17 May 2018

Gary Stallworth
602 North California Street
Stockton, CA 95202

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012 Waste Discharge Requirements General Order for In-Situ Remediation and Discharge of Treated Groundwater to Land, Stallworth Auto Sales, 602 North California Street, Stockton, San Joaquin County

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a document titled *Notice of Intent Application* (Application) submitted on your behalf by Advanced GeoEnvironmental, Inc. (AGE), on 17 June 2014 for the unauthorized underground storage tank (UST) release located at 602 North California Street in Stockton, San Joaquin County (Site). The Application requested coverage under General Order No. R5-2008-0149 for In-Situ Remediation and Discharge of Treated Groundwater to Land (General Order). Subsequent to submission of the Application, General Order No. R5-2008-0149 was replaced by General Order R5-2015-0012. AGE and Central Valley Water Board staff worked together to address several rounds of comments and revisions to the scope of work. Central Valley Water Board staff concludes that this project meets the required conditions to operate under Order No. R5-2015-0012. All of the requirements contained in the General Order are applicable to the Site and you are assigned Order No. R5-2015-0012-040.

Project Location:
The project is in the City of Stockton in San Joaquin County
Assessor's Parcel No. 139-165-09

Project Description:
Previous use of a UST at the Site resulted in petroleum hydrocarbon impact to soil and groundwater. The primary constituents of concern include total petroleum hydrocarbons as gasoline, and benzene, toluene, ethylbenzene and total xylenes (BTEX). The site is currently occupied by a small, single story office facility with a garage utilized for auto sales, and is located in a mixed commercial and residential area.

Between May 2012 and June 2012, AGE performed a hydrogen peroxide injection pilot test at the Site. AGE proposes conducting in-situ chemical oxidation using hydrogen peroxide to remediate residual fuel hydrocarbon impacts to soil and groundwater. San Joaquin County Environmental Management Department approved the proposed *Corrective Action Plan* in March 2014. Oversight of the case was transferred to the Central Valley Water Board on 1 July 2015.

For this project, the Discharger submitted the following documents:

- *Corrective Action Plan* dated 30 January 2014
- *Notice of Intent* (NOI) dated 6 June 2014
- *Response to: Central Valley Water Board Staff Comments to NOI General Order R5-2008-0149* (January 2015 Letter) dated 12 January 2015
- *Response to: Central Valley Water Board Comment Letter Dated 29 June 2015* (August 2015 Letter) dated 25 August 2015
- AGE's 8 April 2016 emailed response to Central Valley Water Board staff Questions on Injections, NOI, and draft MRP (April 2016 email)
- AGE's 25 October 2016 emailed response to Central Valley Water Board staff Questions on Injections, NOI, and draft MRP (October 2016 email)
- AGE's 23 February 2018 emailed response to Central Valley Water Board staff Questions on Injections, NOI, and draft MRP (23 February 2018 email)
- AGE's 27 February 2018 emailed response to Central Valley Water Board staff Questions on Injections, NOI, and draft MRP (27 February 2018 email)

AGE proposes using six (6) injection wells (IW-1, IW-2, IW-3, IW-5, IW-7, and MW-1A) for injection of hydrogen peroxide to the subsurface. A 200-gallon hydrogen peroxide solution composed of 175 gallons of water and 25 gallons of 35% hydrogen peroxide (H_2O_2), will be injected into each of the injection points over an approximately one week period; a total of 1,400 gallons per injection event will be injected. Hydrogen peroxide will be injected at rate between 1 to 5 gallons per minute (gpm). AGE will initially perform four (4) injection events with a frequency of one ejection event a month; a total of 5,600 gallons of peroxide solution will be injected during the initial four injection events. Additional injection events will be performed based on results. AGE must notify Central Valley Water Board staff at least one week prior to conducting additional injection events.

There are 27 wells associated with this Site. The Monitoring and Reporting Program, incorporated with this permit, requires sampling of 15 of the 27 Site wells. Monitoring and reporting of remaining Site wells is under the direction of Central Valley Water Board staff. Gary Stallworth will be responsible for conducting groundwater sampling, and for reporting of the results as described in the attached Monitoring and Reporting Program.

AGE submitted a Contingency Plan to address any unforeseen negative impacts is as follows:

1. The following wells are classified as compliance wells: MW-6, MW-7, and IW-9.

2. For the purposes of this contingency plan, an impact to water quality is defined as one of the constituents exceeding an action level. Background concentrations and action levels are shown in the table below.

Stallworth Auto Sales - Action Levels			
Shallow zone (56 to 68.5 ft. bgs)	Maximum Background Concentration (ug/L)[a]	WQO (ug/L)	Action Level (ug/L)
Arsenic	116	10	116
Barium	1,320	1,000	1,320
Bromide	1,100	2,300	1,100
Bromate	<13	10	13
Cadmium	<5	5	5
Copper	90	300	108
Hexavalent Chromium	<0.20	10	0.24
Iron	2,750	300	2,750
Manganese	4,760	50	4,760
TDS	565,000	500,000	565,000
EC	1198 µmhos/cm	900 µmhos/cm	1198 µmhos/cm
pH			<6.5 or >8.5
Deep Zone (116 to 121)	Maximum Background Concentration (ug/L)	WQO (ug/L)	Action Level (ug/L)
Arsenic	108	10	116
Barium	1,190	1,000	1,320
Bromide	640	2,300	1,100
Bromate	<13	10	13
Cadmium	<5	5	5
Copper	83	300	100
Hexavalent Chromium	<0.20	10	0.24
Iron	740	300	740
Manganese	2,080	50	2,080
TDS	560,000	500,000	560,000
EC	1121 µmhos/cm	900 µmhos/cm	1121 µmhos/cm
pH			<6.5 or >8.5

a –Maximum detected concentrations, sampled collected October 2016 from treatment, background, transition, and compliance zone wells

3. If water quality concentrations exceed action levels in compliance wells, AGE will cease injections into the core area of the plume.

4. AGE will collect additional groundwater data during two consecutive quarters from the compliance wells to confirm exceedance of action levels. If exceedances are confirmed in post-injection analytical results, AGE proposes to implement bulk groundwater extraction

events, utilizing the impacted compliance zone wells as the extraction points. Groundwater will be extracted from each of the effected wells at a rate between 1 and 3 gallons per minute and pumped into an onsite storage container (20,000-gallon capacity), where it will be stored until it is removed and hauled to a licensed waste facility for proper disposed. Each of the bulk-pumping event will remove approximately 20,000 gallons (the capacity of the temporary storage tank).

5. After each bulk-pumping event, groundwater samples will be collected from each of the impacted compliance wells and analyzed. Bulk-pumping events will continue until concentrations in compliance wells decrease to below action levels.

6. AGE will not resume hydrogen peroxide injection after implementing the contingency plan until after corresponding with Central Valley Water Board staff.

If you desire to modify the injectants and/or volume of injectants, a revised Notice of Intent must be submitted and a new Notice of Applicability issued prior to proceeding with the additional/modified injection.

The scope of work for this project is covered by the CEQA documentation for the General Order. Additional CEQA activities are not needed.

No comments were received on the draft Notice of Applicability and Monitoring and Reporting Program during the 30-day public comment period ending 26 April 2018.

Specific Requirements:

1. The project will be operated in accordance with the requirements contained in the General Order and in accordance with the information submitted in the Notice of Intent.

2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this Notice of Applicability is officially rescinded.

3. The Responsible Party shall comply with the attached General Order No. R5-2015-0012, General Waste Discharge Requirements for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land.

4. Injection of materials other than a hydrogen peroxide solution as specified above, into the subsurface is prohibited, unless analysis, as specified in Order No. R5-2015-0012, of the injectant is provided and approval is given by Central Valley Water Board staff.

5. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by provisions of the California Water Code.

6. The Responsible Party will implement the final contingency plan, included as part of the Notice of Intent, within 30-days of it being triggered.

7. The Responsible Party shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-040 and any revisions thereto as ordered by the Executive Officer.

If you have any questions or concerns please contact Vera Fischer at (916) 464-4792 or contact her at vera.fischer@waterboards.ca.gov.

for Patrick Pulupa, Incoming Executive Officer for
Pamela C. Creedon, Executive Officer

Attachment: General Order No. R5-2015-0012
Monitoring and Reporting Program No. R5-2015-0012-040

cc: Ms. Jovel Vossler, Regional Water Quality Control Board, Sacramento
Technical Staff, San Joaquin County Environmental Management, Stockton
Mr. Brian Millman, Advanced GeoEnvironmental, Inc., Stockton

ATTACHMENT C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-040

FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND
FOR
STALLWORTH AUTO SALES
602 NORTH CALIFORNIA STREET, STOCKTON
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation system for the Stallworth Auto Sales at 602 North California Street in Stockton, San Joaquin County. This MRP is issued pursuant to Water Code Section 13267. Stallworth Auto Sales (The Discharger) shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, Central Valley Regional Water Quality Control Board (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 the material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

GROUNDWATER MONITORING

1. As shown on Figure 1, there are 14 groundwater monitoring wells (MW-1A, MW-1B, MW-1C, MW-1D, and MW-2 through MW-11), four (4) soil vapor extraction wells (VW-1 through VW-4), and nine (9) groundwater injection wells (IW-1 through IW-9) 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. Monitoring wells with free phase petroleum product or visible sheen shall be monitored, at a minimum, for product thickness and depth to water. The volume of extracted groundwater, if applicable, shall also be provided in quarterly monitoring reports. Sample collection and analysis shall follow standard EPA protocol.

2. The monitoring wells, extraction wells and/or injection wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Frequency and Constituent Suite

Well Number[1]	Constituent Suite(s)[3]	Frequency[2]	Monitoring Objective
MW-6, MW-7, IW-9	Suite A, Suite B	Once within 6 months of treatment, Semi-Annually thereafter	Compliance[4]

Table 1: Sampling Frequency and Constituent Suite (cont.)

Well Number[1]	Constituent Suite(s)[3]	Frequency[2]	Monitoring Objective
IW-6, IW-8	Suite A, Suite B	Once within 6 months of treatment, Semi-Annually thereafter	Transition Zone[5]
IW-4, MW-8	Suite A, Suite B	Quarterly	Treatment Zone[6]
MW-2	Suite A, Suite B	Semi-Annually	Background[7]
MW-1B, MW-3, MW-4, MW-5, MW-9, MW-10, MW-11	Suite A	Semi-Annually	Other[8]

[1] Well numbers as shown on Figure 1.
[2] Prior to startup and stated frequency thereafter.
[3] Constituent suite components listed in Table 2.
[4] Wells used to determine compliance with groundwater limitations.
[5] Wells sampled to evaluate compliance with groundwater limitations.
[6] Wells sampled to evaluate progress inside the treatment zone.
[7] Wells used to evaluate background concentrations.
[8] Wells used to define the extent of groundwater impacts.

Table 2: Analytical Methods

Constituent	Method [1]	Maximum Practical Quantitation Limit (µg/L) [2]
Suite A		
TPH-G and TPH-D[3]	EPA 8260B or 8015	50
BTEX[4]	EPA 8260B	0.5
Fuel Oxygenates[5]	EPA 8260B	0.5 - 5
1,2-Dichloroethane (1,2-DCA), ethylene dibromide (EDB)	EPA 8260B	0.5
Suite B		
Metals, Dissolved[6]	EPA 6010 or 6020	Various
Hexavalent Chromium	EPA 7199	1.0
Total Dissolved Solids	EPA SM250C	10
Bromate and Bromide	EPA 300.1	1000

[1] Or an equivalent EPA Method that achieves the same or lower Practical Quantitation Limit.
[2] All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as trace.
[3] TPH-G = total petroleum hydrocarbons as gasoline, TPH-D = total petroleum hydrocarbons as diesel
[4] BTEX = benzene, toluene, ethylbenzene, and total xylenes
[5] Fuel Oxygenates = methyl tert butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert butyl ether (ETBE), tert amyl methyl ether (TAME), and tert butyl alcohol (TBA)
[6] Metals include: Aluminum, Arsenic, Barium, Calcium, total Chromium, Copper, Iron, Manganese, and Zinc.

FIELD SAMPLING

3. In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitoring well or injection well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Practical Quantitation Limit	Analytical Method
Groundwater Elevation	Feet, Mean Sea Level	0.01 feet	Measurement +/- 0.01 ft.
Oxidation-Reduction Potential	Millivolts	10 millivolts	Field Meter
Electrical Conductivity	uhmos/cm	50 µS/cm^2	Field Meter
Dissolved Oxygen	mg/L	0.2 mg/L	Field Meter
pH	pH Units (to 0.1 units)	0.1 units	Field Meter
Temperature	^{0}F/^{0}C	0.1 ^{o}F/^{o}C	Field Meter

All wells that are purged shall be purged until pH, temperature, conductivity and dissolved oxygen are within 10% of the previous value.

4. Field test instruments (such as those used to test pH and dissolved oxygen) may be used provided that:
   (a) The operator is trained in proper use and maintenance of the instruments;
   (b) The instruments are calibrated prior to each monitoring event;
   (c) Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
   (d) Field calibration reports are submitted as described in item (b) of the "Reporting" section of this MRP.

IN-SITU DISCHARGE MONITORING

5. The Discharger shall monitor during the injection event the discharge of hydrogen peroxide that is 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 subsurface.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	pounds of injectant per day	Pounds per day specified by manufacturer, operational uptime measure with hour meter

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

6. The Discharger established the following background values for concentrations in shallow groundwater (about 56 to 68.5 feet below ground surface) in Table 5A and deep groundwater (about 116-121 feet below ground surface) in Table 5B.

Table 5A: Shallow Background Concentration Values

Constituent	Background Concentration (µg/L)
Arsenic	116
Barium	1,320
Bromide	1,100
Bromate	<13
Cadmium	<5
Copper	90
Hexavalent Chromium	<0.20
Iron	2,750
Manganese	4,760
Total Dissolved Solids	565,000
Electrical Conductivity	1198 µmhos/cm

Table 5B: Deep Background Concentration Values

Constituent	Background Concentration (µg/L)
Arsenic	108
Barium	1,190
Bromide	640
Bromate	<13
Cadmium	<5
Copper	83
Hexavalent Chromium	<0.20
Iron	740
Manganese	2,080
Total Dissolved Solids	560,000
Electrical Conductivity	1121 µmhos/cm

a –Maximum detected concentrations, sampled collected October 2016 from treatment, background, transition, and compliance zone wells

REPORTING

7. 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. In addition, The Discharger shall notify the Central Valley Water Board within 48 hours of any changes in scheduled injection and/or monitoring events. 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.

8. 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 their subordinate and signed by the registered professional.

9. The Discharger shall submit quarterly electronic data reports, 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 **30th day of the month following the end of each calendar quarter (each 30 April, 30 July, 30 October, and 30 January)** until such time as the Executive Officer determines that the reports are no longer necessary. 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 pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated.

   (b) Field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.

   (c) Groundwater contour maps for all groundwater zones.

   (d) Pollutant concentration maps for all groundwater zones.

   (e) 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.

   (f) A table showing historical lateral and vertical flow directions and gradients.

   (g) Cumulative data tables containing the water quality analytical results and depth to groundwater.
   (h) A copy of the laboratory analytical data report, which may be submitted in an electronic format.

   (i) The status of any ongoing remediation, including an estimate of the cumulative mass of pollutant removed from the subsurface, the effectiveness of the remediation system, and any field notes pertaining to the injection and monitoring of the remedial action.

   (j) The reasons for and duration of all interruptions in the operation of the remediation project, and actions planned or taken to correct and prevent interruptions.

10. An Annual Report shall be submitted to the State Water Resources Control Board Geotracker database by **30 January** 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

fourth quarter monitoring 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 network or reporting program.

(g) A proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

11. 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 Palupa, Incoming Executive Officer for
Pamela C. Creedon, Executive Officer

5/17/18
(Date)