

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 contended, 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