CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

MONITORING AND REPORTING PROGRAM R5-2005-0825 REV1
SYNAGRO WEST LLC AND EMIGH LAND LP
EMIGH LAND TP (SO-4)
SOLANO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring biosolids and biosolids land application areas. 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. This MRP replaces the requirements listed in MRP R5-2005-0825, which was issued on 22 June 2005. Specific sampling locations shall be approved by Regional Board staff prior to implementation of sampling activities.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions). Field test instruments (such as those used to measure pH, electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated at the frequency recommended by the manufacturer;
3. The instruments are serviced and/or calibrated at the manufacturer's recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

1. *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);
2. *Test Methods for Evaluating Solid Waste* (EPA);
3. *Methods for Chemical Analysis of Water and Wastes* (EPA);
4. *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);
5. *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); *and*
6. *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency (EPA) or the State Water Resources Control Board's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than concentrations that implement applicable water quality objectives or limits for the constituents to be analyzed.

BIOSOLIDS MONITORING

Biosolids from each generator shall be sampled and analyzed as follows. Results for all chemical constituents shall be reported in mg/Kg on a dry weight basis. Composite samples may be used in lieu of grab samples if all required holding times are met.

Small generators are those that generate and/or land apply less than 350 dry tons per year (either during a cleanout project or by continuous wasting and disposal). Large generators are all others. Metals include at least the following: arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. PCB arochlors, aldrin, and dieldrin shall be analyzed using SW 846 Method 8080. Semi volatile organics shall be analyzed using EPA Method 8270. Analytical data shall be included in the monthly monitoring report for the month in which monitoring occurred. For months in which no monitoring take place, the Monthly Monitoring Report shall so state.

Table 1 – For Generators Using Continuous Sludge Wasting and Disposal and For Pond Cleaning Projects.

Constituent	Sample Type	Sampling Frequency for Small Generator	Sampling Frequency for Large Generator	Reporting Frequency
Metals (total)	Grab	1 per six months	1 per 200 dry tons; minimum of 1 per month	Monthly
PCB arochlors, aldrin, dielfrin	Grab	1 per six months	1 per 500 dry tons; minimum of 1 per six months	Monthly
Semi-volatile organics	Grab	1 per six months	1 per 500 dry tons; minimum of 1 per six months	Monthly
Percent moisture	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly

Constituent	Sample Type	Sampling Frequency for Small Generator	Sampling Frequency for Large Generator	Reporting Frequency
Total nitrogen	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly
Ammonia nitrogen	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly
Nitrate nitrogen	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly
Total phosphorus	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly
Total potassium	Grab	1 per quarter	1 per 200 dry tons; minimum of 1 per month	Monthly

If, for a particular biosolids generator, it can be demonstrated that the generator's biosolids exhibit consistent chemical character over a period of at least two years, the applicable sampling schedule may be reduced by one-half upon written approval of a Biosolids Monitoring Data Summary Report. The report shall contain tabulated analytical data summaries for all biosolids monitoring data for the previous three years.

Table 2 – For Generators with Stockpile Disposal Projects.

Constituent	Sample Type	Sampling Frequency for Large Generator
Metals (total)	Composite	1 per 200 dry tons; minimum of 1 per month
PCB arochlors, aldrin, dielfrin	Composite	1 per 500 dry tons; minimum of 1 per 6 months
Semi-volatile organics	Composite	1 per 500 dry tons; minimum of 1 per 6 months

Constituent	Sample Type	Sampling Frequency for Large Generator
Percent moisture	Composite	1 per 200 dry tons; minimum of 1 per month
Total nitrogen	Composite	1 per 200 dry tons; minimum of 1 per month
Ammonia nitrogen	Composite	1 per 200 dry tons; minimum of 1 per month
Nitrate nitrogen	Composite	1 per 200 dry tons; minimum of 1 per month
Total phosphorus	Composite	1 per 200 dry tons; minimum of 1 per month
Total potassium	Composite	1 per 200 dry tons; minimum of 1 per month

The analytical data shall be presented in the monthly monitoring report(s) for the month(s) in which application of the biosolids occurs. For months in which no application takes place, the Monthly Monitoring Report shall so state.

ROUTINE FIELD MONITORING

The Discharger shall establish and implement an inspection and application oversight program to monitor and control biosolids application rates and ensure compliance with the NOA and General Order. Each discrete application field shall be managed and monitored as follows:

1. Pre-application Oversight:
    a. Identify generator(s) whose biosolids are to be applied.
    b. Define crop to be planted.
    c. Calculated allowable loading rate based on soil nitrogen residual data from the previous fall and most recent plant available nitrogen (PAN) and moisture content data for the generator(s)' biosolids.
    d. Document communication of allowable loading rates to spreader operator.
2. Pre-application Inspection:

a. Verify that setbacks are clearly delineated.

b. Verify that runoff controls are in place and functional.

c. Verify that culverts are blocked (where applicable).

3. Application Oversight:

a. Verify compliance with setbacks and allowable loading rate.

b. Verify compliance with soil incorporation requirements.

4. Post-application Oversight.

a. Confirm with irrigation manager requirements to control runoff or the specified period after application.

b. Calculate actual biosolids and PAN loading rates.

c. Note anticipated dates of planting, irrigation, and harvest.

SOIL MONITORING

The Discharger shall establish an annual soil sampling program as follows: two background sampling locations outside of the land application areas (e.g. within application setback areas) and, at least six sampling locations within each discrete land application area identified in the NOA. Sampling locations shall be distributed to be representative of each subarea and predominant soil type. Soil samples shall be collected form each sampling location at the following depths intervals: 0 to 1 foot, 2 to 3 feet, and 5 to 6 feet below ground surface. Each 12-inch sample shall be thoroughly mixed to create a composite sample representative of the depth interval and shall be analyzed as specified in the following table and meet the requirements 1-2 below. Annual samples shall be collected in the fall (fourth quarter) and must occur at the same time each year.

1. For specified constituents, shall be reported on a dry weight basis, show calculations.

2. For specified constituents, analysis shall be performed on the extract obtained from the Waste Extraction Test using distilled water as the extractant.

Table 3 – Soil Monitoring Parameters

Constituent/Parameter	Units	Sampling Frequency	Reporting Frequency
Soil Classification (USCS and USDA)	--	Annually	Annually
Total Solids	% total weight	Annually	Annually
Total Alkalinity (see requirement 1, above)	mg/Kg as $CaCO_3$	Annually	Annually
Cation Exchange Capacity (see requirement 1, above)	meq/100 grams	Annually	Annually
Electrical Conductivity	mg/Kg, mg/L	Annually	Annually
Chloride (see requirement 2 above)	mg/L	Annually	Annually
Iron (see requirement 2 above)	mg/L	Annually	Annually
Manganese (see requirement 2 above)	mg/L	Annually	Annually

Soil pH shall be monitored in accordance with the approved Land Productivity Evaluation Report.

GROUNDWATER MONITORING

The groundwater monitoring program applies to the groundwater monitoring wells tabulated below and any wells subsequently installed under direction of the Central Valley Water Board.

Table 4 – Monitoring Well Network

Monitoring Well	Well Designation
MW-1	Up-gradient
MW-2	Down-gradient
MW-3	Down-gradient

Prior to construction of any groundwater monitoring wells, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan* to the Regional Board for review and approval. Upon completion and development of groundwater monitoring wells installed in accordance with the approved workplan, the Discharger shall implement the following groundwater monitoring program for all monitoring wells. Once installed, all new wells shall be added to the MRP and all wells shall be sampled and analyzed according to the schedule below.

Prior to purging, groundwater elevations shall be measured, and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized prior to sampling. Depth to groundwater shall be measured to the nearest 0.01 feet. Water table elevations shall be calculated and used to determine groundwater gradient and direction of flow. Samples shall be collected using approved EPA methods. Groundwater monitoring shall include, at a minimum, as specified in the table below. Groundwater elevation shall be determined on depth to water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

Table 5 – Groundwater Monitoring Parameters

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to groundwater	0.01 feet	Measurement	Annually	Annually
Groundwater elevation	0.01 feet	Calculated	Annually	Annually
Gradient magnitude	feet/feet	Calculated	Annually	Annually
Gradient direction	degrees	Calculated	Annually	Annually
pH	std unit	Grab	Annually	Annually

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Electrical Conductivity	µmhos/cm	Grab	Annually	Annually
Total Dissolved Solids	mg/L	Grab	Annually	Annually
Sodium	mg/L	Grab	Annually	Annually
Chloride	mg/L	Grab	Annually	Annually
Nitrate Nitrogen	mg/L	Grab	Annually	Annually
Total Nitrogen	mg/L	Grab	Annually	Annually
Total Coliform Organism	MPN/100 ml	Grab	Annually	Annually
Arsenic	mg/L	Grab	Annually	Annually
Selenium	mg/L	Grab	Annually	Annually
Molybdenum	mg/L	Grab	Annually	Annually

REPORTING REQUIREMENTS

All monitoring reports should be converted to a searchable Portable Document Format (PDF) and submittal electronically. Documents that are less than 50 MB should be emailed to: centralvalleysacramento@waterboards.ca.gov.

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
ECM Mailroom
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

To ensure that your submittal is routed to the appropriate staff person, the following information should be included in the body of the email or transmittal sheet:

Attention: Non-15 Compliance/Enforcement Section
Emigh Land LP (SO-4)
Solano County
Place ID: CW-222717

A transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of this MRP during the reporting period and actions taken or planned for correction each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Section B.3 of the Standard Provisions and General Reporting Requirements, the transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent certifying under penalty of perjury that the report is true, accurate and complete to the best of the signer's knowledge.

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g. biosolids, soil, ground water monitoring, etc.) and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirement and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the MRP shall be reported in the next scheduled monitoring report.

Laboratory analysis reports need to be included in the monitoring reports; all laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

In addition to the requirements of Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results of that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code section 6735, 7835, and 7835.1.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the 1st day of the second month following the end of the monitoring period (i.e. the January Report is due by 1 March). As a minimum, the reports shall include:

1. A scaled site map depicting each discrete field, property boundaries, roads, on-site structures, surface water bodies, drainage features, and runoff controls (as applicable).

2. The results of biosolids monitoring for each generator whose waste was applied to land during the month. Specifically, tabulated data for each generator shall be provided using the attached Biosolids Monitoring Results form (or approved revision thereof). Laboratory analytical reports need not be included but must be provided upon request.

3. The results of routine field monitoring. Specifically, tabulated information for each discrete application field used during the month shall be provided using the attached Field Monitoring Results form (or approved revision thereof).

4. For each biosolids generator and discrete application field, a comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.

5. If no biosolids were applied during the month, a letter report certifying that fact.

B. Annual Monitoring Reports

An Annual Report shall be prepared and submitted to the Regional Board by 1 February each year. The Annual Report shall include the following:

1. The monthly monitoring report for the last month of the calendar year.

2. For each biosolids generator, a summary of all analytical data and verification of compliance with the biosolids monitoring requirements. Include all Biosolids Monitoring Results forms.

3. For each discrete application field, a chronological log of dates of biosolids application, irrigation, precipitation, and runoff control operations. Specifically, tabulated information for each discrete application field shall be provided using the attached Field Activities Summary form (or approved revision thereof).

4. For each discrete application field:

    a. Total cumulative metals loading rates as of the end of the previous calendar year;

    b. Calculation of the total metals and nitrogen loading rates for the year;

    c. The cumulative metals loading rates since biosolids land application began; and

d. The cumulative metals loading rates to date as a percentage of the cumulative metals loading limits.

5. A report of soil monitoring, including:

   a. Sampling and analysis activities, including a scaled map of sampling locations;

   b. Tabulation of all soil analytical results;

   c. Historical time vs. concentration plots for each constituent at each sampling interval;

   d. A discussion of any observed spatial or temporal variation; and

   e. Whether pH adjustment is needed and, if so, how and when the adjustment will be made.

6. A groundwater monitoring summary report including:

   a. The contents of the regular groundwater monitoring report for the last sampling event of the year;

   b. If requested by staff, tabular and graphical summaries of all data collected during the year;

   c. An evaluation of the groundwater quality beneath the site;

   d. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements;

   e. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and

   f. The results for groundwater analyses that are performed annually.

7. A copy of calibration log page(s) verifying calibration of all hand-held monitoring instruments performed during the year.

A letter transmitting the self-monitoring reports shall accompany each report. The 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 submitting 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 submitting Discharger or its authorized agent as described in Section B.3 of the Standard Provisions.

This Order is issued under the authority delegated to the Executive Officer by the Central Valley Water Board pursuant to Resolution R5-2009-0027 and is effective upon signature.

Ordered by: John J. Baum Digitally signed by John J. Baum Date: 2020.09.18 13:31:52 -07'00' Water Boards

For PATRICK PULUPA, Executive Officer