



California Regional Water Quality Control Board Los Angeles Region



Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

Linda S. Adams
Agency Secretary

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Arnold Schwarzenegger
Governor

September 16, 2006

Ms. Lanita Stevens
USG Corporation
125 South Franklin Street
Chicago, Illinois, 60606-4678

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7005 1820 0001 2653 5637

Dear Ms. Stevens:

GENERAL WASTE DISCHARGE REQUIREMENTS FOR INTERIM TREATMENT INJECTION (SODIUM PERSULFATE/HYDROGEN PEROXIDE/FENTON'S REAGENTS) AT PETROLEUM HYDROCARBON FUEL AND VOLATILE ORGANIC COMPOUND IMPACTED SITE – US GYPSUM FACILITY, 14370 GANNET STREET, LA MIRADA, CALIFORNIA, (FILE NO. 2041700, SLIC NO. 388, MONITORING AND REPORTING PROGRAM NO. CI-9176)

We have completed our review of your application for enrollment under General Waste Discharge Requirements for the injection of sodium persulfate, hydrogen peroxide and Fenton's reagent solution at the site referenced above in La Mirada, California.

Background

The US Gypsum Company facility (Site) is located in the city of La Mirada (Figure A). The site is located at 14370 Gannett Street (Figure 1). Most of the site is occupied by a multi-use warehouse, manufacturing building and office building, all of which are currently occupied.

US Gypsum manufactures building materials using benzene, toluene, xylenes, hexane, and trichloroethane stored in underground storage tanks at the Site. Delineation began in 1988 and identified a maximum of 3,400 µg/L of trichloroethene (TCE), 78,000 µg/L of benzene, 1,1-dichloroethylene (DCE), chloroform, acetone, methyl-2-pentanone and lead in groundwater.

Between 1990 and 1994, Groundwater Technology removed the tanks on the site. Ten tanks were removed from the tank farm south of the main building. All tanks were in good condition, with no signs of corrosion or cracking. Approximately 70 cubic yards of soil with VOC and TPH levels above 50 ppm (vapor) were removed from the Site.

A Corrective Action Plan (CAP) for this site was prepared by Groundwater Technology Inc. (GTI) in 1993 and amended in 1995. Construction of a combined soil and groundwater remediation system began in late 1995. The SVE system operated continuously from 1995 until 2005.

In 2002, Waste Discharge Resolution R4-2002-026 was approved for a pilot test of permanganate injection at the US Gypsum Site with environmental documentation. The injection test through well RW-7 was completed in October, 2002 with significant reduction in TCE at the eastern edge of the Site.

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On September 30, 2005, US Gypsum submitted a Work Plan for in-situ chemical oxidation treatment using hydrogen peroxide and sodium persulfate (Fenton's reaction). The interim remediation treatment called for injection of oxidants to treat BTEX and other volatile organic compounds remaining after the vapor extraction. The work plan was approved by SLIC II Unit Chief, Dixon Oriola, on October 18, 2005. On January 10, 2006, US Gypsum submitted a design parameter evaluation report using sodium persulfate, hydrogen peroxide and Fenton's reactants which included a bench test showing 98% removal of benzene in the non-control samples.

Site Hydrology and Plume Details

Boreholes at the site encountered silty sand, silt and sand, silt with some intermixed clays and clay interbeds. These sediments are consistent with the Lakewood Formation. The Formation consists of the Bellflower Aquiclude, the Artesia-Exposition Aquifer, and at the base, the Gage Aquifer. The interbedding of silt and clay are consistent with the sediments of the Bellflower Aquiclude, including a permeable sand unit between 93 and 123 feet bgs. The Artesia aquifer was encountered below the clay at 150 feet bgs in GTI-12. No contaminants have been identified in the deepest screened horizons of GTI-12 since 2000. The saturated zone extends from 93 to about 123 bgs. A clay also is found at the base of the sand. Pumping tests conducted on the zone indicate it has an average hydraulic conductivity of 11.4 ft/day.

The most recent Site-wide monitoring event, in December, 2005, included 30 groundwater monitoring wells (GTI-1 through GTI-11, GTI-12, GTI-13, GTI-5, BH-19, BH-20, BH-22, MW-1 through MW-4, OS-1 through OS-4, and TR-1). In the south tank farm the maximum levels are: benzene, 5700 µg/L; c-1, 2, dichloroethene, 25 µg/L; trichloroethene, 15 µg/L and vinyl chloride, 27 µg/L. Eleven groundwater wells were sampled again in February 2006 for the presence of chromium. Total chromium, which contains chromium III and chromium VI, was identified with concentration ranging up to 14.3 µg/L.

Description of Project

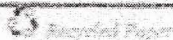
It is proposed that the benzene contamination beneath the South Tank Farm in groundwater be removed through in-situ chemical oxidation treatment using catalyzed hydrogen peroxide and activated sodium persulfate (Fenton's reaction). Concentrations of TCE, vinyl chloride, and c-1, 2-DCE are near the MCLs at this location but are also expected to be reduced or eliminated by the treatment.

The treatment area measures approximately 5,400 square feet in size beneath the south tank farm. The affected area is approximately 25 feet thick (85 to 110 feet below the ground surface) where the average benzene concentration is 1,330 µg/L.

The oxidation treatment may convert trivalent chromium to hexavalent chromium. The trivalent chromium is measured as part of total chromium, which has been detected at levels below the groundwater MCL and the soil PRG. The maximum concentration for total chromium is 14.3 µg/L. If all the total chromium is converted to hexavalent chromium, 14 µg/L of hexavalent chromium would be present, an amount below the California Department of Health Services reporting limit of 20 µg/L.

In the interim remediation, approximately 7,400 gallons oxidizing reagent (hydrogen peroxide) will be injected through 6 wells with 300 pounds of ferrous sulfate, 1,700 pounds sodium persulfate (or 5,800 gallons) and 12 gallons hydrochloric acid

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Ms. Lanita Stevens

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September 18, 2006

Six application (injection) Wells (F-1 to F-6) were selected for the interim remediation (Figure 2). The wells have a total depth of 100 feet bgs and a screened interval from 85 to 100 feet. The wells are constructed of stainless steel in order to withstand the high subsurface temperatures. In May 2006, the depth to water was about 78-83 feet bgs. Existing monitoring wells GTI-15D, GTI-19, GTI-13, GTI-14, RW-1, RW-5, and MW-4 will be used to assess treatment of the interim remediation test. Figures 1 and 2 provide the relative location of the wells.

Regional Board staff has determined that the proposed discharge meets the conditions specified in Order No. R4-2005-0030, "General Waste Discharge Requirements for Groundwater Remediation at Petroleum Hydrocarbon Fuel and/or Volatile Organic Compound Impacted Sites," adopted by this Regional Board on May 5, 2005.

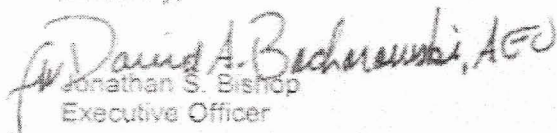
Enclosed are your Waste Discharge Requirements, consisting of Regional Board Order No. R4-2005-0030 (Series No. 061) and Monitoring and Reporting Program No. CI-9176 and Standard Provisions. We understand that you will start your project in October, and you will initiate this Interim remediation within six months.

The Monitoring and Reporting Program requires you to implement the monitoring program on the effective date of this enrollment (September 18, 2006) under Regional Board Order No. R4-2005-0030. All monitoring reports shall be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File No. CI-9176, which will assure that the reports are directed to the appropriate file and staff. Do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

We are sending a copy of Order No. R4-2005-0030 only to the applicant. A copy of the Order will be furnished to anyone who requests it. If you have any questions, please contact Ms. Elizabeth Erickson at (213) 576-6697.

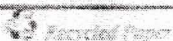
Sincerely,


Jonathan S. Bishop
Executive Officer

Enclosures: 1. Board Order No. R4-2005-0030
2. Monitoring and Reporting Program No. CI-9176
3. Standard Provisions for WDR

cc: Mr. Gary Cronk, MECX, LLC.
Mr. Robert Sams, Office of the Chief Counsel

California Environmental Protection Agency



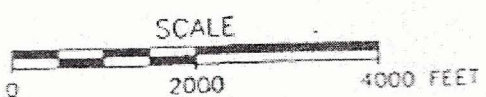
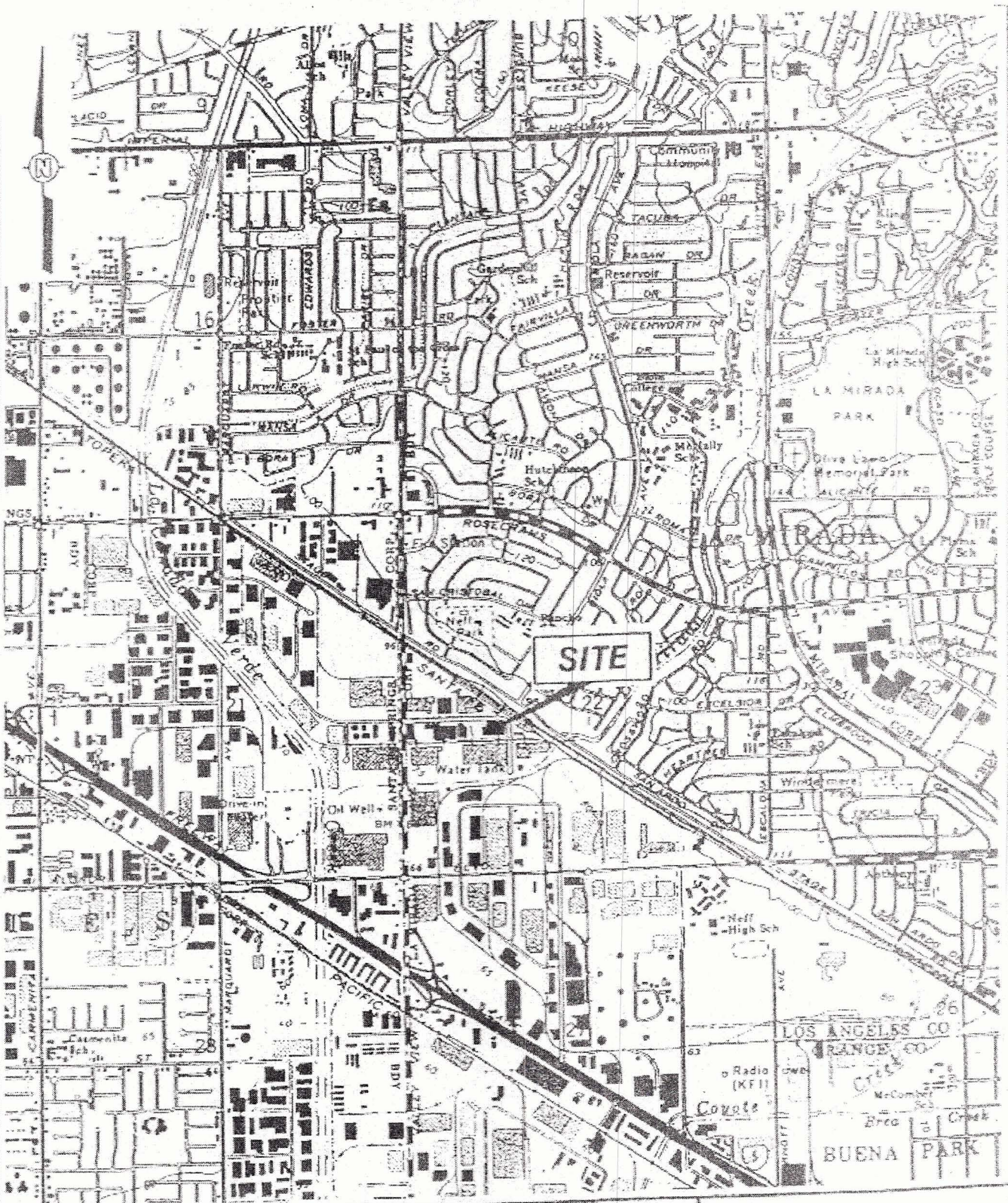
Our mission is to preserve and enhance the quality of California's water resources for the benefit of present and future generations.

DRAWING NUMBER 103055

APPROVED BY

CHECKED BY

DRAWN BY
MEMNER 7-15-99

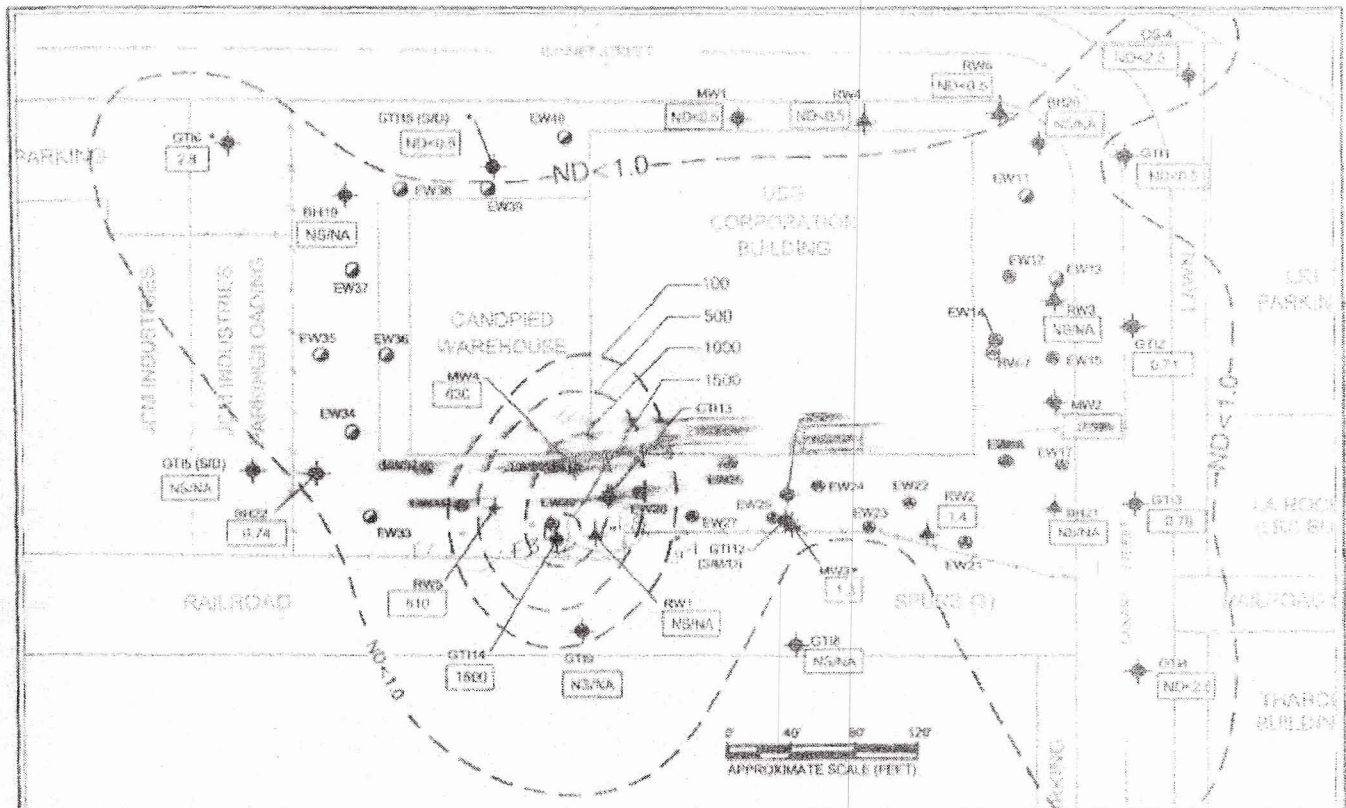


REFERENCE:
 7.5 MINUTE USGS TOPOGRAPHIC MAP OF
 ASHTABULA, CALIFORNIA QUADRANGLE
 DATE: 1978, PHOTOREVISED: 1982
 SCALE = 1:2400



UNITED STATES GYPSUM COMPANY
 14370 CANNET STREET
 LA MIRADA, CALIFORNIA

FIGURE A
 SITE LOCATION MAP
 UNITED STATES GYPSUM COMPANY



LEGEND:

- ◆ - MONITORING WELL
- - EXTRACTION WELL
- ⊕ - RECOVERY WELL
- ⊗ - DOUBLE NESTED SPARGE/VAPOR EXTRACTION WELL
- - - - DISSOLVED BENZENE CONTOUR LINE

NOTES:

CONCENTRATIONS PRESENTED IN MICROGRAMS PER LITER (UG/L, P/B)
 BASE MAP AND CONTOURS ADAPTED FROM SHAW EM (2004)

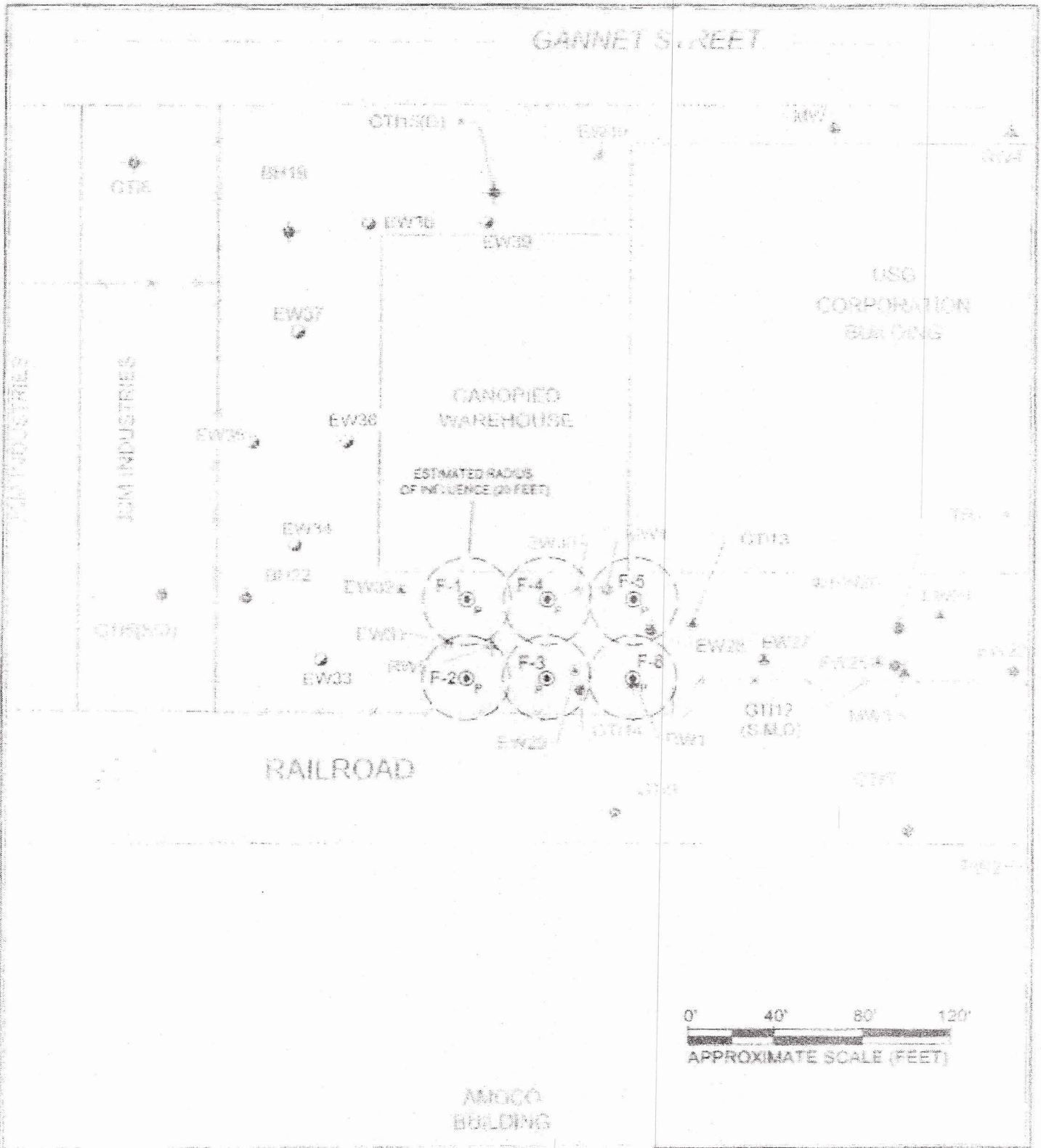
10/27/05



SHEET 210
 100 GANNET STREET
 MIRAGE, CALIFORNIA 92551

FIGURE 7 - BENZENE
ISO-CONCENTRATION MAP (DEC. 2004)
U. S. GYPSUM COMPANY
14370 GANNET STREET
LA MIRADA, CALIFORNIA

PROJECT NO. 04-0001
 DATE: 12/15/04



- LEGEND:**
- ◆ - MONITORING WELL
 - ▲ - RECOVERY WELL
 - ⊙ - PROPOSED APPLICATION WELL



APCY, LLC
 131 MORCA AVE
 IRVINE, CALIFORNIA 92614

**FIGURE 2 - PROPOSED FENTON'S/
 PERSULFATE APPLICATION WELLS**
 U. S. GYPSUM COMPANY
 14370 GANNET STREET
 LA MIRADA, CALIFORNIA

PROJECT NO. 1207.0011 REV. DATE 05-16-95 MTK

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI-9176
FOR
UNITED STATES GYPSUM CORPORATION
FACILITY AT 14370 GANNET STREET, LA MIRADA

ENROLLMENT UNDER REGIONAL BOARD
ORDER NO. R4-2005-0030 (Series No. 061)
FILE NO. 2041700

REPORTING REQUIREMENTS

- A. United States Gypsum Corporation (hereinafter Discharger) shall implement this monitoring program on the effective date of this enrollment (September 15, 2006) under Regional Board Order No. R4-2005-0030. The first monitoring report under this Program is due by January 15, 2007.

Monitoring reports shall be received by the dates in the following schedule:

<u>Reporting Period</u>	<u>Report Due</u>
January – March	<u>April 15</u> 2007
April – June	<u>July 15</u>
July – September	<u>October 15</u>
October – December	<u>January 15</u>

- B. If there is no discharge or injection during any reporting period, the report shall so state. Monitoring reports must be addressed to the Regional Board, Attention: Information Technology Unit.
- C. By January 30 of each year, beginning January 30, 2007, the Discharger shall submit an annual summary report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the Discharger shall explain the compliance record and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements (WDRs).
- D. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with WDRs. This section shall be located at the front of the report and shall clearly list all non-compliance with discharge requirements, as well as all excursions of effluent limitations.
- E. The Discharger shall comply with requirements contained in Section G of Order No. R4-2005-0030 "Monitoring and Reporting Requirements" in addition to the aforementioned requirements.

II. INJECTION MONITORING REQUIREMENTS FOR THE INTERIM TREATMENT PROJECT

Sodium Persulfate/ Hydrogen Peroxide/ Fenton Reagents Injection

The quarterly reports shall contain the following information regarding the injection activities. If there is no injection, during any reporting period, the report shall so state:

1. Location Map showing injection point for the solution
2. Written summary defining:
 - Depth of injection points;
 - Quantity and description of solution injected per injection point; and
 - Total amount of solution injected at site.
3. Monthly visual inspection at each injection well shall be conducted to evaluate the well casing integrity for a period of three months after each injection. The quarterly report shall include a summary of the visual inspection.

III. GROUNDWATER MONITORING PROGRAM FOR THE INTERIM TREATMENT PROJECT

A groundwater-monitoring program shall be designed to detect and evaluate impacts associated with the injection activities (Fenton reagents). The following shall constitute the monitoring program for wells GTI-15, GTI-9, GTI-13, GTI-14, RW-1, RW-5, and MW-4, (Figure 2). These sampling stations shall not be changed and any proposed change of monitoring locations shall be identified and approved by Board staff prior to their use. The Discharger shall conduct baseline sampling from the same wells and regular post-injection sampling with the required frequencies from the monitoring wells for the following constituents:

7 wells

CONSTITUENT RELATED TO INJECTION CHARACTERIZATION	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
pH ¹	pH units	Grab	Weekly ¹ /Monthly ²
Temperature ¹	°F	Grab	Weekly ¹ /Monthly ²
Oxidation-reduction potential ⁴	Millivolts	Grab	Weekly ¹ /Monthly ²
Specific conductivity ²	umhos/cm	Grab	Weekly ¹ /Monthly ²
Dissolved Oxygen ³	ug/L	Grab	Weekly ¹ /Monthly ²

CONSTITUENT OF CONCERN AT SITE	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Benzene	µg/L	Grab	Weekly ² /Monthly ³
Toluene			
Xylene			
Hexane			
Butane			
Chloroform			
Vinyl Chloride			
Trichloroethene (TCE)			
1,1,1-Trichloroethane (TCA)			
Dichloroethene			
1,1 Dichloroethene (DCE)			
1,1, Dichloroethane (DCA)			
1,2 Dichloroethane			
C-1,2, Dichloroethene			
1,2 Dichloroethene			
Sulfate			
Iron			
Total chromium	µg/L	Grab	Weekly ² /Monthly ³
Hexavalent chromium	µg/L	Grab	Weekly ² /Monthly ³

mg/L: milligrams per liter; µg/L: micrograms per liter; µmhos/cm: microohms per centimeter;

*F: degree Fahrenheit.

² Weekly sampling events are required for the first four weeks from the injection date or until concentrations have stabilized, whichever is later.

³ Monthly sampling events are required for 3 months after the weekly sampling events with quarterly sampling thereafter.

⁴ Field instrument will be used to test for this constituent.

All groundwater monitoring reports must include, at minimum, the following:

- a. Well identification, date and time of sampling;
- b. Sampler identification, and laboratory identification;
- c. Quarterly observation of groundwater levels, recorded to 0.01 feet mean sea level and groundwater flow direction.

IV. MONITORING FREQUENCIES

Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by Board staff based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted to a less frequent basis or parameters and locations dropped by Board staff if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

V. CERTIFICATION STATEMENT

Each report shall contain the following completed declaration:

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

Executed on the _____ day of _____ at _____

(Signature)

(Title)

All records and reports submitted in compliance with this Order are public documents and will be made available for inspection during business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region, upon request by interested parties. Only proprietary information, and only at the request of the Discharger, will be treated as confidential.

Ordered by

David A. Bacharowski, AEO
Executive Officer

Date: Sept. 18, 2006