

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-091

FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

FLORIN TOWNE CENTER
6117 FLORIN ROAD
SACRAMENTO, CALIFORNIA
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the progress of the Enhanced Reductive Dechlorination program (ERD Program) to treat tetrachloroethylene (PCE) and related volatile organic compounds (VOCs) at the Florin Towne Center facility located at 6117 Florin Road in Sacramento, Sacramento County (the "Site", Figure 1). This MRP is issued pursuant to Water Code Section 13267. 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 sample station locations prior to implementation of sampling activities.

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

GROUNDWATER MONITORING

As shown on Figure 2, there are nine groundwater monitoring wells associated with the site. Sample collection and analysis shall follow standard United States Environmental Protection Agency (USEPA) protocols and sample analyses shall be completed by a California state-certified laboratory.

The locations of the groundwater monitoring wells included in the ERD monitoring program are shown on Figure 2. The groundwater monitoring wells shall be monitored according to the schedule in Table 1, and the corresponding Constituent Suites and Analytical Methods are presented in Table 2. Prior to collection of each sample at each well, groundwater quality parameters will be measured as described in Table 3.

Table 1: Monitoring Frequency and Constituent Suites

Well ID¹	Frequency	Analysis Suite(s)²	Monitoring Objective
GWM-2, GMW-4, GMW-6, GMW-7, GMW-8	Annually	A, D, E	Background ⁴
GMW-5	Pre-Injection Baseline	A, B	
	Immediately Prior to Injection	D	
GMW-3, GMW-9	Quarterly for at least 2 quarters, then annually	A, B	Treatment Zone ³
	Pre-Injection Baseline	A, B, C	
	Immediately Prior to Injection	D	
GMW-1	Quarterly for at least 2 quarters, then annually	A, B, C	Compliance ⁵
	Pre-Injection Baseline	A, B	
	Immediately Prior to Injection	D	

- 1 Well IDs and locations as shown on Figure 2.
- 2 Analysis suite components are listed in Table 2.
- 3 Treatment: Wells sampled to evaluate remediation progress inside the treatment zone.
- 4 Background: Well used to assess groundwater quality in the background area upgradient or cross-gradient to the treatment zone.
- 5 Compliance: Wells used to evaluate compliance with groundwater limitations downgradient from the treatment zone.

Table 2: Analytical Methods and Constituent Suite

Constituent Suite	Analytical Method ¹	Maximum Practical Quantitation Limit ²
Suite A		
Volatile Organic Compounds <ul style="list-style-type: none"> • PCE • TCE • <i>cis</i>-1,2-DCE • <i>trans</i>-1,2-DCE • 1,2-DCA • Vinyl Chloride 	EPA 8260B	0.5 to 1 µg/L
Suite B		
Dissolved Gases <ul style="list-style-type: none"> • Methane • Ethane • Ethene 	RSK-175M	1 µg/L
Anions <ul style="list-style-type: none"> • Nitrate • Sulfate • Chloride 	EPA 300.0	varies
Alkalinity	SM 2320B	5 mg/L
Total and Dissolved Organic Carbon	EPA 9060	1 mg/L
Total Dissolved Solids	SM 2540C	10 mg/L
Dissolved Metals <ul style="list-style-type: none"> • Arsenic • Chromium • Iron • Manganese 	EPA 6010/6020	Varies
Suite C		
<i>Dehalococcoides</i>	SiREM Gene-Trac® Dhc	3,280 cells/L
Chlorinated Ethene Functional Genes (<i>vcrA</i> , <i>bvcA</i> , <i>tceA</i>)	SiREM Gene-Trac® FGA	3,280 cells/L
Volatile Fatty Acids <ul style="list-style-type: none"> • Lactate • Acetate • Propionate • Formate • Butyrate 	Ion Chromatography with Electrical Conductivity Detection	Varies

Constituent Suite	Analytical Method ¹	Maximum Practical Quantitation Limit ²
• Pyruvate		
Suite D		
Depth to Groundwater	Field Measurement	0.01 feet
pH	Field Measurement	0.1 units
Specific Conductivity	Field Measurement	50 μ S/cm
Suite E		
Temperature	Field Measurement	0.1 $^{\circ}$ C or $^{\circ}$ F
Dissolved Oxygen	Field Measurement	0.2 mg/L
ORP	Field Measurement	10 mV
Turbidity	Field Measurement	1.0 NTU

¹ Or an equivalent analytical method that achieves the listed maximum practical quantitation limit.

² All concentrations between the method detection limit and the practical quantitation limit shall be reported as an estimated value.

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted at each well location each time it is sampled. During injection activities the Discharger will monitor wells GMW-1, GMW-3, GMW-5, and GMW-9 for depth to water, pH, conductivity, and visual evidence of electron donor solution arrival. All other wells will be gauged for depth to water at least once every two days during injection activities. The sampling and analysis of field parameters shall be completed as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Practical Quantitation Limit	Sample Type
Depth to Groundwater	feet	0.01 feet	Measurement
pH	standard pH units	0.1 units	Field Meter
Specific Conductivity	microsiemens per centimeter ($\mu\text{S}/\text{cm}$)	50 $\mu\text{S}/\text{cm}$	Field Meter
Turbidity	Nephelometric Turbidity Unit (NTU)	1.0 NTU	Field Meter
Oxidation-Reduction Potential	millivolts (mV)	10 millivolts	Field Meter
Dissolved Oxygen	milligrams per liter (mg/L)	0.2 mg/L	Field Meter
Temperature	$^{\circ}\text{C}$ or $^{\circ}\text{F}$	0.1 $^{\circ}\text{C}$ or $^{\circ}\text{F}$	Field Meter
Volume Purged	Gallons or liters	0.1 liter	Measurement

Field test instruments 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 the "Reporting" section of this

MRP under item (c) in the first list (quarterly reporting).

INJECTION MONITORING

The Discharger shall monitor daily the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 4: Injection Monitoring Requirements

Parameters	Units	Sample Type
Injected volume	gallons per day	Totalizing Meter
Injection rate	gallons per minute	Measured
Amendment(s) added	pounds	Measured or Meter
Injection durations	hours	Clock Reference

AMENDMENT ANALYSIS

The Discharger has provided the Central Valley Water Board with the safety data sheets for amendments EDS-QR™, EDS-ER™, and KB-1®. Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on a mixture of the amendment and water at the estimated concentration that would be injected during the project.

Table 5: Amendment Analytical Requirements

Constituent	Analytical Method¹	Maximum Practical Quantitation Limit
Volatile Organic Compounds	EPA 8020 or 8260B	0.5 µg/L
General Minerals ²	Various	Varies
Metals, Total and Dissolved ³	EPA 200.7, 200.8	Varies
Semi-Volatile Organic Compounds	EPA Method 8270	5.0 µg/L
Total Dissolved Solids	EPA 160.1	10 mg/L
pH	Field Meter	0.1 units
Specific Conductivity	Field Meter	50 µS/cm

¹ Or equivalent EPA method

² General Minerals includes alkalinity, bicarbonate, potassium, chloride, sulfate, total hardness, nitrate, nitrite, ammonia

³ Metals include arsenic, barium, cadmium, calcium, total chromium, copper, iron, lead, manganese, magnesium, mercury, molybdenum, nickel, selenium, and silica

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger shall conduct a Background Study to evaluate the background concentration values of dissolved metals (arsenic, chromium, ferrous iron, and manganese), total dissolved solids, pH, and specific conductivity in groundwater following the procedures found in CCR Section 20415(e)(10).

For the initial establishment of the background concentration values (i.e., baseline concentrations), the discharger shall conduct one background sampling event prior to injection activities as part of this study. During the baseline sampling event, field parameters will be measured at all monitoring wells, and samples will be collected from all wells for analysis of VOCs. Additional samples will be collected as laid out in Table 1.

The baseline concentration or measurement (e.g., depth to groundwater, pH, and specific conductivity) for each constituent will be reported for each well. Beginning in the first quarterly monitoring event after amendment injection has been completed and continuing on a quarterly basis for as long as required under this WDR, wells GMW-1, GMW-3, GMW-4, GMW-7, and GMW-8 will again be sampled and analyzed for dissolved metals (arsenic, chromium, ferrous iron, and manganese) and total dissolved solids, and field parameters will be measured at all wells.

Changes in baseline groundwater quality may occur over time due to environmental factors. In consultation with the Central Valley Water Board staff, the discharger may propose future studies to evaluate changes in background groundwater quality conditions. The Discharger may propose updated background values for certain constituents based on the results of such studies.

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 Civil Engineer or Geologist or their subordinate and signed by the registered professional.

The Discharger shall submit quarterly electronic data reports for at least two quarters following implementation of the injection program, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. **The quarterly reports shall be submitted electronically over the internet to the GeoTracker database system by the first day of the second month following the end of each quarterly period (i.e. 1 February, 1 May, 1 August, and 1 November) until such time as the Executive Officer determines that the reports are no longer necessary or frequency may be reduced.**

Each quarterly 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 constituents and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume is delineated;

- (b) a discussion of groundwater quality at Compliance wells, with respect to the applicable groundwater limitations;
- (c) field logs that contain, at a minimum and as applicable, water quality parameters measured before, during, and after purging, depth to water, method of purging, volume of water purged, field instrument calibration reports, etc.;
- (d) groundwater elevation contour interpolation maps for the shallow groundwater zones, and posted depth to groundwater in the single deep groundwater well (GMW-2);
- (e) pollutant concentration maps for all groundwater zones, if applicable;
- (f) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
- (g) a table showing historical lateral and vertical flow directions and gradients;
- (h) cumulative data tables containing the water quality analytical results and groundwater depth and elevation;
- (i) a copy of the laboratory analytical data report(s);
- (j) the status of any ongoing remediation, such as system operating time, cumulative extraction and injection volumes/amounts, the effectiveness of the remediation system, and details pertaining to the operation and maintenance of the system; and
- (k) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions.

An Annual Report shall be submitted to the Central Valley Water Board by **1 February** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation. The Annual Report may be substituted for the 1 February semiannual monitoring report as long as it contains all of the information required for that report plus that required for the Annual Report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of all data obtained during the year;
- (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;

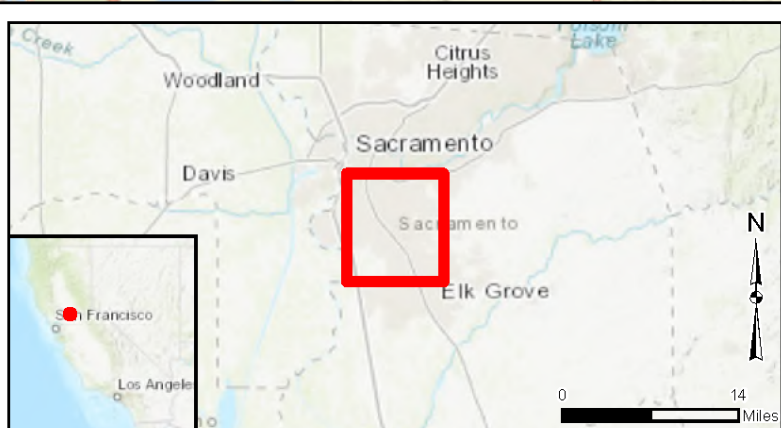
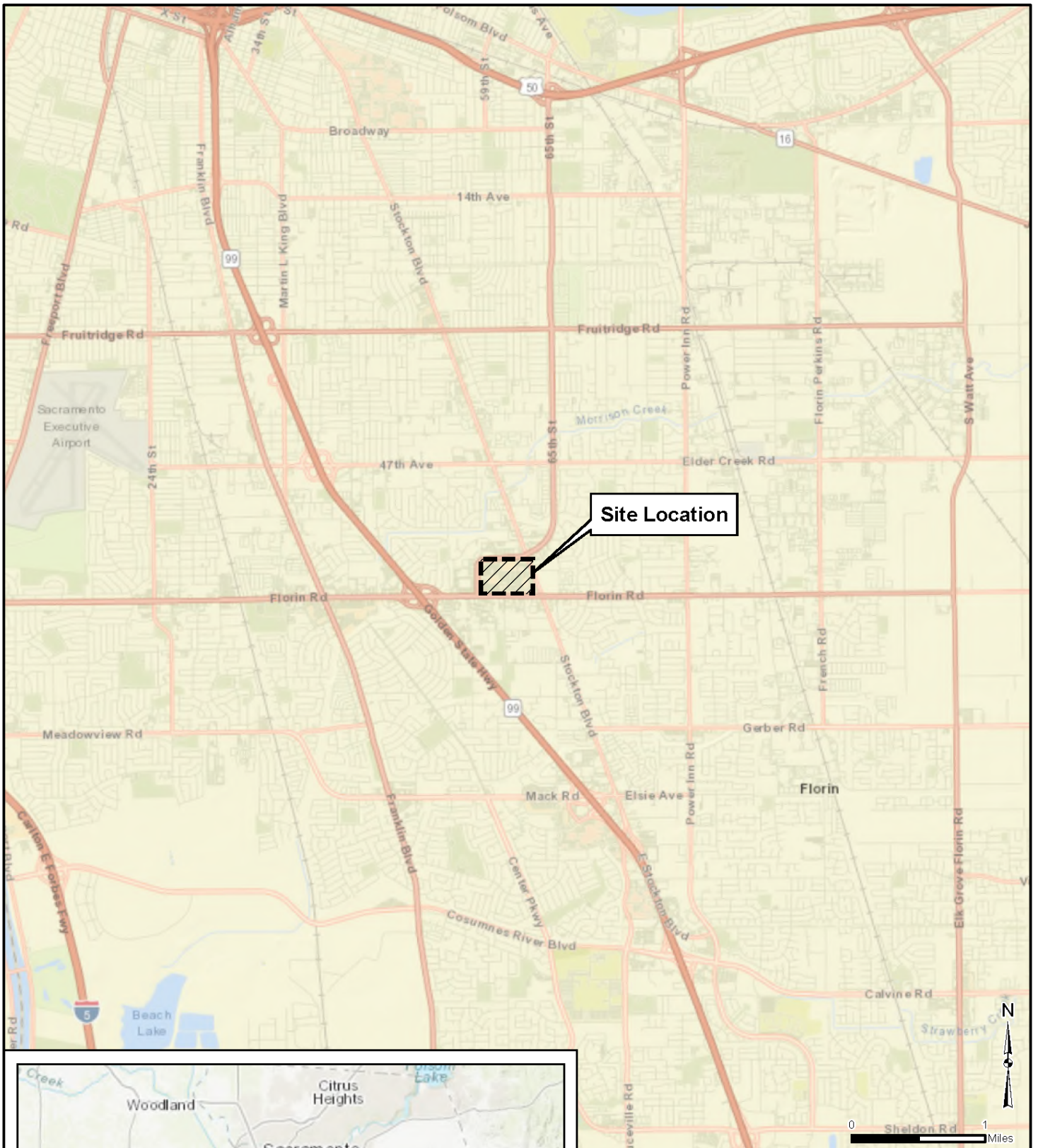
- (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (d) an analysis of whether the pollutant plume is being effectively treated;
- (e) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation system effectiveness;
- (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (g) 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 or facility 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: _____
for PATRICK PULUPA, Executive Officer

12/4/2025
(Date)



Site Location Map

Florin Towne Center
Sacramento, California

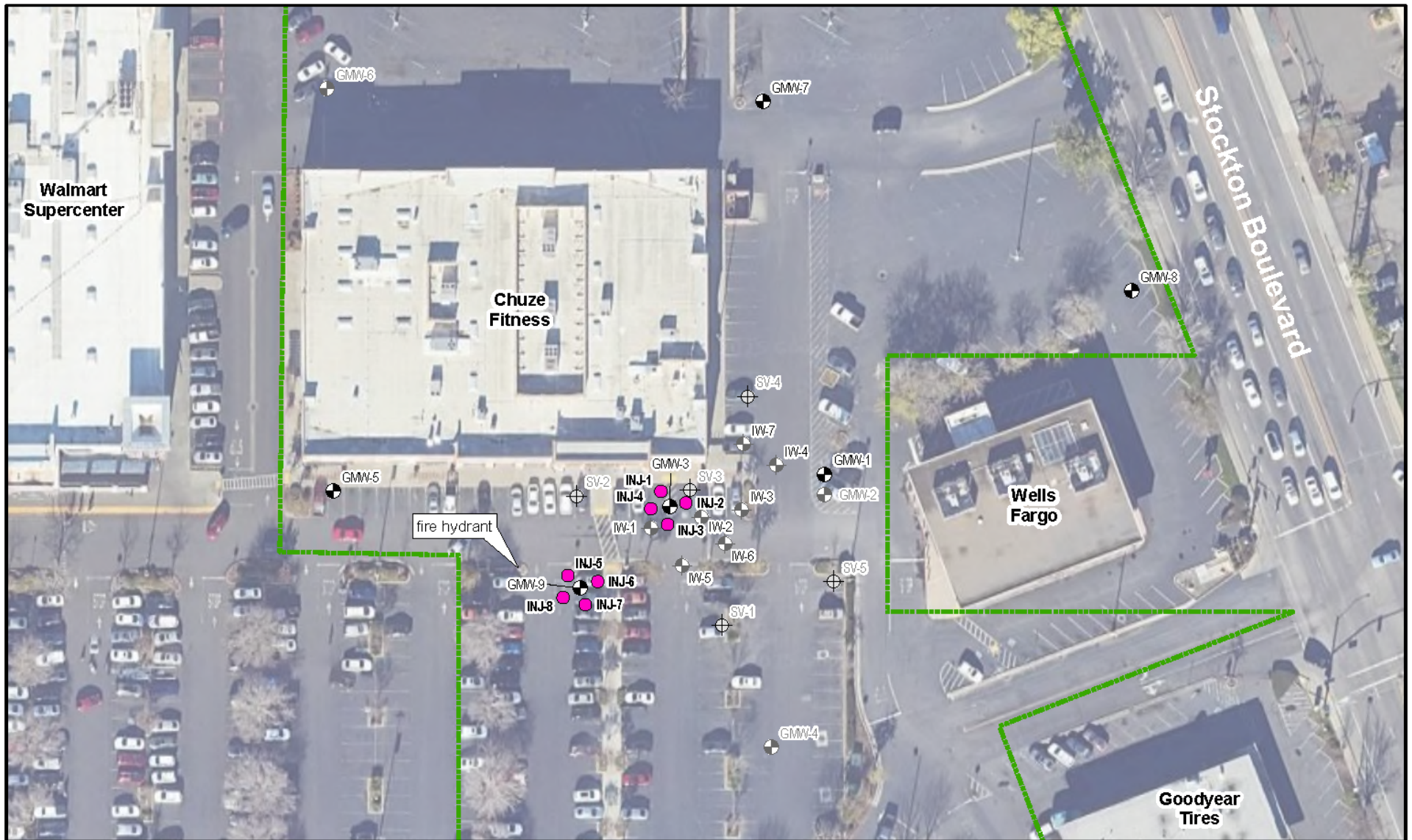
Geosyntec
consultants

Figure

1

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July 2025



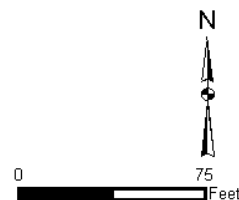
Legend

- Proposed Direct Push Injection Location¹ (Approximate)
- ⊗ Groundwater Monitoring Well in Injection Monitoring Program
- ⊕ Groundwater Monitoring Well Not in Injection Monitoring Program
- ⊙ Groundwater Injection Well (max depth 55 ft bgs)

- ⊕ Nested Soil Vapor Probes (depths of 5 and 15 ft bgs)
- Approximate Property Boundary (Source: Arcadis, 2017a)

Notes:

¹ Proposed injection locations are approximately 15 feet from the nearest groundwater monitoring well. Well locations are approximate ft bgs = feet below ground surface



Proposed Injection and Monitoring Locations

Florin Towne Center
Sacramento, California

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Figure

2

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