



Los Angeles Regional Water Quality Control Board

June 30, 2014

Mr. Clay Rumbaoa, Trustee
Anadite California Restoration Trust
1003 Bishop Street, Suite 1170
Honolulu, Hawaii 96813

REVISED MONITORING AND REPORTING PROGRAM – IN-SITU ENHANCED ANAEROBIC BIOREMEDIATION OF VOLATILE ORGANIC COMPOUNDS IMPACTED GROUNDWATER AT FORMER ANADITE FACILITY, 10647 GARFIELD AVENUE, SOUTH GATE, CALIFORNIA (FILE NO. 97-019, WDR ORDER NO. R4-2011-0036, CI-8685, CLEANUP AND ABATEMENT ORDER NO. 98-004, SCP NO. 0541, SITE ID NO. 2041C00, GLOBAL ID WDR100000235)

Dear Mr. Rumbaoa:

On February 3, 2011, the Anadite California Restoration Trust (hereinafter Discharger) was provided coverage under Waste Discharge Requirements (WDR) Order No. R4-2011-0036 by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The application of in-situ enhanced anaerobic bioremediation of volatile organic compounds (VOCs) impacted groundwater at the former Anadite facility was regulated under the WDR and its corresponding Monitoring and Reporting Program (MRP) No. CI-8685.

On June 30, 2011, the Discharger notified Regional Board staff of the suspension of monitoring and remediation activities at the site due to the Discharger's inability to provide financial resources. Regional Board staff requested financial documents from the Discharger to verify the financial status. The State Water Resources Control Board, Office of Research, Planning and Performance (ORPP) reviewed financial documents provided by the Discharger, and determined that the Discharger is able to continue remediation activities at a reduced scope. Based upon ORPP's determination, Regional Board staff in a letter dated March 18, 2013, required the Discharger to implement a reduced-scale groundwater remediation and monitoring program.

A *Reduced-Scale Groundwater Remedial Action Plan and Implementation Plan* (REDUCED-SCALE RAP) was submitted on November 27, 2013. Regional Board staff approved the REDUCED-SCALE RAP on March 10, 2014, as an interim remedial action. Additional remedial activities not addressed in the REDUCED-SCALE RAP, will be required in the future, pursuant to Cleanup and Abatement Order No. 98-004 dated January 27, 1998.

The REDUCED-SCALE RAP proposes the following scope of work to start treating VOCs impacted groundwater at and near the on-site source area:

- Injection of a mixture of potable water with electron donor (emulsified vegetable oil [EVO] and lactate) into four existing groundwater monitoring wells (three on-site

locations and one off-site location). Approximately 6,000 gallons of diluted EVO solution containing organic carbon at 2% to 3% weight/volume (wt/vol) is planned to be injected into MW-9, while approximately 5,300 gallons of the aforementioned amendment solution will be injected into each of the three wells, MW-15, MW-22, and MW-19.

- Injection of a commercially-available bacterial culture (SDC-9™ or KB-1®) into the aforementioned four existing groundwater monitoring wells. Approximately 10 liters are planned to be injected into MW-15, MW-19, and MW-22 while 15 liters are planned for MW-9.
- The duration of field implementation of the electron donor amendment injections and bioaugmentation is estimated to be two to three weeks.
- Monitoring of injection activities with 12 existing groundwater monitoring wells (four on-site and eight off-site locations) is planned for a period of one to two years after the injections.

Due to the reduced scope of work proposed in the REDUCED-SCALE RAP, injection of the proposed electron donors and bacterial cultures cannot be started until Monitoring and Reporting Program (MRP) No. CI-8685 is revised to identify the 16 monitoring wells and associated monitoring and reporting schedule. The revised Monitoring and Reporting Program, which incorporates the requested modifications, is enclosed.

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports and correspondence required under the MRP, including groundwater monitoring data, discharge location data, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100000235. ESI training video is available at:

<https://waterboards.webex.com/waterboards/ldr.php?AT=pb&SP=MC&rID=44145287&rKey=7dad4352c990334b>

Please see Electronic Submittal for Geotracker Users, dated December 12, 2011, at:
<http://www.waterboards.ca.gov/losangeles/resources/Paperless/Paperless%20Office%20for%20OGT%20Users.pdf>.

If you have any additional questions, please contact the Project Manager, Mr. Luis Changkuon at (213) 576-6667 (lchangkuon@waterboards.ca.gov) or Groundwater Permitting Program staff for this case, Mr. David Koo at (213) 620-6155 (dkoo@waterboards.ca.gov).

Sincerely,


Samuel Unger, P.E.
Executive Officer

Enclosure: Monitoring and Reporting Program No. CI-8685 revised on date June 16, 2014

cc: Mr. Ted Johnson, Water Replenishment District of Southern California
Mr. Mark Stuart, California Department of Water Resources, Central Basin
Mr. Gladis Deras, City of South Gate, Public Works Department, Engineering Division
Mr. Sibel Tekce, CDM Smith
Mr. John Didun, Anadite South Gate
Mr. Shu-Fang Peng Orr, California Department of Public Health, Drinking Water
Program

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

**MONITORING AND REPORTING PROGRAM NO. CI-8685
FOR
ANADITE CALIFORNIA RESTORATION TRUST
FORMER ANADITE SOUTH GATE FACILITY
SOUTH GATE, CALIFORNIA**

(FILE NO. 97-019, SCP NO. 0541)

The Discharger shall implement this monitoring and reporting program (MRP) effective June 16, 2014.

I. GROUNDWATER MONITORING PROGRAM

It is anticipated that injection activities will be initiated in the third quarter of 2014. Monitoring of the application of Enhanced Anaerobic Bioremediation (EAB) injections shall consist of samples collected from the following groundwater wells:

Injection Wells:	50-foot zone:	MW-9
	80-foot zone:	MW-15 and MW-22
	100-foot zone:	MW-19
Performance Monitoring Wells:	50-foot zone:	MW-10
	80-foot zone:	MW-18 and MW-20,
	100-foot zone:	MW-21 and MW-28,
Downgradient Monitoring Wells:	50-foot zone:	MW-12
	80-foot zone:	MW-38
	100-foot zone:	MW-40
Upgradient Monitoring Wells:	50-foot zone:	MW-1 and MW-2 (cross gradient)
	80-foot zone:	MW-16 (cross gradient)
	100-foot zone:	MW-23

Figure 1 shows the location of the Facility. The groundwater injection and monitoring network, which includes a total of 16 groundwater wells as listed above, are shown in Figure 2.

Groundwater samples will be collected once from all the injection and monitoring wells prior to injection (baseline). Once EAB starts, groundwater samples shall be collected and analyzed in accordance with the following program.

CONSTITUENT	UNITS	TYPE OF SAMPLE	MINIMUM FREQUENCY OF ANALYSIS
Total Daily Injections	Liters or Gallons	Measurement	Per injection
Depth to Groundwater	feet below ground surface (ft bgs)	In-situ	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Groundwater Elevation	Feet above mean sea level	Calculation	<u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Field Parameters (dissolved Oxygen, Oxidation-Reduction Potential, pH, Temperatures, Specific Conductance, and Turbidity)	m/L, millivolts, pH units, degrees C, $\mu\text{S}/\text{cm}$, and NTU, respectively	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Volatile Organic Compounds	$\mu\text{g}/\text{L}$	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and semi-annual thereafter
Dissolved Hydrogen Gases: Ethane, ethene, methane	$\mu\text{g}/\text{L}$	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Total Organic Carbon	$\mu\text{g}/\text{L}$	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Anions: (Sulfate, nitrate, nitrite, chloride)	$\mu\text{g}/\text{L}$	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter

Alkalinity	µg/L	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter
Volatile Fatty Acids	µg/L	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline and Semiannual (second and fourth quarters) for first year only <u>Upgradient Monitoring Wells</u> : Baseline and Semiannual (second and fourth quarters) for first year only
Bacterial DNA analysis*	gene copies/mL	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline and Semiannual (second and fourth quarters) for first year only <u>Upgradient Monitoring Wells</u> : Baseline and Semiannual (second and fourth quarters) for first year only
Total Dissolved Solids	µg/L	Grab	<u>Injection wells</u> : Baseline <u>Performance Monitoring Wells</u> : Baseline, Quarterly for first year, and Semi-annual thereafter <u>Downgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter <u>Upgradient Monitoring Wells</u> : Baseline, Quarterly starting from the second quarter for first year, and Semi-annual thereafter

Notes:

* Bacterial DNA Analysis = Quantitative Polymerase Chain Reaction (qPCR) test for Dehalococcoides bacteria and functional analyses for the three reductase (RDase) genes – tceA (TCE RDase), vcrA, and bvcA (BAVI RDase)

II. AMENDMENT INJECTION REPORTING REQUIREMENTS

The EAB monitoring reports shall contain the following information regarding injection activities:

- a. Depth of injection points/zones;
- b. Quantity and concentration of amendment injected and dates injected; and
- c. Total amount of amendment injected during the reporting period and to date.

III. GROUNDWATER MONITORING REPORTING REQUIREMENTS

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

- a. Well identification, date and time of sampling;
- b. Sampler identification and laboratory identification; and

- c. Routine observation of groundwater elevation levels, recorded to 0.01 feet above mean sea level (ft amsl) and groundwater flow direction.

The Discharger is required to submit MRP reports which shall include data collected during the baseline, quarterly, and semi-annual sampling events. The groundwater monitoring wells shall be gauged and sampled as outlined in Section I, and results shall be reported to the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) under the MRP for the Individual Waste Discharge Requirements according to the following schedule. Any future changes in the injections, sampling, and reporting schedule will be provided in a revised MRP approved by the Regional Board.

Reporting Period	Sampling Period	Report Due Date
Baseline	Prior to injections	October 15, 2014
Quarterly (1 st , 2 nd , 3 rd , 4 th)	Months 3, 6, 9 and 12	April 15, 2015, July 15, 2015, October 15, 2015, and January 15, 2016
Semi-annual (2 nd year)	Months 18 and 24	July 15, 2016 and January 15, 2017
Final Report	Active remediation period	To be determined

The Discharger shall submit reports detailing the results of the remediation. The reports should include a discussion of the use of electron donor and bioaugmentation culture to treat VOC-contaminated groundwater at and in the vicinity of the site.

If there is no discharge or injection during the reporting period, the report shall so state. Groundwater monitoring reports must be addressed to the Regional Board, Attention: Information Technology Unit.

Whenever wastes associated with the discharge under this Order, are transported to a different disposal site, the following shall be reported in the monitoring report: type and quantity of wastes; name and address of the hauler (or method of transport if other than by hauling); and location of the final point(s) of disposal.

IV. 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)

V. MONITORING FREQUENCIES

Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer 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 removed by the Executive Officer if the Discharger makes a request and the request is supported by statistical trends of monitoring data submitted.

VI. ELECTRONIC SUBMITTAL OF INFORMATION (ESI) TO GEOTRACKER

The Discharger shall comply with the Electronic Submittal of Information (ESI) requirements by submitting all reports required under the MRP, including groundwater monitoring data and discharge location data (latitude and longitude), correspondence, and pdf monitoring reports to the State Water Resources Control Board GeoTracker database under Global ID WDR100000235.

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: Samuel Unger
Samuel Unger, P.E.
Executive Officer

Date: 6-25-14