CAMBRIA

July 10, 2002

Mr. Joseph Cotton
City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Suite 5301
Oakland, California 94612-2034

JUL 19 2002

Re: **Offsite Remediation Report**
2662 Fruitvale Avenue
Oakland, California 94621
Cambria Project No. 153-1664-029

Dear Mr. Cotton:

Cambria Environmental Technology, Inc. (Cambria) is pleased to present this *Offsite Remediation Report* for the site referenced above (Site). The work described in this report was performed in accordance with Cambria's *Remediation Workplan* dated September 17, 2001. The Alameda County Health Care Services Agency (ACHCSA) approved the remediation workplan in their September 24, 2001 letter, and again in their January 28, 2002 letter, which followed the submittal of Cambria's *Site Remediation and Closure Report.* The hydrogen peroxide introduction, results, and conclusions are described below.

HYDROGEN PEROXIDE INTRODUCTION

Hydrogen peroxide was introduced into offsite wells MW-13 and MW-F4 to chemically oxidize hydrocarbons and to supply oxygen to stimulate hydrocarbon biodegradation.

Task 1 - Pre-Field Preparation and Coordination

To introduce hydrogen peroxide into Site groundwater, Cambria coordinated with two small local businesses within Oakland – GAIA Consulting, Inc. (GAIA) and Morgan Environmental Services, Inc. (Morgan). GAIA provided a site-specific health and safety plan as wells as a technician for the field activities. The signed health and safety plan is presented in Attachment A. Morgan provided 7% hydrogen peroxide solution (peroxide) in 5-gallon containers, which were transported to the Site on introduction events by GAIA.

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Task 2 - Hydrogen Peroxide Introduction

The 7% hydrogen peroxide solution was introduced into offsite wells MW-13 and MW-F4. The peroxide introduction events were conducted twice per week over a four-week period, for a total of eight introduction events. In conjunction with the peroxide introduction, the following items were measured: depth to groundwater, groundwater temperature, and dissolved oxygen (DO) concentrations. The DO concentrations were measured by lowering a probe approximately 3 feet below the groundwater table surface then waiting for the reading to stabilize. As much peroxide as practical was introduced into Site wells MW-F4 and MW-13 during each event. Field forms are presented in Attachment B.

The schedule for the peroxide introduction plan was:

Activity	Date
Measured depth to water in wells	March 29, 2002
Began four weeks of H_2O_2 introduction	May 20, 2002
Completed H_2O_2 introduction	June 13, 2002
Measured DO (4 days after final introduction)	June 17, 2002
Measured DO (11 days after final introduction)	June 24, 2002

In accordance with the site-specific health and safety plan, all field personnel that could come in contact with the hydrogen peroxide solution wore appropriate personal protective equipment. In addition, a portable eye wash station was onsite during field activities. The following additional precautions were taken:

- The infiltration rate of the hydrogen peroxide solution was monitored to prevent any overflowing of the well.
- Absorbent pads were kept onsite to help contain any overflows.
- The groundwater temperature was monitored during and after the peroxide introduction.
- Water was added to the well to help cool the reaction and force peroxide into the formation.
- After sealing the well and replacing the well vault, the field personnel observed the wells. The initial observation lasted approximately two hours after sealing the well. Subsequent observation lasted 30 minutes.

PEROXIDE INTRODUCTION RESULTS

Approximately 88 gallons of 7% hydrogen peroxide solution were introduced into groundwater during this remedial action. During each event, approximately 3 gallons of peroxide were introduced into well MW-F4 and approximately 8 gallons of peroxide were introduced into well MW-13. The amount of hydrogen peroxide injected per event was limited by the infiltration rate for each well. The total volume of peroxide introduced into each well was approximately 23.1 gallons into well MW-F4 and approximately 64.5 gallons into well MW-13. The actual peroxide introduction volumes and the field measurements are presented in Table 1.

Before peroxide introduction, the DO concentrations were 4.0 mg/L (milligrams/liter) and 6.7 mg/L in wells MW-F4 and MW-13, respectively. Two days after the initial peroxide introduction event the DO concentrations were significantly higher in both wells – 17.1 mg/L and 15.9 mg/L in wells MW-F4 and MW-13, respectively. Three days after the initial peroxide introduction event the DO concentrations had decreased to 13.6 mg/L but remained elevated in well MW-F4. For well MW-13, three days after the initial peroxide introduction event the DO concentrations decreased to 4.9 mg/L, which is below the initial DO concentration of 6.7 mg/L for MW-13. Measurements following subsequent peroxide introductions indicate that DO concentrations remained elevated after each introduction. By the final introduction event of June 13, 2002, the DO concentrations in wells MW-F4 and MW-13 exceeded the measurement range of the field instrument of 19.9 mg/L. Four days following the final introduction event the DO concentrations remained above 19.9 mg/L in both wells. Eleven days after the final introduction event the DO concentrations still remained above 19.9 mg/L in well MW-F4 and remained elevated in well MW-13 (10.5 mg/L).

DO measurements indicate that the utilization of DO reduced significantly by the end of the peroxide introduction events. As shown in well MW-13, the DO concentrations decreased to below the initial DO concentration within three days of the initial peroxide introduction while the DO concentrations remained >19.9 mg/L for at least eleven days following the final peroxide introduction event.

CONCLUSIONS

The results of this offsite remedial action suggest that the hydrogen peroxide introduction has supplied sufficient dissolved oxygen to stimulate hydrocarbon biodegradation. Having successfully implemented the approved onsite and offsite remedial plans, Cambria recommends requesting regulatory case closure. In their January 28, 2002 letter, the ACHSCA indicated their office would recommend case closure for the Site upon satisfactory completion of offsite groundwater remediation. Prior reports have indicated that there is no significant risk associated with residual hydrocarbons located offsite and downgradient of the Site.

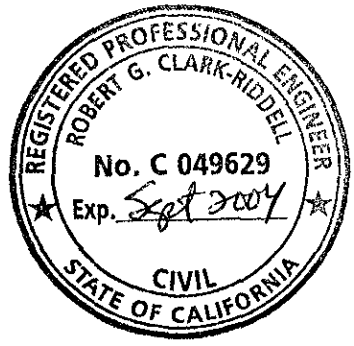
CLOSING

If you have any questions or comments, please contact me at (510) 420-3303.

Sincerely,
Cambria Environmental Technology, Inc.

Bob Clark-Riddell

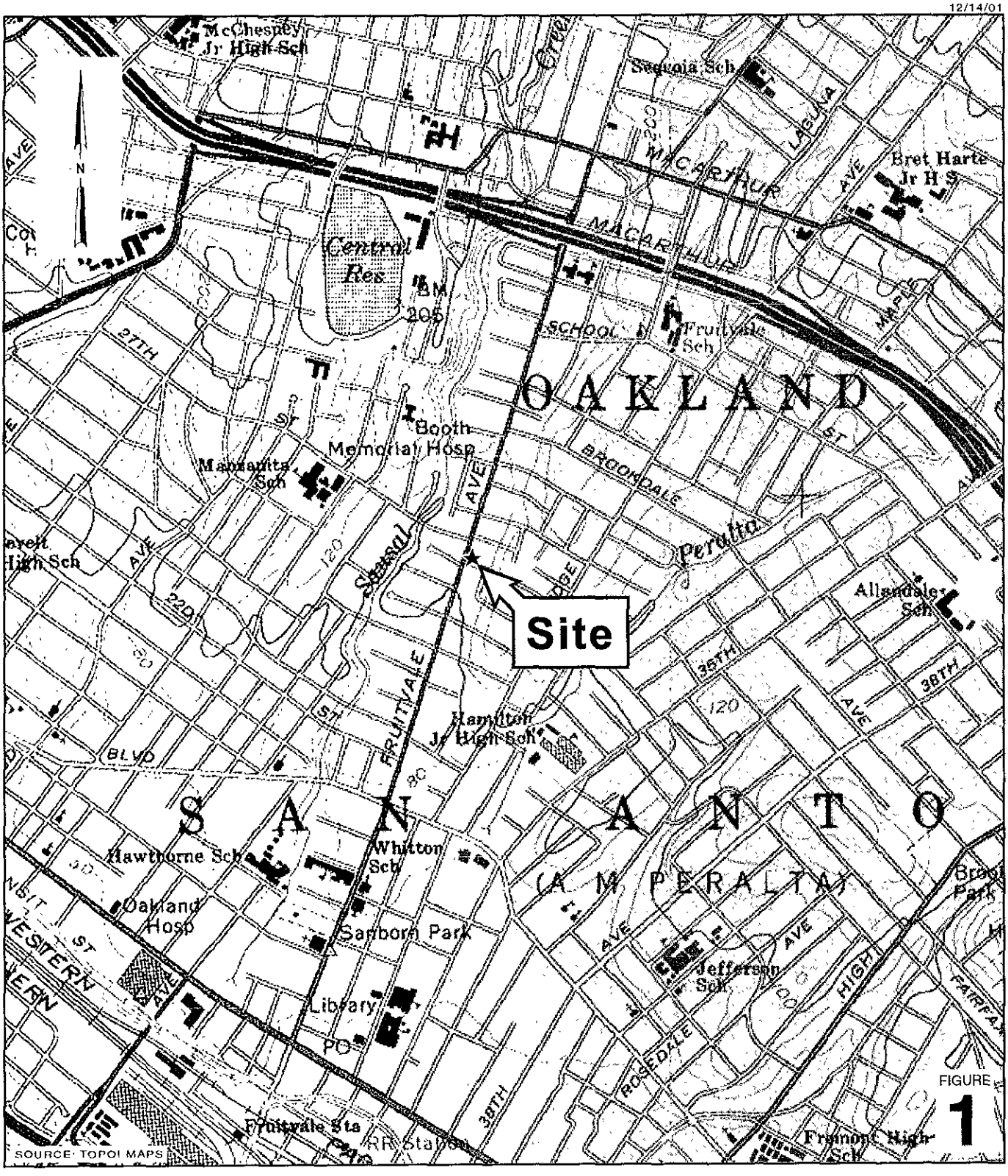
Bob Clark-Riddell, P.E.
Principal Engineer



H:\City of Oakland\2662 Fruitvale\Remediation Implementation\h202 report-final.doc

Attachments: Figure 1 – Vicinity Map
Figure 2 - Site Plan
Table 1 – Hydrogen Peroxide Introduction Parameters
Attachment A – Health and Safety Plan
Attachment B - Field Notes

12/14/01



H:\CITY OF OAKLAND\2662 FRUITVALE\FIGURES\VICINITY-MAP AI

FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

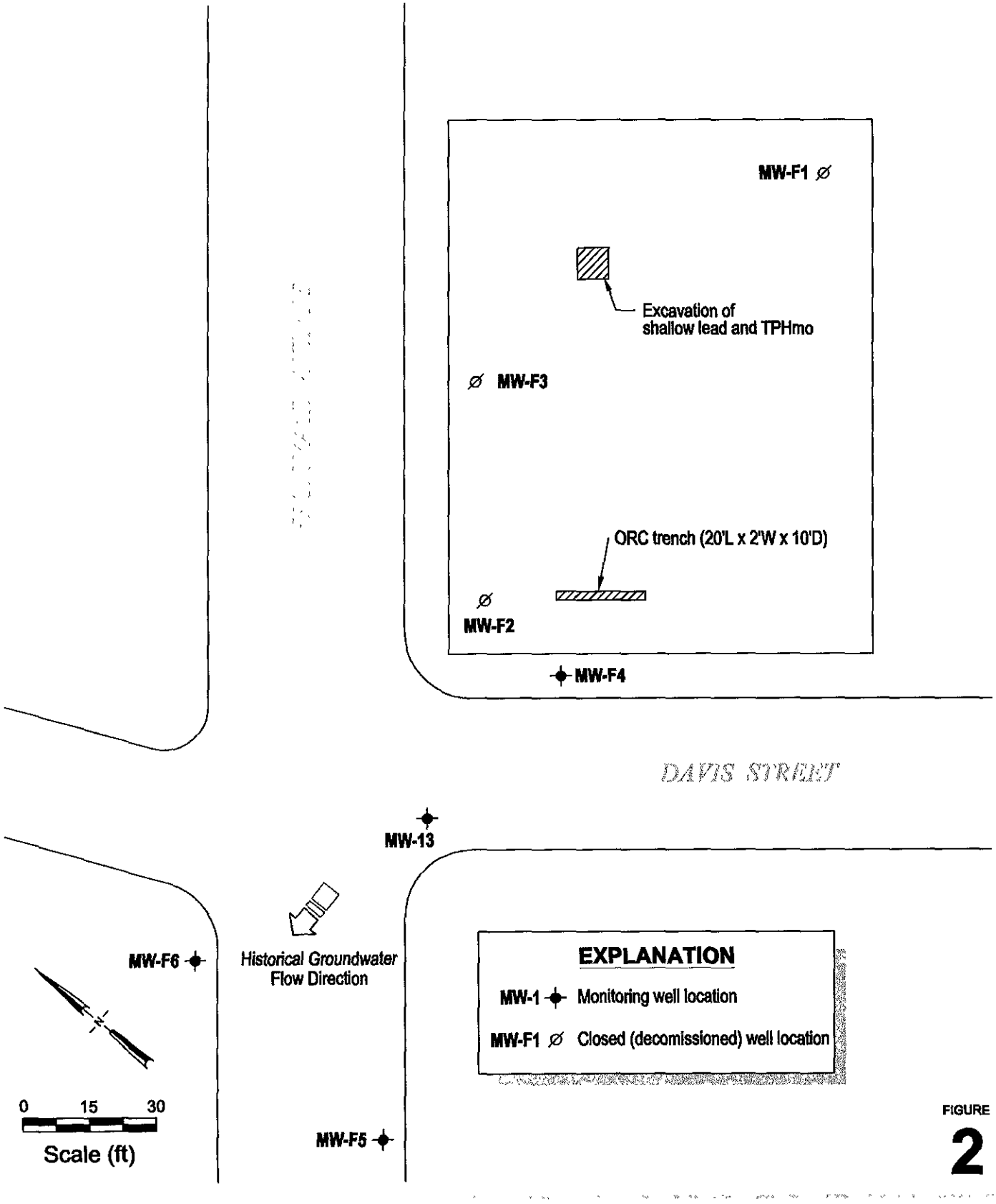
City of Oakland

2662 Fruitvale Avenue

Oakland, California

CAMBRIA

Vicinity Map



H:\CITY OF OAKLAND\2662 FRUITVALE\FIGURES\SITEPLAN.DWG

FIGURE

2

City of Oakland

2662 Fruitvale Avenue

Oakland, California

CAMBRIA

Site Plan

CAMBRIA

Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	3/29/2002	12.30	7.40	--	--	--
MW-F4	5/20/2002	13.00	8.4	--	18.8	4.0
MW-F4	5/20/2002	16:20	--	3 3	19.0	--
	Gallons of H_2O_2 injected this event:			**3.3**		
MW-F4	5/22/2002	9:30	9.6	--	--	17.1
MW-F4	5/23/2002	9:00	9.1	--	21.9	13.6
MW-F4	5/23/2002	9:30	--	3.3	--	--
MW-F4	5/23/2002	11:00	--	--	23.1	--
MW-F4	5/23/2002	12:15	--	--	22.4	--
MW-F4	5/23/2002	13.30	--	--	23.4	--
	Gallons of H_2O_2 injected this event:			**3.3**		
MW-F4	5/28/2002	10.45	12.0	--	20 5	19.1
MW-F4	5/28/2002	11.20	--	2.5	--	--
MW-F4	5/28/2002	12:05	--	--	21.8	--
MW-F4	5/28/2002	12:30	--	--	21.4	--
MW-F4	5/28/2002	13:00	--	--	21.3	--
MW-F4	5/28/2002	13:30	--	--	22.8	--
MW-F4	5/28/2002	14:00	--	--	22.1	--
	Gallons of H_2O_2 injected this event:			**2.5**		
MW-F4	5/30/2002	12:00	12.2	--	23.1	19 8
MW-F4	5/30/2002	13:00	--	3	--	--
MW-F4	5/30/2002	13:10	--	--	24.7	--
MW-F4	5/30/2002	13:30	--	--	24.8	--
MW-F4	5/30/2002	14:00	--	--	24.6	--
MW-F4	5/30/2002	14.30	--	--	24.5	--
MW-F4	5/30/2002	15:00	--	--	24.5	--
MW-F4	5/30/2002	15:30	--	--	24.3	--
MW-F4	5/30/2002	16:00	--	--	24.1	--
	Gallons of H_2O_2 injected this event:			**3**		
MW-F4	6/3/2002	13:30	11 3	--	21.2	15.2
MW-F4	6/3/2002	14:00	--	2 5	--	--
MW-F4	6/3/2002	15:00	--	--	21.2	--
MW-F4	6/3/2002	15:30	--	--	24.2	--
MW-F4	6/3/2002	16:00	--	--	24.4	--
MW-F4	6/3/2002	16:30	--	--	24.4	--
MW-F4	6/3/2002	17:00	--	--	23.4	--
MW-F4	6/3/2002	17:30	--	--	24.3	--
MW-F4	6/3/2002	18:00	--	--	24.1	--
	Gallons of H_2O_2 injected this event:			**2.5**		
MW-F4	6/6/2002	10:30	9 2	--	21 7	12.4
MW-F4	6/6/2002	11:15	--	2 5	--	--
MW-F4	6/6/2002	11:30	--	--	25.3	--
MW-F4	6/6/2002	12:00	--	--	24.4	--
MW-F4	6/6/2002	12:30	--	--	23.7	--
MW-F4	6/6/2002	13:00	--	--	23.5	--
MW-F4	6/6/2002	13.30	--	--	23.6	--
MW-F4	6/6/2002	14:30	--	--	22.8	--
	Gallons of H_2O_2 injected this event:			**2.5**		

Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-F4	6/10/2002	11:30	10.1	--	24.1	15.4
MW-F4	6/10/2002	12.00	--	3	--	--
MW-F4	6/10/2002	12:30	--	--	24.8	--
MW-F4	6/10/2002	13:00	--	--	24.8	--
MW-F4	6/10/2002	13:30	--	--	25 6	--
MW-F4	6/10/2002	14:00	--	--	25.3	--
MW-F4	6/10/2002	15:00	--	--	25.5	--
MW-F4	6/10/2002	15:15	--	--	25.7	--
	Gallons of H_2O_2 injected this event:			**3**		
MW-F4	6/13/2002	10.45	9.3	--	19.4	>19.9
MW-F4	6/13/2002	11:30	--	3	--	--
MW-F4	6/13/2002	12:00	--	--	20 8	--
MW-F4	6/13/2002	12:30	--	--	22 9	--
MW-F4	6/13/2002	13:00	--	--	22.4	--
MW-F4	6/13/2002	13:30	--	--	22.2	--
MW-F4	6/13/2002	14:30	--	--	22.2	--
	Gallons of H_2O_2 injected this event:			**3**		
MW-F4	6/17/2002	9:20	10.9	--	--	>19.9
MW-F4	6/24/2002	12:50	10.05	--	--	>19.9
Total gallons of H_2O_2 injected In to MW-F4:				**23.1**		
MW-13	3/29/2002	12.35	10.30	--	--	--
MW-13	5/20/2002	13:30	10.4	--	19.6	6.7
MW-13	5/20/2002	14:00	--	--	20.3	--
MW-13	5/20/2002	16:20	--	10	19.2	--
	Gallons of H_2O_2 injected this event:			**10**		
MW-13	5/22/2002	9:30	13.4	--	--	15.9
MW-13	5/23/2002	10.00	10.2	--	21.4	4.9
MW-13	5/23/2002	10:30	--	5	--	--
MW-13	5/23/2002	11:00	--	--	23.4	--
MW-13	5/23/2002	12.15	--	1	24.1	--
MW-13	5/23/2002	13:30	--	--	23 9	--
	Gallons of H_2O_2 injected this event:			**6**		
MW-13	5/28/2002	11:30	13.9	--	21.5	11.7
MW-13	5/28/2002	12:00	--	5	22.3	--
MW-13	5/28/2002	12:05	--	1.5	--	--
MW-13	5/28/2002	12:30	--	--	24.1	--
MW-13	5/28/2002	13:00	--	--	22.6	--
MW-13	5/28/2002	13:30	--	--	23.7	--
MW-13	5/28/2002	14:00	--	--	23.3	--
	Gallons of H_2O_2 injected this event:			**6.5**		

Table 1. Hydrogen Peroxide Introduction Parameters - *City of Oakland, 2662 Fruitvale Avenue, Oakland, California*

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	5/30/2002	12.00	15.85	--	21.7	18.9
MW-13	5/30/2002	13:00	--	5	--	--
MW-13	5/30/2002	13:10	--	--	26.9	--
MW-13	5/30/2002	13 30	--	--	25.0	--
MW-13	5/30/2002	13:40	--	0.5	--	--
MW-13	5/30/2002	14:00	--	--	25.5	--
MW-13	5/30/2002	14.05	--	1.5	--	--
MW-13	5/30/2002	14:30	--	--	25.2	--
MW-13	5/30/2002	15:00	--	--	25.1	--
MW-13	5/30/2002	15:30	--	--	25.5	--
MW-13	5/30/2002	16:00	--	--	27.1	--
	Gallons of H_2O_2 injected this event:			7		
MW-13	6/3/2002	13.30	14.7	--	21.4	17.4
MW-13	6/3/2002	14:00	--	3.5	--	--
MW-13	6/3/2002	15:00	--	3	22 3	--
MW-13	6/3/2002	15:30	--	1	22.6	--
MW-13	6/3/2002	16:00	--	--	25.1	--
MW-13	6/3/2002	16:30	--	--	24.1	--
MW-13	6/3/2002	17:00	--	--	25.3	--
MW-13	6/3/2002	17.30	--	--	23.9	--
MW-13	6/3/2002	18:00	--	--	24.7	--
	Gallons of H_2O_2 injected this event:			7.5		
MW-13	6/6/2002	10:30	15.1	--	23 9	18 2
MW-13	6/6/2002	11:15	--	9	--	--
MW-13	6/6/2002	11:30	--	--	26.6	--
MW-13	6/6/2002	11:45	--	1	--	--
MW-13	6/6/2002	12:00	--	--	26 3	--
MW-13	6/6/2002	12:15	--	1	--	--
MW-13	6/6/2002	12:30	--	--	26.5	--
MW-13	6/6/2002	12:45	--	1	--	--
MW-13	6/6/2002	13:00	--	--	27.3	--
MW-13	6/6/2002	13 15	--	0.5	--	--
MW-13	6/6/2002	13:30	--	--	25.3	--
MW-13	6/6/2002	13:50	--	0.5	--	--
MW-13	6/6/2002	14:30	--	--	27 5	--
	Gallons of H_2O_2 injected this event:			**13**		
MW-13	6/10/2002	11:30	10.8	--	23.5	18.9
MW-13	6/10/2002	12.00	--	5	--	--
MW-13	6/10/2002	12.30	--	--	25.4	--
MW-13	6/10/2002	12:45	--	0.5	--	--
MW-13	6/10/2002	13:00	--	--	27.2	--
MW-13	6/10/2002	13:30	--	1	27.7	--
MW-13	6/10/2002	14:00	--	1	28.2	--
MW-13	6/10/2002	15:00	--	--	30.5	--
MW-13	6/10/2002	15.15	--	--	29.4	--
	Gallons of H_2O_2 injected this event:			7.5		

Table 1. Hydrogen Peroxide Introduction Parameters - City of Oakland, 2662 Fruitvale Avenue, Oakland, California

Well Identification	Date	Time	Depth to Water (TOC in ft)	Peroxide Volume Injected (gallons)	Temperature (°C)	Dissolved Oxygen Concentration (mg/L)
MW-13	6/13/2002	10 45	15 95	--	20.9	>19.9
MW-13	6/13/2002	11:30	--	5	--	--
MW-13	6/13/2002	12:00	--	--	21.2	--
MW-13	6/13/2002	12:15	--	1	--	--
MW-13	6/13/2002	12:30	--	--	22 7	--
MW-13	6/13/2002	12 45	--	0.5	--	--
MW-13	6/13/2002	13·00	--	--	22.9	--
MW-13	6/13/2002	13:15	--	0.5	--	--
MW-13	6/13/2002	13:30	--	--	22.8	--
	Gallons of H_2O_2 injected this event:			7		
MW-13	6/13/2002	14:30	--	--	22.0	--
MW-13	6/17/2002	9·40	14 6	--	--	>19.9
MW-13	6/24/2002	12:25	11.07	--	--	10.5
Total gallons of H_2O_2 injected In to MW-13:				**64.5**		

Abbreviations and Methods:

TOC in feet = Depth to water measured from the top of well casing in feet.
°C = degrees Celsius
mg/L = Milligrams per liter
>19.9 = Dissolved oxygen concentration exceeds meter measurement limit of 19.9 mg/L
Peroxide, H_2O_2 = Hydrogen Peroxide

CAMBRIA

ATTACHMENT A

Health and Safety Plan

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Project Title: Fruitvale Avenue H2O2 Injection

Project No.: 192

Client: Cambria

For the City of Oakland

Date: May 15, 2002

This form may be used for those site activities that pose a significant threat of exposure to site contaminants or hazards (e.g., well installation, soil borings, water/soil sampling, excavation/ trenching). The GAIA Consulting, Inc. Health and Safety Director will determine whether or not this form is appropriate for any given activity at the site. It is the responsibility of the Project Manager to complete the Health and Safety Plan (HSP). The Health and Safety Director must sign the HSP. All project personnel must receive a copy of this form, familiarize themselves with its contents, and sign the signature page before work begins.

1. **Site Name and Address**

   2662 Fruitvale Avenue
   Oakland CA 94612

2. **Site Personnel and Assigned Responsibilities**

   Principal-in-Charge: Bob Clark-Riddell (Cambria)

   Project Manager: Mary Holland-Ford (Cambria); June Dougherty (GAIA)

   Site Safety Officer: June Dougherty

   Other Field Personnel: Craig Zeff (GAIA) (510) 682-3003

3. **Site Description and Background (attach site map)**

   Two site wells, MW- F4 and MW-13, are located at the intersection of Fruitvale Avenue and Davis Street. MW-F4 is located on the sidewalk of DAVIS Street and MW-13 is

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

located on the southeast corner of Fruitvale and Davis in the street. (See attached site map).

4. **Planned Site Activities**

- 15 gallons of 7% Hydrogen Peroxide solution will be introduced into each well during each event. Events will occur 2 times per week for 4 weeks. The 7% H2O2 solution will be picked up at Morgan Environmental prior to each event and transported in appropriate containers in the back of the Pick-up truck. If Morgan Environmental determines that H2O2 still requires ventilation at the 7% solution, then be sure to keep product in ventilated containers.

- Water level, water temperature and dissolved oxygen (DO) will be measured as per the work plan and scope during each event. Water level and DO will also be measured two days after the first event and two days after the final event.

5. **Chemical Compounds at the Site (*complete 5a and/or 5b, as appropriate*)**

5a. **Chemical Data Summary**

__X__ Available Chemical Information has been requested from client.

_____ No Known or Suspected Chemical Contamination

Known Compounds	Source (soil/water/drum, etc.)	Known Concentrations Range (ppm, mg/kg, mg/l)	
		Lowest	Highest
Hydrogen Peroxide	**Introduced**		
Organic Hydrocarbons	**Potentially in wells**		

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

5b. **Chemical Data/Information**

Hygrogen Peroxide at 7% solution is not a Hazardous Material, however, it can still cause irritation to the eyes and skin with contact.

The wells may contain free standing product (hydrocarbons). Wells will be tested with a bailer first to determine if any product is present. If affirmative, DO NOT PROCEED WITH H2O2 INTRODUCTION. THE COMBINATION OF H2O2 WITH FREE PRODUCT WILL PRODUCE A DANGEROUS REACTION.

Hydrogen peroxide is reactive and incompatible with many organic compounds, and metals and can cause fires, explosions and excessive heat when high concentrations of H2O2 come in contact with these compounds and elements.

Use H2O2 in a well ventilated area; Keep away from heat sources; Keep away from incompatible products; Prevent all contact with organics; Use only compatible equipment (glass, plastic, stainless steel, or aluminum) and containers; Keep an adequate supply of water on hand for dilution and rinsing in the event of a spill or splash.

If clothing comes in contact with H2O2, rinse thoroughly and submerse in water before drying.

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

6. **Potential Physical, Mechanical, Electrical, and Biological Hazards**

(Check all boxes that potentially apply to the project)

X	Do not stand in traffic lanes. Set up traffic cones around each well before beginning work. Set up at least 30 feet of traffic cones spaced no less than 10 feet apart to detour oncoming traffic from the work area at well MW-13. Place the truck between the oncoming traffic and the well/work area to use the truck as a physical barrier to workers from the traffic. Also, set up traffic cones and warning tape around the MW-F4 work area.
X	Wear protective equipment as described in Item # when handling H2O2.
X	Do not permit any unauthorized personnel (i.e., public pedestrians) to enter the work area.
X	Wear traffic safety vest when at site.
X	Verify that all equipment is in good condition.
☐	Do not stand or walk under elevated loads or ladders.
☐	Do not stand near unguarded excavation and trenches.
☐	Do not enter excavation or trenches over 5 feet deep that are not properly guarded, shored, or sloped.
X	Consult Health and Safety Director if other mechanical hazards exist.
☐	Discuss location of buried utilities with client.
☐	Locate and mark buried utilities, and notify USA (Date: USA Tag No.
☐	Have buried utilities cleared by private utility locating company.
☐	Maintain at least 10-foot clearance from overhead power lines.
☐	Contact utility company for minimum clearance from high voltage power lines. If unavoidably close to buried or overhead power line, have power turned off, with circuit breaker locked and tagged.
☐	Properly ground all electrical equipment.
☐	Avoid standing in water when operating electrical equipment.
☐	If equipment must be connected by splicing wires, make sure all connections are properly taped.
☐	Be familiar with specific operating instructions for each piece of equipment.
☐	Avoid contact with poison oak and poison ivy.
☐	Avoid contact with potentially infectious waste.
☐	Be aware of and avoid contact with potentially rabid animals.
☐	Use appropriate insect repellant to avoid disease carrying or poisonous insects. Avoid breathing dust in dry desert or central valley areas (valley fever, Hanta virus, etc.).

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

7. **Health and Safety Procedures Required by the Facility**

Contact Mr.Joseph Cotton of the City of Oakland and Mr. Bob Clark-Riddell (510-420-3303) of Cambria, via fax, phone or email prior to each event.

Verify from Mr. Cotton whether or not any other City agencies or departments need to be informed of traffic detour procedures during operations.

8. **Special Procedures and Precautions**

☐	**Not Applicable.**
X	**Wear the following PPE when handling 7% Hydrogen Peroxide solution and measuring water parameters:** ***Steel toed PVC boots, hard hat with splash shield, chemical goggles, heavy duty neoprene gloves, heavy duty PVC jacket and pants, latex or neoprene inner gloves. Respirator should not be necessary at these concentrations and provided area is well ventilated.***
X	If H2O2 comes in contact with PPE, o clothing rinse thoroughly for with clean water. Rinse skin for at least 15 minutes.
X	If H2O2 comes in contact with eyes, use portable eye wash station and rinse eye(s) for a minimum of 15 minutes. Contact June Dougherty at 510-774-6972 immediately. Seek medical attention if severe.
X	If water in well increases in temperature after adding hydrogen peroxide by more than 5 degrees F, add water to well until temperature stabilizes and/or decreases.
X	If small spill occur, immediately flush with large amounts of water (minimum of a 3:1 ratio or the equivalent of reducing the H2O2 to less than a 3% solution).
X	For large spills use absorbent pads to clean up spill. Place pads in a container and submerse in water till disposal.
X	Use a plastic, glass, stainless steel, or aluminum funnel to pour H2O2 into wells.

9. **Air Monitoring Procedures**

Note: If applicable, see last page of this HSP for Total Dust Equivalency calculation instructions.

X	**Not Applicable**	Because no chemical contamination or excessive dust is expected, no air monitoring will be performed.
☐	**Volatile organics only**	VOC concentrations in the breathing zone will be monitored using a PID or FID, during intrusive activities, or any time activities or site conditions change.
☐	**Uncontaminated dust only;** Total dust monitoring w/Real	Monitoring will be performed when there is visual dust, using a Real Time Total Dust Meter, to detect if

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

	Time Dust Monitors	total dust levels are above the OSHA PEL for dust of 10 mg/m3.

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

☐	**Contaminated dust only**; Total dust monitoring w/Real Time Dust Monitors	To obtain current information about potential exposure conditions to contaminated airborne dust, Real Time Total Dust Meter(s) will be used to monitor the breathing zone or immediate work area. Calculations have been done to determine the total airborne dust level necessary to reach the Permissible Exposure Level (Cal/OSHA, PEL-TWA) of given it's highest known concentration in soil. The compound with the highest soil concentration, and the lowest PEL is _____. Subsequently, it has the lowest Total Dust Equivalency Level of _____. This is the amount of total dust necessary in the breathing zone to create an inhalation exposure exceeding the PEL of _____. Since, the number is **above/below** the OSHA PEL for simple Nuisance Dust/Particulate (non-toxic) of 10 mg/m3, then the Action Level to upgrade to respiratory protection during site activities will be the more conservative limit, mg/m3. See item #10 for a detailed description of Action Levels, Activities, and corresponding PPE.

☐	**Volatile organics and uncontaminated dust**	VOC concentrations in the breathing zone will be monitored using a PID or FID, during intrusive activities, or any time activities or site conditions change. Monitoring will be performed when there is visual dust, using a Real Time Total Dust Meter, to detect if total dust levels are above the OSHA PEL for dust of 10 mg/m3.

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

☐	**Volatile organics and contaminated dust**	VOC concentrations in the breathing zone will be monitored using a PID or FID, during intrusive activities, or any time activities or site conditions change. To obtain current information about potential exposure conditions to contaminated airborne dust, Real Time Total Dust Meter(s) will be used to monitor the breathing zone or immediate work area. Calculations have been done to determine the total airborne dust level necessary to reach the Permissible Exposure Level (Cal/OSHA, PEL-TWA) of _____ given its highest known concentration in soil. The compound with the highest soil concentration, and the lowest PEL is ___. Subsequently, it has the lowest Total Dust Equivalency Level of_____. This is the amount of total dust necessary in the breathing zone to create an inhalation exposure exceeding the PEL of _____. Since, the number is **above/below** the OSHA PEL for simple Nuisance Dust/Particulate (non-toxic) of 10 mg/m3, then the Action Level to upgrade to respiratory protection during site activities will be the more conservative limit, _____ mg/m3. See item #10 for a detailed description of Action Levels, Activities, and corresponding PPE.
☐	**Methane**	Methane will be monitored using an LEL/O2 meter (Combustible Gas Indicator such as a GasTech) during excavation or confined space activities, to protect against explosion hazards. Methane is an asphyxiant and is not considered to be an inhalation hazard.

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

10. Action Levels

X	**Not Applicable (No air monitoring will be performed) See section 8 for appropriate personal protective equipment to wear/use while handling H2O2.**	

Note: If PID/FID readings in the breathing zone exceed 5 ppm consistently and Level C is required, contact the Project Manager before proceeding.

Volatile Organics		PID/FID	
	Activities/Locations	**Action Level**	**Level of Protection**
☐	Drilling/sampling of soil and groundwater	0 to 5 ppm	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		5 to 50 ppm	Level C: Level D as above plus a half face respirator with organic vapor cartridges, and chemical goggles, and polycoated tyvek.
		50 to 250 ppm	Level C as above EXCEPT with a Full FACE respirator.
		> 250 ppm	Upgrade to Level B or Cease operations until vapors dissipate and readings are below 200 ppm.

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Uncontaminated Dust		Total Dust Meter	
	Activities/Locations	**Action Level**	**Level of Protection**
☐	Drilling/sampling of soil and groundwater	0<10 mg/m3	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		> 10 mg/m3	Level C: Level D as above plus a half face respirator with dust/mist cartridges, chemical goggles, and regular or polycoated tyvek. Or use dust suppression methods.

Contaminated Dust		Total Dust Meter	
	Activities/Locations	**Action Level**	**Level of Protection**
☐	Drilling/sampling of soil and groundwater	0<10 mg/m3 or _____ mg/m3 level calculated in Item #9	Level D with steel toed boots, safety glasses, hard hat, and latex inner gloves and nitrile or neoprene outer gloves. Regular or polycoated Tyvek is optional.
		>10 mg/m3 or _____ mg/m3 level calculated in Item #9	Level C: Level D as above plus a half face respirator with dust/mist cartridges, chemical goggles, and regular or polycoated tyvek. Or use dust suppression methods.

Other			
	Activities/Locations	**Action Level**	**Level of Protection**
☐	Drilling/sampling of soil and groundwater		

11. Decontamination

☐ **Not Applicable.**

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

☐	**General:** A designated decontamination area will be setup within the Contamination Reduction Zone prior to the commencement of work. The designated area will accommodate both personnel and vehicles that have been in the Exclusion Zone and then pass through the Contamination Reduction Zone to enter the Support zone.
X	**Specific:** Rinse PPE after handling H2O2 if any splashing occurred. Wash and rinse hands and face.

12. Sample Handling and Investigation – Derived Waste Management

☐	Chemical contamination not suspected. If contamination is encountered, contact the project manager regarding special sample handling or waste management requirements.
☐	Sample contamination known or suspected. Wear gloves when handling samples.
☐	Place soil cuttings and equipment rinsate wastewater in labeled 55 gallon drums or other appropriate containers.

13. Emergency Contacts (names and telephone numbers)

Police:	911
Fire:	911
Ambulance:	911
Hospital: Alameda County Medical Center	510-437-4701
Facility Health and Safety Officer (if applicable):	
GAIA Health and Safety Director:	510-774-6972, June Dougherty (GAIA)
Mary Holland-Ford (Cambria) Project Manager	510-450-1982

TO THE SUBCONTRACTOR: ***This plan has been prepared solely for the use of GAIA Consulting, Inc.personnel. It is supplied to you for informational purposes only. You are responsible for your own health and safety program.***

16. Checklist

This HSP contains the following attachments. If they are not present with this document, it is incomplete.

X Site Map (see Item 3)

X Hospital Route Map (see Item 14)

17. Signatures

Note: For sites with known or suspected chemical contamination, the HSP must be reviewed and approved by the Health and Safety Director or her designee.

5-19-02

GAIA Consulting, Inc. Health and Safety Director — Date

2662 Fruitvale Avenue
Oakland, California

Source: Base Map - Modified from Groundwater Technology, Inc., 1993, Site Plan Map.

YAHOO! Yellow Pages

Welcome, Guest User

Yahoo! Yellow Pages

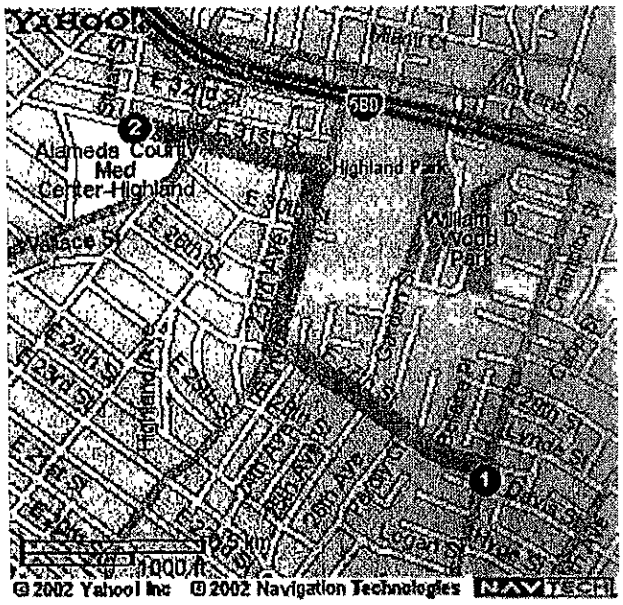
Starting from: 2662 Fruitvale Ave, Oakland, CA 94601-2033

Arriving at: ★Alameda County Medical Ctr
1411 E 31st St, Oakland, CA 94602

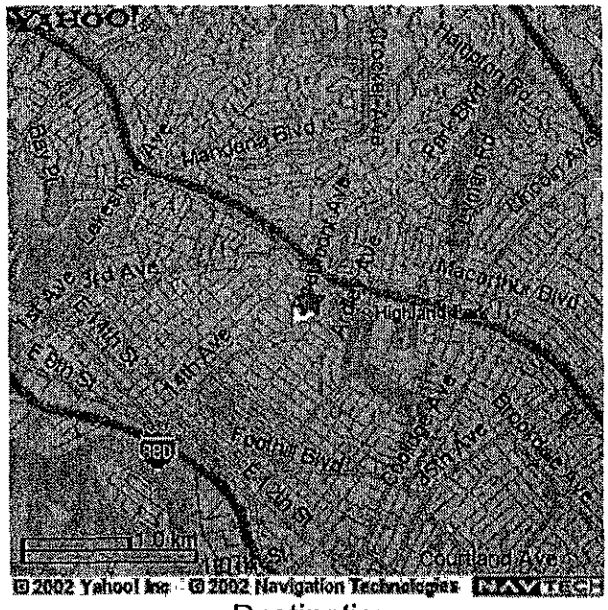
(510) 437-4701

Distance: 1.1 miles **Approximate Travel Time:** 3 mins

- Email Directions
- Get Reverse Directions
- Text Only Driving Directions



Full Route



Destination

	Directions	Miles
1.	Start on **FRUITVALE AVE** going towards **E 27TH ST**	0.0
2.	Turn Left on **E 27TH ST**	0.4
3.	Turn Right on **23RD AVE**	0.3
4.	Turn Left on **E 31ST ST**	0.3
5.	Arrive at destination	

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Driving Directions

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. Written Directions to Nearest Hospital (attach route map)

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.

Name (Print)	Name (Signature)	Date
Craig Zeff	5/20/02	
Craig Zeff		5/22/02
Craig Zeff		5/23/02
Craig Zeff		5/24/02
Craig Zeff		5/30/02
Craig Zeff		6/3/02
Craig Zeff		6/6/02
Craig Zeff		6/10/02
Craig Zeff		6/12/02
Craig Zeff		6/17/02

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. **Written Directions to Nearest Hospital (attach route map)**

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. **By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.**

Name (Print)	Name (Signature)	Date
Matt Meyers		6/24/2002

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. **Written Directions to Nearest Hospital (attach route map)**

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. **By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.**

Name (Print)	Name (Signature)	Date
Ian Young (Cambria)		5/23/02

GAIA Consulting, Inc.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

14. **Written Directions to Nearest Hospital (attach route map)**

Take Fruitvale to East 27th street. Turn left on 27th, right on 23rd, left on 31st street. See attached map and directions.

15. **By my signature below, I hereby indicate that I have read and understand this HSP and I agree to follow the guidelines therein.**

Name (Print)	Name (Signature)	Date
Ian Young (Cambria)		5/20/02

Job Safety Analysis

Hydrogen Peroxide Injection

JSA Type: ☒ SAR Operations ☐ Transport ☐ Office ☐ Construction	☒ New ☐ Revised	Date: 02/20/02
Co: Dept: Div: Org Unit: Loc:		
Work Type: Environmental	Work Activity: GWE and/or SVE Pilot Testing	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: safety goggles, rubber or vinyl rainsuit, hard hat with face shield, rubber steel-toed and shank boots, hearing protection, and rubber or nitrile gloves

Additional PPE may be required in the Health & Safety Plan (HSP). Also refer to the HSP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date
Berry, Thomas R.	Operations Manager	N. Scott MacLeod	Principal Geologist	
Barbara Jakub	Project Geologist			
Brian Busch	Project Scientist			

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each workday. Self Performance Safety Analysis (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, and lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Order H_2O_2 delivered to site if concentration is above 7.5 % or volume is greater than 1000 lbs.	Accident during transportation could cause H_2O_2 release.	Follow DOT regulations for H_2O_2 transport.
Review hydrogen peroxide hazards	Reacts with anything organic, Incompatible with iron, steel, brass, bases, acids, lime ammonia. Can cause personal burns, ignition of combustible organic material, and/or pressure bursts caused by contamination or lack of ventilation.	Ensure that no organic or incompatible chemicals are anywhere near H_2O_2. Ensure that no H_2O_2 gets onto skin or in eyes by wearing appropriate PPE. Do not drop anything in drums containing H_2O_2.
Pick up H_2O_2 and transport to site.	Accident during transportation could cause H_2O_2 release. H_2O_2 can cause personal burns, ignition of combustible material, pressure bursts caused by contamination or lack of ventilation.	Follow DOT regulations for H_2O_2 transport. Ensure that the proper emergency response equipment is in your truck in case of spill. Ensure that the proper MSDS are in your truck. Ensure that containers are properly labeled, ventilated, and in proper shipping containers.
Mobilize with proper equipment/ safety supplies for testing.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	Follow safe driving procedures. Employ safe lifting procedures. Make sure sub-contractors are aware of their responsibilities for labor, equipment and supplies. Review HSP and permit conditions and gather necessary PPE.
Inspect injection wells for separate phase hydrocarbons (SPH)	SPH and H_2O_2 can react and cause an explosion.	Do not inject H_2O_2 in a well that contains SPH.
H_2O_2 injection		
Set up necessary traffic control.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control. Reference traffic control plan section of HSP (may include specific requirements based on permits).
Unload H_2O_2 drum and set up equipment.	Struck by vehicle. Trip hazards. Accident when maneuvering equipment. Lifting hazard. Adverse impacts to station sales. Contamination of equipment may cause ignition of material.	Place equipment away from pump islands or other high traffic areas. Protect drums with traffic control equipment (cones, barricades, etc). Provide as-needed hand signals and guidance to driver when placing dropping off large quantities of H_2O_2. Visually inspect equipment (fire extinguisher on board/available on site, no damaged hoses, all hoses and connections firmly connected?). Use proper lifting

		techniques. Use dedicated equipment
Set up exclusion zone(s) including eyewash, safety shower and decon station, and workstation.	Struck by vehicle during set up. Slip/fall hazards, lifting hazard.	Implement exclusion zone set-up instructions of HSP. Set up workstation with clear walking paths to all testing locations. Face oncoming traffic.
Bring H_2O_2 drum to injection wells		
Gauge water levels and product thickness (where applicable).	Back strain. Inhalation or dermal exposure to chemical hazards. Repetitive motion. Traffic hazards.	Don necessary PPE and initiate air quality monitoring in accordance with the HSP. Maintain safe distance from well heads. Bend at knees, not waist. Decontaminate equipment between each measurement. Face oncoming traffic.
Commence testing.	Explosion or fire. Trip hazards. Unauthorized release of contaminants. Exposure to contaminants (inhalation, dermal contact). Noise. Electrical hazards.	Follow equipment-specific operation instructions. Monitor influent vapor and oxygen concentrations if applicable. Keep work area tidy and free of loose equipment. Monitor treatment system and collect data to ensure discharge is within permit parameters and capacity of any storage containers (concentrations and flow rates). Wear PPE in accordance with HSP (including ear protection as necessary). Use GFIC and inspect cords.
H_2O_2 injection	Burns to skin and eyes. Accelerating reaction with leather/metal can lead to explosion or fire. Unvented containers can build pressure and explode. Oxygen-enriched atmosphere.	Wear rubber gloves, boots, coveralls, rain suit, and hard hat with eye shield (no leather!) in accordance with HSP. Use dilute concentration ($\leq$8% when possible). Store and transport H_2O_2 in approved and labeled containers in accordance with DOT regulations. Refer to H_2O_2-specific safety procedures for all work with H_2O_2. Do not use H_20_2 unless you know and understand the hazards and safety procedures.
Collect samples in accordance with sampling plan.	Cross-contamination. Improper sample labeling or storage. Exposure to contaminants. Repetitive motion. Body position	Label samples in accordance with sampling plan. Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store waste (water, carbon canisters, etc.) in accordance with site-specific requirements.	Back strain. Traffic hazard. Improper storage or disposal. If disposing through onsite treatment system, damage or injury from improper use of equipment	Use proper equipment to transport waste containers (pumps, drum dollies, etc.). Have proper storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions. Label waste. Coordinate proper disposal offsite (where applicable). Review instructions for use of onsite treatment systems.
Clean site/demobilize	Traffic hazard. Lifting hazards. Safety hazards left on site. Leaving H2O2 on surfaces to react.	Use buddy system as necessary to remove traffic control. Use proper lifting techniques. Leave site clean of refuse and debris. Notify station personnel of departure and location of any stored waste. Ensure that no H_2O_2 is has been spilled and not rinsed down with water. Rinse down any spills with copious amounts of water.
Package and deliver samples to lab.	Bottle breakage, back strain.	Handle and pack bottles carefully (bubble wrap bags are helpful). Use proper lifting techniques.

F:\Safety\LPS Forms\JSA-H2O2Draft.doc

AUTOTYPE INTERNATIONAL LTD -- HYDROGEN PEROXIDE SOLUTION
MATERIAL SAFETY DATA SHEET
NSN: 681000N052088
Manufacturer's CAGE: AUTTY
Part No. Indicator: A
Part Number/Trade Name: HYDROGEN PEROXIDE SOLUTION

General Information

Company's Name: AUTOTYPE INTERNATIONAL LTD
Company's Street: GROVE RD
Company's City: WANTAGE, OXON, ENGLAND
Company's Zip Code: OX12 7BZ
Company's Emerg Ph #: 800-424-9300
Company's Info Ph #: 708-303-5900
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 01MAY91
Safety Data Review Date: 09AUG94
MSDS Serial Number: BVLQP
Hazard Characteristic Code: NK

Ingredients/Identity Information

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID (WATER).
Boiling Point: 212F,100C
Melting Point: N/A
Vapor Pressure (MM Hg/70 F): AS WATER
Vapor Density (Air=1): AS WATER
Specific Gravity: 1.0 (H*2O=1)
Solubility In Water: COMPLETE

Fire and Explosion Hazard Data

Flash Point: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).
Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIAL WILL ASSIST COMBUSTION.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT.
Materials To Avoid: REDUCING AGENTS, ORGANICS.

Health Hazard Data

Precautions for Safe Handling and Use

Control Measures

Transportation Data

Disposal Data

==========

Label Data

==========

Label Required: YES
Technical Review Date: 09AUG94
Label Date: 05AUG94
Label Status: G
Common Name: HYDROGEN PEROXIDE SOLUTION
Chronic Hazard: NO
Signal Word: WARNING!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE: EYES: IRRITATING. SKIN: BURNS/
IRRITATION. INGESTION: HARMFUL; STOMACH DISTENSION, NAUSEA, VOMITING,
BLEEDING. CHRONIC: NONE LISTED BY MANUFACTURER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AUTOTYPE INTERNATIONAL LTD
Label Street: GROVE RD
Label City: WANTAGE, OXON, ENGLAND
Label Zip Code: OX12 7BZ
Label Emergency Number: 800-424-9300

BELL FUELS -- LEAD-FREE GASOLINE; NO-LEAD GASOLINE - GASOLINE,UNLEADED
MATERIAL SAFETY DATA SHEET
NSN: 9130012084172
Manufacturer's CAGE: 8P539
Part No. Indicator: A
Part Number/Trade Name: LEAD-FREE GASOLINE; NO-LEAD GASOLINE

General Information

Item Name: GASOLINE,UNLEADED
Company's Name: BELL FUELS, INC
Company's Street: 4116 WEST PATERSON AVE
Company's City: CHICAGO
Company's State: IL
Company's Country: US
Company's Zip Code: 60646
Company's Emerg Ph #: 312-286-0200
Company's Info Ph #: 312-286-0200
Record No. For Safety Entry: 060
Tot Safety Entries This Stk#: 064
Status: SP
Date MSDS Prepared: 23FEB90
Safety Data Review Date: 21OCT94
Supply Item Manager: KY
MSDS Serial Number: BVHJT
Specification Number: VV-G-1690
Spec Type, Grade, Class: CIVGAS
Hazard Characteristic Code: F2
Unit Of Issue: DR
Unit Of Issue Container Qty: 55 GALLONS
Type Of Container: DRUM, 18 GAGE
Net Unit Weight: 325.2 LBS

Ingredients/Identity Information

Proprietary: NO
Ingredient: HYDROCARBONS, AROMATIC
Ingredient Sequence Number: 01
Percent: 15-35
NIOSH (RTECS) Number: 1008732HA
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: SATURATED HYDROCARBONS
Ingredient Sequence Number: 02
Percent: 60-75
NIOSH (RTECS) Number: 1006886SH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: UNSATURATED HYDROCARBONS
Ingredient Sequence Number: 03
Percent: 1-15
NIOSH (RTECS) Number: 1006887UH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: DYE AND OTHER ADDITIVES
Ingredient Sequence Number: 04
Percent: 0.02
NIOSH (RTECS) Number: 1003746AD

OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: BLUE OR CLEAR, TYPICAL HYDROCARBON ODOR.
Boiling Point: 90.0F,32.2C
Vapor Pressure (MM Hg/70 F): 414 @100C
Vapor Density (Air=1): 3-4
Specific Gravity: 0.71-0.77
Solubility In Water: NEGLIGIBLE.

Fire and Explosion Hazard Data

Flash Point: -50F,-46C
Flash Point Method: TCC
Lower Explosive Limit: 1.3
Upper Explosive Limit: 6
Extinguishing Media: ANY UL APPROVED CLASS B MEDIA SUCH AS FOAM, CARBON DIOXIDE, DRY CHEMICAL.
Special Fire Fighting Proc: NONE SPECIFIED BY MFG; HOWEVER USE APPROPRIATE PROTECTIVE EQPMT INCLUDING SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MFG; HOWEVER MATL IS HEAVIER THAN AIR AND WILL TRAVEL LONG DISTANCES & FLASHBACK. EXPLOSIVE MIXTURE FORMS W/GASOLINE & AIR.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MFG; HOWEVER AVOID OPEN FLAMES/HEAT/SPARKS/OTHER IGNITION SOURCES.
Materials To Avoid: OXIDIZERS.
Hazardous Decomp Products: NONE SPECIFIED BY MFG.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE:EYE:IRRIT @ HIGH VAP LEVELS OR DIRECT CONTACT W/FLUID. SKIN:IRRIT ON PROLONG CONTACT W/LIQ, DERM RESULTING FROM DEFATTING NATURE OF LIQ. SYSTEMATIC:CNS EFFECTS (NARCOSIS) @ HIGH VAP LEVELS; MUC MEMBRANE IRRIT, PNEUMONIA. INGEST:GASTROINTESTINAL DISTRUBANCES. CHRONIC:PERIPERAL NERVOUS SY EFFECTS, BLOOD ALTERATIONS
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: PER MSDS:NONE STATED; HOWEVER CONTAINS GASOLINE WHICH IS CONSIDERED BY IARC TO BE POTENTIAL CARCINOGEN.
Signs/Symptoms Of Overexp: EYE & SKIN IRRITATION. DERMATITIS. NARCOSIS. GI DISTURBANCES:NAUSEA, DIARRHEA, STOMACH PAINS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MFG.
THOROUGHLY WASH AREA W/SOAP & WATER. INHAL:REMOVE FROM CONTAMINATED AREA. ADMINISTER ARTIFICIAL RESP IF NECESSARY. CALL PHYSICIAN. INGEST:GIVE A VEGETABLE OIL TO RETARD ABSORPTION. DO NOT INDUCE VOMITING. CALL PHYSICIAN. FATAL DOSE ADULT HUMAN APPROX 350G, CHILD APPROX 10-13G.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: KEEP PUBLIC AWAY. SHUT OFF SOURCE W/O RISK. ADVISE POLICE & NAT RESP CENTER 800-424-8802 IF SUBSTANCE HAS ENTERED A WATER COURSE OR SEWER. CONTAIN LIQ W/EARTH, SAND. RECOVER FREE LIQ BY PPUMPING OR W/SUITABLE ABSORBENT.

Neutralizing Agent: NONE SPECIFIED BY MFG.
Waste Disposal Method: UNDER MANY SPILL SITUATIONS LIQ CAN BE RECOVERED & RECLAIMED. WHERE SOLID ABSORBENTS ARE USED THEY SHOULD BE INCINERATED PER APPLICABLE STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: USE APPROPRIATE GROUNDING-DISPENSING PROCEDURES. STORE IN RELATIVELY COOL PLACE. DO NOT EXPOSE TO HEAT, OPEN FLAME OR OXIDANTS.
Other Precautions: NONE SPECIFIED BY MFG.

Control Measures

Respiratory Protection: FOR EXPOSURES IN EXCESS OF EXPOSURE LIMITS CHEMICAL CARTRIDGE RESPIRATOR OR AIR SUPPLIED EQUIPMENT.
Ventilation: LOCAL EXHAUST REQUIRED & EXPLOSION PROOF EQUIPMENT.
Protective Gloves: IMPERMEABLE GLOVES.
Eye Protection: NONE SPECIFIED HOWEVER SAF GLASSES/GOGG
Other Protective Equipment: NONE SPEICFIED BY MFG.
Work Hygienic Practices: WASH HANDS AFTER HANDLING & PRIOR TO EAT/DRINK/ SMOKE/USE OF TOILET FACILITIES. FOLLOW GOOD WORK HYGIENE PRACTICES.

Transportation Data

Trans Data Review Date: 94294
DOT PSN Code: GTN
DOT Proper Shipping Name: GASOLINE
DOT Class: 3
DOT ID Number: UN1203
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: HRV
IMO Proper Shipping Name: GASOLINE
IMO Regulations Page Number: 3141
IMO UN Number: 1203
IMO UN Class: 3.1
IMO Subsidiary Risk Label: -
IATA PSN Code: MUC
IATA UN ID Number: 1203
IATA Proper Shipping Name: GASOLINE
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MUC
AFI Prop. Shipping Name: GASOLINE
AFI Class: 3
AFI ID Number: UN1203
AFI Pack Group: II
AFI Basic Pac Ref: 7-7

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 21OCT94
Label Status: F
Common Name: LEAD-FREE GASOLINE; NO-LEAD GASOLINE
Signal Word: DANGER!
Acute Health Hazard-Moderate: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE:EYE:IRRIT @ HIGH VAP LEVELS OR DIRECT CONTACT W/FLUID. SKIN:IRRIT ON PROLONG CONTACT W/LIQ, DERM RESULTING FROM DEFATTING NATURE OF LIQ. SYSTEMATIC:CNS EFFECTS (NARCOSIS) @ HIGH VAP LEVELS; MUC MEMBRANE IRRIT, PNEUMONIA. INGEST:GASTROINTESTINAL DISTRUBANCES. CHRONIC:PERIPERAL NERVOUS SYS EFFECTS, BLOOD ALTERATIONS. 1STAID:EYE:FLUSH FOR @ LEAST 15MINS W/WATER. SKIN:THOROUGHLY WASH AREA W/

SOAP & WATER. INHAL:REMOVE FROM CONTAMINATED AREA. ADMINISTER ARTIFICIAL RESP IF NECESSARY. CALL PHYSICIAN. INGEST:GIVE A VEGETABLE OIL TO RETARD ABSORPTION. DO NOT INDUCE VOMITING. CALL PHYSICIAN. FATAL DOSE ADULT HUMAN APPROX 350G, CHILD APPROX 10-13G.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: BELL FUELS, INC
Label Street: 4116 WEST PATERSON AVE
Label City: CHICAGO
Label State: IL
Label Zip Code: 60646
Label Country: US
Label Emergency Number: 312-286-0200

POLYSCIENCE -- BENZENE, PRODUCT #: 251C-1 - BENZENE, ACS.
MATERIAL SAFETY DATA SHEET
NSN: 6810002815266
Manufacturer's CAGE: 58378
Part No. Indicator: A
Part Number/Trade Name: BENZENE, PRODUCT #: 251C-1

General Information

Item Name: BENZENE, ACS.
Company's Name: POLYSCIENCE
Company's Street: 7800 MERRIMAC AVE
Company's City: NILES
Company's State: IL
Company's Country: US
Company's Zip Code: 60648
Record No. For Safety Entry: 003
Tot Safety Entries This Stk#: 006
Status: SE
Date MSDS Prepared: 01MAR92
Safety Data Review Date: 05AUG94
Supply Item Manager: CX
MSDS Serial Number: BTSWC
Specification Number: O-C-265C (RED SPEC)
Hazard Characteristic Code: F3
Unit Of Issue: CN
Unit Of Issue Container Qty: 20 LITERS
Type Of Container: METAL/PLASTIC
Net Unit Weight: 36.4 LBS

Ingredients/Identity Information

Proprietary: NO
Ingredient: BENZENE (SARA III)
Ingredient Sequence Number: 01
Percent: 100
NIOSH (RTECS) Number: CY1400000
CAS Number: 71-43-2
OSHA PEL: SEE 1910.1028
ACGIH TLV: 10 PPM; A2; 9394
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS LIQUID.
Boiling Point: 176F,80C
Vapor Pressure (MM Hg/70 F): 7403 @20C
Vapor Density (Air=1): 2.77
Specific Gravity: 0.874
Autoignition Temperature: 928F

Fire and Explosion Hazard Data

Flash Point: 12F,-11C
Lower Explosive Limit: 1.3
Upper Explosive Limit: 7.1
Extinguishing Media: CARBON DIOXIDE, DRY CHEM POWDER OR APPROPRIATE FOAM. WATER MAY BE EFFECTIVE FOR COOLING BUT MAY NOT EFFECT EXTINGUISHMENT
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT W/SKIN & EYES. USE WATER SPRAY TO COOL FIRE-EXPOSED CONTAINERS.
Unusual Fire And Expl Hazrds: EXTREMELY FLAMMABLE. VAPOR MAY TRAVEL CONSIDERABLE DISTANCE TO SOURCE OF IGNITION AND FLASHBACK. CONTAINER EXPLOSION MAY OCCUR UNDER FIRE CONDITIONS.

Reactivity Data

Cond To Avoid (Stability): HIGHT TEMPERATURES. SOURCES OF IGNITION.
Materials To Avoid: OXIDIZING AGENTS.
Hazardous Decomp Products: TOXIC FUMES OF CARBON MONOXIDE AND CARBON DIOXIDE.

Health Hazard Data

LD50-LC50 Mixture: LD50 (ORAL,RAT)=930 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE:HARMFUL IF SWALLOWED,INHALED,ABSORBED THRU SKIN.IRRIT TO MUC MEM & UPPER RESP TRACT.CAUSES SKIN & SEVERE EYE IRRIT.CHRONIC:CARCINOGEN.MAY ALTER GENETIC MATERIAL.BLOOD EFFECTS.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: YES
Explanation Carcinogenicity: CONTAINS Benzene [71-43-2] WHICH IS LISTED BY NTP AND IARC AND REGULATED BY OSHA AS A CARCINOGEN.
Signs/Symptoms Of Overexp: NAUSEA,DIZZ,HEAD,NARCOTIC EFFECT.CANCER. EXHILARATION,NERVOUS EXCITATION &/OR GIDD,DEPRESS,DROWSINESS,FATIGUE. TIGHTNESS IN CHEST,BREATHLESSNESS,LOSS OF CONSC,TREMORS,CONVULS,DEATH DUE TO RESP PARA OR CIRCULATORY COLLAPSE.DRYING,SCALING DERM,2NSD SKIN INFECTIONS.BLEEDING FROM NOSE/GUMS/MUC MEM,SMALL BLISTERS,LEUKOPENIA.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: IMMED FLUSH EYES OR SKIN W/COPIOUS AMTS OF WATER FOR @ LEAST 15MINS WHILE REMOVING CONTAMINATED CLOTHING/SHOES. IF INHALED, REMOVE TO FRESH AIR. IF NOT BREAHTING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT GIVE OXYGEN. IF SWALLOWED WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA.SHUT OFF ALL IGNITION SOURCES. WEAR SCBA,RUBBER BOOTS & HEAVY RUBBER GLOVES.COVER W/ACTIVATED CARBON ADSORBENT.TAKE UP & PLACE IN CLOSED CONTAINERS.TRANSPORT OUTDOOORS. VENITLATE AREA & WASH SITE AFTER MATL PICKUP IS COMPLETE.
Neutralizing Agent: NOT RELEVANT.
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER BUT EXERT EXTRA CARE IN IGNITING AS THIS MATERIAL IS HIGHLY FLAMMABLE. OBSERVE ALL LOCAL, STATE AND FEDERAL LAWS.
Precautions-Handling/Storing: WEAR APPROPRIATE NIOSH/MSHA APPROVED RESP, CHEM-RESIST GLOVES,SAFTY GOGGLES,OTHER PROTECTIVE CLOTH.USE ONLY IN CHEMICAL FUME HOOD.USE NONSPARKING TOOLS
Other Precautions: DON'T BREATHE VAPOR.DON'T GET IN EYES,ON SKIN,ON CLOTHING.AVOID PROLONG/REPEAT EXPOSURE.KEEP TIGHTLY CLOSED.KEEP AWAY FROM HEAT,SPARKS,OPEN FLAME.STORE IN COOL DRY PLACE.IF FEEL UNWELL SEEK MED ADVICE(SHOW LABEL WHERE POSSIBLE).

Control Measures

Respiratory Protection: WEAR APPROPRIATE NIOSH/MSHA-APPROVED RESPIRATOR.
Ventilation: CHEMICAL FUME HOOD WHICH IS EXPLOSION PROOF.
Protective Gloves: CHEMICAL RESISTANT GLOVES.
Eye Protection: SAFETY GOGGLES.
Other Protective Equipment: PROTECTIVE SUITABLE CLOTHING TO MINIMIZE SKIN CONTACT. SAFETY SHOWER & EYE BATH.
Work Hygienic Practices: WASH CONTAMINATED CLOTHING PROMPTLY.WASH THOROUGHLY AFTER HANDLING.

Transportation Data

Trans Data Review Date: 94217

DOT PSN Code: BRS
DOT Proper Shipping Name: BENZENE
DOT Class: 3
DOT ID Number: UN1114
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID
IMO PSN Code: BXB
IMO Proper Shipping Name: BENZENE
IMO Regulations Page Number: 3185
IMO UN Number: 1114
IMO UN Class: 3.2
IMO Subsidiary Risk Label: -
IATA PSN Code: DBA
IATA UN ID Number: 1114
IATA Proper Shipping Name: BENZENE
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: DBA
AFI Symbols: 0
AFI Prop. Shipping Name: BENZENE
AFI Class: 3
AFI ID Number: UN1114
AFI Pack Group: II
AFI Basic Pac Ref: 7-7
N.O.S. Shipping Name: BENZENE.
Additional Trans Data: PER CTDF SHIPPING NAME:BENZENE, UNIT CAN CONTAINS 20 LITERS. FOR PALLETIZATION REQMTS:METAL OR PLASTIC 5 GALLON CONTAINER.

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 05AUG94
Label Status: F
Common Name: BENZENE, PRODUCT #: 251C-1
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Moderate: X
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Special Hazard Precautions: HARMFUL IF SWALLOWED,INHALED,ABSORBED THRU SKIN.IRRIT TO MUC MEM & UPPER RESP TRACT.CAUSES SKIN & SEVERE EYE IRRIT. CHRONIC:CARCINOGEN.MAY ALTER GENETIC MATERIAL (MUTAGEN).BLOOD EFFECTS. TARGET ORGANS:BLOOD/BLOOD MARROW/CNS. FIRST AID:IMMED FLUSH EYES OR SKIN W/ COPIOUS AMTS OF WATER FOR @ LEAST 15MINS WHILE REMOVING CONTAMINATED CLOTHING/SHOES. IF INHALED, REMOVE TO FRESH AIR. IF NOT BREAHTING GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT GIVE OXYGEN. IF SWALLOWED WASH OUT MOUTH W/WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: POLYSCIENCE
Label Street: 7800 MERRIMAC AVE
Label City: NILES
Label State: IL
Label Zip Code: 60648
Label Country: US

MOTOR OIL HELLAS CORINTH REFINERIES SA -- DIESEL FUEL, ARTIC (DFA) - DIESEL FUEL
MATERIAL SAFETY DATA SHEET
NSN: 9140002865282
Manufacturer's CAGE: G0262
Part No. Indicator: A
Part Number/Trade Name: DIESEL FUEL, ARTIC (DFA)

General Information

Item Name: DIESEL FUEL
Company's Name: MOTOR OIL/HELLAS/CORINTH REFINERIES SA
Company's Street: 2 CAR SERVIAS
Company's City: ATENS GREECE
Company's Country: GR
Company's Zip Code: GREECE
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 004
Status: SMU
Date MSDS Prepared: 24JAN92
Safety Data Review Date: 24JUN92
Supply Item Manager: KY
MSDS Serial Number: BMZSY
Specification Number: VV-F-800
Spec Type, Grade, Class: DF-A-GRADE
Hazard Characteristic Code: F4

Ingredients/Identity Information

Proprietary: NO
Ingredient: PETROLEUM HYDROCARBONS (PREDOMINANTLY IN THE RANGE C15 TO C30)
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: 1000099PH
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 5 MG/M3 AS OIL MIST

Proprietary: NO
Ingredient: ADDITIVES AND OTHER INGREDIENTS(MAY INCLUDE ANTIOXIDANTS, CETANE IMPROVERS, CORROSION INHIBITOR OR FUEL ICING INHIBITOR)
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 1003746AD
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: PALE YELLOW/STRAW COLORED LIQUID, KEROSENE/DIESEL ODOR
Boiling Point: 150 - 300C
Melting Point: -60F,-51C
Vapor Pressure (MM Hg/70 F): NIL
Vapor Density (Air=1): NOT GIVEN
Specific Gravity: 0.78 -0.80
Decomposition Temperature: UNKNOWN
Evaporation Rate And Ref: NOT GIVEN
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: SLIGHT
Corrosion Rate (IPY): UNKNOWN

Fire and Explosion Hazard Data

Flash Point: 100F,38C
Lower Explosive Limit: 0.6 %
Upper Explosive Limit: 4.6 %
Extinguishing Media: DRY POWDER, FOAM, BCF, CARBON DIOXIDE OR WATER FOG
Special Fire Fighting Proc: USE BREATHING APPARATUS IN ENCLOSED AREAS.

COOL TANKS AND CONTAINERS EXPOSED TO FIRE WITH WATER BUT ENSURE THE WATER DOES NOT SPREAD THE FIRE OVER A LARGE AREA.
Unusual Fire And Expl Hazrds: ANY SPILLAGE SHOULD BE CONSIDERED A POTENTIAL FIRE HAZARD. FLAMMABLE VAPORS RELEASED WHEN HEATED ABOVE FLASH POINT WHICH ARE EXPOSED TO IGNITION SOURCES BURN.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HEAT, SPARKS, OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS

Health Hazard Data

Precautions for Safe Handling and Use

Control Measures

Transportation Data

Disposal Data

Label Data

Label Required: YES
Technical Review Date: 24JUN92
MFR Label Number: NONE
Label Status: G
Common Name: DIESEL FUEL, ARTIC (DFA)
Chronic Hazard: NO
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-Slight: X
Reactivity Hazard-None: X
Special Hazard Precautions: STORE AND DISPENSE ONLY IN WELL VENTILATED AREAS AWAY FROM HEAAT OR SOURCES OF IGNITION. SAMPLE CONTAINERS MUST BE PROPERLY LABELLED AND CLOSED. FIRST AID: INHALATION: REMOVE TO FRESH AIR. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. EYES: FLUSH WITH LOW PRESSURE WATER, ENSURING EYELIDS ARE KEPT OPEN. SEEK MEDICAL ADVICE IF REDNESS OR PAIN DEVELOPS. SKIN: WASH CONTACTED AREA WITH SOAP AND WATER. SEEK MEDICAL ATTENTION IF PAIN OR REDNESS DEVELOPS. INGESTION: DO NOT INDUCE VOMITING. SEEK IMMEDIATE MEDICAL ATTENTION. RINSE MOUTH.
Protect Eye: Y
Protect Skin: Y
Label Name: MOTOR OIL/HELLAS/CORINTH REFINERIES SA
Label Street: 2 CAR SERVIAS
Label City: ATENS GREECE
Label Zip Code: GREECE
Label Country: GR

CAMBRIA

ATTACHMENT B

Field Notes

WELL DEPTH MEASUREMENTS

Well ID	Time	Product Depth	Water Depth	Product Thickness	Well Depth	Comments
MW-F4	12:30		7.40			
MW-13	12:35		10.30			

FAXED RCR

Project Name: Fruitvale (City of Oakland

Project Number: 153-1664-029

Measured By: L. Hill

Date: 3-29-02

F:\TEMPLATE\FORMS\FIELD\GW-DEPTH.WPD

CAMBRIA

DAILY FIELD REPORT

Project Name: Fruitvale	Cambria Mgr: Mary Holland-Ford	Field Person: Jon Young
Project Number: 153-1653	Date: 5/20/02	Site Address: 2662 Fruitvale Ave. Oakland CA
General Tasks: H_2O_2 Well Injection		

Time	Activity/Comments	Hours
12:15 pm	Depart for site. Beginning mileage: 120	
12:35 pm	Arrive on site. Fire hwy. Conduct preliminary site walk.	
	Box lid missing from MW-F4; some debris in box, but casing and cap appear to be in good condition.	
	MW-13 intact.	
1:00	GAIA staff arrives on site. Casey Zoff. Quick site walk.	
1:10	H&S meeting	
	Setting up at MW-F4	
1:25	Joseph Cotton from City of Oakland arrives on site to observe.	
1:30	Begin gauging and taking measurements from wells - DO, temp	
2:00	Joseph departing site. Setting up to gauge at MW-13	
2:10	Absorbant sock found in well. Checked in with Bob Clark-Riddell of Cambria by phone and confirmed that it may be disposed of. No stain	
2:25	Completed gauging, preparing for H_2O_2 introduction at MW-13 No odor	
2:40	Begin H_2O_2 introduction to MW-13	
2:55	First 3gal in MW-13; will wait before gauging again.	
	Setting up at MW-F4	
3:00	Begin H_2O_2 introduction at MW-F4	
3:20	Taking temp readings on MW-13. Introducing another 3 gal. H_2O_2	
	Fluid level in MW-F4 has risen to top of casing and is not receding quickly. Allowing it to sit while H_2O_2 is poured into MW-13.	
3:35	Joseph Cotton returns to site	
3:40	Noted ~~sheen in~~ MW-13 and increasing odor	
	Joseph recommends that if MW-F4 does not accept more H_2O_2, take note and pour extra H_2O_2 in MW-13	
3:45	Fluid noted rising to top of casing in both wells. Perhaps couplings from funnel to casing is advisable in future.	
3:55	Reported in to Mary Holland-Ford of Cambria to provide her with progress report.	
4:05	Fluid level in MW-13 has risen to TOC and is now dropping very slowly	
4:10	Joseph Cotton departing site	

CAMBRIA

DAILY FIELD REPORT

Project Name: Fruitvale	Cambria Mgr: Mary Holland Ford	Field Person: Ian Young
Project Number: 153-1653	Date: 5/20/10	Site Address: 2662 Fruitvale Ave Oakland CA
General Tasks: H_2O_2 Well Injection		

Time	Activity/Comments	Hours
4:10	Call from Mary. She and BCR gave order to stop H_2O_2 introduction and observe reaction for at least one hour. Approximately 2 gal. introduced to MW-F4. Effervescing. Approximately 6 gal. in MW-13. Only light effervescence.	
4:40	Reaction diminishing in MW-F4.	
4:45	Introducing water to both wells to stabilize reaction	
4:53	Fairly active reaction in MW-13 still. Adding more water (~2 gallons)	
5:20	Active effervescence in both wells. Craig has to depart temporarily to return unused buckets of H_2O_2 to Morgan Environmental. Will return shortly.	
5:25	~~Product sheen visible in MW-13~~ ~~Product sheen visible in MW-F4~~	
5:30	Effervescence diminishing in MW-F4, still strong in MW-13. Adding another gallon of water to MW-13 (~3 gal total).	
5:45	Effervescence abating in both wells.	
6:15	Craig returned. Not able to drop buckets of H_2O_2 at Morgan Env. Will keep with him until Thursday. Taking final temp readings. - temp stable. Little or no sign of further reaction. Replacing well caps.	
6:45	Craig departs site for Emeryville site. Ending mileage: 141	

(left @ 1230) Arrived site at 13:00 — Well on sidewalk has no lid. Well plug looks good. Obtained lid from Joseph Gitton from city of Oakland.

H_2O Depth to top of casing in well on sidewalk = ~~8.11~~ 8.4'

$T° = 65.8°F = \_\_\_C°$? 18.78°C

Dissolved O_2 = 4.0 mg/L
Lowered ~3-4' below H_2O level in well.

13:30 — Moved to well on Davis to take reading.

H_2O Depth to Top of casing = ~~10~~ 10.4'

D.O. ~ 3-4' below water H_2O level = 6.7 mg/L

$T° = 67.2°F = \_\_C°$? 19.56°C

14:00 — Began H_2O_2 introduction in well at Davis St.
Moved to well on sidewalk
Began H_2O_2 intro. ~~well depth~~

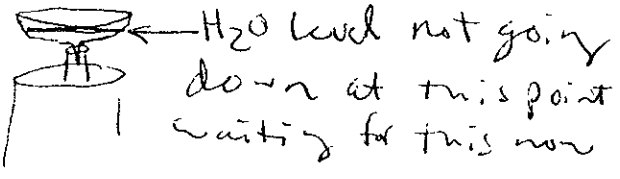
water not going in fast, slow rate
waited
Took H_2O T° of well on street
T° = [redacted]
68.5° F

16.20 In - talked to Boss - Instructed us to stop & observe wells

MW-F4 (on street)
MW-13 (on street)

10 (CZ) gallons H_2O_2 introduced into MW-13
3 1/3 (CZ) gallons H_2O_2 introduced into MW-F4

Funnels containing water at same level for long period of time now i.e. very slow rate



H_2O level in MW-13 now down
Some effervescence observed - poured water into well to try and stabilize reaction

Partial steam now observed in MW-F4

5-20-02

For MW-F4

T° before end/capping off = 66.2°F

T° II for MW-13 = 66.5°F

18:00 Left Site

18:30 Arrived at office

Note: Since Morgan Environmental closed @ 16:00, took H_2O_2 back to office & then to Morgan Env. the following day

5-22-02

09:00 left [redacted]

09:39 Arrived site

MW-4) depth to H_2O = [redacted] 9.6' (T.O.C.) 10.0 (BGS)

Dissolved O_2 = 17.1

MW-13) depth to H_2O = 13.4' (T.O.C.) 13.8' BGS

Dissolved O_2 = 15.9

D.O. taken ~3-4' below H_2O level in well

10:30	Left site
11:00	Arrived office

CAMBRIA

DAILY FIELD REPORT

Project Name: Fruitvale	Cambria Mgr: Mary Holland-Ford	Field Person: Ian Young
Project Number: 153-1653	Date: 5/23/02	Site Address: 2662 Fruitvale Ave. Oakland CA
General Tasks: H_2O_2 Introduction		

Time	Activity/Comments	Hours
9:35	Depart for site. Beginning milage = 184	
9:50	Arrive on site. GAIA staff, Craig Zeff on site.	
	Measurements and readings already taken on MW-F4	
	Already pouring H_2O_2 when I arrived. All safety clothing and	
	PPE in place - rain suit, eye gear, faceplate, rubber boots and	
	gloves. Traffic control in place.	
	MW-F4 is again accepting fluid only very slowly - only a little	
	more than 2gal poured and top of casing has been reached.	
10:00	Testing new well caps for both wells and new well box lid for	
	MW-F4. Good fit on all.	
10:10	While Craig waits for fluid level to recede on MW-F4, begins	
	taking readings on MW-13.	
	MW-13 DTW from TOC: 23.3'	
10:30	Fluid level still at TOC on MW-F4.	
10:40	MW-13 accepting H_2O_2 well - 5gal bucket	
10:55	TOC in MW-13 reached and holding steady - not dropping.	
11:00	Fluid levels in both wells remaining high.	
	Run down procedure for rest of day with Craig.	
	Departing site.	
	Ending milage: 204	

5-23-02

08:30 Left (picked up 6 - 5 gallon buckets H_2O_2 from Morgan Environ.)

09:00 Arrived at site - Began taking readings at MW-F4

Depth to H_2O)

0.4' T.O.C. = 9.1' Well Top = 9.5'

(difference btwn lid + Top of casing)

D.O. = 13.6 mg/L in well ~2.5' below H_2O level

(Difficult to get rdg. because sensor gets covered in 2" diameter well)

Temp = 66.6°F 21.9°C

09:30 Poured ~ 2½ 5 gallon bucket into MW-F4

9:45 Ian Young stopped by to replace well lids, plugs, etc.

10:00 Depth to H_2O from T.O.C in MW-13 = 10.2' from ground = 10.6'

MW-13: Dissolved O_2 = 4.9 mg/L ~3-4' below H_2O level

MW-13: T° = 21.4°C

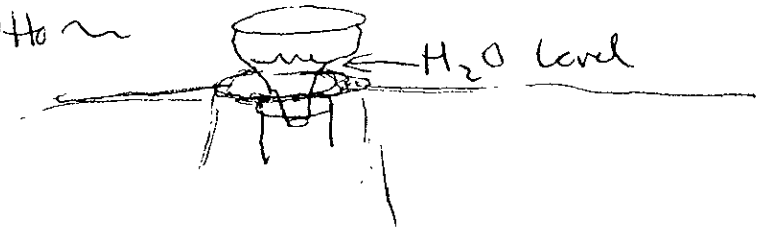
Depth to Bottom of well = 23.3' (T.O.C.)

10:30 Introduced H_2O_2 (full 5 gallon bucket) into well MW-13

11:00 T° @ MW-F4 = 23.1°C T° @ MW-13 = 23.4°C

5-23-02

11:30 H_2O levels in both wells still above funnel bottom



12:15 ~1 gallon has been added of H_2O_2 to MW-13 $T^o = 24.1°C$

T^o in MW-F4 = 22.4°C

12:30 Ended H_2O_2 addition & Began H_2O addition to stabilize the effervescence in each well.

13:00 Wells still effervescing - water being added

13:30 MW-F4 stopped effervescing (~2 gallons H_2O added)
$T^o = 23.4°C$
Depth to Bottom of well = 16.8' from T.O.C.
17.2' from Ground

MW-13 Very light effervescence (~2 gallons water added)
$T^o = 23.9°C$

14:00 left site after monitoring closed wells for 1/2 hour

14:15 Dropped off extra hydrogen peroxide pails at Morgan Environmental

14:30 End Driving Time

5-28-02

09:15 Arrived office in Walnut Creek
Loaded expensive equipment into car to take to truck at Bart station.
Switched car with truck @ Bart Station.

10:00 Arrived @ Morgan Environmental
Loaded H_2O_2 and H_2O onto truck.

10:30 Left Morgan Env.

10:45 Arrived site, Took readings at MW-F4. Depth to H_2O = 12.0' (T.O.C.)
Temp = 20.5°C Dissolved O_2 = 19.1 mg/L ~3-4' below H_2O level

11:00 Began H_2O_2 injection at well MW-F4

11:20 1/2 of a 5 gallon bucket injected (2.5 gallons) at MW-F4 Liquid at top of casing now

11:30 Took readings @ MW-13
Depth to H_2O from T.O.C. = 13.9'
D.O. = 11.7 mg/L ~2.5-3' below H_2O
Temp = 21.5°C

11:50 Began H_2O_2 injection at MW-13

12:00 1 5-gallon bucket of H_2O_2 has been injected into MW-13.

Effervescence apparent in each well
Temp now at 22.3°C in MW-13

12:05 ~1.5 gallons added of H_2O_2 into MW-13 for a total of 6.5 so far today

T° in MW-F4 = 21.8°C

12:30 T° in MW-13 = 24.1°C
T° in MW-F4 = 21.4°C

13:00 T° in MW-13 = 22.6°C
T° in MW-F4 = 21.3°C

13:05 About 1 gallon of water added to each well to decrease the effervescence observed

13:30 T° in MW-F4 = 22.8°C
T° in MW-13 = 23.7°C

13:40 1,5 gallons of water added to MW-13. Still effervescing

MW-F4: effervescence notably went down

14:00 MW-13 T° = 23.3°C
MW-F4 T° = 22.1°C

Wells plugged and capped securely

14:40 Picked up all cones and left site.

15:30 Arrived at Walnut Creek office (Stopped at Bart to switch car with truck and rearrange equipment)

Note: MW-13: 6.5 gallons H_2O_2 added (2.5 gallons H_2O)
MW-F4: 2.5 gallons H_2O_2 added (1 gallon H_2O)

5-30-02

10:30 Left office (waiting for equipment so left slightly later)

11:30 Arrived at Morgan Environmental. Picked up H_2O_2 and filled 15-gallon bucket with water.
Note: Construction on Ignacio Valley caused traffic delay

12:00 Arrived site and took parameters.
-MW-13 depth to H_2O = 15.85' (from T.O.C.)
MW-13 T° = 21.7°C
MW-13 D.O. = 18.9 mg/L (~2-3' below H_2O level)

MW-F4 depth to H_2O = 12.2' (from T.O.C.)
MW-F4 T° = 23.1°C
MW-F4 D.O. = 19.8 mg/L

12:00 to
13:00 5 gallons injected of H_2O_2 into MW-13
3 gallons H_2O_2 injected into MW-F4
Both wells contain liquid overflowing above casing at this time.
Stopped to wait for liquid level to go lower.

Light effervescence in MW-F4
Strong effervescence in MW-13

13:10 Temp. in MW-13 = 26.9°C
Temp in MW-F4 = 24.7°C

13:30 T° in MW-13 = 25.0°C still strong effervescence

T° in MW-F4 = 24.8°C light effervescence

13:40 About 0.5 gallons H_2O_2 injected into MW-13
Liquid over top of casing with strong effervescence
Stopped to wait for Liquid Level to go down

MW-F4 liquid level still above casing with light effervescence

14:00 Medium effervescence in MW-13
T° = 25.5°C

Light effervescence in MW-F4
T° = 24.6°C

14:05 Injected 1.5 additional gallons of Hydrogen Peroxide into MW-13.
Liquid level above top of casing with strong effervescence once again

Still Light effervescence in MW-F4
Liquid Still above casing

14:30 MW-13 T° = 25.2°C
Still effervescing with liquid at almost top of casing

MW-F4 T° = 24.5°C
Very light effervescing with H_2O level still above casing

15:00 MW-13 Temp° = 25.1°C
= Medium effervescence with Liquid level about 2.5' below top of casing

MW-F4 Temp° = 24.5°C
Very light effervescence with water level at top of casing

Began water addition to reduce the effervescence/stabilize reaction

About 1/2 gallon added (water) to MW-13
Very little H_2O added to MW-F4 (as much as possible w/o well overflowing)

15:30 MW-13 T° = 25.5°C w/ medium effervescence

MW-F4 T° = 24.3°C w/ medium to light effervescence partial sheen apparent here

15:40 Another 1/2 gallon of water was injected into well MW-13
Effervescence medium to light here now

16:00 Final Temperature Readings before capping wells:
MW-13 T° = 27.1°C with light effervescence
MW-F4 T° = 24.1°C with very light effervesce

16:00 Wells plugged, capped and monitored for next 1/2 hour.

16:30 Left site after making sure nothing left behind in well area

17:00 Arrived at office in Walnut Creek

7 gallons injected into MW-13 (w/1 gallon H_2O added)
3 gallons injected into MW-F4 (Very little H_2O added)

6-3-02

10:00 Arrived office & loaded Truck
10:30 Left office (W.C.) to go to Oakland office
11:00 Arrived Oakland office
Start 13:00 Left to pick up H_2O_2 from Morgan Env.
13:15 Picked up 10 gallons H_2O_2 and filled 5 gallons of H_2O
13:30 Arrived at Site & took measurements.
Depth to H_2O at MW-13 = 14.7' (from T.O.C.)
MW-13 Dissolved O_2 = 17.4 mg/L
MW-13 Temp = 21.4°C

MW-F4 Depth to H_2O = 11.3' (from T.O.C.)
MW-F4 Temp = 21.2°C
MW-F4 D.O. = 15.2 mg/L

14:00 Filled/Injected about 3.5 gallons H_2O_2 into MW-13. Liquid level at top of casing

Injected ~2.5 gallons into MW-F4
Liquid at T.O.C.

3.0 [redacted] H_2O_2 (CZ)
15:00 [redacted] more gallons added to MW-13
Well contains medium effervescence
[redacted] T° = 22.3°C
(CZ)
(CZ)

15:00 MW-F4 Temp = 21.2°C
Medium to Light effervescence
Liquid still above casing

15:30 1.0 gallons more H_2O_2 added to well MW-13 (7.5 total H_2O_2 today)
High effervescence at MW-13 now
T° = 22.6°C at MW-13

MW-F4 T° = 24.2°C

15:35 MW-F4 - medium to light effervescence
(2.5 total H_2O_2 in MW-F4 today)

16:00 1/2 gallon of H_2O added to MW-13
to stabilize the reaction
T° = 25.1°C w/ high effervescence (MW-13)

MW-F4 T° = 24.4°C
MW-F4 still at medium effervescence
+ H_2O/liquid level still above casing

16:30 MW-13 T° = 24.1°C w/ medium effervesc

MW-F4 T° = 24.4°C w/ medium effervescenc

16:45 ~2.0 more gallons of H_2O added to
MW-13 to try and decrease effervescence

17:00 MW-13 T° = 25.3°C w/ medium effervescence

MW-F4 T° = 23.4°C w/ medium effervescence

17:15 ~1 gallon H_2O added to MW-13
Very small amount of H_2O added to MW-F4

17:30 MW-13 T° = 23.9°C w/ medium to light effervesc.

MW-F4 T° = 24.3°C w/ med. to light effervescence

18:00 A small amount of H_2O added to each well now

MW-13 T° = 24.7°C w/ med. to light effervesc.

MW-F4 T° = 24.1°C w/ light effervescence

Wells plugged and capped tightly (MW-F4 may need new plug)

18:00-18:30
Wells monitored/observed

18:30 Left Site

19:00 Arrived office

7.5 gallons H_2O_2 into MW-13
2.5 gallons H_2O_2 into MW-F4

6-6-02

09:00 Picked up 15 gallon Hydrogen Peroxide & 15 gallon H_2O bucket

lost hr. of time because of misplaced socket wrench bits - Had to go to Hardware store

10:30 Arrived at site

Took measurements

MW-13 depth to H_2O = 15.1' (T.O.C.)

MW-13 Dissolved O_2 = 18.2 mg/L T° = 23.9°C

MW-F4 depth to H_2O = 9.2' (T.O.C.)

MW-F4 Dissolved O_2 = 12.4 mg/L T° = 21.7°C

11:15 ~9 gallons H_2O_2 injected into MW-13

~2.5 gallons H_2O_2 injected into MW-F4

Liquid levels at T.O.C. for wells now

11:30 T° = 26.6°C @MW-13

T° = 25.3°C @MW-F4

High effervescence in both wells at this time

11:45 ~1 additional gallon H_2O_2 added to MW-13

12:00 $T^{\circ} = 26.3^{\circ}C$ at MW-13 w/ high effervescence

$T^{\circ} = 24.4^{\circ}C$ at MW-F4 w/ med. effervescence

12:15 Additional gallon of H_2O_2 added to MW-13

12:30 MW-13 $T^{\circ} = 26.5^{\circ}C$ w/ high effervescence

MW-F4 $T^{\circ} = 23.7^{\circ}C$ w/ med to low effervescence

12:45 MW-13 - 1 additional gallon H_2O_2 injected

13:00 MW-13 $T^{\circ} = 27.3^{\circ}C$ w/ high effervescence

MW-F4 $T^{\circ} = 23.5^{\circ}C$ w/ med. to low effvcs.

13:15 MW-13 - ~0.5 gallons H_2O_2 injected into MW-13

13:30 MW-13 - $T^{\circ} = 25.3^{\circ}C$ w/ high effers.

MW-F4 $T^{\circ} = 23.6^{\circ}C$ w/ med. to light effers.

13:50 ~0.5 gallon H_2O_2 added to MW-13

14:00 Stopped H_2O_2 injections
Began H_2O addition to decrease effers.

- 11.5 gallons H_2O_2 injected into well MW-13 today
- 2.5 gallons into MW-F4 today

14:00-15:00 Small amount of H_2O added to MW-F4
2 gallons water added to MW-13

14:30 T^o = 27.5°C @ MW-13 w/ med effervesc.
T^o = 22.8°C @ MW-F4 w/ light effervesc.

15:00 Wells plugged and capped tightly then monitored for 1/2 hour

15:30 Left site

15:45 Dropped off buckets at Morgan Environmental

16:00 Arrived at office

6-10-09

10:00 Arrived office + loaded truck w/ missing equipment (equipment needed if not in truck)

10:45 Arrived at Morgan Environmental Picked up 3 5-gallon buckets of H_2O_2 and 1 5-gallon bucket of water

11:15 Arrived on-site.

11:30 Took measurements

MW-13 depth to H_2O = 10.8' (T.O.C.)
MW-13 Dissolved O_2 = 18.9 mg/L
MW-13 Temp° = 23.5°C

MW-F4 depth to H_2O = 10.1' bgs (T.O.C.)
MW-F4 D.O. = 15.4 mg/L
MW-F4 T° = 24.1°C

12:00 5 gallons Hydrogen Peroxide injected into MW-13
3 gallons H_2O_2 injected into MW-F4

12:30 T° at MW-13 = 25.4°C w/ high effervescence
T° at MW-F4 = 24.8°C w/ med. to light effervesc

12:45 ~0.5 gallons H_2O_2 added to MW-13

13:00 T° at MW-13 = 27.2°C w/ high effervescence
T° at MW-F4 = 24.8°C w/ med. to high effervescence

13:30 ~1 gallon H_2O_2 added to MW-13

13:30 T° at MW-13 = 27.7°C w/ high effervescence
T° at MW-F4 = 25.6°C w/ med. effervescence

14:00 ~1 gallon H_2O_2 added to MW-13

14:00 T° at MW-13 = 28.2°C w/ high effervescence
T° at MW-F4 = 25.3°C w/ med. effervescence

14:30 Stop H_2O_2 injections / Began Water addition

- 7.5 gallons H_2O_2 injected into MW-13 today
- 3.0 gallons H_2O_2 injected into MW-F4 today

15:00 T° at MW-13 = 30.5°C w/ high effervescence
T° at MW-F4 = 25.5°C w/ med. effervescence

15:15 Small amt. H_2O added to MW-F4 Final T° = 25.7°C
~3 gallons H_2O added to MW-13 Final T° = 29.4°C

CZ

15:15 Well lids plugged and capped tightly

15:45 Left Site

16:00 Dropped off buckets at Morgan Environmental + then went to office

6/13/02

9:30 Left Office

10:00 Picked up 2 5-gallon buckets of H_2O_2 + 1 5-gallon bucket of water from Morgan Environmental

10:45 Arrived at site - well lids + plugs removed + took measurements.

MW-13 depth to H_2O = 15.95' (T.O.C.)
MW-13 dissolved oxygen = Max. (Meter's upper limit = 19.9) > 19.9 mg/L
MW-13 Temperature° = 20.9°C

MW-F4: Well plug off, but well lid still on - (probably popped off from Rxn.)

MW-F4: depth to H_2O = 9.3' (T.O.C.)
MW-F4 - dissolved O_2 = >19.9 mg/L (meter only goes to 19.9 mg/L)
MW-F4 - T° = 19.4°C

Note: Water more turbid (brown in coloration) in MW-13 while clear in MW-F4

11:30 5 gallons H_2O_2 injected into MW-13
3 gallons H_2O_2 injected into MW-F4

12:00 MW-13 T° = 21.2°C w/ high effervescence
MW-F4 T° = 20.8°C w/ medium to low effervescence
Liquid levels still at casing tops at each well

12:15 ~1 gallon H_2O_2 injected into MW-13.

12:30 MW-13 T° = 22.7°C w/ high effusc.
MW-F4 T° = 22.9°C w/ med. to low effusc.

12:45 ~ 0.5 gallons H_2O_2 added to MW-13

13:00 MW-13 T° = 22.9°C w/ high effusc.
MW-F4 T° = 22.4°C w/ med. to low effusc.

13:15 ~0.5 gallon H_2O_2 added to MW-13.

13:30 MW-13 T° = 22.8°C w/ high effusc.
MW-F4 T° = 22.2°C w/ med. to low effusc.
Stopped H_2O_2 injection and began water addition

13:30-14:30 ~1.5 gallons water added to MW-13
Very small amt. H_2O added to MW-F4

14:30 MW-13 T° = 22.0°C w/ high effusc.
MW-F4 T° = 22.2°C w/ ~med. to low effusc.
(Wells plugged/capped tightly)

14:30-15:00 monitored wells for 1/2 hour

15:00 Left site

15:30 Arrived office

Totals:

7 gallons H_2O_2 into MW-13 today

3 gallons H_2O_2 into MW-F4 today

6/17/10

Short Field Event

08:30 Left for site

09:20 MW-F4 Depth to water = 10.9' (T.O.C.)

MW-F4 Dissolved O_2 = Max. (19.9 mg/L is upper limit for meter.)

Well plug + lid sealed/capped tightly

09:40 MW-13 Depth to H_2O = 14.6' (T.O.C.)

MW-13 D.O. = Max (meter only went up to 19.9 mg/L)

Well plug and lid sealed/capped tightly

10:20 Arrived at W.C. office

10:30 Unloaded equipment

CAMBRIA

Groundwater Monitoring Field Sheet

Well ID	Time	DTP	DTW	Product Thickness	Amount of Product Removed	Casing Diam.	Comment
MW-13	12:25	/	11.07	/	/	2"	DO = 10.50 mg/L
MW-F4	12:50		10.05	/	/	2"	DO = >19.99 mg/L

Project Name: OAKLAND - FRUITVALE

Project Number/Task: 153-1664-029

Measured By: M. Meyers

Date: 6/24/02

CAMBRIA

DAILY FIELD REPORT

Project Name: OAKLAND - FRUITVALE	Cambria Mgr: MHF	Field Person: M. Meyers
Project Number: 153-1664-029	Date: 10-24-02	Site Address: 2662 Fruitvale Oakland
General Tasks: MEASURE DO + DEPTH TO WATER		

Time	Activity/Comments	Code	Hours
11 45	LEFT OFFICE		
12 00	ARRIVE ONSITE		
	BEGIN W/ MW-13. SET-UP CONES & BARRICADES. REMOVE CAP + LID.		
	WELL HAS POSITIVE PRESSURE TAKE READINGS. REPLACE CAP +		
	LID. REMOVE CONES + BARRICADES		
12.40	FINISHED MW-13		
12.50	BEGIN MW-F4		
	WELL HAS LOCK ON CAP. UNKNOWN KEY. NOT TYPICAL		
	DOLPHIN LOCK. PULL OFF CAP. TAKE DEPTH TO H_2O.		
	PROBLEM W/ DO METER. GET Er 4 DISPLAY NO DO READING.		
	CALL PAUL. THEN CALL SUPPLIER. WAIT TILL HE		
	RETURNS FROM LUNCH. BEGIN WAIT 1:05		
1 30	SPOKE WITH MARY @ 1 30. SAID TO RETURN TO OFFICE.		
1 50	LEFT SITE @ 1 50. MANUEL CALLED SAID Er 4 MESSAGE MEANS >19.9 mg/L.		
2.10	ARRIVED OFFICE @ 2 10		
2 25	UNLOAD FINISHED		