
Central Valley Regional Water Quality Control Board

27 January 2020

Jami Aggers
Stanislaus County Dept. of Env. Resources
3800 Cornucopia Way, Suite C
Modesto, CA 95358

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NOTICE OF APPLICABILITY OF GENERAL ORDER R5-2015-0012 GEER ROAD LANDFILL, 750 GEER ROAD, MODESTO, STANISLAUS COUNTY

Stanislaus County Department of Environmental Resources (Discharger) submitted a completed Notice of Intent (NOI), dated 16 April 2019, requesting coverage under Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land* (General Order). Additional information was received from the Discharger on 17 December 2019. Based on the information provided the system will operate according to Waste Discharge Requirements (WDRs) for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258), (hereafter "Title 27"), therefore, staff have determined that the discharge meets the required conditions for approval under the General Order. The NOI proposes the discharge of treated groundwater to a shallow subsurface infiltration gallery (Project). All requirements contained in the General Order are applicable to this Project. The Project is hereby assigned Order R5-2015-0012-059. A copy of the General Order is enclosed with this notice and is also available at the Central Valley Regional Water Quality Control Board (Central Valley Water Board) [Adopted Orders webpage](https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2015-0012.pdf) (https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2015-0012.pdf).

Project Location

The Project is in Stanislaus County, Section 3, Township 3S, Range 10E, MDB & M at Triangle Ranch, owned by Stanislaus County, and adjacent to the northwest corner of Geer Road Landfill (Landfill), Modesto, as shown on Attachment A. Triangle Ranch is a buffer land area, not cropped or grazed. The Project is on assessor's parcel number 009-029-015 at latitude 37°37'52"N, and longitude 120°51'6.5"W. The Tuolumne River runs southwest and west of the Triangle Ranch. The landfill groundwater extraction treatment system (GWETS) infiltration gallery is situated on a bluff to the northwest of the Landfill. The depth to groundwater in the infiltration zone is approximately 75 feet below ground surface (bgs). Downgradient, towards the river, groundwater is typically less than 20 feet bgs. The Project location is shown on Attachment B of this Notice of Applicability (NOA).

Project Description

The Project described in this NOA is the discharge from the GWETS to offsite land via an infiltration gallery. Target groundwater pollutants to be treated via the GWETS process described in Table 1 are manganese (Mn), iron (Fe), and volatile organic compounds (VOCs). The GWETS includes two parallel treatment trains for groundwater treatment, each with four stages of treatment for removal of VOCs and metals, however, with Central Valley Water Board approval the GWETS system may require expansion or modification to fulfill its purpose of limiting the spread of the VOC plume. The built-in redundancy of the two treatment trains is intended to allow running the system on one train while conducting maintenance on the other. Influent and effluent equalization tanks were also included in the system design.

Table 1 Groundwater Extraction Treatment System (GWETS) stages

| Stage | Process | Purpose |
|-------|---|---|
| 1 | Chlorine injection | Chlorine promotes oxidation, helping the precipitation of soluble metals for better Stage 2 efficiency. |
| 2 | Filtration phase 1 | Retains some metals (i.e. iron and manganese), resulting in reduction of their concentrations. |
| 3 | Filtration phase 2 | Retains some solids, resulting in reduction of turbidity. |
| 4 | Multi-phase GAC with two chambers in series | Retains VOCs on the GAC, reducing total VOC concentrations. |

Each treatment train in the GWETS has three sample locations: at the inlet, between the two granular activated carbon (GAC) chambers, and at the outlet. GWETS monitoring of the inlet, intra-process, and outlet is reported to GeoTracker according to the applicable Title 27 WDRs. The Title 27 WDRs for the Landfill specify prescriptive requirements and performance standards applicable to monitoring data analysis and to the GWETS Operation and Maintenance plan, meeting the requirements in Provision F.3. of the General Order.

Purge water from monitoring well sampling across the Landfill is taken to the GWETS and added to the extracted groundwater influent stream, in compliance with Title 27 WDRs' approved *Sampling and Analysis Plan*. Within the Landfill site there are 20 groundwater extraction wells, which provide extracted groundwater influent for GEWTS treatment, and 38 groundwater monitoring wells, in addition to onsite piezometers to monitor groundwater elevations in extraction areas, and offsite monitoring wells along or near the landfill's western and northwestern compliance boundary. These extraction wells and monitoring points are all part of the Discharger's groundwater monitoring and reporting program under Title 27 WDRs.

There are six piezometers offsite from the Landfill, on Triangle Ranch property, which are uniquely monitored as part of this NOA. This NOA requires monitoring of groundwater elevation (depth to groundwater) within and downgradient of the infiltration gallery, to help protect against overloading.

Treated effluent from the GWETS is disposed of via subsurface infiltration through a perforated pipe gallery located in the northeast corner of the County-owned Triangle Ranch Property. The infiltration gallery is comprised of an array of three 350-foot separate sub-surface perforated pipes set in crushed drain rock and encased in non-woven polypropylene geotextile fabric in parallel five-foot-deep trenches. The infiltration gallery is designed such that a single perforated pipe can accommodate the anticipated treatment system maximum flow of 200 gpm (288,000 gallons per day). In addition, system piping will be such that the infiltration gallery can be expanded if necessary. Underlying soils are sand, silty sand, and clayey clay to roughly 10 feet bgs, where there is an apparently isolated clay and silt interval approximately five feet thick with limited extent, appearing not to pose a major impediment to subsurface percolation.

GWETS effluent discharge is not expected to contribute to further groundwater degradation because the treated groundwater is of better water quality than local groundwater beneath the Landfill. The constituents of concern for the GWETS treatment are total dissolved solids, arsenic, iron, manganese, and VOCs that are present in concentrations greater than the limits allowed for protection of beneficial uses of the waters of the State. Groundwater is monitored for these and other non-aqueous phase organic compounds under the Title 27 WDRs.

This NOA requires monitoring of flow to and condition of the infiltration gallery to ensure the system is not overloaded. Treated groundwater effluent quality and groundwater monitoring that would normally be required to comply with the General Order are reported in accordance with the Title 27 WDRs. Extracted groundwater influent to the GWETS, the treatment system itself, and the quality of its treated effluent are monitored according to the requirements of applicable Title 27 WDRs.

Under this NOA's monitoring and reporting program (MRP), data shall be reported electronically to the California State Water Resources Control Board's [GeoTracker Database](https://geotracker.waterboards.ca.gov/) (<https://geotracker.waterboards.ca.gov/>).

General Information

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 completed 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 revoked.
3. *In-situ* placement of materials other than treated groundwater as described in this NOA into the subsurface is prohibited.
4. 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.

5. Stanislaus County Department of Environmental Resources and Geer Road Landfill and their agents shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-059 and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding the requirements of this NOA, please contact Paul Sanders at (916) 464-4817 or at paul.sanders@waterboards.ca.gov.

Original signed by Robert Busby for

Patrick Pulupa
Executive Officer

Enclosures: General Order R5-2015-0012
 Standard Provisions

cc: Stanislaus County Environmental Health Department
 Greg Acosta, Tetra Tech BAS



Sources:

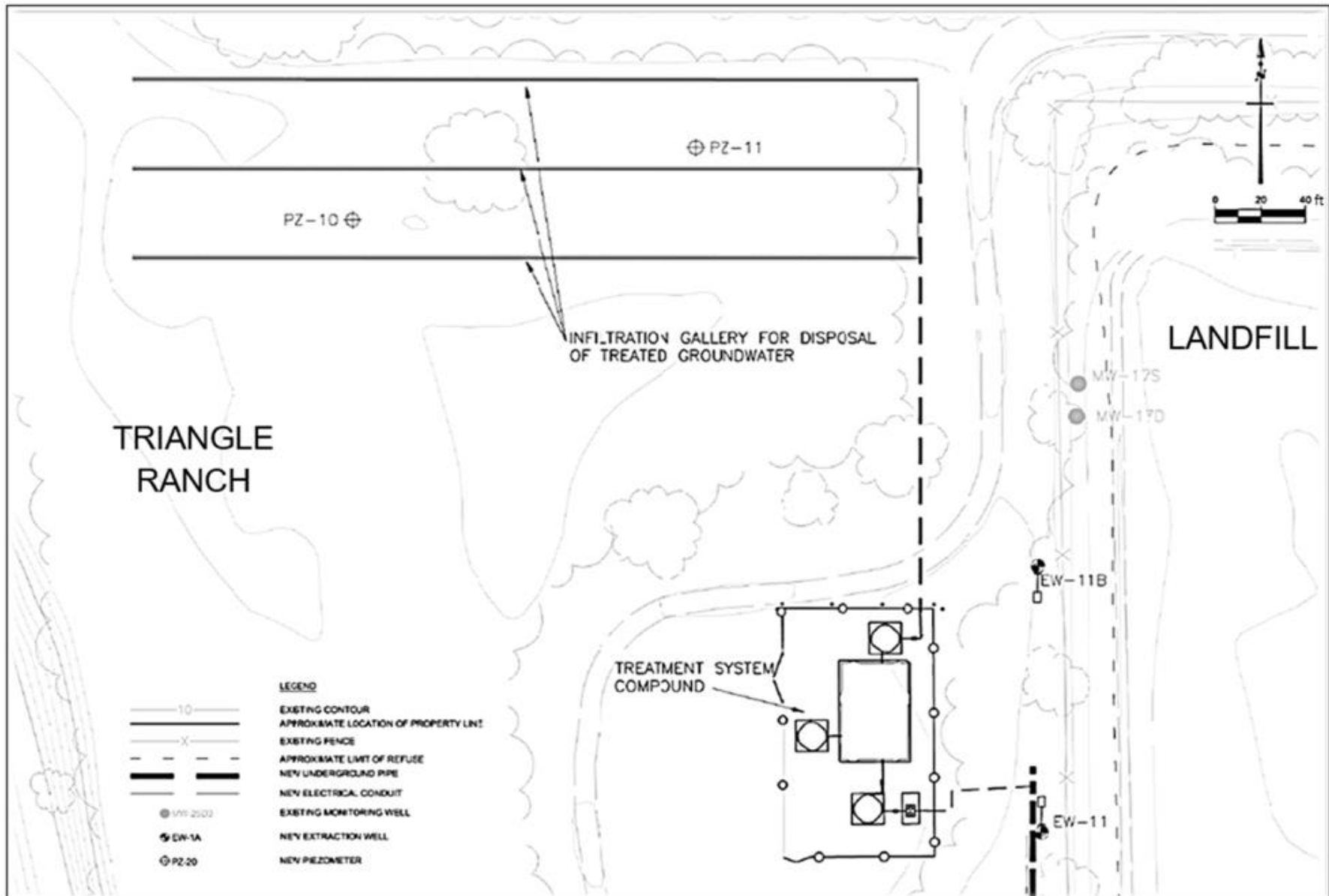
GeoTracker
(Imagery ©2019, Maxar Technologies,
USGS, USDA Farm Service Agency)

SITE LOCATION MAP

Geer Road Landfill GWETS
Stanislaus County

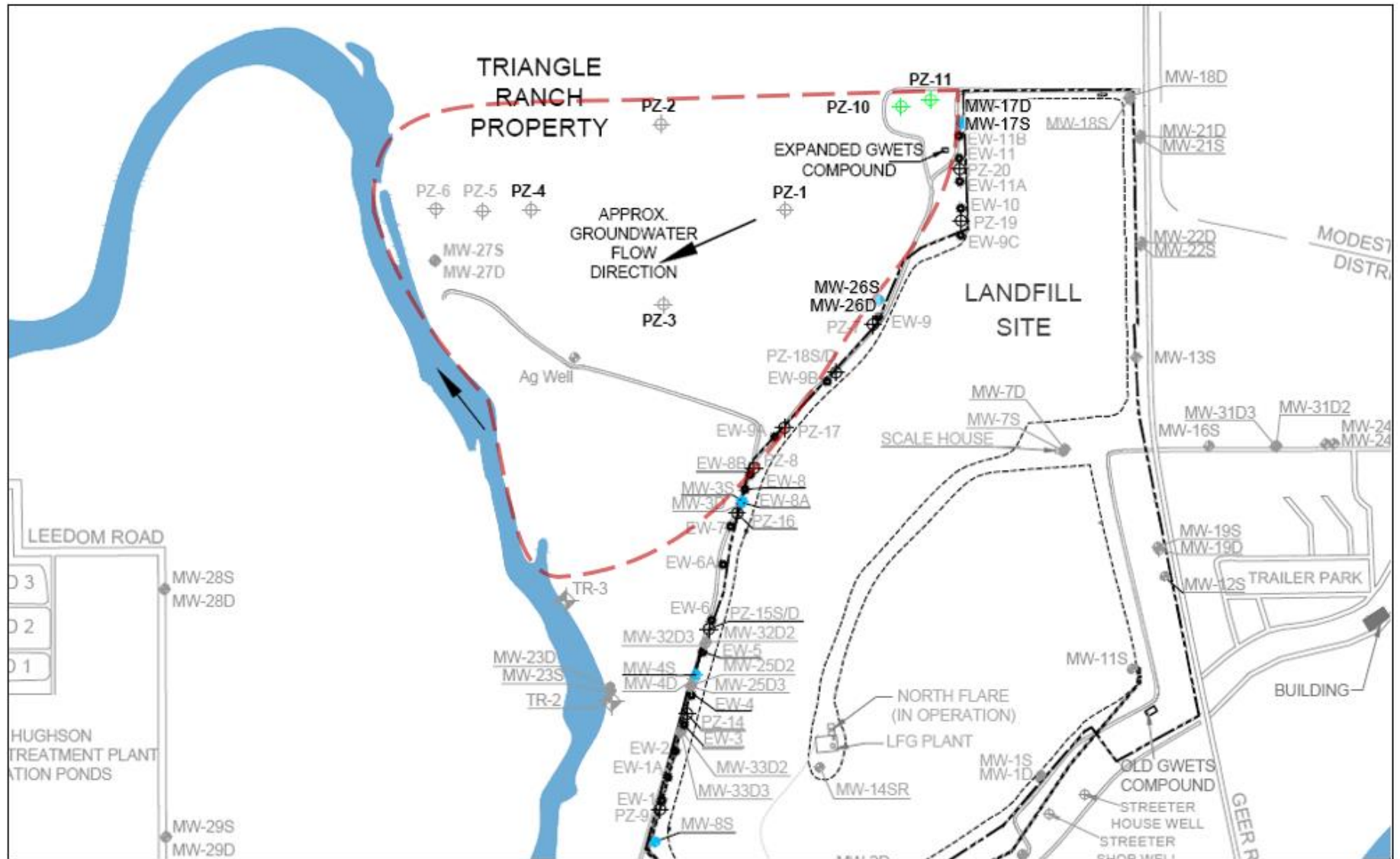
Scale:
1 in. ≈ 1100 feet





Source:
RWD Attachment D from Tetra Tech BAS,
Diamond Bar, CA

GWETS DISCHARGE LOCATION
GEER ROAD LANDFILL
STANISLAUS COUNTY



Source:
 Notice of Intent: General Waste
 Discharge Requirements Attachment C,
 Tetra Tech BAS

**GWETS INFILTRATION GALLERY
 SAMPLING SITE MAP**
 Geer Road Landfill,
 Triangle Ranch Property
 Stanislaus County

Scale:
 1 in. ≈ 800 feet

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-059
FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the discharge of treated groundwater to land by the groundwater extraction and treatment system (GWETS) which is treating contaminated leachate from Geer Road Landfill at 750 Geer Road in Modesto, Stanislaus County. 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 specific sample station locations prior to implementation of sampling activities.

The Central Valley Water Board recognizes that the Geer Road Landfill GWETS operation, including influent and effluent quality, is monitored in compliance with Title 27 waste discharge requirements (WDRs). The Discharger shall continue reporting all required extraction well and GWETS system monitoring data as necessary under Title 27 requirements. Thus, no additional GWETS treatment plant data collection is needed under this Order. However, if there is a future change with the Title 27 requirements, this MRP will be re-evaluated. Data required to evaluate the GWETS impact to groundwater under this Order include groundwater depth, elevation, and flow contours, GWETS effluent flow rate and water quality data, and groundwater data from the monitoring wells and piezometers identified below. Some of those data are monitored under the Title 27 requirements. This MRP requires monitoring and reporting of groundwater elevation at and downstream of the infiltration gallery, flow rate to the infiltration gallery, and the condition of infiltration gallery.

GROUNDWATER MONITORING

As shown on Attachment B, there is an infiltration gallery with three parallel branches and two local piezometers, PZ-10 and PZ-11. Within the groundwater flow path from the infiltration gallery to the river, shown on Attachment C, there are six additional piezometers: PZ-1 through PZ-6. All may be used to monitor groundwater elevation, while all except PZ-5 are also used to monitor groundwater quality. Monitoring wells MW-27S and MW-27D are used for monitoring groundwater quality downgradient of the landfill and GWETS infiltration site. Select piezometers and monitoring wells shall be sampled according to the schedule in Table 1 on the next page. Additional groundwater monitoring for the GWETS system, and any treatment system wells installed after the issuance of this MRP, shall at a minimum follow the schedule described by Title 27 WDRs as summarized in Table 2. Sample collection and analysis shall follow standard United States Environmental Protection Agency (EPA) protocol.

Table 1. Sampling Frequency

| Well Number | Parameter | Frequency | Monitoring Objective |
|-------------------|-----------------------|-----------|---------------------------|
| PZ-10, PZ-11 | groundwater elevation | Weekly | Treatment Zone compliance |
| PZ-1 through PZ-4 | groundwater elevation | Weekly | Downgradient compliance |

Table 2. Title 27 monitoring relative to GWETS infiltration

| Well Number | Constituents | Frequency | Monitoring Objective |
|-------------------------------------|--|-------------------|-------------------------|
| MW-27S | VOCs, metals (dissolved), chloride, Total Dissolved Solids (TDS), nitrate as N | per Title 27 WDRs | Downgradient compliance |
| MW-3S, MW-4S, MW-8S, MW-17S, MW-26S | VOCs, metals (dissolved), chloride, Total Dissolved Solids (TDS), nitrate as N | per Title 27 WDRs | Background |

FIELD SAMPLING AND INSPECTION

Field inspection shall be conducted each time a monitoring well or piezometer is sampled. Sampling and inspection of field parameters shall be as specified in Table 3. Inspection of the condition of the infiltration gallery zone shall include recorded observations including the following at a minimum:

1. Evidence of ponded or surfacing water at any point in or near the infiltration zone.
2. Evidence of erosion at any point in or near the infiltration zone.
3. Evidence of seeping at any point in or near the infiltration zone.

For these field observations record the estimated size of the affected area and record the affected areas on a map with the observation date and the inspector's initials. The observations and associated map(s) shall be submitted as part of the regular semi-annual report. Elevation units shall be feet, Mean Sea Level (ft MSL).

Table 3 Field sampling and inspection requirements

| Parameters | Units | Analytical method | Monitoring Frequency | Reporting Frequency |
|--|--------|-------------------|----------------------|---------------------|
| Groundwater Elevation (to 0.01 ft MSL) | ft MSL | Measurement | weekly | semi-annually |
| Condition of infiltration gallery zone | -- | Observation | weekly | semi-annually |
| Condition of downgradient zone | -- | Observation | monthly | semi-annually |

TREATMENT PLANT EFFLUENT MONITORING

The effluent from the GWETS is sampled on a defined frequency for compliance with Title 27 requirements, therefore only the data listed in Table 4 are required to meet the

treatment plant effluent monitoring stipulations of the General Order. The concentration of VOCs and other non-naturally occurring organic compounds in the GWETS effluent shall be non-detect. The method detection limit for VOC analysis shall not exceed 0.5 ug/L or the lowest detection limit for a VOC using EPA Method 8260B. See Title 27 WDRs MRP for required GWETS effluent monitoring and reporting.

IN-SITU DISCHARGE MONITORING

Under this NOA the flow rate and flow duration of injected treated groundwater (GWETS effluent) to the GWETS infiltration gallery shall be provided in semi-annual monitoring reports according to the requirements specified in Table 4.

Table 4 Discharge Monitoring Requirements

| Effluent Parameter | Units | Type of Sample | Monitoring Frequency | Reporting Frequency |
|---------------------------|-----------------|-----------------------|-----------------------------|----------------------------|
| Flow rate | gallons per day | meter | weekly | semi-annually |
| Flow duration | hours per day | meter | weekly | semi-annually |

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Discharger has reported background values for concentrations of constituents such as dissolved iron, dissolved manganese, volatile organic compounds, chloride, total dissolved solids, and electrical conductivity in groundwater following the procedures found in California Code of Regulations (CCR) Title 27 § 20415(e)(10), and § 20400(c). Data are summarized here in Table 5 for the most recent sampling date available, from monitoring wells MW-17S/D on 22 May 2019 and from MW-26S/D on 14 November 2018. Also listed in the table are the corrective action concentration limits per Title 27 requirements as of the date of this NOA. The limits present cleanup levels to achieve background concentrations.

Table 5 Background concentration values from MW-17S/D and MW 26S/D

| Parameter | Units | Shallow wells value | Deep wells value | Title 27 Corrective Action Concentration limits (for reference) |
|----------------------|--------------|----------------------------|-------------------------|--|
| TDS | mg/L | 305 | 275 | 690 |
| Arsenic, dissolved | µg/L | 0.5 | 0.4 | 4.5 |
| Iron, dissolved | µg/L | non detect | 245 | 170 |
| Manganese, dissolved | µg/L | 7.7 | 15 | 21 |
| Chloride | mg/L | 19.5 | 11.3 | 120 |
| Nitrate as N | mg/L | 3.7 | 4.6 | 25 |

REPORTING

All monitoring reports should be converted to a searchable portable document format (PDF) and submitted electronically to the [State Water Board's GeoTracker database](https://geotracker.waterboards.ca.gov/) (<https://geotracker.waterboards.ca.gov/>). Additional information regarding electronic submittals is accessible through the Information tab on the GeoTracker homepage. After uploading a document via GeoTracker, the submitting party shall notify Central Valley Water Board staff via email at centralvalleysacramento@waterboards.ca.gov, including the following in the body of the email:

Attention: Non-15 Compliance
Order: R5-2015-0012-059
Report Title: [title of submitted report]
Discharger: County of Stanislaus Department of Environmental Resources
Facility: Geer Road Landfill GWETS Infiltration Gallery
County: Stanislaus
CIWQS ID: 737139

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 clearly illustrate compliance with this Order. In addition, the Discharger shall notify the Central Valley Water Board within 48 hours of any unscheduled shutdown of the groundwater extraction treatment system. 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 semi-annual electronic data reports which conform to requirements of CCR Title 23, Division 3, Chapter 30. The semi-annual reports shall be submitted electronically over the internet to the California Integrated Water Quality System (CWIQS) database by the first day of the second month following the end of each calendar half:

| | |
|---|-------------------|
| First Semi-annual Monitoring Report (January – June): | 1 August |
| Second Semi-annual Monitoring Report (July –December): | 1 February |

A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include the GeoTracker confirmation number for data submitted under this NOA, a discussion of GWETS system requirements 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: Original signed by Robert Busby for
PATRICK PULUPA, Executive Officer

on 27 January 2020
(Date)

Monitoring Report Submittal Transmittal Form

Attn: Paul Sanders (916) 464-4817
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Discharger: Stanislaus County Dept. of Env. Resources.
Name of Facility: Geer Road Landfill GWETS Infiltration
WDRs Order Number: R5-2015-0012-059
Place ID: 737139
County: Stanislaus

I am hereby submitting to the Central Valley Water Board the following information:

Check all that apply:

Monthly Monitoring Report for the month of _____

1st / 2nd (**circle one**) Semi-annual Monitoring Report for the year _____

Violation Notification

During the monitoring period, there were / were not (circle one) any violations of the General Order or Notice of Applicability.

1. The violations were:

2. Have the violations been corrected? Yes / No.

If no, describe what will be done to correct the violations:

Certification Statement

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Signature: _____

Phone: _____

Printed Name: _____

Date: _____