

**Regional Water Quality Control Board
Central Valley Region
Board Meeting – 11/12 April 2013**

**Responses to Written Comments for the
The Vendo Company
Groundwater Remediation System
Fresno County
Tentative Waste Discharge Requirements/NPDES Permit**

At a public hearing scheduled for 11/12 April 2013, the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) will consider adoption of Waste Discharge Requirements (WDRs) (NPDES No. CA0083046) for the Vendo Company Groundwater Remediation System. This document contains responses to written comments received from interested parties regarding the tentative WDRs/NPDES permit circulated on 8 February 2013. Written comments from interested parties were required by public notice to be submitted to the Central Valley Water Board by 5:00 pm on 11 March 2013 to receive full consideration. Written comments were received from:

- United States Environmental Protection Agency (USEPA), Region IX (11 March 2012)

Written comments from the above interested party are summarized below, followed by the response of Central Valley Water Board staff. Based on the comments, changes were made to the tentative WDRs/NPDES permit Fact Sheet. Central Valley Water Board staff also made changes to the tentative WDRs/NPDES permit to correct typographical errors and to improve clarity.

USEPA COMMENTS

USEPA COMMENT 1: Removal of Technology-Based Effluent Limits (TBELs)

USEPA comments that there is not sufficient basis for removal of the TBELs for methylene chloride and total volatile organic compounds (VOCs) (including chloromethane) in the proposed WDRs/NPDES permit. USEPA contends that removal of the TBELs for VOCs based on new information that was not available at the time of the previous permit was issued is not appropriate since the pollutants were not detected prior to issuance of the previous permit. USEPA states that in order to ensure proper operation and maintenance of the facility and to meet federal anti-backsliding requirements, the proposed WDRs/NPDES permit should include a TBEL for total VOCs.

RESPONSE: The Central Valley Water Board staff does not concur. The proposed WDRs/NPDES permit includes TBELs for the VOCs of concern (1,1-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, and trichloroethylene) at the cleanup site. The Department of Toxic Substances Control (DTSC) approved a Final Remedial Action Plan (RAP) for the Pinedale Groundwater Site on 19 November 1998. The RAP indicated which chemicals were of concern at the

Pinedale Groundwater Site. The proposed WDRs/NPDES permit includes TBELs for the VOCs mentioned in the RAP as chemicals of concern that have also had reported detections in either the influent groundwater, surrounding groundwater, and/or effluent from January 2006 to July 2010. The proposed WDRs/NPDES permit does not include TBELs for VOCs not identified in the RAP as chemicals of concern at the site or for VOCs that have consistently not been found at detectable levels in groundwater or the effluent. However, continued influent and effluent monitoring for all typical VOCs listed in Table 2a of Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP) is required in the proposed WDRs/NPDES permit.

The Vendo Company's routine monitoring of surrounding groundwater, influent groundwater to the treatment units, and effluent has created an extensive data set. From January 2006 to July 2010, the Discharger reported approximately 50 monitoring results for the majority of the typical VOCs listed in Table 2a of Appendix 4 of the SIP. The only VOCs besides the VOCs of concern (1,1-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, and trichloroethylene) that had reported quantifiable detections in the effluent were methylene chloride and chloromethane.

Methylene chloride only had one reported effluent detection (0.81 µg/L) out of 51 effluent monitoring results. Methylene chloride was not detected (minimum method detection level = 0.056 µg/L) in any of the 48 influent samples taken between January 2006 and July 2010. In addition, there were no reported detections for methylene chloride, estimated or quantifiable, in the surrounding groundwater monitoring wells between January 2006 and July 2010. Furthermore, the method document for USEPA Method 8260 (the analytical method used to test for methylene chloride) states that a sample is susceptible to contamination of methylene chloride if special precautions are not followed. According to the method document, a sample can be contaminated by diffusion of methylene chloride through the septum seal of the sample container. Therefore, since methylene chloride was only detected once out of 51 effluent samples and not detected in the influent or surrounding groundwater monitoring wells between January 2006 and July 2010, it is reasonable to conclude that the one methylene chloride effluent detection is anomalous, unrepresentative, and potentially the result of sample contamination. Methylene chloride is also not a listed constituent of concern in the DTSC's RAP.

Chloromethane had only two reported effluent detections (0.84 µg/L and 0.6 µg/L) based on 39 effluent samples. The other 37 effluent monitoring results for chloromethane between January 2006 and July 2010 were all reported as less than the analytical method detection levels (minimum MDL = 0.1 µg/L). In addition, the only reported influent chloromethane detection was 0.59 µg/L (out of 38 influent samples). The other 37 influent monitoring results for chloromethane between January 2006 and July 2010 were all reported as less than the analytical method detection levels (minimum MDL = 0.1 µg/L). Furthermore, chloromethane is not a listed constituent of concern in either the DTSC's RAP or the previous permit.

Clean Water Act (CWA) section 402(o)(2)(B)(i) allows a renewed permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance. The additional years of monitoring data since the issuance of the previous permit has allowed groundwater and the treatment system discharge to be fully characterized and, thus, allowed Central Valley Water Board staff to appropriately evaluate the established treatment system and include TBELs for only the VOCs of concern. Therefore, Central Valley Water Board staff believe the additional monitoring data are new information as described in CWA section 402(o)(2)(B)(i) and an appropriate basis for removal of the TBELs for methylene chloride and total VOCs.

Central Valley Water Board staff does not expect that the removal of the TBELs for methylene chloride or total VOCs to result in lower water quality or additional degradation of the receiving water since the proposed WDRs/NPDES permit retains effluent limitations for the VOCs of concern. The TBELs included in the proposed WDRs/NPDES permit for the VOCs of concern at the site are identical to those established in the previous permit. Proper operation and maintenance (i.e., carbon changeout frequency) is dictated by the particular VOCs with TBELs in the proposed WDRs/NPDES permit, not by total VOCs. The discharge is treated groundwater. The Discharger does not add chemicals or other sources of pollutants to the discharge. Therefore, it is not expected that the removal of TBELs for methylene chloride or total VOCs will result in any change to the Facility operation or maintenance that would increase the mass of pollutants discharged.

USEPA COMMENT 2: Chromium (VI) and Outliers

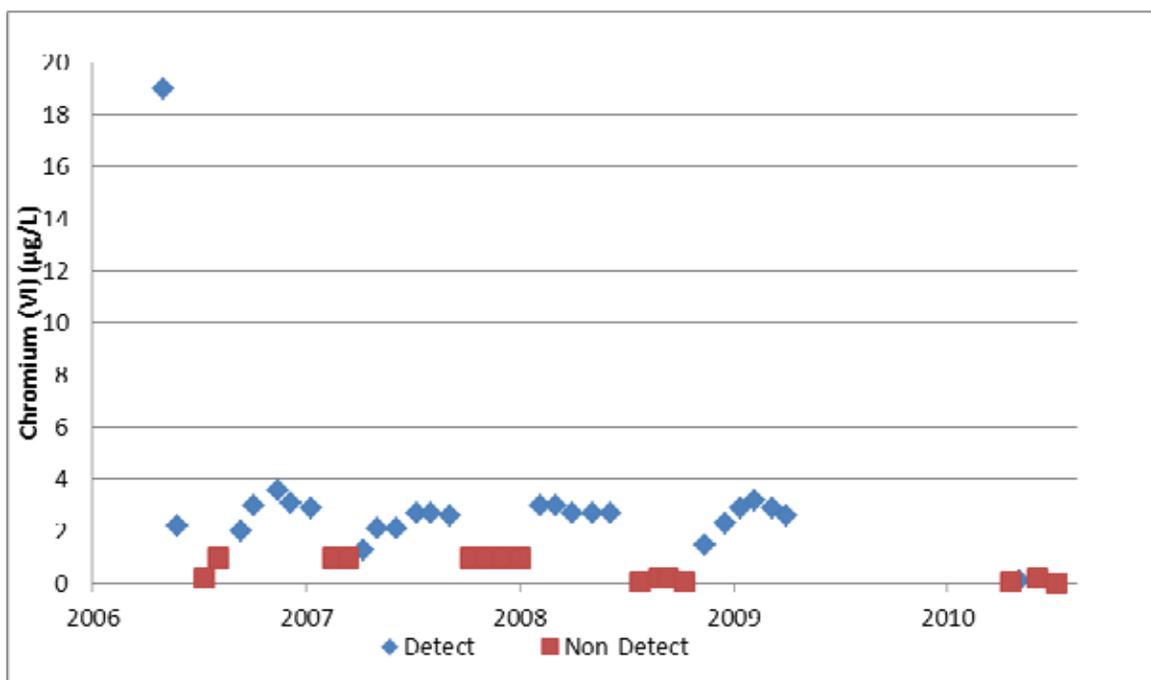
USEPA comments that the maximum effluent concentration (MEC) of 19 µg/L for chromium (VI) should not be considered as an unrepresentative outlier until a full analysis is performed according to the methodology described in section 4.4.1 of USEPA's *Data Quality Assessment: Statistical Methods for Practitioners* (Data Quality Assessment Document). USEPA contends that the 19 µg/L value for chromium (VI) is likely representative because the laboratory did not report any errors with the result and no other basis was used to conclude this value is unrepresentative. Furthermore, USEPA states that inclusion of the data point in the data set would result in a finding of reasonable potential for chromium (VI) and, thus, chromium (VI) effluent limits should be included.

RESPONSE: The Central Valley Water Board staff believes the proposed WDRs/NPDES permit provides sufficient justification to exclude the 19 µg/L chromium (VI) data point from the reasonable potential analysis and that the exclusion of this data point is within the discretion allowed by Section 1.2 of the SIP. Central Valley Water Board staff also disagrees with USEPA's assertion that "*no other basis for concluding that the data point should be censored has been provided.*" Page F-30 of the proposed WDRs/NPDES permit Fact Sheet presents several lines of evidence (i.e., influent data, groundwater monitoring data, and total chromium data) beyond a statistical analysis of the chromium (VI) effluent data to support the conclusion that the 19 µg/L value is

unrepresentative and inappropriate for use in the reasonable potential analysis. While the Data Quality Assessment Document is not a regulatory document and, thus, the Central Valley Water Board has no regulatory obligation to reference or use it when evaluating data, Central Valley Water Board staff, as presented below, has gone through the five steps listed in the Data Quality Assessment Document.

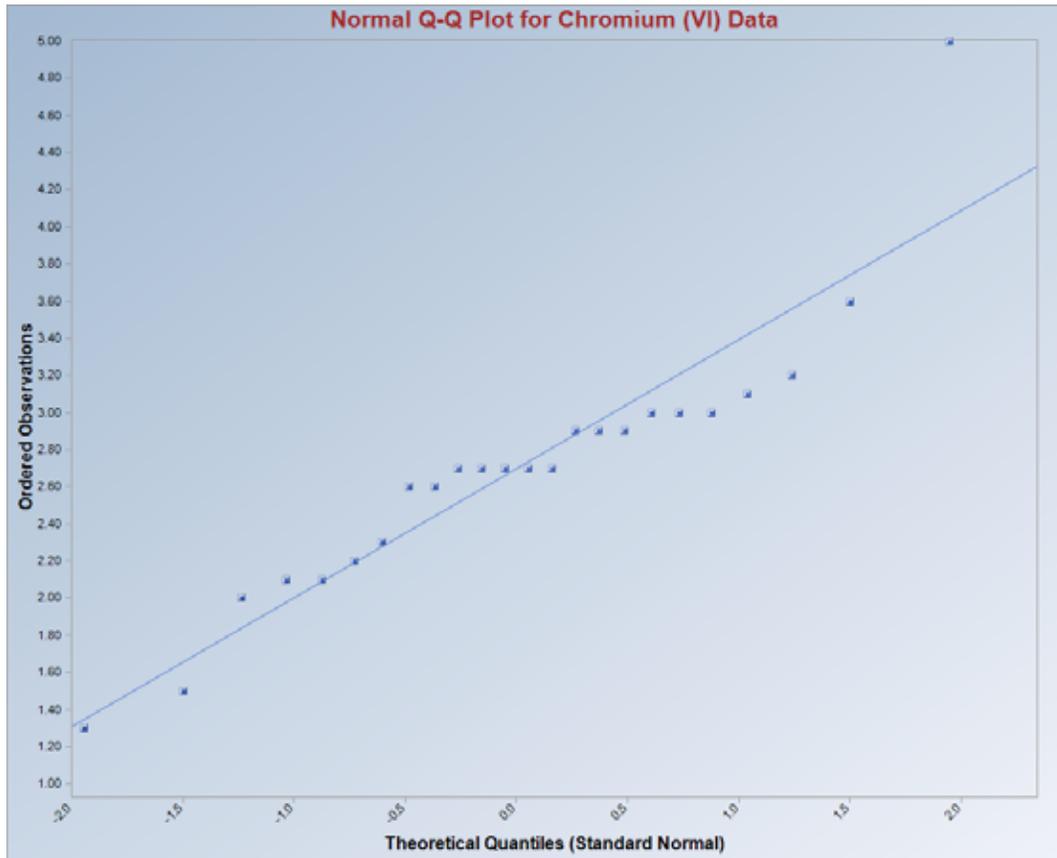
Step 1: Identify extreme values that may be potential outliers

As shown in the graph below, the chromium (VI) MEC of 19 µg/L is significantly larger than the rest of the data. Hence, Central Valley Water Board staff identifies the 19 µg/L chromium (VI) data point as a potential outlier.



Step 2: Apply statistical test

The Data Quality Assessment Document recommends certain statistical tests to determine if a data point is an outlier. However, all the recommended statistical tests assume that the data set is normally distributed. Prior to using the Shapiro-Wilk W test to determine if the chromium (VI) effluent data are normally distributed, the regression on order statistics method for normal distribution was used to extrapolate and estimate the non-detect results. A Normal Quantile-Quantile (Q-Q) plot test, shown below, accompanied with the Shapiro-Wilk W test was then used to test the data for normality. When a confidence level of 99% ($\alpha = 0.01$) was used for the Shapiro-Wilk W test, the test failed to reject the null hypothesis that the data was normally distributed. Therefore, Central Valley Water Board staff proceeded under the assumption that the data are approximately normally distributed.



The Rosner's test for outliers was then used to determine if the 19 µg/L chromium (VI) detection was an outlier. The Rosner's test calculated a test value of 5.9 for the potential outlier. Using a confidence level of 99% ($\alpha = 0.01$), the critical value was calculated to be 3.38. Since the test value was significantly greater than the critical value, the Rosner's test rejects the null hypothesis that there are no outliers in the data. Therefore, Central Valley Water Board staff concludes that the 19 µg/L chromium (VI) is a statistical outlier.

Step 3: Scientifically review statistical outliers and decide on their disposition

As mentioned above, Central Valley Water Board staff believes that additional reasons were provided in the proposed WDRs/NPDES permit to demonstrate that it is inappropriate to include the 19 µg/L chromium (VI) detection for use in the reasonable potential analysis. In addition to the significant statistical evidence, Central Valley Water Board staff considers the 19 µg/L chromium (VI) detection unrepresentative of the Facility's discharge and inappropriate for use in the reasonable potential analysis for the following reasons:

- (1) The Discharger also monitored for chromium (VI) in the influent. The maximum observed chromium (VI) influent concentration was 2.7 µg/L

(39 samples), as dissolved. In addition, chromium (VI) influent samples were taken from both extraction wells at approximately the same time when the 19 µg/L chromium (VI) sample was taken. Those chromium (VI) influent samples were both reported as below analytical levels (method detection level not reported, reporting level = 1.0 µg/L).

- (2) The Discharger reported total chromium results for the influent, effluent, and surrounding groundwater monitoring wells. The Discharger reported 15 total recoverable and 28 dissolved effluent monitoring results for total chromium. The MEC for total chromium was 6.17 µg/L, as total recoverable. The maximum observed total chromium influent concentration was 8.1 µg/L (41 samples), as total recoverable. The maximum observed dissolved total chromium concentration detected in the nearby groundwater monitoring wells was 13 µg/L. The 13 µg/L dissolved total chromium was the result of a 16 April 2008 sample of an intermediate monitoring well. Besides the 16 April 2008 result, all the reported surrounding groundwater monitoring results for dissolved total chromium either were estimated values below the California Toxics Rule (CTR) criterion of 11 µg/L or reported as below analytical method detection levels (i.e., non-detect).
- (3) The 19 µg/L result was the oldest effluent monitoring result reported during the previous permit term (2 May 2006). The Discharger, since the May 2006 chromium (VI) detection, has operated the GAC system over 1,229 days and replaced the carbon in the GAC system over five times. As illustrated in the figure below, the chromium (VI) concentration levels, excluding the May 2006 result of 19 µg/L, are significantly below the CTR criterion of 11 µg/L.

Step 4: Conduct data analyses with and without statistical outliers

Central Valley Water Board staff conducted data analyses with and without the 19 µg/L chromium (VI) detection. The 19 µg/L chromium (VI) detection appears to be the only statistical outlier in the data.

Step 5: Document the entire process.

The entire process is documented here within this response to comments and the summary of the analysis of the data set has been summarized in the Fact Sheet as shown in the underline format below. While the Fact Sheet does not specifically reference the Data Quality Assessment Document, the Fact Sheet, with the revisions presented below, contains the same basic elements recommended by the Data Quality Assessment Document.

- (b) **RPA Results.** The maximum observed upstream receiving water concentration for chromium (VI) was 3.1 µg/L (as dissolved) based on

16 samples. The Discharger reported 40 effluent monitoring results for dissolved chromium (VI). The MEC was 19 µg/L, as dissolved.

The Central Valley Water Board considers the 19 µg/L chromium (VI) detection unrepresentative of the Facility's discharge and inappropriate for use in the RPA for the following reasons:

- (1) The second highest observed effluent concentration was 3.6 µg/L, as dissolved. In addition, using ½ the MDL (.06 µg/L or 0.044 µg/L), or ½ the ML (0.2 µg/L or 1.0 µg/L) if no MDL was reported, the mean is 2.1 µg/L and the standard deviation is 3.0. The 99.9th percentile of the data set (i.e., 3.3 standard deviations + the mean) is 12.0 µg/L. The result of 19 µg/L is more than five standard deviations from the mean of the data and over five times greater than any other effluent sample from January 2006 to July 2010.

Central Valley Water Board staff conducted an additional statistical test of the chromium (VI) effluent data to evaluate the 19 µg/L chromium (VI) detection further. This test assumes that the data are normally distributed. Prior to using the Shapiro-Wilk W test to determine if the chromium (VI) effluent data are normally distributed, the regression on order statistics method for normal distribution was used to extrapolate and estimate the non-detect results. The result of the Shapiro-Wilk W test shows that chromium (VI) effluent data are approximately normally distributed at a 99% confidence level ($\alpha = 0.01$). The Rosner's test for outliers was then used to determine if the 19 µg/L chromium (VI) detection was an outlier. When a 99% confidence level ($\alpha = 0.01$) is used, the test value of 5.9 is significantly greater than the crucial value (3.38). Therefore, the Central Valley Water Board concludes the 19 µg/L chromium (VI) detection is a statistical outlier.

As detailed above, conducting a statistical analysis of the chromium (VI) effluent data in the manner recommended by section 4.4.1 of USEPA's Data Quality Assessment Document results in the same conclusion Central Valley Water Board staff came to in the proposed WDRs/NPDES permit, that the chromium (VI) detection of 19 µg/L is unrepresentative of the Facility's discharge and inappropriate for use in the reasonable potential analysis. Therefore, the Facility's discharge does not have reasonable potential to cause or contribute to an in-stream excursion above applicable water quality criteria or objectives and Water Quality Based Effluent Limits (WQBELs) for chromium (VI) are not included in the proposed WDRs/NPDES permit.