | Rabbit (eyes), severe irritant |

| | |
|---|---|
| **Sensitization:** | No data |
| **Chronic Toxicity:** | In vitro, no mutagenic effect (Powder 50%) |
| **Target Organ Effects:** | Eyes and respiratory passages. |

## Section 11 – Information on Ecology

| | |
|---|---|
| **Ecology Data** | |
| | 10 mg $Ca(OH)_2$/L: pH = 9.0<br>100 mg $Ca(OH)_2$/L: pH = 10.6 |
| **Acute Exotoxicity:** | Fishes, Cyprinus carpio, $LC_{50}$, 48 hrs, 160 mg/L<br>Crustaceans, Daphnia sp., $EC_{50}$, 24 hours, 25.6 mg/L<br>(Powder 16%) |
| **Mobility:** | Low Solubility and Mobility |
| **Abiotic Degradation:** | Water – Slow Hydrolysis.<br>Degradation Products: Calcium Hydroxide<br>Water/soil – complexation/precipitation. Carbonates/sulfates present at environmental concentrations.<br>Degradation products: carbonates/sulfates sparingly soluble |
| **Biotic Degradation:** | NA (inorganic compound) |
| **Potential for Bioaccumulation:** | NA (ionizable inorganic compound) |

## Section 11 – Information on Ecology (cont)

| | |
|---|---|
| **Comments:** | Observed effects are related to alkaline properties of the product. Hazard for the environment is limited due to the product properties of:<br>• No bioaccumulation<br>• Weak solubility and precipitation as carbonate or sulfate in an aquatic environment.<br>Diluted product is rapidly neutralized at environmental pH. |
| **Further Information:** | NA |

## Section 12 – Disposal Considerations

| | |
|---|---|
| **Waste Disposal Method:** | Consult current federal, state and local regulations regarding the proper disposal of this material and its emptied containers. |

## Section 13 – Shipping/Transport Information

| | |
|---|---|
| **D.O.T Shipping Name:** | Oxidizing Solid, N.O.S [A mixture of Calcium OxyHydroxide [$CaO(OH)_2$] and Calcium Hydroxide [$Ca(OH)_2$]. |
| **UN Number:** | 1479 |
| **Hazard Class:** | 5.1 |
| **Label(s):** | 5.1 (Oxidizer) |
| **Packaging Group:** | II |
| **STCC Number:** | 4918717 |

## Section 14 – Other Information

| | | |
|---|---|---|
| **HMIS® Rating** | Health – 2<br>Flammability – 0 | Reactivity – 1<br>PPE - Required |

HMIS® is a registered trademark of the National Painting and Coating Association.

| | | |
|---|---|---|
| **NFPA® Rating** | Health – 2<br>Flammability – 0 | Reactivity – 1<br>OX |

NFPA® is a registered trademark of the National Fire Protection Association.

**Reason for Issue:** Update toxicological and ecological data

## Section 15 – Further Information

**The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available.**