

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-029, Revision 1

FOR
IN-SITU GROUNDWATER REMEDIATION
AT SITES WITH VOLATILE ORGANIC COMPOUNDS

UNIFIRST STOCKTON FACILITY
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a pilot-scale treatment of groundwater using subsurface injections to stimulate biological remediation of volatile organic chemicals at 819 North Hunter Street in Stockton. This MRP is issued pursuant to Water Code Section 13267, and replaces the requirements listed in MRP No. R5-2008-0149-029, which was adopted on 25 May 2011. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain-of-custody form.

GROUNDWATER MONITORING

As shown on Attachment A, there are 11 monitoring wells associated with this site. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP shall follow the schedule below as applicable. Sample collection and analysis shall follow standard EPA protocol.

The monitoring wells, extraction wells, and/or injection wells shall be sampled according to the schedule in Table 1, the samples analyzed by the methods in Table 2, and pursuant to the monitoring objectives shown in Table 3, as presented on the following pages.

Table 1: Sampling Frequency¹ and Constituent Suites²

Well Number	Volatile Organic Compounds	Alkalinity	Manganese	Dissolved Organic Carbon	Total Dissolved Solids
MW-1	S	S	A	A	A
MW-2, MW-3, MW-4	A				
MW-5A, MW-5B, MW-5C	S	S	S	S	S
MW-7	S	S	S	S	S
MW-6, MW-8, MW-9	A	A	A	A	A

¹ Semi-Annual sampling (S) is to occur in the 1st and 3rd quarters (January-March, July-September); Annual sampling (A) is to occur in the first quarter (January-March).

² Constituent suite analytical methods listed in Table 2.

Table 2: Analytical Methods

Constituents	Method ³	Maximum Practical Quantitation Limit ⁴
Volatile Organic Compounds	EPA 8260B	0.5 ug/L ⁵
Alkalinity	SM2320B	2 mg/L
Dissolved Manganese	EPA 6010B	5 ug/L
Carbon, dissolved organic	SM 5310D	0.5 mg/L
Total Dissolved Solids	EPA 160.1	10 mg/L

³ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

⁴ All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

⁵ Method 8260B quantitation limit of 0.5 ug/L applies to tetrachloroethene, trichloroethene, and daughter products.

Table 3: Monitoring Well Objectives

Monitoring Well	Monitoring Objective	Objective Definition
MW-1, MW-6	Background	Wells used to monitor background concentrations.
MW-5A, MW-5B, MW-5C	Transition Zone	Wells sampled to evaluate migration of pollutants within the treatment zone.
MW-7, MW-8, MW-9	Compliance	Wells used to determine compliance with water groundwater limitations.
MW-2, MW-3, MW-4	Ambient Conditions	Wells used to monitor pollutants between background location and treatment area.

FIELD SAMPLING

In addition to the above sampling and analysis, field parameter sampling and analysis shall be conducted each time a monitoring well or extraction well is sampled. The sampling and analysis of field parameters shall be as specified in Table 4.

Table 4: Field Sampling Requirements

Parameters	Units	Type of Sample	Minimum Unit of Measurement
Groundwater Elevation	Feet, Mean Sea Level	Measurement	0.01 feet
Oxidation-Reduction Potential	Millivolts	Grab	1 millivolt
Electrical Conductivity	$\mu\text{S}/\text{cm}^2$	Grab	$50 \mu\text{S}/\text{cm}^2$
Dissolved Oxygen	mg/L	Grab	1 mg/L
pH	pH Units	Grab	0.1 pH Unit

Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in item (b) of the "Reporting" section of this MRP.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger developed background values for concentrations of dissolved iron, dissolved manganese, total dissolved solids and electrical conductivity in groundwater which are presented in the 31 May 2013 *First Semiannual 2013 Groundwater Monitoring Report*. Central Valley Water Board staff concur with the background values.

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Central Valley Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or subordinate and signed by the registered professional.

The Discharger shall submit semi-annual electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The semiannual reports shall be submitted electronically over the internet to the Geotracker database system by **31 May, and 30 November** until such time as the Executive Officer determines that the reports are no longer necessary. UniFirst may recommend changes to the Monitoring and Reporting Program by submitting a request in an Annual Report.

Hard copies of semiannual reports shall be submitted to the Regional Board by **31 May, and 30 November** each year. Each semiannual report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, and how and when samples were collected;
- (b) field logs or summary tables that contain, at a minimum, water quality parameters measured before, during, and after purging, results of field calibration of water quality parameter meters, method of purging, depth of water, volume of water purged, etc.;
- (c) pollutant concentration maps for all groundwater zones, if applicable;
- (d) a table(s) showing well construction details such as well number, reference elevation, depth of screen, depth of bentonite, and depth of well bottom;
- (e) cumulative data tables containing the water quality analytical results and depth to groundwater;
- (f) a copy of the laboratory analytical data report, which may be submitted in an electronic format;
- (g) the status of any ongoing remediation and the effectiveness of the remediation.

An Annual Report shall be submitted to the Regional Board by **30 November** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the second semi-annual monitoring report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of chlorinated volatile organic compound monitoring data obtained during the year;

- (b) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (c) an analysis of whether the pollutant plume is being effectively treated;
- (d) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation effectiveness;
- (e) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (f) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

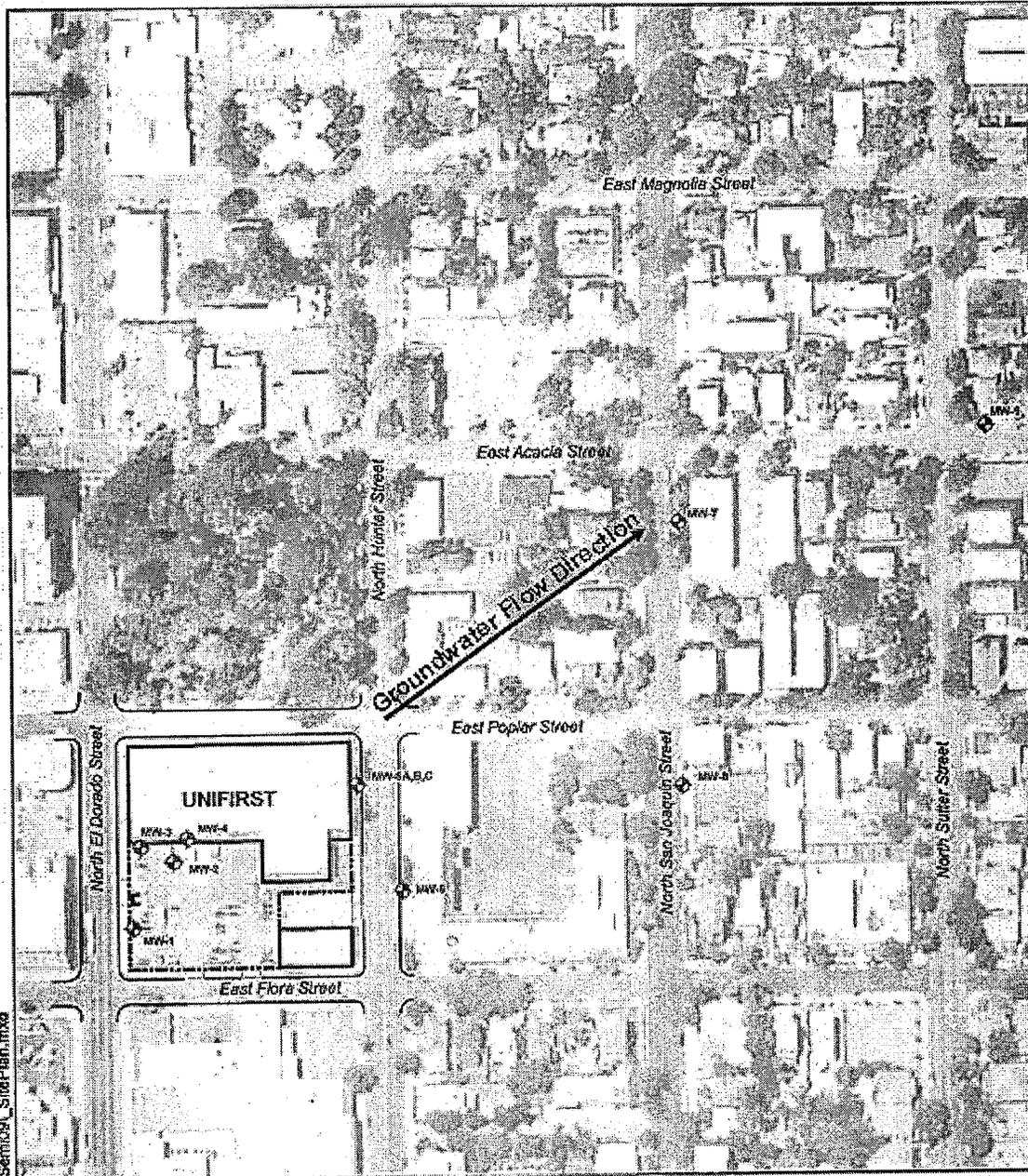
The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: Andrew Altman
for PAMELA C. CREEDON, Executive Officer

4 April 2014

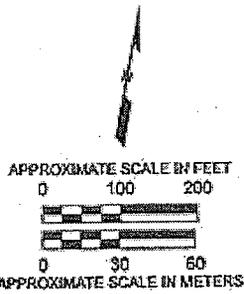
(Date)

Attachment A
Location of Monitoring Wells, UniFirst Stockton



K:\130000\13290\gis\maps\09_1020_2nd_Semi09L_SitePlan.mxd

- Explanation**
-  UniFirst facility boundary
 -  Groundwater monitoring wells



Basemap modified from AirPhoto aerial photography, dated 7/1/2006.

<p>SITE PLAN UniFirst Facility Stockton, California</p>		
By: KLU	Date: 10/20/2009	Project No. 13290.000
AMEC Geomatrix		