



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair

9/15/09 Bd Mtg/Wrkshp Item 13
A-1948 - Soper Mine
Deadline: 9/8/09 by 12 noon



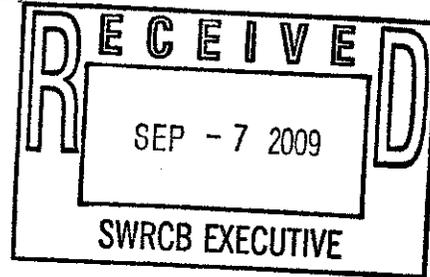
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7 September 2009

Ms. Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
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COMMENTS FOR PETITION OF WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2008-0104 (NPDES NO. CA0085286) FOR SOPER COMPANY, SPANISH MINE, NEVADA COUNTY

SWRCB/OCC FILE A-1948 - 15 SEPTEMBER 2009 STATE WATER RESOURCES CONTROL BOARD MEETING

Thank you for the opportunity to comment on the 3 August 2009 draft State Water Resources Control Board (State Water Board) Water Quality Order (Draft Order) referenced above. The Draft Order remands Waste Discharge Requirements Order No. R5-2008-0104 (Adopted Permit) to the Central Valley Regional Water Quality Control Board (Central Valley Water Board) to; (1) revise the Adopted Permit to establish numeric effluent limitations for priority and non-priority pollutants, (2) amend the Adopted Permit to include an exception to its monitoring requirements, and (3) amend the Adopted Permit to include a requirement that a mixing zone study be conducted. The Central Valley Water Board agrees the Adopted Permit should be remanded for revisions. However, based on the discussion provided below, the Central Valley Water Board requests the State Water Board revise its conclusions to affirm that the numeric effluent limitation exemptions provided under the Section 122.44(k)(3) of the Federal Code of Regulations (40 CFR 122.44(k)(3)) are allowed under the SIP. The State Water Board should direct the Central Valley Water Board to amend the Adopted Permit to clarify and enhance the justification that developing numeric limitations are infeasible in this case. Further, State Water Board direction to amend the Adopted Permit to revise the monitoring and require a mixing zone study is unnecessary as the Adopted Permit already includes such requirements.

Discussion

Waste Discharge Requirements Order No. R5-2008-0104 for Soper Company, Spanish Mine, adopted by the Central Valley Water Board allows the implementation of BMPs *in-lieu* of numeric effluent limits pursuant to 40 CFR 122.44(k)(3) where numeric effluent limits are infeasible. The application of 40 CFR 122.44(k)(3) was deemed appropriate by the Central Valley Water Board due to the nature of mine drainage discharge, specifically it is highly variable in flow rate and pollutant concentration, each of which can change rapidly in response to natural phenomena. Numeric effluent limits

have been found to be infeasible for other discharges including, but not limited to storm water and aquatic pesticide use.

Order No. R5-2008-0104 was petitioned to the State Water Resources Control Board (State Water Board) by the California Sportfishing Protection Alliance (CALSPA) for several issues, the major issue being the claim that the application 40 CFR 122.44(k) (B) to the discharge to surface waters is not allowed under the State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).

On 3 August 2009, the State Water Board issued a Draft Order concluding that the Central Valley Water Board was wrong in substituting BMPs *in-lieu* of numeric effluent limits. The Draft Order contains the State Water Board's reasoning for its conclusions. The Central Valley Water Board's response to the State Water Board's Draft Order is presented below along with our recommendations for modifications to the Draft Order.

Priority Pollutants

The Draft Order on the petition by CALSPA states, among other things, that it was not appropriate for the Central Valley Water Board to use the similarity of mine drainage to storm water to regulate the discharge of priority pollutants through BMPs pursuant to 40 CFR 122.44(k)(3) stating that 1) the discharge is not storm water 2) the exemption for effluent limits in the SIP applies only to storm water, and 3) the SIP, being more stringent than the Clean Water Act, supersedes the federal regulation.

In review of the SIP, the Central Valley Water Board believes this interpretation of the SIP is unclear because the SIP is silent regarding the applicability or use of the exception provided under the Federal Regulations. Therefore, the Central Valley Water Board believes the State Water Board has the discretion to establish through this action how the SIP should be interpreted and whether the SIP language was intended to eliminate the option of BMPs where numeric limits are infeasible. The fact that the SIP does not explicitly allow BMPs that are allowed by general NPDES regulations could be interpreted that those exceptions do not apply. Conversely, the SIP's silence on this issue could mean that the State Board did not consider whether 40 CFR 122.44 (k) (3) would still apply in appropriate cases, and therefore the SIP does not allow nor disallow the use of the regulatory exception where applicable.

Highly Variable Discharge Characteristics. The Central Valley Water Board agrees with the Draft Order that mine drainage is not storm water and the storm water exemption in the SIP is not applicable to mine drainage. The Central Valley Water Board did not rely on the storm water exemption in the SIP for its actions. The specific instance of the regulation of the discharge from abandoned mines is a unique situation and the Central Valley Water Board did recognize that mine drainage shares characteristics with storm water that make the development of numeric effluent limits for both priority pollutants and non-priority pollutants infeasible. We believe that during development and adoption of the SIP, the focus was on industrial and municipal discharges that have a consistent or controllable discharge rates and effluent characteristics. Discharges from abandon mines do not behave in this manner.

Mine drainage is highly variable and responds to precipitation both in flow volume and constituent concentration, often these changes are large and rapid. The constituent concentration can increase or decrease with flow rates depending upon the hydrology and characteristics at a given site.

The highly variable nature of mine drainage, both in flow rates and waste constituents, and the rapidity in which these variations happen can be better understood with a brief explanation on how mine drainage is formed. Precipitation in the form of rain or snowmelt infiltrates into the native bedrock and flows generally from areas of high elevation to low elevation either through pores in aquifers comprised of sand, gravel etc, or discrete fissures and fractures in crystalline bedrock as is common in underground hardrock mines. If the ground water encounters a mineralized zone in the subsurface, it reacts with the minerals as it moves through the area, dissolving some of the minerals and transporting them beyond the immediate area. Eventually, this ground water and the mineral constituents it has picked up in its passage through the subsurface, flows to the ground surface in the form of springs, or in the bottom of streams as evidenced by increased stream flow. In some cases, the concentration of mineral constituents may have naturally increased well above water quality objectives. In some cases of extensive mineralization of the ground water discharges, miners were able to follow the mineral staining in the watercourse substrate to the site of commercial deposits. The volume of this ground water discharge and the concentration of the mineral constituents are highly variable, dependent upon climate, annual precipitation, recent storm events, and types and character of the hosting bedrock and mineralization.

Prior to the implementation of the Clean Water Act and its amendments in the 1970s, underground mines were developed with no consideration of water quality. These mines were designed specifically to *drain* ground water from the underground workings, reducing the need for costly pumps. During mining activities, tunnels and underground workings were dug into the mountains to access the natural mineral deposits. Construction of the tunnels and workings, and blasting and shattering of the bedrock allowed for the exposure of the mineral deposits to oxygen, increasing their solubility, as well as allowing the mineral laden ground water a rapid and easy route to drain from the underground workings. Modern mining operations develop their underground workings to avoid similar conditions and prevent the uncontrolled discharge of mine drainage.

After mining activities ceased, natural processes take over the mined area resulting in the continued discharge of elevated concentrations mineral constituents from the mine workings which remains highly variable in both volume and constituents.

There is usually no information available to determine what the pre-mining conditions were for a particular site except for historical comments on the color of the water or staining in the drainage. While many efforts have been attempting at modeling pre- and post-mining discharges, it is impossible to accurately determine what percentage of the current discharge is natural background and man-induced.

At the Spanish Mine, underground mining operations ceased in 1942, however mine drainage containing mineral constituents, including arsenic, cadmium, cobalt, copper, iron, lead, manganese, nickel, and zinc, continues to discharge from two mine portals in excess of water quality objectives. There is no manufacturing process that can stop or valves that can be closed to cease the discharge. The highly variable volume and mineral constituents of the discharge, and the rapidity in which they can change, makes the development of numeric effluent limits infeasible. These conditions are similar to those that resulted in the determination that numeric effluent limits for storm water discharges were infeasible. However implementation of BMPs is highly successful in reducing waste constituents in mine drainage.

Other Pollutants

The Draft Order concludes that numeric effluent limits for non-priority pollutants are also feasible. The Central Valley Water Board disagrees with this conclusion for the same reasons as described above for priority pollutants. Further, non-priority pollutants are not subject to the provisions of the SIP. Therefore, even if the State Water Board should determine that 40CFR 122.44(k) (3) is not applicable under the SIP and numeric limits must be developed for priority pollutants, this does not apply to non-priority pollutants. 40CFR122.44 (k) (3) remains available to the Central Valley Water Board where it can demonstrate developing numeric limits is infeasible for non-priority pollutants.

This section of the Draft Order also includes several statements that are incorrect or not supported by the record or evidence. The Draft Order states that because the Discharger has been able to gain access to the site fairly consistently as shown by their monitoring reports, that access for the purposes of operating treatment systems and other operations is possible. The Draft Order also concludes that implementing source control, installing concrete bulkhead seals to plug the mine adits, and operating the types of passive biological or physical treatment systems used at other mines sites, the Discharger should be able to comply with protective numeric effluent limits.

Site Access. The Spanish Mine is often inaccessible due to the snow conditions commonly present at the altitude of the site (4,000+ feet) high stream flows, and steep remote terrain. The Draft Order references the fact that monitoring reports contain data collected at different portions of the year to argue the site is continuously accessible. This conclusion ignores the prevailing winter weather conditions commonly experienced in the Sierra Nevada Mountains. While the mine may be accessible at some point over a period of three months, this accessibility may be limited to snowmobile, Cross County skis etc. It does not mean the site is accessible 24 hours a day, seven days a week, and 365 days a year which would be required to operate a treatment plant and safely transport chemical reagents.

Source Control and Passive Treatment Systems. The Draft Order goes on to state that installation of concrete bulkhead seals to plug the mine adits, and operating the types of passive biological or physical treatment systems used at other mines sites should

enable the Discharger to comply with the numeric effluent limits. The Central Valley Water Board does not agree.

The Draft Order discussion ignores efforts undertaken at many other abandoned mines and their inability to meet numeric effluent limits. This is based on the extensive experience of Central Valley Water Board staff in this area. The diversion of surface waters to prevent infiltration into the mine workings may be effective in *reducing* the discharge, but the effect can be minimal depending on the site. Concrete bulkhead seals are commonly attempted to prevent mine drainage from discharge from the portal. However only in rare instances is this technique successful. Mine drainage often accumulates behind the seals and forces its way through fractures fissures, or through unknown mine workings to the surface, negating any positive results of the seals. Passive treatment systems are available and are very successful in *reducing* pollutants discharged from mine adits, however they are unable to consistently meet the strict numeric effluent limits on discharges typical of abandoned mines: highly variable and rapidly changing discharge flow rates and waste constituent concentrations, especially where large, rapid changes in ambient air and influent temperature exist that affects the treatment efficiency. Further, data from both passive and active treatment systems show some waste constituents in mine drainage (i.e. zinc) are more difficult, if not impossible, to treat to levels that meet water quality objectives on a consistent basis.

The statement that "compliance with numeric effluent limits should not be difficult, particularly after the Discharger implements the BMPs required in the Permit" is unsupported, ignores the actual operation and effectiveness of BMPs and passive treatment systems and the fact that they cannot provide consistent results due to the highly variable and rapid changes in flow rates, pollutant concentrations, and ambient temperature conditions, and is contrary to the Central Valley Water Board's years of experience with these systems.

Exemption from monitoring requirements. The Other Pollutants section of the Draft Order concludes with a statement that "An exception to the Permit's monitoring requirements may be appropriate if access to a monitoring location poses a threat to safety due to snow or flooding conditions. This exception is already included in the permit in Attachment E, General Monitoring Provisions, Section 1.F., at page E-2 that states:

"Due to the physical location of portions of the site up to elevations of 4,800 feet in a remote, heavily forested area of the Sierra Nevada's, access is often limited for extended periods due to deep snow or flooding conditions. If access to a given monitoring location for monthly monitoring under such conditions cannot be achieved or poses a threat to the safety of sampling personnel, it shall not be deemed a violation of this Order. Sampling shall resume as soon as safety allows. The Discharger shall make a note in the Monitoring Report describing why the scheduled monitoring was not conducted"

Receiving Water Limits

The Draft Order states the Central Valley Water Board allowed a de facto mixing zone and 100:1 dilution credit. We disagree with this characterization of the permit conditions. Adequate data was not available to establish a mixing zone. The available data allowed for a general description of the available dilution in Poorman Creek using data from the U.S. Geological Survey gauging station and discharge data from the Discharger. This methodology allowed the Central Valley Water Board to issue the permit and accompanying Cease and Desist Order No. R5-2008-0105, placing an enforceable time schedule on the Discharger to remedy the discharge rather than wait an additional year(s) to gather the level of detailed data required by the SIP for a Mixing Zone and Dilution Study.

The Central Valley Water Board agrees the Discharger must conduct a Mixing Zone and Dilution Study. The requirement for this Study is included in Order No. R5-2008-0104 in the section titled Provisions, Section VI.C.1.b., page 16 which states:

***“Mixing Zone and Dilution Study.** Although rapid and complete mixing is assumed, this Order requires the Discharger to complete an independent mixing zone and dilution study of the receiving water both upstream and downstream of Discharge Points 001 and 003. The study shall be completed and submitted to the Regional Water Board within twenty-four (24) months of the effective date of this Order. The mixing zone and dilution study shall be conducted in accordance with the procedures outlined in Appendix 5 of the SIP and provide adequate information for the Regional Water Board to determine if the conditions for Mixing Zones and Dilution Credits described in Section 1.4.2 of the SIP can be met. If after completion of the mixing zone and dilution study, it is determined that the receiving water limits cannot be met or beneficial uses may be affected by the discharge, then the Order may be reopened and the discharge requirements modified.”*

Additional information is included on page F-12 of the Fact Sheet on page F-12. If the study indicates receiving water limits cannot be met or beneficial uses may be affected, then the Order can be reopened and more stringent measures required.

Proposed Changes to the Draft Order

Upon review of the administrative record for the Soper Company, Spanish Mine, Central Valley Water Board staff believes additional information is available that was not before the Central Valley Water Board when it adopted Order No. R5-2008-0104. We believe this information is necessary to clarify and enhance the Central Valley Water Board's position regarding the regulation of discharges from the Spanish Mine using BMPs *in-lieu* of numeric effluent limits as allowed in 40 CFR 122.44(k)(3). Therefore, the Central Valley Water Board requests the State Water Board remand the Adopted Permit back to allow the Central Valley Water Board to clarify and enhance the justification that developing numeric limitations are infeasible in this case.

Further, depending on the State Water Board's interpretation on the applicability of the 40CFR 122.44(k) (3) to the SIP, the Central Valley Water Board requests the State Board revise the Draft Order as follows:

- 1. Assuming the State Water Board determines to interpret that the SIP allows the application of the exception provided in 40 CFR 122.44(k)(3) where the Regional Water Board can adequately demonstrate that development of numeric effluent limitations is not feasible, the Central Valley Water Board proposes the following revisions to the Draft Order:**

Revise Conclusion 1 to state that the State Water Board finds the SIP does not supersede the application of 40 CFR 122.44(k)(3), and BMPs can be placed in NPDES permits when numeric effluent limits are infeasible as determined on a case by case basis by the Central Valley Water Board. Remand the Adopted Permit back to the Central Valley Water Board to clarify and enhance the justification that developing numeric limitations are infeasible in this case.

Delete Conclusion 2 due to the revised Conclusion 1.

Delete Conclusion 3 due to the revised Conclusion 1.

Delete Conclusion 4 since the Adopted Permit already contains such an exemptions as described above in Exemption from monitoring requirements.

Delete Conclusion 5 since no dilution credit has been granted and a Mixing Zone and Dilution Study is already included in the Adopted Permit as described above in Receiving Water Limits.

Delete or significantly revise Conclusion 6 as it inaccurately describes conditions at the site that do not yet exist and ignores the highly variable effectiveness rate of these measures as described above in Source Control and Passive Treatment Systems.

Tuolumne Utilities District NPDES Permit Comments on Draft Order

2. Assuming the State Water Board determines to interpret that the SIP does not allow the application of the exception provided in 40 CFR 122.44(k)(3) and finds that numeric effluent limitations must be developed in the Adopted Permit, the Central Valley Water Board proposes the following revisions to the Draft Order:

No proposed change to Conclusion 1

No proposed change to Conclusion 2.

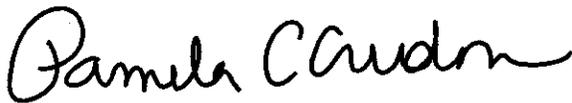
Modify Conclusion 3 to state numeric effluent limitations as required in the SIP apply only to priority pollutants and affirm the Central Valley Water Board's action to implement 40CFR 122.44(k)(3) exceptions to numeric limitations for non-priority pollutants. This is appropriate since non-priority pollutants are not subject to the SIP provisions.

Delete Conclusion as the Adopted Permit already contains such an exemptions as described above in Exemption from monitoring requirements.

Delete Conclusion 5 as no dilution credit has been granted and a mixing zone and Dilution Study is already included in the permit as described above in Receiving Water Limits.

Delete or significantly revise Conclusion 6 as it inaccurately describes conditions at the site that do not yet exist and ignores the highly variable effectiveness rate of these measures as described above in Source Control and Passive Treatment Systems.

Thank you again for this opportunity to respond to the Draft Order. If you have any questions, please contact Mr. Jim Pedri at (530) 224-4855 or jpedri@waterboards.ca.gov.



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