



California Regional Water Quality Control Board Central Valley Region

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Attachment 2 of Staff Report
Tentative Amendment 2 of Cleanup and Abatement Order
R5-2006-0721

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RESPONSE TO COMMENTS, AMENDMENT 1 OF CLEANUP AND ABATEMENT ORDER R5-2006-0721, BONZI SANITATION LANDFILL, STANISLAUS

On 2 January 2009, the Central Valley Water Board received comments prepared by Amec Geomatrix on behalf of the Bonzi Sanitation Landfill (the "Discharger") in response to Amendment 1 to Cleanup and Abatement Order (CAO) R5-2006-0721 (the "12/31/08 Comments"). The Order¹ requires the Discharger, under section 13304 of the Water Code, to: (1) submit a plan to provide replacement drinking water to the Riverdale community; (2) provide replacement water to the Riverdale Community if any volatile organic compounds (VOCs) are detected in the Riverdale well at levels exceeding their applicable Maximum Contaminant Level (MCL), and (3) provide replacement water for the user(s) of any other domestic well downgradient of the Bonzi Landfill that contains VOCs at concentrations exceeding the MCL. The Discharger submitted a replacement water plan, but objected to findings in the Order that identify the landfill as a source of pollution. Accordingly, the Discharger also filed a petition for review with the State Water Resources Control Board, which has been stayed by stipulation of the parties.

In support of its objection, the Discharger created a new conceptual site model that purports to establish: (1) an alternate source for the VOC pollution emanating from the landfill; (2) a shift in the historical groundwater flow direction; and (3) that its current groundwater treatment system is capable of capturing the plume at the point of compliance. It is unclear whether historical data and/or previous reports were used to prepare the Discharger's newly-created conceptual site model.

Many of the Discharger's arguments have already been addressed in previous enforcement actions and Orders. Generally, the Discharger's newly-created conceptual site model is based on too limited a data set and is not supported by substantial evidence. Its attempts to point to other possible sources of VOC contamination that are speculative, and much of its analysis of the data is contradicted by previous reports and findings. Specifically, Staff has prepared the following, point-by-point responses to the Discharger's comments on the Order:

¹ Amendment 1 to CAO R5-2006-0721 is referred to herein as the "Order."

1. Paragraph 1 – *The Landfill continued groundwater monitoring required by the CAO and the Waste Discharge Requirements Order No. R5-2007-0148 (WDRs) in 2008. In a meeting with the RWQCB staff on October 17, 2008 a commitment was made to provide the results of this monitoring to the RWQCB by December 1, 2008. AMEC validated and tabulated this data and the data collected between between Fourth Quarter 2007 and the Third Quarter 2008 were submitted to the RWQCB on December 1, 2008.*

The applicable Waste Discharge Requirements (“WDRs”) mandate that the Discharger submit monitoring reports on a quarterly basis. The Discharger stopped submitting quarterly reports after Third Quarter 2007, and by the time of the referenced October 17, 2008 meeting, had failed to submit four mandatory quarterly monitoring reports, thereby directly violating the WDRs. The Discharger further failed to submit the WDR’s-required 2007 Annual Monitoring Report. Staff agreed to the 1 December 2008 date as a deadline for submittal of the late reports as a “stopgap” measure only, so that it would have up-to-date groundwater information, including data on the Riverdale community well. Staff’s need to obtain data was based on the threat to water supply wells demonstrated by trends in the 2006 and 2007 quarterly monitoring reports, and the complete lack of data or analysis on the VOC plume emanating from the landfill for over a year.

Moreover, the Discharger submitted only data (in the form of laboratory sheets) on 1 December 2008. Data alone is insufficient, and, under the WDRs and CCR Title 27, quarterly monitoring reports must provide interpretation of the data. The 2007 Annual Monitoring Report, which is required to include the yearly evaluation and discussion of the statistical trends in groundwater data, has yet to be submitted. Accordingly, the Discharger has provided neither evaluation nor discussion of statistical trends in groundwater data for over two years, since the 2006 Annual Monitoring Report was submitted.

2. Paragraph 2 – *As indicated above the Landfill continued monitoring as required under the CAO and the WDRs from Third Quarter 2007 through Third Quarter 2008. These results were submitted to the RWQCB on December 1, 2008.*

See comment for Paragraph 1. Staff acknowledges that certain monitoring was conducted during this period, but the required monitoring reports were not submitted. The Discharger’s comment is misleading to the extent it implies the Discharger was in compliance with its monitoring and reporting obligations during the referenced period.

3. Paragraph 3 – *There is no conclusive data indicating that the groundwater extraction system is not currently capturing the entirety of the existing plume of contaminants in groundwater. The groundwater extraction system was designed and installed to capture landfill impacts in groundwater at the site boundary. There have been residual low and decreasing concentrations of VOCs (mostly 1,1 dichloroethane (1,1 DCA) and 1,2 dichloroethene (1,2 DCE) in groundwater just downgradient of the extraction systems for many years (Monitoring wells 85-7., 85-25, 86-5B and 86-6B shown on Figure 15 Third and Fourth Quarter 2006 1,1 DCA Isoconcentration Contour Map, Attachment 1). These impact areas are decreasing in concentration over time and there is no data suggesting that these impacts are migrating further downgradient. It is likely that these offsite areas continue to exist due to static flow conditions caused by very flat groundwater gradients and recharge and discharge seasonally from the Tuolumne River. These impacts do not appear to be indicative of a lack of*

capture by the current groundwater extraction system otherwise there would be greater variation and increases in VOC concentrations over time. This condition will be evaluated further in the upcoming investigation required by the CAO. The Riverdale supply well is cross gradient from these areas and neither the monitoring wells near the supply well nor the supply well itself have shown the VOCs reported in these offsite areas or other VOCs from the Landfill to suggest this supply well is threatened by landfill impacts (Attachment 1 showing the distribution of 1,1 DCA Attachment 2 showing groundwater gradients and Attachment 3 showing the monitoring results for the last four quarterly sampling events).

The evidence to indicate that the groundwater extraction system is not currently capturing the entirety of the existing plume of contaminants in groundwater emanating from the Landfill has been recited in, and conclusively established by, findings of fact set forth in previous enforcement Orders. For example, Finding 8 of Cease and Desist Order (CDO) R5-2005-0073 states: "The October 1998 corrective action program analysis reported that the site hydraulic conductivity varies from 145 to 460 feet per day. With the continued detection of VOCs downgradient of the extraction system, the highly conductive aquifer material, and the Discharger's failure to operate the system, the groundwater plume likely has expanded since the original offsite investigation. Consequently, the system's original design maybe inadequate to capture and remediate the current plume".

VOCs are still reported downgradient of the site and the system has yet to be upgraded. Therefore, the current extraction system is not capable of capturing all the contaminants at the landfill's point of compliance as required by CDO R5-2005-0073, CAO R5-2006-0721 and WDRs No. R5-2007-0148.

4. The Discharger states that the groundwater extraction system was designed and installed to capture landfill impacts in groundwater at the site boundary.

Finding 40 of Cleanup and Abatement Order No. R5-2006-0721 states: "[T]he design of the current system did not take into account the impact of the unlined WMUs II and III. Each of these units contains waste other than inert that had not been discharged when the system was designed. In addition, WMU IV also accepted non-permitted waste. WMUs II and III are again receiving waste to prepare for closure. There is no protective cover installed to prevent rainfall percolation. The lack of a final cover ultimately promotes leachate and landfill gas generation and is likely the source of groundwater VOCs detected in downgradient monitoring wells."

It is noted that the Discharger did not contest the adoption of the CAO, and therefore did not contest the findings contained therein. The conditions of the site have not changed since the adoption of the CAO. The Discharger's statement is also misleading because the current groundwater extraction system was only designed to capture the VOCs emanating from WMU I; it was not designed and installed to capture the VOC's which are likely emanating from WMUs II, III and/or IV, all of which accepted non-permitted waste.

5. The Discharger states: These impact areas are decreasing in concentration over time and there is no data suggesting that these impacts are migrating further downgradient. It is likely that these offsite areas continue to exist due to static flow conditions caused by very flat groundwater gradients and recharge and discharge seasonally from the Tuolumne River.

The Discharger has submitted no data evaluation since the Monitoring Report for Third Quarter 2007, making it difficult for Staff to evaluate impact areas and the data trends over the past year. The 2007 Annual Monitoring Report should have contained the Discharger's evaluation of data trends in 2007, which would have allowed Staff to peer review and confirm data trends, but that Report has never been submitted. The 2008 Annual Report has not yet been submitted either. Moreover, the Discharger's conclusions about "impact areas" and the extent of the groundwater plume are speculative since it has, to date, failed to comply with its obligation under the CAO to define the lateral and vertical extent of the plume. Finally, the data referenced by the Discharger in this paragraph is all from 2006 – more than two years ago. The Discharger states its belief that groundwater flow is "static." This statement has no factual or logical basis. Historical data indicates groundwater is moving beneath the site, as well as beneath the Riverdale community toward the Tuolumne River. The WDRs state: "...average groundwater flow gradients for the northern and southern portion of the landfill are 0.0013ft/ft and 0.002 ft/ft, respectively." The data shows that groundwater moves both vertically and laterally at the site. The statement that groundwater flow is "static" is speculative and inappropriate.

6. The Discharger states: *The Riverdale supply well is cross gradient from these [impact] areas and neither the monitoring wells near the supply well nor the supply well itself have shown the VOCs reported in these offsite areas or other VOCs from the Landfill to suggest this supply well is threatened by landfill impacts.*

The Discharger's consultant submitted laboratory results from a California certified laboratory that indicate that monitoring wells 06-01A and 06-01B have detectable levels of VOCs. These data show that 06-01A had multiple hits of PCE, while 06-01B had a detection of TCE. While the concentrations of these VOCs are lower than those of the same VOCs found in the wells on the landfill property, both of these constituents are found in other landfill monitoring wells upgradient of the groundwater treatment system. There is no reason to assume that these VOCs are not due to the groundwater plume emanating from the landfill.

7. Paragraph 4 – *As shown on the attached water elevation maps (Attachment 2), between Fourth Quarter 2007 and Third Quarter 2008, the groundwater flow direction for the majority of the year in the area of WMU-I is northwest. The Riverdale supply well is never "directly downgradient from WMU-I and for the majority of the year is not downgradient of WMU-1 at all.*

First, the Discharger's use of a mere four measurements is far too narrow a data set for this interpretation of groundwater flow direction. Historical data demonstrates that the Riverdale supply well is directly downgradient from the Landfill. For example, Finding 32 of the WDRs states: "The predominant groundwater flow direction in the Landfill vicinity is presently toward the north-northwest. The local groundwater gradient is strongly influenced by the Tuolumne River. Groundwater gradients vary in direction and magnitude as influenced by changing river stages." This finding of fact in the WDRs cannot be disregarded based on four measurements.

Second, when using the same data set as the consultant, but selecting different wells that span the entire site (P-1, MW6R and 06-01A), the groundwater flow for the first, second and third quarters in 2008 showed groundwater moving directly to the Riverdale well. Therefore groundwater flowing under WMU II and IV has the potential to transport VOCs in the direction of the Riverdale well.

Third, even assuming the “shift” in plume direction could be established based on substantial evidence, which it cannot, the Discharger’s consultant’s opinion is too narrow, and falsely assumes the only release of VOCs from the Landfill emanates from WMU I. However, as recited in Finding 40 of CAO R5-2006-0721, referenced above, WMU I is not the only unit with a release that may affect the Riverdale supply well. Uncontrolled releases from WMUs II, III and IV also pose threats to the Riverdale supply well, particularly since there is no extraction or treatment system in place to prevent migration of pollutants past individual points of compliance for these three Units.

8. Paragraph 5 and 6 – VOCs detected at the southern-most extent of the Landfill are not present in groundwater monitoring wells upgradient of the Riverdale supply well over 3000 feet away. The data presented in the Amendment shows this. Monitoring well 06-09 on the upgradient boundary of the landfill near inert WMU-III has tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1 DCA, 1,1-DCE and cis-1,2-dichloroethene (cis-1,2 DCE) reported in groundwater.²

The constituents detected in groundwater beneath WMU III are chlorinated two-carbon VOCs and include tetrachloroethylene (PCE) and trichloroethylene (TCE). Under reducing conditions commonly found in and beneath landfills, the chemicals 1,1 DCA, 1,1-DCE and cis-1,2-dichloroethene (cis-1,2 DCE) are known to be formed by microbial decomposition of PCE and TCE. It is common for the chemical constituent detected in groundwater beneath a landfill to be a product of decomposition of the chemical that was originally discharged to the landfill. The data here is consistent with microbial decomposition, and does not indicate, as the Discharger’s statement implies, that the VOCs detected are not emanating from the Landfill. It should also be noted that the Regional Board has previously made factual findings that WMU III contains wastes other than just inert waste.

9. Considering the location of this well these groundwater impacts may be coming from the storm water pond located on the trucking repair facility immediately upgradient.

This is pure speculation and the Discharger has submitted no data to support this theory.

10. Monitoring wells 06-01A and 06-01B just upgradient of the Riverdale supply well and downgradient of monitoring wells 06-03- and 06-04, have had low levels of PCE, TCE, benzene and Chloroform in groundwater as reported in the Amendment. The VOCs reported in the monitoring wells just upgradient of the Riverdale supply well do not appear to be associated with the Landfill based on comparison between the groundwater data collected from these wells and wells located on the landfill. If these VOCs were from the landfill they would be reported in samples collected and analyzed from monitoring wells 06-03, 06-04, or 90-1. The VOC impacts reported in the monitoring wells near the Riverdale well near the

² Many of the Discharger’s comments speculate about other possible sources of VOC contamination. These comments are specifically addressed in this letter. Generally speaking, at this time, the Regional Board Staff is not aware of any substantial evidence that would support issuing any Order concerning the VOC plume at issue to any person other than the Discharger. The lack of substantial evidence to support the Board’s issuance of any order to any other person should be viewed in the light of the fact that the Discharger has been investigating this matter since 1991, or earlier. It should also be noted that, in the event the Discharger is ultimately able to identify some other source of VOCs in addition to itself, nothing in this Order, or any other Board Order, prevents the Discharger from obtaining contribution towards its costs of compliance from that person or persons.

Riverdale supply well are likely from discharges to septic system leach fields, supply well chlorination and past waste disposal practices in the Riverdale Tract area.

The VOCs found in 06-01A and 06-01B have also been detected in upgradient wells located on the Landfill property. Monitoring wells MW2 and MW3 were replaced in 2006 by monitoring wells 06-03 and 06-04. The Discharger replaced the wells because they felt landfill gas was impacting the wells. While the old and new wells are located along the northern boundary, their geographic position along the boundary is different. Monitoring 06-03 is approximately 400 feet west of MW-2 and monitoring well 06-04 is approximately 200 feet west of MW3. Historically, PCE, TCE and their associated breakdown products, as described above, were detected in MW1, MW2, and MW3. PCE and TCE have historically been detected in monitoring well 90-1. The fact that they were not present during the 2008 sampling events suggests that the conditions between the WMU and groundwater flow is dynamic and varies with time. The loss of the data from MW2 and MW3 suggests that the monitoring network must again be upgraded to include new monitoring wells directly adjacent to the previous wells.

Furthermore, the vertical gradient for monitoring well 06-01A and 06-01B during the fourth quarter 2007 sampling event was 0.005 ft/ft and the horizontal gradient between the 06-03 and 06-01A was 0.0007 ft/ft. In order for TCE to be detected deep in the aquifer, as it has been, an upgradient source would be required at some distance to allow for the vertical and horizontal migration of the pollution through the aquifer. Accordingly, the data is inconsistent with the Discharger's conclusion that the VOC impacts reported in monitoring wells near the Riverdale supply well are likely from other discharges.

The Discharger also attributes contamination to "*past waste disposal practices in the Riverdale Tract Area*". Many of the Riverdale Tract homes were built prior to wastes being deposited at the Bonzi Landfill. The only source of waste known to staff is the Landfill, 500 feet upgradient of the Riverdale supply well, which is owned by the Discharger. Staff is not aware of any past disposal practices in the Riverdale Tract area that might explain the data. The Discharger's statement is speculative, and requires evidence to support it.

11. Paragraph 7 – *WMU IV is an inert waste management unit. The 1,1-DCA reported in the single groundwater sample was from WMUIV7. WMUIV7 is very close to monitoring well 90-1 which also has 1,1-DCA reported in groundwater. 1,1-DCA has not been reported in groundwater wells 06-03 and 06-04 downgradient of WMU IV. See attached tables presenting results reported for the groundwater monitoring over the last four quarters.*

It is correct that WMU IV is **permitted** only as an inert management unit. However, during Staff's inspections in 2005, non-permitted waste was discovered mixed in with the waste material in WMU IV. Finding 27 of CDO R5-2005-0073 states: "On 3 March 2005 and 1 April 2005, staff observed large amounts of paper, cardboard, significant amounts of plastic, furniture cushions, and carpet material being discharged to WMU IV. This discharge of non-permitted waste is a violation of WDRs No. 98-093".

In October 2006, the Discharger confirmed the presence of VOCs in groundwater directly under Waste Management Unit IV. The following VOCs were detected in boring WMU IV7, as reported in the Discharger's October 2006 characterization of Waste Management Unit IV: 1,1-DCA (2.8 ug/l), 1, 2,4-trimethylbenzene (1.1 ug/l), benzene (0.93 ug/l), ethylbenzene (2.9 ug/l), o-xylenes (1.6 ug/l), p/m-xylenes (5.5 ug/l) p-isopropyltoluene (1.7 ug/l), and toluene

(3.0 ug/l) . Although none of the VOCs were detected at levels exceeding applicable MCLs, the data clearly demonstrates that VOCs are present directly beneath WMU IV.

12. Paragraph 8 – *92-CIL is a leachate well located in closed/capped WMU I, which was permitted as unlined. The well is completed above the groundwater table and the majority of the constituents reported in this well are not reported in groundwater monitoring wells downgradient of WMU I. A direct comparison of the analytical results from this leachate well to water quality goals or maximum contaminate levels (MCLs) is inappropriate because the leachate well is above the water table, constituents reported in leachate will attenuate in the vadose zone and if these constituents are found in groundwater they will be at lower concentrations. The groundwater extraction and treatment system is located directly downgradient of WMUI and the location of the leachate well. Based on groundwater contour maps the leachate well is not upgradient of the Riverdale supply well.*

Finding 3 of the 2007 WDRs states: “WMU I is a 35 acre Class III landfill closed pursuant to Title 27. In 1999, WMU I was capped with a two-foot thick foundation layer, a 30-mil PVC flexible membrane and an 18-inch vegetative layer. Approximately two million cubic yards of municipal refuse, agricultural wastes, industrial wastes and construction debris was landfilled from 1967 to 1978. WMU I was constructed without a bottom liner or a leachate collection and removal system (LCRS).”

Finding 10 of the CAO states: “Waste Management Units I, II and III were filled without an underlying protective liner system....”

Finding 7 of the CAO states: “The Discharger’s fourth quarter 2005 groundwater monitoring report contains the statement: *“Based upon groundwater elevations recorded this quarter and limited available refuse bottom elevations, groundwater appears to be inundating up to two feet of refuse in Unit I and appears to be below the bottom of refuse in Units II, III and IV”.*

The Discharger reported in its 2006 draft Human Health Risk Assessment that *“Based upon groundwater elevations measured for 2006 and limited available refuse bottom elevations (boring logs and cross sections by others), groundwater inundation of refuse appears to occur in WMUI and in WMUII for at least part of the year.”*

In its 2006 Annual Groundwater Monitoring Report, the Discharger summarized the VOCs in 92-CIL by stating: *“Historically the following VOCs have been reported in leachate sporadically over the past five years: 1,2-dichlorobenzene; 1,4-dichlorobenzene; benzene; ethylbenzene; toluene; total xylenes; and vinyl chloride”.* Vinyl chloride is a product of the decomposition reactions of both PCE and TCE.

92-CIL is a collection point for WMU I’s leachate. As stated in previous orders, WMU I has no protective barrier. Any liquid in the WMU will percolate through the waste directly to the underlying groundwater. The Discharger speculates that VOCs emanating from WMU I would attenuate in the vadose zone beneath the cell. This conclusion is flawed, however, because there are times during the year that groundwater not only saturates the entire vadose zone beneath the cell, but also inundates the uncontained waste in WMU I, thus eliminating any potential attenuation that might otherwise occur. The Discharger further claims that VOCs will be at lower concentrations when leachate meets the water table. The discharge of any amount of VOCs into the groundwater without filing a report of waste discharge is a violation of

California's Water Code. Dilution of the VOCs by mixing with groundwater to reduce concentration is not an approved corrective action measure. Thus, the 92-CIL data in the Amended Order identifies the ongoing threat to the Riverdale supply well.

13. Paragraph 9 – *Monitoring well 85-25 is located just north of Hatch Road and as shown on the groundwater elevation maps and described above this well is not located upgradient of the Riverdale supply well. The concentrations of 1,1 DCA in monitoring well 85-25 have been declining over time and 1,1-DCA was not reported above the laboratory reporting limit of 1 ug/l in any of the last four sample rounds. Historical data collected in this area shows that the 1,1 DCA in groundwater is limited in all directions, the “plume” is not expanding. Monitoring well 85-25 is also just over 300-feet laterally from groundwater extraction well EW-1 and this monitoring well is likely within the capture zone of this well. VOCs reported in monitoring 85-25 are not reported in monitoring wells 06-01A and 06-01B located upgradient of the Riverdale supply and no Landfill VOCs have ever been reported in the Riverdale supply well itself.*

With regard to the precise geographic position of monitoring well 85-25 in relation to the Riverdale supply well and the Landfill, please refer to the response to paragraph 4, above. The Discharger based its data analysis for monitoring well 85-25 on an extremely limited (i.e., four measurements) data set. The Discharger's conclusions about plume direction contradict historic data and evidence-based findings already made by the Board. Beginning in the second quarter of 2002 the concentration of 1,1-DCA also declined for four quarters, just as the Discharger described. However, during the next quarter, another pulse of 1,1-DCA moved past the well's screened interval, and concentrations rose for another four consecutive quarters. The Discharger stated in its 2006 Annual Monitoring Report that: "...concentrations of 1,1-DCA, located just beyond the boundary of the northwest corner of the site, in wells 85-25 and 85-7, have been very consistent over the last 10 plus years with average concentrations of approximately 3 ug/l." The continued presence of landfill VOCs in monitoring well 85-25 indicates that the threat of pollution migrating to the Riverdale supply well still exists.

14. Paragraph 10 – *As described in the comment to paragraph 5 and 6 above, the VOCs reported in monitoring well 06-01A are not reported in groundwater monitoring wells 06-03 and 06-04 downgradient of the landfill and upgradient of this monitoring well and the Riverdale supply well. Chloroform has not been reported above the reporting limit in this well in the last four quarters. Chloroform is a typical chlorination constituent found in groundwater. The Riverdale housing tract is on septic systems with leach fields and the groundwater supply is chlorinated by the community. As shown in the Addendum, PCE is not reported in Landfill monitoring well 90-1 towards the center of the landfill nor is it reported in monitoring wells 06-03 and 06-04 at the landfill boundary. Based on these data the PCE and chloroform reported in monitoring well 06-01A do not appear to originate from the landfill.*

Both the Riverdale Community and the Bonzi Sanitation Landfill discharge their wastewater to septic systems. Trihalomethanes are known VOCs that are associated with the chlorination of drinking water. The detection of chloroform may be a result of the Riverdale supply well water being chlorinated prior to distribution to the residents. The discharge of chlorinated wastewater to individual septic systems may be a source of the chloroform. The Discharger would not be expected to provide replacement water if the Riverdale well contains chloroform at levels exceeding standards.

For the four quarters of data provided by the Discharger on December 1, 2008, and presented in support of the Amendment, PCE was not detected in monitoring well 90-1. However, 1,1-DCA and cis-1,2-DCE, which are breakdown products of PCE and TCE, were detected in each of the four quarters of reported data.

15. Paragraph 11 – *Similar to the groundwater monitoring results from well 06-01A the VOCs reported in monitoring well 06-01B are not reported in groundwater monitoring wells upgradient of this well location or downgradient of the landfill.*

See the response for paragraphs 5 and 6.

16. Paragraph 12 – *The groundwater monitoring results from more recent sample collection from the Riverdale supply well continue to be non-detect for VOCs.*

The Central Valley Water Board has a limited data set from the Riverdale supply well. From the data collected since 2005 from the Riverdale supply well, no VOCs have been reported. Accordingly, at this time, the Order compels the Discharger only to prepare **a plan** to supply replacement water. In the event, based on the trends demonstrated above, detections of VOCs in the Riverdale supply well above MCLs are validated, the Discharger will be required to provide replacement water.

17. Paragraph 13 – *It is not clear what data indicates that the treatment system is “undersized and unable to prevent migration of the VOC plume.” The treatment system is designed to treat up to 225 gallons per minute. The system is operating well below the capacity. The VOC plume at the Landfill as described above is very stable or decreasing over time. It does not appear to be migrating further downgradient of the landfill. The CAO requires an analysis of groundwater extraction system capture. This analysis will include an aquifer pumping test, analysis of the results and development of an analytical model to optimize capture. Until this analysis is complete, the conclusion cited in the paragraph is premature.*

Findings 20 through 42 of Cleanup and Abatement Order R5-2006-0721 present a long and tortured history of the Central Valley Water Board efforts to request information, data and analysis from the Discharger regarding the capabilities of the groundwater extraction system.

The data the Board has actually been able to obtain from the Discharger indicates that the treatment system is undersized and unable to prevent migration of the VOC plume. Specifically, the system does not meet the performance criteria listed in Provision 14(D) of the Cleanup and Abatement Order that requires a “redesign of the corrective action treatment and monitoring system” to:

- “Capture all groundwater contaminants from Bonzi Landfill at the point of compliance”. VOCs continue to be detected in groundwater wells downgradient of the site; therefore the release is still ongoing. Historically, the Discharger has presented data that shows groundwater is flowing not only downgradient, but also away from the extraction wells. Consequently, the system is not preventing the release of contaminants from the Landfill site beyond the point of compliance.
- “Prevent groundwater from inundating the bottom of the four waste management units”. Finding 7 of the CAO states: “The Discharger’s fourth quarter 2005 groundwater

monitoring report contains the statement: *“Based upon groundwater elevations recorded this quarter and limited available refuse bottom elevations, groundwater appears to be inundating up to two feet of refuse in Unit I and appears to be below the bottom of refuse in Units II, III and IV”*. Accordingly, the Discharger’s own analysis demonstrates that its system is unable to keep groundwater from inundating the waste.

- “Clean-up groundwater to background or a concentration limit greater than background (CLGBC) in compliance with Title 27 Section 20400(c). This includes the entire groundwater plume as described in Title 27 Section 20430(c)”. VOCs are still being detected downgradient of the site, and therefore the system is not effectively reversing the groundwater gradient and causing VOCs to flow back toward the landfill’s “point of compliance” where they can be captured and remediated.
- “Be able to monitor the groundwater and leachate levels from three locations within the footprint of each landfill unit”. The Discharger has not installed the necessary monitoring points to comply with this requirement.
- “Remove any leachate generated from within the unit.” Although required to do so under the Monitoring and Reporting Program, the Discharger has never provided data regarding the amount of leachate, if any, removed from any of the four WMUs.
- “Continuous treatment system (24 hours a day, 365-days a year) operation until the groundwater plume is remediated to background or a concentration limit greater than background (CLGBC) in compliance with Section 20400(c)”. The November 2008 Corrective Action System and Land Application Area monthly Status Report alone shows five different shut down events related to the transfer pump. During the entirety of 2008, the System’s shut down notification protocol was inoperative, and Regional Board Staff was not notified of System shut downs. Prior to 2008, when the System’s shut down notification protocol was operational, Staff received notifications that the System was shutting down approximately 10 times per month, on average. The System is still plagued with periods of non-operation, which directly violates the CAO.

The Discharger states that the system is operating well below capacity and that it is capable of pumping groundwater at 225 gpm. However, the data shows that each groundwater extraction well pumps at different rates throughout routine operation. It is unclear why these variations in pumping rates occur (e.g. well design, scaling, drop in water level, etc...). For example, during the first three quarters of 2008 the System’s average operational flow was 103.48 gallons per minute, yet during November 2008, the average operational flow rate was only 91.22 gallons per minute. The Discharger has not provided data to support its claim that the System can pump and treat at 225 gpm over a consistent period.

Summary

The Discharger’s newly-created conceptual model is based on too limited a data set. There is no evidence to support an alternate source of VOCs. The Discharger has made statements in previous reports that contradict its newly-created conceptual model and its new opinions and conclusions. Many Findings in Board-adopted Orders contradict the Discharger’s new opinions and conclusions. Furthermore, many data gaps exist. Examples include data to demonstrate the effect of the Riverdale supply well pumping on local groundwater flow, data to demonstrate VOC concentrations in landfill gases, and data to demonstrate the radius of

influence of the groundwater extraction system. Fundamentally, the Discharger has not provided the data necessary to defend its conceptual model.

The Discharger's comments appear to solely address the requirement to provide replacement water in the event that VOCs in the Riverdale well exceeds applicable standards. The Discharger has overlooked the fact that MRP R5-2007-0148 requires that four other individual domestic wells near the Bonzi landfill also be sampled on a semi-annual basis. These are the four wells referred to in Provision No. 2 of the Order, which requires that the Discharger provide replacement water for the user(s) of any other domestic well downgradient of the Bonzi Landfill that contains VOCs at concentrations exceeding the MCL.

Finally, the Discharger seems to overlook the fact that, with the exception of the VFW well and Ace well, it does not currently need to provide replacement water. There will be no need to provide replacement water to the Riverdale well or the other two wells if the Discharger complies with its Cleanup and Abatement Order and upgrades the groundwater extraction system such that volatile organic compounds do not migrate beyond the point of compliance, defined in the WDRs as the downgradient edge of the landfill.

If you have any questions or wish to arrange a meeting to discuss this matter, please do not hesitate to contact Christian Carrigan at (916) 322-3626.

WENDY WYELS, Supervisor
Compliance and Enforcement Section

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Mr. Mike Mooney, The Modesto Bee, Modesto
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