

ORDER NO. R5-2006-0095

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

THIRD REVISION OF MONITORING AND REPORTING PROGRAM NO. 93-236

FOR
SPANISH FLAT WATER DISTRICT
MONTICELLO CEMETERY DISTRICT
AND NAPA COUNTY
SPANISH FLAT WASTEWATER TREATMENT AND DISPOSAL FACILITY
NAPA COUNTY

This Monitoring and Reporting Program (MRP) rescinds and replaces the Second Revision of MRP No. 93-236. The MRP incorporates requirements for monitoring of the wastewater treatment facility. This MRP is issued pursuant to Water Code Section 13267. The Staff Report (attached) provides the report requirements in this MRP. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Regional Board or the Executive Officer.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Process wastewater flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

Field test instruments (such as pH and dissolved oxygen) may be used provided that:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated per manufacturer's recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

INFLUENT MONITORING

Influent samples shall be collected just prior to the package treatment plant. Influent monitoring shall consist of the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	gpd	Continuous Meter	Daily	Monthly
BOD ₅ ¹	gpd	Grab	Monthly	Monthly

¹ 5-day, 20°C Biochemical Oxygen Demand.

EFFLUENT MONITORING

Effluent samples shall be collected from the pipeline that discharges to the evaporation/percolation pond. Effluent monitoring shall include at least the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Total Coliform Organisms ¹	MPN/100 mL ²	Grab	Weekly	Monthly
BOD ₅ ³	mg/L	Grab	Twice Monthly	Monthly
Settleable Solids	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Standard Minerals ⁴	mg/L	Grab	Annually	Annually

¹ Using a minimum of 10 tubes or two dilutions.

² Most probable number per 100 ml.

³ 5-day, 20°C Biochemical Oxygen Demand.

⁴ Standard Minerals shall include the following: boron, calcium, iron, manganese, magnesium, potassium, sodium, chloride, total alkalinity (including alkalinity series), and hardness.

POND MONITORING

The percolation/evaporation pond shall be monitored for the parameters specified below. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding levee and shall be measured to the nearest 0.1 feet.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Dissolved Oxygen ^{1,4}	mg/L	Grab	Weekly	Monthly
pH ⁴	pH units	Grab	Weekly	Monthly
Freeboard	0.1 feet	Observation	Weekly	Monthly
Berm Seepage ²	NA	Observation	Weekly	Monthly
Odors ³	--	Observation	Weekly	Monthly

¹ Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

² Reservoir containment levees shall be observed for signs of seepage or surfacing water along the exterior toe of the levees and dam. If surfacing water is found, then a sample shall be collected and tested for total coliform organisms and total dissolved solids.

³ The presence of strong or unusual odors shall be reported.

⁴ Hand held meter may be used.

DISPOSAL AREA MONITORING

The following Disposal Area Monitoring shall be required only if wastewater has been delivered to either area during the monthly reporting period. If no disposal has taken place that month, the monitoring report shall so state.

Monitoring of the two disposal areas shall be conducted **daily** and the results shall be included in the monthly monitoring report. Evidence of erosion, saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. Effluent monitoring results shall be used in calculations to ascertain loading rates at the application area. Monitoring of the disposal area shall include the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	Gallons	Meter	Daily	Monthly
Local Rainfall	Inches	Measurement	Daily	Monthly
Acreage Applied ¹	Acres	Calculated	Daily	Monthly
Application Rate ²	gal/acre/day	Calculated	Daily	Monthly
BOD ₅ Loading Rate ²	lbs/acre/day ³	Calculated	Monthly	Monthly
Total Nitrogen Loading Rate ²	lbs/acre/month ³	Calculated	Monthly	Monthly
Total Dissolved Solids Loading Rate ²	lbs/acre/month ³	Calculated	Monthly	Monthly

¹ Land application areas shall be identified.
² For each land application area.
³ Report monthly total and cumulative annual to date.

The entire irrigated areas shall be inspected weekly during or immediately following an irrigation event to identify any equipment malfunction or other circumstances that might allow irrigation runoff to leave the irrigation area and/or create ponding conditions that violate the Waste Discharge Requirements. A log of these inspections shall be kept at the facility and made available for review upon request.

SLUDGE MONITORING

In accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, a composite sample of sludge shall be collected when removed from the evaporation/percolation pond and tested for the following metals:

Cadmium	Copper	Nickel
Chromium	Lead	Zinc

Sampling records shall be retained for a minimum of five years. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.

GROUNDWATER MONITORING

By **1 November 2006**, the Discharger shall submit the name of the California Registered Professional that will prepare the two reports listed below.

By **1 March 2007**, the Discharger shall submit a Groundwater Monitoring Well Installation Workplan prepared in accordance with, and including the items listed in, the first section of the attached “*Items to be Included in a Monitoring Well Installation Workplan and Monitoring Well Installation Report of Results.*” The workplan shall describe a groundwater monitoring network consisting of at least three wells around the storage pond specifically designed to ensure that background groundwater quality is adequately characterized and any potential water quality impacts from the discharge are detected. One of the three wells may consist of the County Maintenance Yard well, if the workplan provides details showing that the well is adequate to monitor the storage pond or background groundwater quality. The system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the facility site. The workplan shall also include a Sampling and Analysis Plan (SAP) that includes all information listed in the second section of the attachment to this MRP.

By **1 October 2007**, the Discharger shall submit a Well Installation Report that presents well construction, well development, and well surveying details, and as well as any soil sampling details, and contains the information listed in the second section of the attachment to this MRP.

The groundwater monitoring program shall begin in the **fourth quarter of 2007**. Samples shall be collected from all groundwater monitoring wells at the facility. Prior to construction of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Once installed, all new wells shall be added to the MRP and shall be sampled and analyzed according to the schedule below.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged at least three well volumes until temperature, pH and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency³</u>
Depth to Groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation ¹	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly	Quarterly
Total Coliform Organisms	MPN/100 mL	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly

Standard Minerals ²	mg/L	Grab	Annually	Annually
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¹ Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.

² Standard Minerals shall include the following: boron, calcium, iron, manganese, magnesium, potassium, sodium, chloride, total alkalinity (including alkalinity series), and hardness.

³ Beginning with the fourth quarter 2007

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., process wastewater effluent, groundwater well, 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 requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Quarterly Groundwater Monitoring Reports and the annual groundwater evaluation shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

Section 13267 of the California Water Code state in part: (b)(1) *In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.*

Section 13268 of the California Water Code states in part: (a) *Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or failing or refusing to furnish a statement of compliance as required by subdivision (b) of Section 13399.2, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in accordance with subdivision (b).*

(b)(1) *Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.*

The Discharger owns and operates the facility that discharges waste subject to WDRs Order No. 93-236. The following reports are required to ensure compliance with the WDRs and the Revised MRP. Pursuant to Section 13267 of the California Water Code, the Discharger shall submit the following reports (as well as the above groundwater monitoring workplan and installation report) by the specified due dates:

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board by the **1st day of the second month** following the end of the reporting period (i.e. the August monthly report is due by 1 October). The monthly reports shall include the following:

1. Results of influent, effluent, pond, and disposal area monitoring;
2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
3. If requested by staff, copies of laboratory analytical report(s); and
4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;

B. Quarterly Monitoring Reports

Beginning with the **fourth quarter of 2007**, the Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Regional Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st) and may be combined with the monthly report. The Quarterly Report shall include the following:

1. Results of groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities. The narrative shall be sufficiently detailed to verify compliance with the WDRs, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of the casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of the groundwater flow direction and gradient on the date of measurement, comparison to previous flow direction and gradient data, and discussion of seasonal trends, if any;
4. A narrative discussion of the analytical results for all media and locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of monitoring data to the discharge specifications, groundwater limitations, and surface water limitations, and explanation of any violation of those requirements;

6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Monitoring Reports

An Annual Report shall be prepared as the fourth quarter monitoring report and shall include all monitoring data required in the monthly/quarterly schedule. The Annual Report shall be submitted to the Regional Board by **1 February of each year** and shall include the following:

1. The contents of the regular groundwater monitoring report for the last sampling event of the year;
2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. Data for the effluent and groundwater monitoring performed on an annual basis;
4. An evaluation of the groundwater quality beneath the facility;
5. A discussion of whether sludge was removed from the pond, and if so, the results of the sampling;
6. An evaluation of the performance of the wastewater treatment system, as well as a forecast of the flows anticipated in the next year;
7. Verification of appropriate employee training for all personnel involved in operation and maintenance of wastewater treatment system;
8. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and
9. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-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

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NAPA COUNTY

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shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 22 September 2006.

PAMELA C. CREEDON, Executive Officer

Attachment: Items to be Included in a Monitoring Well Installation Workplan and Monitoring Well
Installation Report of Results
2006 Staff Report

GJC/WSW: 28 September 2006



Linda S. Adams
*Secretary for
Environmental Protection*

California Regional Water Quality Control Board Central Valley Region

Robert Schneider, Chair



**Arnold
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MRP ORDER NO. R5-2006-0095 ATTACHMENT A REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

- Purpose of the well installation project
- Brief description of local geologic and hydrogeologic conditions
- Proposed monitoring well locations and rationale for well locations
- Topographic map showing facility location, roads, and surface water bodies
- Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

- On-site supervision of drilling and well installation activities
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):

- Diagram of proposed well construction details
 - Borehole diameter
 - Casing and screen material, diameter, and centralizer spacing (if needed)
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
 - Anticipated depth of well, length of well casing, and length and position of perforated interval
 - Thickness, position and composition of surface seal, sanitary seal, and sand pack

California Environmental Protection Agency

- Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

- Method of development to be used (i.e., surge, bail, pump, etc.)
- Parameters to be monitored during development and record keeping technique
- Method of determining when development is complete
- Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

- Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
- Datum for survey measurements
- List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
 - General sampling techniques
 - Record keeping during sampling (include copies of record keeping logs to be used)
 - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:

- Purpose of the well installation project

Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells

Number of monitoring wells installed and copies of County Well Construction Permits

Topographic map showing facility location, roads, surface water bodies

Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development

How well development completion was determined

Volume of water purged from well and method of development water disposal

Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):

Identify the coordinate system and datum for survey measurements

Describe the measuring points (i.e. ground surface, top of casing, etc.)

Present the well survey report data in a table

Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix

STAFF REPORT

CONSIDERATION OF APPROVAL OF A THIRD REVISED MONITORING AND REPORTING PROGRAM

for
SPANISH FLAT WATER DISTRICT
MONTICELLO CEMETERY DISTRICT
AND NAPA COUNTY

SPANISH FLAT WASTEWATER TREATMENT AND DISPOSAL SYSTEM

Background

The Spanish Flat Water District, Monticello Cemetery District, and Napa County (hereafter referred to as “Discharger”) are regulated by Waste Discharge Requirements No. 93-236. Spanish Flat Water District owns and operates a wastewater treatment plant, which serves the Berryessa Pines and Spanish Flat housing developments on the shores of Lake Berryessa. Napa County owns the land on which the treatment plant and main storage/disposal pond have been constructed.

The facility was originally constructed in 1967, and at that time consisted of three percolation/evaporation ponds and a sprayfield. However, the ponds had inadequate capacity and leaked wastewater into tributaries of Lake Berryessa. Regional Water Board staff (staff) requested numerous times that the Discharger voluntarily correct the problems. The Discharger did not do so, and in 1989, the Napa County Health Officer certified that the Discharger was causing a public health threat and the Regional Water Board adopted Cleanup and Abatement Order No. 89-715. The Discharger was required to cease the seepage from its ponds no later than November 1989. A new facility was constructed in 1993, and the WDRs were revised at that time.

The wastewater treatment facility now consists of an extended aeration package treatment plant with an aeration tank, a clarifier, and a chlorine contact chamber. Wastewater is stored and disposed of in an unlined 13 acre-foot percolation/evaporation pond. During the summer, wastewater is also spray-irrigated on a 2.5 acre disposal field managed by Spanish Flat Water District, or at the 3.7 acre Monticello Cemetery.

The WDRs allow the discharge of a monthly average dry weather flow of 25,000 gallons per day (gpd), with peak daily flows of up to 53,000 gpd.

It is noted that a spill estimated at 1,050,000 gallons of partially treated domestic wastewater occurred on 16 April 2006. An unknown volume of the spill entered Lake Berryessa. The spill resulted from a sudden breach in a section of the levee of the primary wastewater storage pond. Immediately following discovery, temporary repairs to the breached levee, which included sand bagging the opening, were completed. During this period, all wastewater entering the primary pond was diverted to the Woodland and Spanish Flat ponds, neither of which are permitted to receive wastewater. Since that time, the Discharger has made more permanent repairs to the breached levee, which included the drilling of soil borings along the levee to a suitable soil depth and filling the borings with a mixture of soil and cement. The Discharger indicates that they were hoping to

obtain funding from the Federal Emergency Management Agency (FEMA) through the State of California's Office of Emergency Services (OES) for other permanent repairs to the levee prior to the rainy season.

Monitoring and Reporting Program Revision

Staff reviewed the case file and inspected the facility in July 2004. Our review found that the WDRs and the associated Monitoring and Reporting Program (MRP) are outdated and should be revised. As with many other sites, we determined that it would be most appropriate to revise the MRP first, allowing the Discharger several years to gather the monitoring information needed to support an update of the WDRs.

Staff prepared a draft revised MRP which included influent monitoring (new requirement), effluent monitoring (reduced number of constituents), pond monitoring (new requirement), disposal area monitoring (expanded), sludge monitoring (no change), and groundwater monitoring (new requirement). A draft revised MRP was sent to Spanish Flat Water District in July 2004, and any comments were to be submitted within one month. No comments were received, so in late August 2004 the MRP was finalized, signed by the Executive Officer, and sent to the Discharger.

The Discharger responded by letter on 16 November 2004, stating that the previous two documents had been sent to the wrong address and had just been received by Spanish Flat¹. The Discharger requested additional time to review the MRP and stated that it appeared that it would be unable to financially comply with the new monitoring requirements.

On 2 February 2005, staff met with Mr. Steve Silva (the wastewater treatment plant operator) and with Mr. Al Colon (a director of the Spanish Flat Water District). The Discharger questioned the need for groundwater monitoring wells, and provided the District's 2004 financial audit, which shows that the District provides both wastewater and drinking water services. Staff's review of the audit finds that in 2004, the District's wastewater system operated at a loss of \$68,000 while the water system provided an income of \$15,000. The audit discusses the requirement to upgrade the two drinking water treatment plants (75% of the costs to be provided by a State grant); however, no mention is made of the fact that the wastewater service charges are insufficient to cover operating expenses.

In response to the meeting, a Second Revised MRP was transmitted to the Discharger on 14 March 2005. The cover letter states the following:

“Staff understand your concern regarding the costs associated with the installation of the groundwater monitoring wells as required by the Revised MRP and your request to delay discussing the need to install wells until next year. However, the wells are necessary to provide monitoring to determine if any impacts to groundwater have or are occurring as a result of the ongoing waste disposal practices associated with the facility. At this time, staff can only extend the required monitoring from the third quarter 2005 to the third quarter 2006.

¹ Staff inadvertently used an incorrect address for the July 2004 and August 2004 transmittal letters. Letters sent to the District since that time have been sent to the corrected address, as provided by the District in its November 2004 letter.

If this extension is not acceptable, then by 15 June 2005 you may request that this matter be addressed at a meeting of the Regional Water Board on 4/5 August 2005.”

The Discharger did not respond to the letter, so staff assumed that the Board of Directors had discussed the matter and agreed to implement the MRP. To begin the groundwater monitoring process, the Discharger was required to submit a groundwater monitoring well installation workplan by 1 December 2005. That document was not submitted. A review of the file also showed that the Discharger had not submitted nine of the last 12 required monthly monitoring reports (as required by both the Second Revised MRP and the 1993 MRP). On 8 March 2006 the Executive Officer signed a California Water Code Section 13267 letter requiring submittal of the outstanding monthly monitoring reports, as well as submittal of the groundwater monitoring well installation workplan.

Spanish Flat Water District responded by letter dated 19 March 2006 (Attachment A to this staff report) stating that they had been waiting since the February 2005 meeting to learn when they could address the Regional Water Board regarding the issue of groundwater monitoring. The District provides several reasons as to why it believes that groundwater monitoring is inappropriate, including (a) the negative economic impact on the users, (b) only domestic wastewater is generated, (c) the need to upgrade the water treatment plants, (d) the fact that they “are against the penetration of a groundwater aquifer unless there are known breaches from our wastewater treatment plant”, and (e) the thought that lining the pond would be a better approach. The District asked that the California Water Code Section 13267 letter be rescinded and requested a hearing before the Regional Water Board. The Section 13267 letter was rescinded by the Executive Officer on 12 April 2006, and a hearing regarding this matter was scheduled for the 4/5 May 2006 Regional Water Board meeting.

The District has also recently submitted the outstanding monthly monitoring reports. A review of these reports show that the Discharger is complying with all of the revised MRP except for the groundwater monitoring section. Based on this review and the comments in the 19 March 2006 letter, it appears that the Discharger’s only issue with the revised MRP is with the groundwater monitoring component. Therefore, the remainder of this staff report only addresses that subject.

Response to Discharger’s Comments

Why is groundwater monitoring necessary at this site?

When adopting WDRs that permit the discharge of waste to land, the Regional Water Board is required to protect groundwater quality in accordance with Water Code Section 13263, the Basin Plan and State policies. All land-discharge WDRs contain a Groundwater Limitation. The Groundwater Limitation for the Spanish Flat wastewater treatment facility states that the discharge may not degrade groundwater. There is no method to clearly determine whether the Discharger is complying with this requirement except through the installation of groundwater monitoring wells. Based on staff’s understanding of conditions at this facility and our experience at other similar facilities, we believe the installation of groundwater monitoring wells is justified.

The Discharger’s monitoring reports show that the majority of the wastewater is disposed of through percolation and evaporation in an unlined 13-acre foot capacity pond. No information is

provided in the WDRs as to the depth to groundwater beneath the pond, but this site is on a ridge above Lake Berryessa, and based on our knowledge from nearby sites, groundwater is probably within 40 to 50 feet below ground surface (bgs).

The wastewater pond is unlined, to enhance wastewater percolation into the soil below. In general, the underlying soil will provide additional treatment (polishing) of the wastewater before it enters groundwater. However, the Discharger has not provided any documentation as to the attenuation of organics or nitrogen in the soil profile after infiltration, but the mass and rate of infiltration of these waste constituents has a reasonable potential to degrade the groundwater with organics and nitrogen, absent significant attenuation. In addition, in areas with fractured groundwater flow (such as areas around Lake Berryessa) the possibility exists that wastewater could enter fractures and flow into the lake with minimal soil treatment. In fact, this was recently the case at another facility along Berryessa; wastewater was exiting the unlined percolation pond, surfacing several hundred feet below the pond, and flowing into Lake Berryessa (this site was recently placed under a Cleanup and Abatement Order to require corrective actions). The Berryessa Pines and Spanish Flat communities obtain their drinking water from Lake Berryessa, which is just downhill from the percolation pond. Groundwater monitoring is needed to determine if Spanish Flat's wastewater pond is impacting the first encountered groundwater and possibly the community's drinking water supply.

A similar small discharger along the shores of Lake Berryessa was recently required by the Regional Water Board to install groundwater monitoring wells. When the wells were not installed per the prescribed schedule, the Board adopted a \$30,000 Administrative Civil Liability Order against the discharger. This site also disposes of its domestic wastewater through percolation ponds, and the monitoring data submitted to date shows that groundwater downgradient of the ponds appears to have been polluted with chloride, calcium, magnesium, sodium, and total dissolved solids. While staff hope that the same is not true at Spanish Flat, it is appropriate to require that monitoring wells be installed and monitored to determine whether the Spanish Flat discharge is creating any adverse groundwater impacts.

What is the cost to drill wells? The cost to line a pond?

Staff prepared a detailed cost estimate for the installation of groundwater monitoring wells at this site. The summary table is found as Attachment B to this staff report, while the details are found in a memo in the case file (which has been provided to the Discharger). Staff assumed that three wells would be drilled around the pond, and that the depth to groundwater is less than 50 feet. The estimate includes the cost to prepare the well installation workplan and the well installation report, as well as drill and develop the wells. It is estimated that the entire project would cost approximately \$14,000.

The cost for quarterly monitoring and reporting for the three wells is estimated to be approximately \$3,700 per quarter. Because the majority of the quarterly cost is for a consultant to collect the samples, some dischargers have reduced their costs by having their staff trained in sample collection procedures. In addition, once baseline data have been established (usually at least eight monitoring points are needed for statistical validity), a discharger may request that the monitoring frequency be reduced.

Staff are only proposing that monitoring wells be installed at the percolation pond, instead of at both the pond and the disposal fields. This is because the pond can be considered a direct discharge source as opposed to the disposal fields in which it is assumed that grasses remove some of the wastewater constituents. If groundwater has been impacted at this facility, it would probably be measured first at the percolation pond. If monitoring wells do not show an impact at the pond, then there would be no need to install wells at the disposal fields.

In its 19 March 2006 letter, the District first brings up the idea that the percolation pond could be lined in lieu of installing groundwater monitoring wells. Staff have also prepared an estimate for this work (see Attachment B), and calculate that it would cost well over \$94,000 to line the pond. It is noted that this value does not include the cost to remove all wastewater from the pond, store wastewater elsewhere during construction, or to grade the pond prior to liner installation. In addition, it is noted that all liners leak to some extent, and some facilities have been required to install groundwater monitoring wells even if a pond has been lined. It is unclear whether installation of a liner at Spanish Flat would preclude the need to monitor the groundwater.

Why is groundwater monitoring necessary at smaller sites?

Since at least the year 2000, the Regional Water Board has almost always required groundwater monitoring at similar sites that discharges waste to land, including small² domestic wastewater facilities. Attachment C to this staff report contains a list of most of the small domestic wastewater dischargers which have been required to install groundwater monitoring wells since 2000³. As shown on the attachment, at least 61 small domestic dischargers with flows ranging between 1,600 gpd and 50,000 gpd have been required to install groundwater monitoring wells in the last six years. The Spanish Flat wastewater treatment facility has an average permitted flow of 25,000 gpd, and therefore the requirement to install groundwater monitoring wells at this site is consistent with that required of other small dischargers.

Based on staff's experience, there tends to be a greater potential for small sites to impact groundwater than for larger facilities. Smaller sites tend to have a lower level of waste treatment and many times simply rely on percolation ponds for disposal. Also, many smaller facilities do not employ certified wastewater treatment plant operators so there may be a greater potential for improper treatment and/or disposal. Finally, the sewer rates at many small sites (apparently including Spanish Flat) have not kept pace with the cost of maintaining the facilities or with the cost to comply with current regulations. Many facilities do not have sufficient operation and maintenance fund reserves and are unable to adequately maintain their equipment – they only react to emergencies. This results in a greater potential to inadequately treat or dispose of wastewater, leading to a greater potential to impact groundwater. From a public health standpoint, it is important to monitor groundwater at smaller facilities because many of the smaller housing

² Staff are following the lead of the State Water Board in defining a “small domestic facility” as one that generates less than 50,000 gallons per day of wastewater.

³ Because the state-wide database has not been available for almost a year (during the transition from SWIM to CIWQS), staff were unable to obtain a full query of sites. Instead, staff used other records to list sites regulated by the Sacramento office. It is recognized that the list may not contain every small domestic discharger that monitors groundwater; however, it is believed that the majority of sites are listed.

developments tend to obtain their drinking water supplies from domestic wells (or in the case of Spanish Flat, from a surface water located directly downgradient from the wastewater pond).

Regional Water Board and State Board guidance

Few dischargers have contested the requirement to install groundwater monitoring wells, and in those cases, the Regional Water Board has always upheld the need. One case has been petitioned to the State Water Board; the petitioner contented, among other items, that groundwater monitoring is not necessary. That case bears discussion here.

Sacramento County owns and operates the Sacramento County Boys Ranch, a youth correctional facility in a rural area south of Folsom. Approximately 15,000 gpd of wastewater is generated and discharged to four percolation/evaporation ponds. The wastewater receives only passive treatment in the ponds before it evaporates or percolates into the ground. Groundwater is shallow, approximately 15-20 feet bgs. In 2001, staff prepared a WDR update that included the requirement for groundwater monitoring. Sacramento County contested the Order, for among other items, the requirement to install and monitor groundwater wells. After holding a public hearing, the Regional Water Board adopted the WDRs as proposed.

Sacramento County then petitioned the WDRs to the State Board. The petition raised a number of points, including the County's contention that groundwater monitoring is not justified. Staff prepared two lengthy petition responses, and met several times with the County and State Board staff in an attempt to resolve the issues. In 2003, the State Water Board adopted WQO No. 2003-0014 which states that "...The Regional Water Board properly required the installation of a groundwater monitoring well network... monitoring will enable the Regional Water Board to determine if the Boys Ranch discharge is unreasonably affecting beneficial uses and is consistent with both the Water Code and the Basin Plan." Sacramento County has recently installed the monitoring wells.

Specific Response to Discharger's Points

Staff offers the following in response to the specific issues raised by the Discharger in its 19 March 2006 letter.

The Discharger states that the requirement to install groundwater monitoring wells would have a negative economic impact on its users. The State Water Board periodically conducts a survey of the rates paid for wastewater service throughout the state. The latest available survey (2004) shows that the 75 residential customers of the Spanish Flat Water District pay \$36/month for wastewater service, while the 9 commercial customers pay between \$36 and \$53/month for service. This value is rather low in comparison to that paid by customers of other small wastewater districts. In general, small rural districts must charge more for wastewater service because they don't have the economy of scale that larger districts do. The cost to install the monitoring wells (\$14,000) does not seem excessive, and staff have already extended the completion date by two years from that originally proposed (from the third quarter 2005 to the third quarter 2007). During that time, the District should evaluate its rate structure and obtain any needed funding, not just in the context of the groundwater monitoring, but for long term operation and maintenance concerns.

The Discharger implies that because only domestic wastewater is generated there won't be an impact to the groundwater. That issue has been addressed above, in the examples of other domestic wastewater dischargers that have adversely impacted groundwater.

The Discharger implies that because it must upgrade its domestic water treatment plants, it shouldn't be required to install groundwater wells. The requirement to upgrade the domestic water treatment plants comes from the Department of Health Services, and has nothing to do with the wastewater issues. However, as stated earlier, staff have extended the time for compliance to allow the Discharger to evaluate its rate structure and obtain the funding.

The Discharger states that they "are against the penetration of a groundwater aquifer unless there are known breaches from our wastewater treatment plant". It appears that the Discharger is concerned that monitoring wells may provide a conduit for contamination to the aquifer. However, groundwater monitoring wells must be constructed under the supervision of a registered professional and in a manner that complies with County ordinances and with the Department of Water Resources' Well Standards. Great care is taken to ensure that the wells do not impact the aquifer but that they do provide representative samples of the underlying groundwater.

Finally, the Discharger appears to be now considering lining the percolation pond instead of installing groundwater monitoring wells. As stated above, that cost would be in excess of \$100,000 compared to the \$14,000 to install the wells. In addition, lining the pond would obviously limit the percolation rate, and would therefore severely reduce the storage capacity. In all likelihood, the Discharger would need to construct additional lined storage ponds to prevent surface water overflows. Finally, as stated above, staff are not certain that lining the pond would preclude the need to monitor the groundwater.

Recent Developments Since the 4 May 2006 Meeting of the Regional Water Board

This item was scheduled for the 4 May 2006 meeting of the Regional Water Board. However, based on discussions between staff, the Discharger, and their attorney it was not heard. The Discharger indicated that they had recently retained a professional geologist and requested that staff meet with their geologist at the site to determine if groundwater monitoring wells could be installed around the primary wastewater pond and to identify possible locations for the wells. Staff informed the Discharger that if the requirements of the Third Revision to the MRP could not be met, the item would be re-scheduled for either the August or September 2006 meeting of the Regional Water Board.

On 17 May 2006, staff met with the Discharger's geologist from Napa County Public Works at the site to discuss potential groundwater monitoring well locations around the primary wastewater pond. Observations made and information obtained during the inspection and documented in a 9 June 2006 inspection report are as follows:

- Because of the steep slopes on the eastern side of the primary wastewater pond and the inability for a drilling rig to access the area, it was determined that monitoring wells could not be installed in this area.

- Based on topography and geologic conditions surrounding the primary wastewater pond, it was determined that groundwater monitoring wells could be installed southwest and west of the pond.
- The Discharger's geologist suggested using one of the groundwater monitoring wells from the nearby former underground storage tank site at the Napa County Department of Public Works Spanish Flat Maintenance Yard southwest of the ponds as part of the monitoring well network. Staff indicated that they were open to further discussions with the Discharger regarding the use of these wells as part of a groundwater monitoring well network.

Review of a Groundwater Monitoring Well Installation Report for the Spanish Flat Maintenance Yard former underground storage tank site indicates that groundwater ranges from approximately 14 to 16 feet bgs in the three monitoring wells installed to depths of approximately 35 feet bgs.

Following the inspection, the Discharger's geologist indicated that he would discuss possible well locations with the Discharger. However, in a 1 July 2006 letter (Attachment D to this Staff Report), the Discharger indicated that the groundwater monitoring requirement in the Third Revised MRP was not appropriate and that the water quality in the pond is good enough to be used for irrigation purposes and will not cause groundwater contamination. The Discharger also indicated that the installation and sampling of the groundwater monitoring wells would significantly increase their operating costs with no benefit to the customers.

The Discharger requested another meeting with staff, and on 30 August 2006, staff conducted a conference call with the Discharger, its attorney and two geologists to discuss the groundwater monitoring requirements in the Third Revised MRP. Staff informed the Discharger that if they could not accept the Revised MRP, the item would be placed on the contested calendar for the 21/22 September meeting of the Regional Water Board. The Discharger stated that they would get back to staff. No response has been received as of the date of this staff report.

Conclusion

Staff have prepared a third revision of the Spanish Flat Monitoring and Reporting Program for the Regional Water Board's consideration. This MRP rescinds and replaces the Second Revision of MRP No. 93-236. It contains the same monitoring requirements as the Second Revision, but allows the Discharger additional time to complete the tasks related to groundwater monitoring. The Third Revision requires that:

- By 1 November 2006, the Discharger shall submit the name of the California Registered Professional that will prepare the two reports listed below;
- By 1 March 2007, the Discharger shall submit a *Groundwater Monitoring Workplan*;
- By 1 October 2007, the Discharger shall submit a *Well Installation Report* documenting that three groundwater monitoring wells have been installed around the pond; and

- Groundwater monitoring shall commence with the fourth quarter of 2007.

Based on the site specific conditions (groundwater anticipated at depths less 50 feet bgs) at this facility, and on the need to determine whether the discharge complies with the Groundwater Limitations of the WDRs, it is appropriate to require that the Spanish Flat Water District install and sample groundwater monitoring wells to characterize the groundwater conditions downgradient of the wastewater pond. One of the three existing wells at the nearby Spanish Flat Maintenance Yard may possibly be used to monitor the groundwater quality down slope of the storage pond or the background groundwater quality. Staff recommends that the Regional Water Board approve the proposed revised Monitoring and Reporting Program.

Attachments:

- A: Spanish Flat Water District's 19 March 2006 letter
- B: Estimated Costs for Groundwater Monitoring and Liner Installation
- C: Small Domestic Wastewater Facilities at Which Groundwater Monitoring is required
- D: Letter from Spanish Flat Water District dated 1 July 2006

WSW: 1 September 2006

Staff Report for the 21/22 September 2006 Meeting of the Regional Water Board