

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2017-0082

WASTE DISCHARGE REQUIREMENTS
FOR
SOPER COMPANY
SPANISH MINE
NEVADA COUNTY

The California Regional Water Quality Control Regional Board, Central Valley Region, (hereafter Central Valley Water Board or Board) finds that:

1. Soper Company (hereafter Discharger) owns the historic, inactive Spanish Mine, a former underground gold and surface barite mine (the "Facility") located approximately three miles north of the town of Washington in Nevada County (see Attachment A). The Facility is located on private land in Township 18 North, Range 11 East, Sections 18, 19, 30, and 31 Mount Diablo Base and Meridian, as shown on Attachment B. The Facility covers approximately 456 acres of surface area and the elevation at the Facility ranges from about 3,200 to 4,800 feet above mean sea level.
2. The Facility operated intermittently as a gold mine from 1883 to 1942 and as an open pit barite mine from the late 1970s to 1988. As a result of the former mining activities, groundwater seepage through the underground mine workings has historically discharged moderately acidic water containing metals (acid mine drainage or "AMD") from two mine adits (A-001 and A-003) to land, and indirectly to surface waters. The A-001 adit is located at N39.3817° and W120.7875°, approximately 50-feet above Poorman Creek, and the A-003 adit is located at N39.4042° and W120.79 04°, approximately 360-feet above and 0.25-miles from Devils Canyon. Devils Canyon is an ephemeral drainage tributary to Poorman Creek, which is tributary to the South Fork Yuba River. A flow schematic of the adit discharges and nearby surface waters is shown in Attachment C.
3. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
Attachment A – Site Location Map
Attachment B – Site Map
Attachment C – Site Drainage Map
Attachment D – Standard Provisions and Reporting Requirements
4. The following acronyms are used throughout this Order:

| | |
|-----|---------------------------|
| AMD | Acid Mine Drainage |
| PTS | Passive Treatment Systems |
| SRB | Sulfate-Reducing Bacteria |

5. In 1996, the Discharger, a timber management company, purchased the Facility as part of its timber management business. The Discharger has never conducted any mining activities at the Facility and has stated that they have no intention to operate the Facility as a mine in the future.

Regulatory History

6. In July 1990, the Central Valley Water Board received a water quality complaint of sedimentation discharging from the Facility. In response to the complaint, the Board requested that the Discharger apply for a National Pollutant Discharge Elimination System (NPDES) permit for the discharge. In October 1999, the Discharger submitted a Report of Waste Discharge (ROWD). In June 2003, the Central Valley Water Board requested that the Discharge submit a surface water sampling plan for the Facility.
7. In July 2006, the Central Valley Water Board requested that the Discharger update and resubmit an October 1999 NPDES permit application along with a Five-Year Remedial Action Work Plan detailing remedial activities to bring the mine discharge into compliance. The permit application was submitted in October 2006 and was deemed complete in December 2006.
8. In July 2008, the Central Valley Water Board adopted WDR Order R5-2008-0104 (NPDES Permit No. CA0085286) to regulate discharges from the Facility. At the time the NPDES permit was issued, there were no treatment systems or other controls in place for the AMD, which contains arsenic, cadmium, cobalt, copper, iron, lead, manganese, nickel, and zinc in concentrations substantially above water quality objectives. The NPDES permit required the discharger to implement best management practices (BMPs) to manage the discharge of AMD from the mine adits, and other point source discharges to surface waters or surface water drainage courses. The NPDES permit specified that BMPs may include, but are not limited to, installation of concrete bulkhead seals, passive biological or physical treatment systems (sulfate reducing bacteria reactors, anoxic limestone drains, etc.), injection of neutralizing agents into underground workings, run-on and run-off controls, consolidation and capping of reactive waste rock, or other technologies as they are developed.

Petition of NPDES Permit to State Board and Related Facility Activities

9. On 30 August 2008, the California Sport Fishing Protection Alliance petitioned the issuance of the NPDES permit to the State Water Resources Control Board (State Board) contending that in approving the permit, the Central Valley Water Board violated federal NPDES regulations and the State Water Board's policy for Implementation of the Toxics Standards for Inland Surface Waters, Enclosed Bays,

and Estuaries of California (SIP) by failing to include various numeric effluent limitations in the permit.

10. On 17 November 2009, the State Board issued Water Quality Order 2009-0015 remanding the permit back to the Central Valley Water Board for reconsideration and revision, either to *"include numeric effluent limitations or to comply with the applicable requirements for including BMPs in lieu of numeric effluent limitations for priority pollutants"*.
11. In May 2009 and May of 2010, the Discharger submitted Remedial Action Work Plans for the A-001 and A-003 Adits, respectively. The Work Plans were submitted in accordance with Cease and Desist Order R5-2008-0105 to address AMD discharges from both the A-001 and A-003 Adits.
12. In 2011, after consultation with Central Valley Water Board staff, the Discharger constructed two passive treatment systems (PTS) at the Facility for the treatment of AMD from the A-001 and A-003 adits. Point source discharges from the mine workings to surface waters have been eliminated and treated effluent from the PTS is now discharged to land.
13. On 11 March 2015, the Discharger submitted a ROWD for the PTS and land disposal of mine drainage from the Spanish Mine. In a subsequent 24 March 2015 letter, Board staff determined that the ROWD was complete and stated that staff would begin to draft new waste discharge requirements (WDRs) for the Facility.

Site-Specific Conditions

14. The Facility is located on a ridge between two drainages, Devils Canyon and Poorman Creek. Both drainages flow in the southwest direction and have a gradient of approximately 5 percent. Side slopes of the Spanish Mine ridge typically have an overall gradient of 2 to 1 (horizontal to vertical) and can be as steep as 1 to 1 at some parts. The underlying soil formations consist of moderately deep well drained soils formed in material weathered from metamorphosed sedimentary rock.
15. The Lower Spanish Mine (the A-001 Adit) is located along Poorman Creek at an elevation of approximately 3,300 feet. When mining activities ceased at the Lower Spanish Mine in the 1940s, the underground mine workings extended nearly 5,700 feet along the vein system to the north. Raises were put up into the ore zone and some workings extended to the surface where they were worked by open cuts.
16. The Upper Spanish Mine (the A-003 Adit) is located at an elevation of approximately 4,000 feet, and approximately 7,000 feet north of Adit-001. The A-003 Adit discharges water from a collapsed mine adit. The adit has been described as a "spring" in various reports over the past 50 years. The A-003 Adit water flows

into an ephemeral drainage which empties into Devils Canyon approximately 0.25 mile below the adit. Devils Canyon flows into Poorman Creek north of Washington.

17. A March 2009 report by the Discharger reports flow from the A-001 Adit ranging from 15 gallons per minute (gpm) to 29 gpm between April 2008 and March 2009. A March 2010 report by the Discharger reports flow from the A-003 Adit ranging from 16 gpm to 53 gpm between April 2008 and March 2009. Review of precipitation data from the nearby Nevada City station for the same time period indicates that normal precipitation had been recorded for the same periods.
18. The average annual precipitation is estimated to be 66.15 inches per year¹ and the 10- year, annual return period is estimated to be 93.14 inches². The normal-year pan evaporation is estimated to be 57 inches³, with maximum evaporation occurring during the months of May through October and minimum evaporation occurring in the months of November through April.
19. Surrounding land primarily consists of forestland managed by the U.S. Forest Service. The nearest residence is approximately 5,000 feet southwest from the Facility and 400 feet lower in elevation, and in separate watershed not affected by the Facility. The water supply for this residence is unknown.

Groundwater Conditions

20. The Discharger has not completed a site-specific groundwater evaluation to determine background groundwater quality and potential impacts from the discharge. The proposed Spanish Mine Gold Project (Cedar Resources, 1988 to 1992) resulted in the installation of two groundwater monitoring wells (MW-1 and MW-2) at the Facility. Both monitoring wells were later destroyed in accordance with County regulations when the project was abandoned in 1993.

Data presented in Table 1 below are from Regional Board files concerning the Spanish Mine Gold Project and provides only a limited evaluation of site-specific groundwater conditions. General mineral and metals results show the upgradient (background) monitoring well MW-2 is representative of existing groundwater quality, which has not been impacted by mining activities. The downgradient (mining impacted) monitoring well MW-1 was drilled in the proximity of the underground mine workings and indicates that historic mining activities accelerated the oxidation of iron pyrite and other sulfidic minerals and released dissolved metals which form AMD.

¹ Data from Deer Creek Forebay, Nevada County.

² Data from Deer Creek Forebay, Nevada County.

³ Data from Lake Spaulding, Nevada County.

Currently, there are no groundwater wells installed for this mine site. Mine adits, passive treatment systems, and infiltration and spray fields are located on steep slopes, and accessibility of well drilling equipment at the A-001 infiltration field and A-003 spray field is not practical.

Table 1 – 1990s Groundwater Data

| | MW-2 (Upgradient-Background) | MW-1 (Downgradient-Impacted) | Groundwater WQO | |
|---------------------------------|------------------------------|------------------------------|-----------------|---------------|
| Bicarbonate (HCO ₃) | 16120 | 52520 | | |
| Cadmium | 0.23 | 0.23 | 5 µg/L | Primary MCL |
| Calcium | 2580 | 9660 | | |
| Chloride | 700 | 660 | 250000 µg/L | Secondary MCL |
| Copper | 10.36 | 7.8 | 1000 µg/L | Secondary MCL |
| EC | 39.4 | 102.6 | 900 µmhos/cm | Secondary MCL |
| Iron | 484 | 3064 | 300 µg/L | Secondary MCL |
| Lead | 1.2 | 2.4 | 15 µg/L | Primary MCL |
| Magnesium | 1700 | 3460 | | |
| Manganese | 55.2 | 996.4 | 50 µg/L | Secondary MCL |
| Nickel | 6.4 | 13 | 100 µg/L | Primary MCL |
| pH (lab) | 5.46 | 6.2 | 6.5 - 8.5 | Secondary MCL |
| pH (field) | 5.965 | 5.43 | 6.5 - 8.5 | Secondary MCL |
| Sodium | 1400 | 4440 | | |
| Sulfate (SO ₄) | 5580 | 10200 | 250000 µg/L | Secondary MCL |
| TDS | 28400 | 71600 | 500000 µg/L | Secondary MCL |
| Zinc | 77.8 | 816.4 | 5000 µg/L | Secondary MCL |

Note: Data represents approximately 5 consecutive quarters; April 1991 through March 1992. Data shown is average concentrations (µg/L).

21. In the mineralized area where mining activities have been undertaken, sulfide minerals are exposed to air and water and, through a natural chemical reaction, produce sulfuric acid, which dissolves metals in water to produce AMD. The groundwater seeps through fractures in the bedrock and through the former underground mine workings where some portion of the groundwater is discharged from the mine adits as AMD. The AMD is collected and treated in the PTS and then discharged to the infiltration field and spray field where it eventually recharges to surface waters. Seepage water from the mine (i.e., AMD) is also groundwater, and thus any incidental discharges to groundwater would not be expected to cause degradation to existing groundwater quality.
22. Prior to the 2011, Spanish Mine remedial activities, groundwater impacted by AMD migrated through the underground mine workings and discharged from the A-001 and A-003 adits where it flowed to surface waters. Following completion of the remedial activities including installation of the PTS, AMD discharged from the adits is now collected and treated, effectively removing over 90 percent of the metal loading. Treated groundwater, with the metals removed, is returned to the subsurface via land application. As a result of treatment, there is an overall net decrease in AMD threatening surface water and groundwater quality.

Passive Treatment System Design and Performance

23. The Discharger submitted a number of technical reports since 2009 regarding the effectiveness and appropriateness of utilizing passive treatment technology to reduce the amount of metals entering surface and groundwater at the Spanish Mine site. The Dischargers consultant, Vestra Resources, Inc., has designed and constructed multiple PTS to treat AMD and dissolved metals discharging from mine sites, and provides the following design consideration information:

Experience with numerous abandoned mines discharging acid mine drainage (AMD) has shown that significant reductions in AMD can be achieved by implementing best management practices (BMPs). This approach is consistent with Resolution 79-149 (Amendment to the Water Quality Control Plan and Action Plan for Mining) and State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Antidegradation Policy*). The PTS systems installed at Spanish Mine were identified as the most appropriate treatment BMPs to address AMD from the A-001 and A-003 mine portals based on these resolutions.

The size and hydraulic capacity of PTS systems are generally limited by available space, elevation, topography, precipitation, and the flow rates necessary to facilitate the microbial reduction of target metals. For this reason, the systems are not designed to store or treat the high volumes of water generated by extreme precipitation events and the corresponding increase in portal discharge rates. Rather, the systems are typically designed to bypass flows in excess of the design flow to protect the overall integrity of the systems.

Based on flow data collected between 2003 and 2012, the Spanish Mine treatment systems are capable of treating the discharge from the A-001 and A-003 portals 80 percent of the time [equivalent to flow rates up to 30 gallons per minute]. The systems are designed to bypass higher flows to secondary infiltration or spray fields. During emergency or extreme flow conditions, excess discharge may be routed away from the treatment systems to protect the integrity of the systems via an emergency overflow or spillway.

The A-001 and A-003 mine portals existed prior to the adoption of Resolution 68-16, and the results of a baseline study conducted prior to the construction of the PTS systems determined that the water quality in Poorman Creek downstream from the discharge locations was protective of existing and potential beneficial uses. The operation of the PTS systems has further improved the water quality in Poorman Creek.

24. The PTS are lined with a 45 mil-thickness Ethylene Propylene Diene Monomer synthetic rubber liner manufactured by the Firestone Corporation for industrial

applications. The design flow of the PTS is 30 gpm based on flow data collected from the A-001 and A-003 adits from October of 1993 through December of 2009.

25. Each PTS consists of a top-down, anaerobic sulfate-reducing bacteria (SRB) treatment system. The SRB treatment systems facilitate the natural oxidation of the metals and precipitate iron, manganese, and other metals. The treatment systems are used to neutralize acidity and precipitate heavy metals as insoluble sulfides.
26. Each PTS cell contains from top to bottom, 3.5-feet of organic substrate consisting of wood chips, compost, rice hulls, hay, and manure, and at the bottom approximately six inches of crushed limestone. Mine drainage enters the PTS at the top, where it slowly migrates down through the organic substrate to the limestone layer. The combination of organic substrate and limestone removes metals and adds alkalinity. SRB, which are sustained by the organic-rich substrates, reduce sulfate in the mine drainage water. The sulfide then reacts with metals in the water, which precipitate out in the substrate. Bacterial sulfate reduction and limestone dissolution produce water with higher pH and add bicarbonate alkalinity for metal removal which improves water quality before the effluent is discharged to land via an infiltration field and a spray field. Although no groundwater monitoring wells currently exist at this site to evaluate groundwater occurrence, flow direction and water quality, staff acknowledge that PTS effluent is infiltrating to groundwater, where it eventually recharges to surface water.
27. Treated effluent from the A-001 PTS is discharged to an engineered sub-surface infiltration field constructed on a hillside near the adit. The treated effluent percolates into the subsurface where biological agents continue to breakdown the sulfide constituents, and remaining metals are further attenuated by sorption onto soil and rock fragments and precipitation of metals. Consequently, point source discharges from the A-001 mine workings to surface waters have been eliminated.
28. Treated effluent from the Adit A-003 PTS is discharged to land via a surface spray field, where it infiltrates into the underlying soils and continues to be reduced by biological agents and physical processes. Consequently, point source discharges from the A-003 mine workings to surface waters have been eliminated.
29. Influent and effluent data for the A-001 and A-003 adits are shown in Table 2 below. The data show that with the exception of manganese, the PTS significantly reduces constituents of concern in the treated effluent before it is discharged to groundwater via the A-001 infiltration field and the A-003 spray field.

Table 2 – Summary of Influent and Effluent Water Quality Data (10/1/2013 through 10/01/2016)

| Constituent | A-001 | | | | A-003 | | | | Groundwater WQOs |
|------------------|----------------|--------|---------------|-------|-----------------|--------|---------------|-------|------------------|
| | INF | | EFF | | INF | | EFF | | |
| | RANGE | AVG | RANGE | AVG | RANGE | AVG | RANGE | AVG | |
| Flow (gpm) | 5 - 27 | 16 | 5 - 27 | 16 | 10 - 44 | 23 | 10 - 44 | 23 | --- |
| pH | 4.53 - 5.93 | 4.971 | 5.8 - 6.91 | 6.408 | 5.34 - 6.2 | 5.753 | 6.18 - 6.82 | 6.427 | 6.5 - 8.5 |
| EC (umhos/cm) | 191 - 882 | 477.1 | 261 - 925 | 567.2 | 176 - 458 | 220.8 | 207 - 578 | 298.9 | --- |
| Hardness (mg/L) | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Arsenic (ug/L) | 0.2 - 1 | 0.425 | 0.3 - 13.9 | 3.99 | 49.8 - 195 | 79.84 | 2 - 12 | 5.42 | 10 |
| Cadmium (ug/L) | 0.84 - 17.4 | 3.838 | <0.05 | <0.05 | 0.61 - 1.3 | 0.9083 | <0.05 - 0.27 | 0.083 | 0.4 - 1.0 |
| Copper (ug/L) | 2.9 - 280 | 37.38 | <0.1 - 8.7 | 1.69 | 1.1 - 29 | 9.342 | <0.1 - 12.4 | 3.38 | 1.3 - 3.3 |
| Iron (ug/L) | 8,010 - 30,800 | 12,213 | 199 - 6,000 | 1,577 | 12,900 - 17,600 | 15,233 | 261 - 2,440 | 986.9 | 300 |
| Lead (ug/L) | 0.8 - 6.5 | 2.117 | <0.1 - 1.3 | 0.22 | 32.9 - 114 | 56.54 | <0.1 - 12.1 | 2.21 | 0.2 - 0.7 |
| Manganese (ug/L) | 1,790 - 5,950 | 2,497 | 1,350 - 5,660 | 2,688 | 2,920 - 3,600 | 3,360 | 1,640 - 3,940 | 3,119 | 50 |
| Nickel (ug/L) | 40.9 - 196 | 68.6 | 1.4 - 119 | 18.88 | 20.8 - 30.6 | 26.03 | 0.7 - 16.6 | 4.46 | 7.4 - 18.8 |
| Zinc (ug/L) | 700 - 7,210 | 1,839 | 0.7 - 488 | 59.22 | 318 - 504 | 406.7 | 0.9 - 426 | 57.15 | 17 - 43 |

30. A-001 and A-003 average iron concentrations show a significant reduction between influent and effluent values, but effluent iron concentrations still exceed the Secondary MCL of 300 µg/L. The Discharger states that this is not an indication of ineffective performance of the treatment system, but the absence of available treatment space for a larger treatment system or pre-treatment settling ponds. Still, effluent iron concentrations in the A-003 discharge are somewhat consistent with iron concentrations reported in the 1990s upgradient-background MW-2 and effluent iron concentrations in the A-001 discharge are approximately half of those reported in the 1990s downgradient-impacted MW-1 (see Table 1 above). Furthermore, precipitated iron hydroxides become more or insoluble over time. Therefore, the PTS iron effluent concentrations discharged to the infiltration field and spray field do not pose a significant threat to groundwater.
31. A-001 and A-003 average manganese concentrations do not indicate a reduction between influent and effluent values which exceed the Secondary MCLs of 50 µg/L. This suggests that the limestone component of the PTS may not have sufficient capacity to completely promote the chemical oxidation of the manganese. However, treated effluent is discharged to the infiltration and spray fields at an average pH of 6.4 which is essentially neutral. Manganese solubility is controlled by redox potential and soil pH. At a soil pH above 6, manganese forms bonds with organic matter, oxides and silicates whereby its solubility decreases. Soil pH in the area of the infiltration and spray fields has been classified as moderately acid⁴ (pH 5.6 to 6.0). Effluent discharged from the PTS, at an average pH of 6.4, to the moderately acid soils of the infiltration and spray fields is neutralizing manganese mobility because manganese detected in low flow conditions in Poorman Creek above the Spanish Mine area is generally less than 5 parts per billion. Therefore, manganese in effluent discharged to the A-001 infiltration field and the A-003 spray

⁴ Soil Survey Tahoe National Forest Area California, United States Forest Service (January 2002) and staff communication with Tahoe National Forest Soil Scientist Nikos Hunner (28 March 2017).

field is being naturally attenuated by absorption, and does not pose a significant threat to groundwater.

32. Influent and effluent data for the A-001 and A-003 adits show that with the exception of iron and manganese, the PTS significantly reduces constituents of concern in the treated effluent before it is discharged to land. The discharge to land of PTS effluent with iron and manganese concentrations greater than groundwater water quality objectives are mitigated by natural attenuation and geochemical processes which limit the mobility of both iron and manganese such that the discharges do not pose a threat to groundwater.
33. The Discharger estimates an operable period of 15 to 20 years before accumulated precipitated metals in the PTS needs to be removed and the organic and limestone material replaced. The Discharger has stated that when the removal efficiency of the PTS drops below 70%, for three successive quarters, the performance of the PTS shall be evaluated and the PTS substrate materials may need to be removed and replaced as part of normal operations and maintenance.

Waste Classification and Unit Classification

34. In January 2016, Central Valley Water Board staff requested that the Discharger characterize precipitated solids in the PTS. In August 2016, the Discharger submitted a Title 27 Mine Waste Classification Memorandum for the Spanish Mine and in November 2016 submitted an Amendment to the Classification Memorandum with further analysis requested by staff. The Discharger concluded that the PTS function as a long-term kinetic test with effluent concentrations from the PTS representing results of a four-year test period and that the results are more representative than static tests for evaluating the potential to impact water quality. The Discharger also concluded that the PTS are neutralizing the acid generating potential of the AMD.
35. US EPA guidelines suggest that kinetic testing of mining waste should be undertaken to define reaction rates through time under specific environmental conditions⁵. Kinetic tests are intended to mimic the acid forming processes found at mining sites and provide qualitative indicators of the rate and amount of acid that a given sample may generate, but at an accelerated rate.
36. Based on the parameters presented in the Passive Treatment System Design and Performance section, and in the Waste Classification findings above, the PTS infiltration fields do not pose a threat to water quality and can be classified as a Group C mining waste in accordance with Title 27 section 22480(b) and (c), which states, in part:

⁵ EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska, Appendix C, Characterization of Ore, Waste Rock, and Tailings (January 2003).

Group C — mining wastes from Group C are wastes from which any discharge would be in compliance with the applicable water quality control plan, including water quality objectives other than turbidity.

*(c) **Classification Considerations** — In reaching decisions regarding classification of a mining waste as a Group B or Group C waste, the RWQCB can consider the following factors:*

(1) whether the waste contains hazardous constituents only at low concentrations;

(2) whether the waste has no or low acid generating potential; and

(3) whether, because of its intrinsic properties, the waste is readily containable by less stringent measures.

37. Title 27 section 22480(d) contains requirements for the treatment of mining waste, which states:

(d) Treatment — Mining waste shall be treated or neutralized whenever feasible to minimize the threat to water quality and minimize the need to install waste containment structures.

38. Based on the Group C classification determined in the Waste Classification and Unit Classification Section above, and as authorized by Title 27 section 22500(a), groundwater monitoring is not required by these WDRs. Should the mining waste group classification change, the need for groundwater monitoring would be reassessed.

Basin Plan, Beneficial Uses, and Regulatory Considerations

39. The Central Valley Water Board has adopted the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition; revised April 2016 (the Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives.
40. The Basin Plan, at page II-2.00, states that the "...beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Poorman Creek or Devils Canyon, but does identify present and potential uses for the Yuba River, to which Poorman Creek and Devils Canyon are tributary. These beneficial uses are as follows: municipal and domestic supply; agricultural supply, including irrigation and stock watering; hydropower generation; water contact recreation; non-contact water recreation, including aesthetic enjoyment; cold freshwater habitat; cold spawning, and wildlife habitat.

41. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, industrial service supply and industrial process supply, and agricultural supply.
42. The area around the Facility is forest land used for silviculture. Much of the surrounding land is administered by the U.S. Forest Service as forest land. There are no groundwater users within the vicinity of the project extracting groundwater for any purpose.
43. The continued operation of the PTS is expected to result in the reduction of potential impacts to groundwater by treating groundwater that has migrated through the mineralized zone and mine workings and is discharged from the mine adits as AMD. Groundwater in the area eventually recharges to streams.

Antidegradation Analysis

44. The *State Antidegradation Policy* generally prohibits the Central Valley Water Board from authorizing activities that will result in the degradation of high-quality waters unless it has been shown that:
 - a. The degradation is consistent with the maximum benefit to the people of the state.
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses.
 - c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
 - d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.
45. Based on data included in the ROWD, the constituents of concern that have the potential to degrade groundwater, after treatment in the PTS, are iron and manganese. As stated in the Passive Treatment System Design and Performance section above, precipitated iron hydroxides become more insoluble over time and manganese solubility is controlled by redox potential and soil pH. At soil pH above 6, manganese forms bonds with organic matter, oxides, and silicates, whereby its solubility decreases. The nature of the waste and site-specific conditions indicate that the discharge may result in limited degradation, but will not cause exceedances of applicable water quality objectives.
46. Based on site topography and the fact that groundwater in the area eventually recharges to streams, it is reasonable to conclude that Poorman Creek contains substantial groundwater contributions during the summer months. The results from monitoring location R-001 DN, located approximately 100 feet downstream of the A-001 infiltration field, does not indicate any significant water quality degradation in

Poorman Creek for iron, manganese, any other metal, or any other constituent identified in Table 2.

47. This Order establishes effluent and groundwater limitations for the Facility that will ensure that the discharges regulated by this Order will be protective of all applicable beneficial uses consistent with the Basin Plan.
48. Degradation of groundwater by some of the constituents of concern associated with discharges from the PTS, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. Prohibiting the limited degradation authorized by this order would prevent the Discharger's implementation of cost-effective means of significantly reducing the negative environmental impacts associated with the adit discharges, and is fully consistent with the Basin Plan. Cost-effective treatment solutions help preserve the economic viability of the Discharger's timber harvesting operation, which helps support the lumber industry. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State.
49. The Discharger is utilizing a treatment and control methodology to treat AMD in an efficient, innovative, and cost-effective manner. The materials used in the PTS are natural materials consisting of wood chips, compost, rice hulls, hay, and manure, and at the bottom approximately six inches of crushed limestone, which are used to neutralize acidity and precipitate heavy metals as insoluble sulfides. The PTS are lined with an impervious liner to contain the precipitated metals and the Discharger does not add any chemicals to the process operation.
50. This Order is consistent with the *State Antidegradation Policy* since; (a) the limited degradation allowed by this Order will not result in water quality less than water quality objectives, or unreasonably affect present and anticipated beneficial uses, (b) the Discharger has implemented BPTC to minimize degradation, and (c) the limited degradation is of maximum benefit to people of the State.

Other Regulatory Considerations

51. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
52. Based on the threat and complexity of the discharge, the facility is determined to be classified as 3C as defined below:

- a. Category 3 threat to water quality: “Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2.”
 - b. Category C complexity, defined as: “Any discharger for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water Code not included in Category A or Category B as described above. Included are dischargers having no waste treatment systems or that must comply with best management practices, dischargers having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal.”
53. Discharges of wastewater to land, including, but not limited to evaporation ponds, percolation ponds, and subsurface leachfields, are exempt from the requirements of Title 27 pursuant to section 20090(b), provided that the discharge is covered by WDRs, the discharge is in compliance with the Basin Plan, and the discharge does not need to be managed as a hazardous waste. The two wetlands associated with the PTS, the leachfield, and the sprayfield regulated by this Order are exempt from the provisions of Title 27 because:
- a. The Board is issuing these WDRs to regulate the discharge;
 - b. The discharge is in compliance with the applicable water quality control plan; and
 - c. The discharge does not need to be managed as hazardous waste.
54. Water Code section 13267(b) states:
- In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.
- The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2017-0082 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.
55. The action of prescribing these WDRs, which impose regulatory requirements on the existing discharge in order to ensure the protection of groundwater and surface

water, is exempt from the provisions of the CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the “operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review.

56. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

57. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
58. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board’s intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.
59. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that pursuant to Water Code sections 13263 and 13267, Soper Company, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes, including treated effluent, precipitated metals or sludges from the PTS to surface waters or surface water drainage courses is prohibited.
2. Discharge of hazardous wastes, as that term is defined in California Code of Regulations, title 22, section 66261.1 *et seq.*, is prohibited.
3. Discharge of waste classified as ‘designated’, as defined in Water Code section 13173.2, in a manner that causes violation of groundwater limitations, is prohibited.
4. This Order does not authorize bypass around, or overflow from, the PTS systems and primary and secondary infiltration fields and/or spray fields.
5. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

6. Discharge of toxic substances, in concentrations that produce detrimental physiological responses to human, plant, animal or aquatic life is prohibited.
7. Discharge or deposit of waste at this site from sources other than from the PTS is prohibited.

B. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes impairment to surface water or groundwater beneficial uses.
2. The discharge shall not cause degradation of any water supply.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
4. The discharge shall remain within the permitted waste treatment/containment structures at all times.
5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
6. The Discharger shall operate and maintain all treatment, storage, and disposal systems sufficiently to protect the integrity of systems and prevent overtopping and/or structural failure.
7. Wastewater treatment, storage, and disposal systems or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order.
8. On or about **1 October** of each year, available capacity shall at least be equal the volume necessary to comply with Discharge Specifications B.7 and B.8.

C. Provisions

1. The following report shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision C.5:
 - a. By **15 September 2017**, the Discharger shall submit an **Operations and Maintenance Plan** (Plan) to assure that the passive treatment systems (PTS), infiltration fields, and spray fields continue to function as intended. The Plan should include provisions for periodic inspection and

maintenance and include templates for inspection reports, record keeping, and inspection intervals to verify the PTS are functioning properly. The Plan should also include the recommended courses of action if items in need of repair are observed.

2. If effluent monitoring results show that the land discharge of waste causes groundwater to contain any waste constituents in concentrations statistically greater than the Groundwater Limitations of this Order, within 120 days of the request of the Executive Officer, the Discharger shall submit a Best Practicable Treatment and Control (BPTC) Evaluation work plan that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine whether additional treatment or control measures are required for each waste constituent that exceeds a Groundwater Limitation. The work plan shall contain a preliminary evaluation of each component of the facility and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.
3. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.
4. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain work plans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.
5. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

6. The Discharger shall comply with Monitoring and Reporting Program R5-2017-0082, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.
7. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated February 2009, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
8. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule.
9. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.
10. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
11. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
12. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

13. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
14. In the event of any change in control or ownership of the facility, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.
15. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
16. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
17. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true and correct copy of an Order adopted by the California Regional Water Quality Control Board on 9 June 2017.

ORIGINAL SIGNED BY

PAMELA C. CREEDON, Executive Officer

JSH/WMH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2017-0082

FOR
SOPER COMPANY
SPANISH MINE
NEVADA COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring influent (INF) and effluent (EFF) at the Spanish Mine A-001 and A-003 passive treatment systems (PTS) and surface waters (SW) in nearby Poorman Creek. In place of groundwater monitoring requirements for discharges of wastewater to land, effluent concentrations from the PTS and surface water monitoring in Poorman Creek will be used to ensure that there are no impacts to groundwater or surface water.

This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revision is issued by the Executive Officer.

All effluent samples shall be representative of the volume and nature of the discharge. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Field test instruments (such as electrical conductivity, flow, and pH) may be used provided that:

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

MONITORING LOCATIONS

The Discharger shall maintain the following monitoring locations to demonstrate compliance with the discharge specifications and other requirements in this Order:

Table 1. Monitoring Station Locations

| <u>Monitoring Location Name</u> | <u>Monitoring Location Description</u> |
|---------------------------------|---|
| A-001 INF | Discharge from A-001 Adit to PTS |
| A-001 EFF | Discharge from A-001 PTS to Infiltration Field |
| | |
| A-003 INF | Discharge from A-003 Adit to PTS |
| A-003 EFF | Discharge from A-003 PTS to Spray Field |
| <u>Monitoring Location Name</u> | <u>Monitoring Location Description</u> |
| SW-1U | Poorman Creek 0.5 miles upstream of A-001 Adit |
| SW-1D | Poorman Creek 100 feet downstream of A-001 Adit |
| SW-3D | Poorman Creek bridge 1 mile downstream from confluence with Devils Canyon |

PASSIVE TREATMENT SYSTEM MONITORING REQUIREMENTS

1. The PTS (containment structures) shall be inspected quarterly for signs of leakage, damage, failure, or overtopping of the containment systems. Any change in site conditions which could impair the integrity of waste containment facilities, precipitation and drainage control structures, or the effectiveness of the PTS shall be reported as required pursuant to Section VIII. A.2. of the Standard Provision (Attachment D).
2. The A-001 infiltration field and the A-003 spray field shall be inspected quarterly for signs of over saturation, seeps, springs, ponding, or runoff. Any changes shall be reported as required pursuant to Section VIII. A.2. of the Standard Provisions.
3. The Discharger shall monitor influent and effluent from the Spanish Mine A-001 and A-003 passive treatment systems (PTS) as follows:

Table 2. PTS Monitoring

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|------------------------|----------|-------------|----------------------------|---------------------------------|
| Flow | gpm | Grab | Quarterly | Meter |
| pH | pH Units | Grab | Quarterly | Meter |
| Electrical | umhos/cm | Grab | Quarterly | Meter |
| Arsenic ¹ | ug/l | Grab | Quarterly | EPA 6010B |
| Cadmium ¹ | ug/l | Grab | Quarterly | EPA |
| Copper ¹ | ug/l | Grab | Quarterly | EPA |
| Iron ¹ | ug/l | Grab | Quarterly | EPA |
| Lead ¹ | ug/l | Grab | Quarterly | EPA |
| Manganese ¹ | ug/l | Grab | Quarterly | EPA |
| Nickel ¹ | ug/l | Grab | Quarterly | EPA |
| Zinc ¹ | ug/l | Grab | Quarterly | EPA |

¹Metals shall be analyzed for dissolved concentrations.

- The Discharger estimates an operable period of 15 to 20 years before accumulated precipitated metals in the PTS needs to be removed and the organic and limestone material replaced. When the removal efficiency of the PTS drops below 70%, for three successive quarters, the performance of the PTS shall be evaluated and the PTS substrate materials may need to be removed and replaced as part of normal operations and maintenance.

SURFACE WATER MONITORING REQUIREMENTS

1. The Discharger shall monitor the surface waters upstream and downstream of each discharge point at SW-1U, SW-1D, SW-3D as follows:

Table 3. Surface Water Monitoring

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|-------------------------|----------|-------------|----------------------------|---------------------------------|
| Flow | gpm | Grab | Annual ¹ | Meter |
| pH | pH Units | Grab | Annual ¹ | Meter |
| Electrical Conductivity | umhos/cm | Grab | Annual ¹ | Meter |
| Arsenic ² | ug/l | Grab | Annual ¹ | EPA 6010B |
| Cadmium ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |
| Copper ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |
| Lead ² | ug/l | Grab | Annual ¹ | EPA 1669/1631 |
| Nickel ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |
| Zinc ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |
| Iron ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |
| Manganese ² | ug/l | Grab | Annual ¹ | EPA 1620/200.8 |

¹ Sampling shall be at low-flow conditions and prior to on-set of rainy season.

² Metals shall be analyzed for dissolved concentrations.

Surface Water Discharge Specifications

Surface water discharge specifications are based on water quality objectives contained in the Basin Plan and are a required part of this Order.

1. The Discharge of wastewater to land shall not cause the concentrations or parameters to exceed the following in Poorman Creek at Monitoring Locations SW-1D and SW-3D:

Table 4. Surface Water Discharge Specifications for Poorman Creek

| Parameter | Units | Receiving Water Limitations | | | |
|-----------|-------|-----------------------------|--------------------|-----------------------|-----------------------|
| | | Average Monthly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| Arsenic | ug/l | | 10 ^{1,2} | | |
| Cadmium | ug/l | 0.9 ^{3,4} | 1.0 ^{3,4} | | |
| Cobalt | ug/l | 50 ⁵ | | | |
| Copper | ug/l | 3.0 ^{3,4} | 4.1 ^{3,4} | | |
| Iron | ug/l | 300 ⁶ | | | |
| Lead | ug/l | 0.6 ^{3,4} | 15 ^{3,4} | | |
| Manganese | ug/l | 50 ⁶ | | | |
| Nickel | ug/l | 17 ^{3,4} | 100 ² | | |
| Zinc | ug/l | 46 ^{3,4} | 46 ^{3,4} | | |
| pH | ug/l | | | 6.5 | 8.5 |

¹ Criteria from Basin Plan

² Primary MCL for drinking water supply

³ Criteria from California Toxics Rule

⁴ Listed criteria are based on a "worst case" hardness of 27 mg/l. Actual criteria shall be calculated after each sampling event using the California Toxics Rule formulas for Total Recoverable Metals for Criteria Continuous Concentration and Criteria Maximum Concentration.

⁵ Agricultural Water Quality Objective

⁶ Secondary MCL for Drinking water supply

OTHER MONITORING REQUIREMENTS

The Discharger shall submit an annual report to the Regional Board by 1 February of each year. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. The Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report. In addition, the Discharger shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements.

REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions related to monitoring, reporting, and recordkeeping.
2. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.

B. Annual Monitoring Reports

An Annual Monitoring Report shall be prepared and submitted to the Central Valley Water Board by **1 February** each year. The Annual Monitoring Report shall include the following:

1. Analytical results for all required monitoring using US EPA-approved test methods or other test methods specified in this Order, including copies of laboratory analytical report(s).
2. Tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.
4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program.
5. A scaled map showing relevant structures and features of the facility, the

locations of surface water monitoring and all other sampling stations.

6. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of all WDRs violations during the reporting period, and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Discharger, or the Discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete pursuant to Section VIII.A.5. of the Standard Provisions.

The Discharger shall implement the above monitoring program as of the date of this Order.

ORIGINAL SIGNED BY

Ordered by: _____

PAMELA C. CREEDON, Executive Officer

9 June 2017

(Date)

Quarterly Monitoring Report

Facility: Spanish Mine **Order: R5-2017-0082**

Month: _____ **Year:** _____

Did a discharge to surface waters occur during the reporting period? (circle one) **Yes** **No**

| Constituent/Parameter | Sampling Frequency | Value | Units |
|---------------------------------|--------------------|-------|----------------|
| PTS Monitoring | | | |
| Flow | Quarterly | _____ | gal/min |
| pH | Quarterly | _____ | standard units |
| EC | Quarterly | _____ | µmhos/cm |
| Arsenic, dissolved | Quarterly | _____ | µg/L |
| Cadmium, dissolved | Quarterly | _____ | µg/L |
| Copper, dissolved | Quarterly | _____ | µg/L |
| Iron, dissolved | Quarterly | _____ | µg/L |
| Lead, dissolved | Quarterly | _____ | µg/L |
| Manganese | Quarterly | _____ | µg/L |
| Nickel | Quarterly | _____ | µg/L |
| Zinc | Quarterly | _____ | µg/L |
| Surface Water Monitoring | | | |
| Flow | Quarterly | _____ | gal/min |
| pH | Quarterly | _____ | standard units |
| EC | Quarterly | _____ | µmhos/cm |
| Arsenic, dissolved | Quarterly | _____ | µg/L |
| Cadmium, dissolved | Quarterly | _____ | µg/L |
| Copper, dissolved | Quarterly | _____ | µg/L |
| Iron, dissolved | Quarterly | _____ | µg/L |
| Lead, dissolved | Quarterly | _____ | µg/L |
| Manganese | Quarterly | _____ | µg/L |
| Nickel | Quarterly | _____ | µg/L |
| Zinc | Quarterly | _____ | µg/L |

Monitoring Report Submittal Transmittal Form

Attn: Jeff Huggins (916) 464-4639
Central Valley Regional Water Quality Control
Board 11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Discharger: Soper Company
Name of Facility: Spanish Mine
WDRs Order Number: R5-2017-0082
WDID: 5A29NP00001
County: Nevada

I am hereby submitting to the Central Valley Water Board the following information:

Check all that apply:

Annual Monitoring Report for the year _____

Violation Notification

During the monitoring period, there were / were not (circle one) any violations of the WDRs.

1. The violations were:

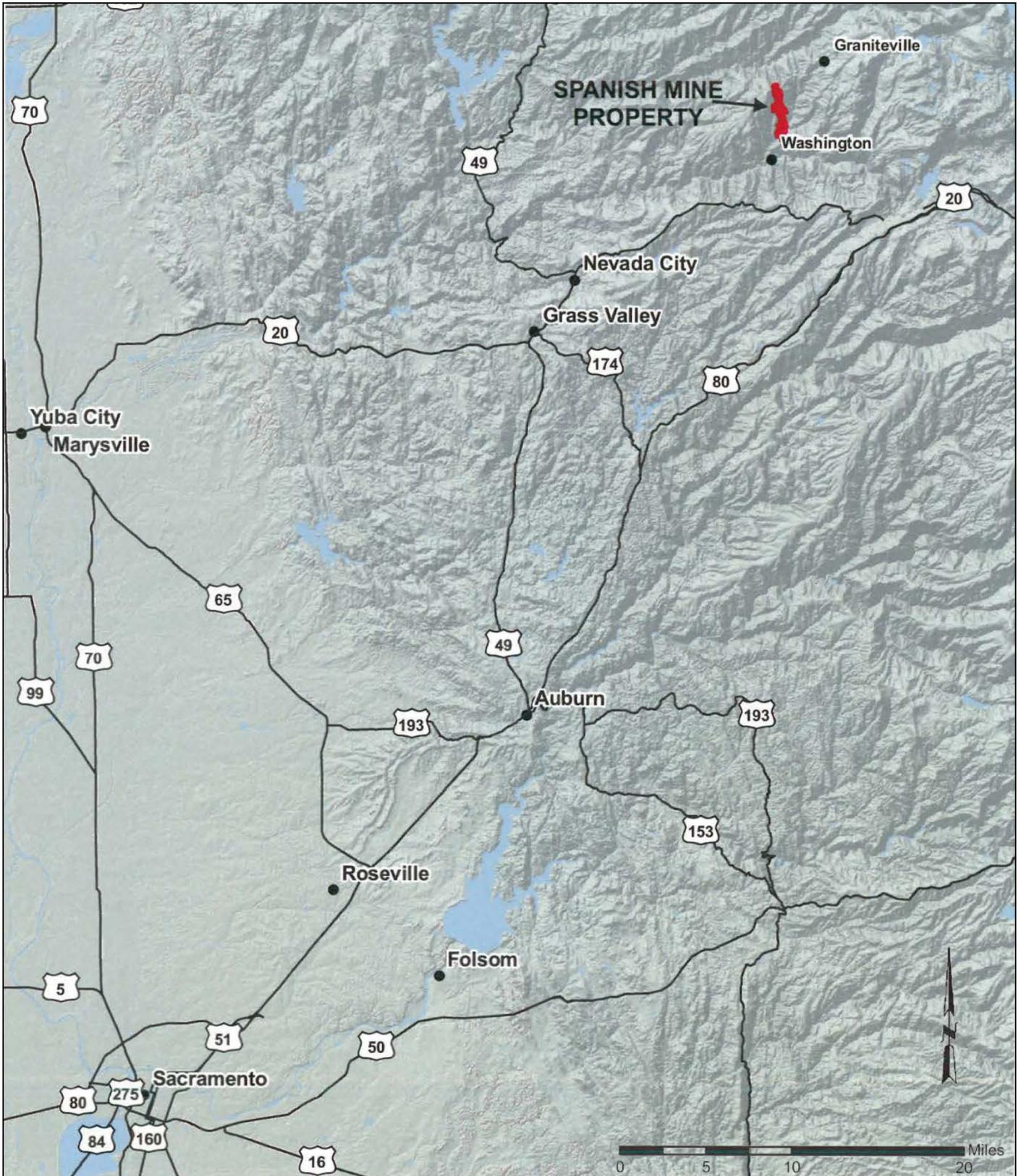
2. Have the violations been corrected? Yes / No. If no, what will be done to correct the violations:

Certification Statement

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

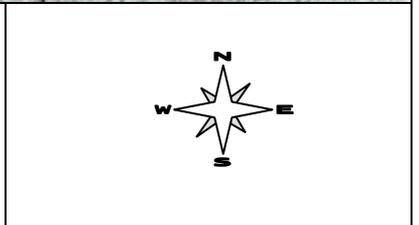
Signature: _____ Phone: _____

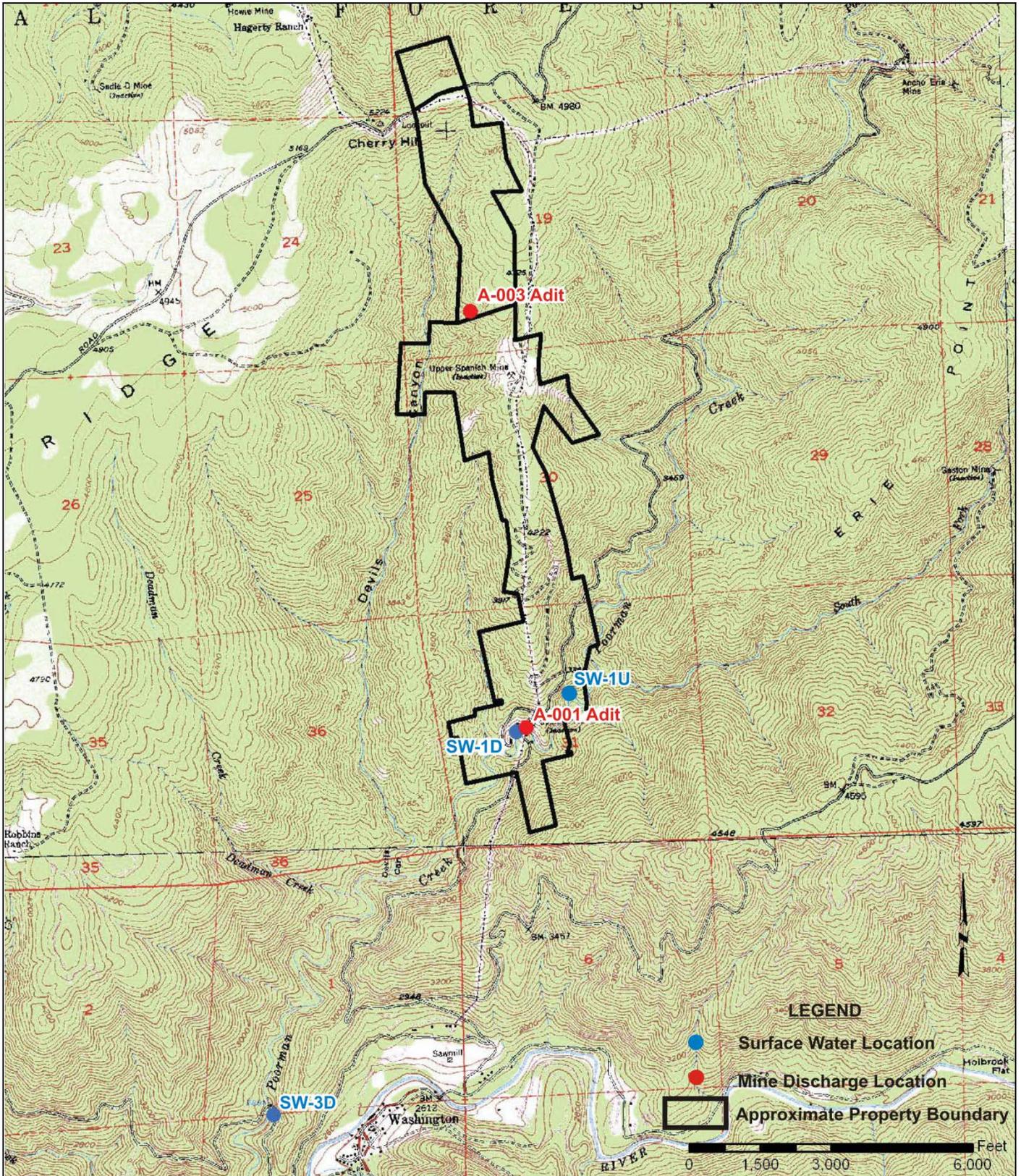
Printed Name: _____ Date: _____



DRAWING REFERENCE:
Soper Company
Figure 1 – General Site
Location

LOCATION MAP
Soper Company
Spanish Mine
Nevada County





DRAWING REFERENCE:

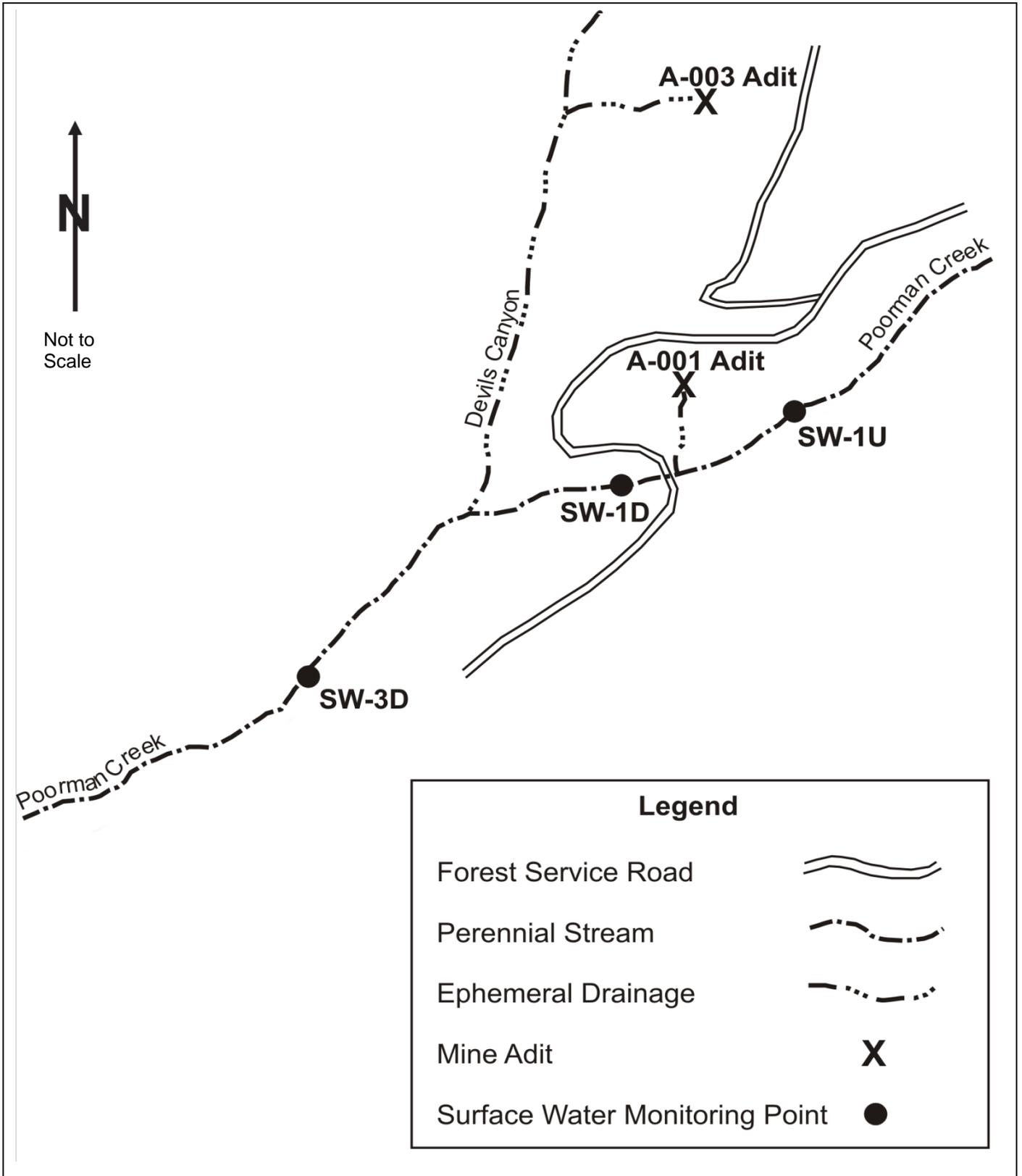
Soper Company
 Figure 2 – General Site Layout
 and Sample Locations

SITE MAP

Soper Company
 Spanish Mine
 Nevada County

Approximate Scale:
 1 inch = 3,100 feet

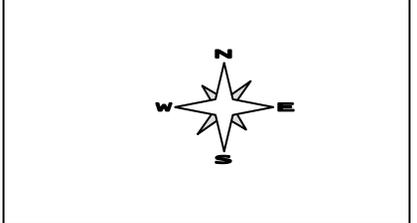




| Legend | |
|--------------------------------|----------|
| Forest Service Road | |
| Perennial Stream | |
| Ephemeral Drainage | |
| Mine Adit | X |
| Surface Water Monitoring Point | |

DRAWING REFERENCE:
 Soper Company
 Order No. R5-2008-0104
 Attachment C – Flow
 Schematic Spanish Mine

**SPANISH MINE SITE DRAINAGE
 MAP**
 Soper Company
 Spanish Mine
 Nevada County



INFORMATION SHEET

ORDER R5-2017-0082
SOPER COMPANY, SPANISH MINE
NEVADA COUNTY COUNTY

Soper Company owns the historic, inactive Spanish Mine, a former underground gold and surface barite mine covering approximately 456 acres. The property is located approximately three miles north of the town of Washington in Nevada County. The Spanish Mine operated intermittently as a gold mine from 1883 to 1942 and as an open pit barite mine from the late 1970s to 1988. As a result of former mining activities, groundwater seepage through the underground mine workings produces and discharges moderately acidic water containing metals ("acid mine drainage" or "AMD") from two mine adits (A00-1 and A-003) to Poorman Creek, tributary to the South Fork Yuba River.

In July 2008, the Central Valley Water Board adopted WDR Order R5-2008-0104 (NPDES Permit No. CA0085286) regulating discharges from the Spanish Mine adits. In August 2008, the California Sport Fishing Protection Alliance petitioned the issuance of the NPDES permit to the State Water Resources Control Board contending that in approving the permit, the Central Valley Water Board violated federal NPDES regulations and the State Water Board's policy for Implementation of the Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) by failing to include various numeric effluent limitations in the permit.

In 17 November 2009, the State Board issued Water Quality Order 2009-0015 remanding the permit back to the Central Valley Water Board for reconsideration and revision, either to *"include numeric effluent limitations or to comply with the applicable requirements for including BMPs in lieu of numeric effluent limitations for priority pollutants"*.

In 2011, after consultation with Central Valley Water Board staff, Soper constructed two passive treatment systems (PTS) for the treatment of AMD from the A-001 and A-003 adits. In March 2015, Soper submitted a Report of Waste Discharge for the PTS and land disposal of mine drainage from the Spanish Mine.

Treated effluent from the Spanish Mine PTS is now discharged to land and as a result of treatment, there is an overall net decrease in metals entering and impacting both groundwater and surface water and an overall improvement in groundwater quality. Point source discharges from the mine workings to surface waters have been eliminated and NPDES Permit No. CA0085286 is no longer necessary to regulate this site.

JSH

Partial Table of Contents for
STANDARD PROVISIONS AND REPORTING REQUIREMENTS
MINING WASTES
For Title 27 (27CCR §20005 et seq.)
FEBRUARY 2009

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF MINING WASTES
REGULATED BY TITLE 27
(27 CCR §20005 et seq.)
MINING FACILITIES

FEBRUARY 2009

I. APPLICABILITY

- A. These Standard Provisions and Reporting Requirements are applicable to “mining waste” disposal sites that are regulated pursuant to the provisions of the California Code of Regulations, title 27 section 20005 et seq. (27 CCR or Title 27). The term “Mining waste” is defined in title 27 section 22480.
- B. For this document, WMU is defined as a waste management unit containing mining waste.
- C. “Order,” as used throughout this document, means the Waste Discharge Requirements to which these Standard Provisions and Reporting Requirements are incorporated.
- D. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
- E. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
- F. If there is any conflicting or contradictory language between the Waste Discharge Requirements (WDRs), the Monitoring and Reporting Program (MRP), or the Standard Provisions and Reporting Requirements (SPRR), then language in the WDRs shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.

- G. Unless otherwise stated, all terms are as defined in California Water Code (CWC) section 13050 and in title 27 section 20164.

II. TERMS AND CONDITIONS

- A. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Resources Control Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of these waste discharge requirements and the California Water Code, which can result in the imposition of civil liability [CWC §13350(a)]
- B. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [CWC §13381]:
1. Violation of any term or condition contained in this Order;
 2. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 3. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 4. A material change in the character, location, or volume of discharge.
- C. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge, or other appropriate joint technical document, with the Central Valley Regional Water Quality Control Board (hereafter Central Valley Water Board) [CWC §13260(c) and §13264(a)]. A material change includes, but is not limited to, the following:
1. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 2. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment); or
 3. A change in the type of waste being accepted for disposal.

- D. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [CWC §13267(c)].
- E. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [CWC §13263(e) and 27 CCR §21720(b)].
- F. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [CWC §13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
- G. The Discharger shall submit to the Central Valley Water Board for review and approval a closure and post-closure maintenance plan prepared in accordance with Closure and Post-Closure for Mining WMUs [27 CCR §22510].

III. GENERAL PROVISIONS

- A. The discharge shall neither cause nor contribute to the contamination, degradation, or **pollution of groundwater** via the release of waste constituents in either liquid or gaseous phase.
- B. Wastes shall not be discharged to any surface water body without a Stormwater Permit or a NPDES permit.
- C. The discharge shall neither cause nor contribute to any **surface water pollution**, contamination, or nuisance, including, but not limited to:
 - 1. floating, suspended, or deposited macroscopic particulate matter or foam;
 - 2. increases in bottom deposits or aquatic growth;
 - 3. an adverse change in temperature, turbidity, or apparent color beyond natural background levels;

4. the creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin;
 5. the introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.
- D. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit (WMU) if such waste constituents could migrate to waters of the State—in either the liquid or the gaseous phase—and cause **a condition of contamination, pollution, degradation, or nuisance**.
- E. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, pollution, degradation, or nuisance to occur, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in the Monitoring and Reporting Program.
- F. The Discharger shall take **all reasonable steps to minimize any adverse impact** to the waters of the state resulting from noncompliance with this Order. (“Order,” as used throughout this document, means the Waste Discharge Requirements). Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
- G. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [27 CCR §21710(c)(1)].
- H. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [27 CCR §21710(a)(4)].

- I. The Discharger shall maintain legible records of the volume and type of each waste discharged at each WMU or portion of a WMU, and the manner and location of discharge. These records shall be on forms approved by the State Water Resources Control Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Resources Control Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post closure maintenance period, copies of these records shall be sent to the Central Valley Water Board. [27 CCR §21720(f)].
- J. All WMUs shall be protected from flooding as required in title 27 section 22490(b).
- K. Diversion and drainage facilities shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff as follows [27 CCR §22490(h)(1)]:
 - 1. Group A – one 25 year, 24 hour storm;
 - 2. Group B – one 10 year, 24 hour storm; and
 - 3. Group C – one 10 year, 24 hour storm.
- L. Precipitation on Group A and B waste piles that is not diverted by containment structures shall be collected and managed through the leachate collection and removal system (LCRS). The Central Valley Water Board can make exemptions to this requirement if the collected fluid does not contain indicator parameters or waste constituents in excess of applicable water quality objectives [27 CCR §22490(h)(2)].
- M. Dischargers shall comply with special requirements for surface impoundments given in title 27 section 20375. Nevertheless, for Mining Units, Dischargers shall use the precipitation conditions in title 27 section 22490(h)(1).

IV. **FINANCIAL ASSURANCE PROVISIONS**

- A. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified WMU in accordance with an approved closure and post-closure maintenance plan [27 CCR §22510(f)].

- B. If a lead agency acting under the authority of §2774(a) of the Public Resources code requires assurances of financial responsibility, these assurances can be used to fulfill all comparable requirements provided that:
 - 1. the Central Valley Water Board approves the assurance; and
 - 2. the Central Valley Water Board is named as alternate payee. [27 CCR §22510(g)]

V. DISCHARGE SPECIFICATIONS

- A. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the WMU and whether or not the wastes are required to be managed as a Group A, Group B or Group C mining waste [27 CCR §22480]
- B. Group B and Group C WMUs contained with liners shall be designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [27 CCR §20240(c), §20330(a), and §22490(f)(6)], including the capillary fringe.
- C. The Discharger shall submit operations plans and any amended operation plans describing those WMU operations which could affect water quality, including, but not limited to [27 CCR §21760(b)]:
 - 1. A description of proposed treatment, storage, and disposal methods;
 - 2. Contingency plans for the failure or breakdown of waste handling facilities or containment systems, including notice or any such failure, or any detection of waste or leachate in monitoring facilities, to the Central Valley Water Board, local governments, and water users downgradient of the WMU(s); and
 - 3. A description of inspection and maintenance programs which will be undertaken regularly during disposal operations and the post-closure maintenance period.

VI. FACILITY SPECIFICATIONS

- A. Surface and subsurface drainage from outside of a WMU shall be diverted from the WMU [27 CCR §20365(e)].

- B. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [27 CCR §20365(d)].
- C. The Discharger shall promptly notify the Central Valley Water Board of any slope failure occurring at a WMU. Any failure which threatens the integrity of containment features or the WMU shall be promptly corrected in accordance with an approved method [27 CCR §21710(c)(2)].

VII. CONSTRUCTION SPECIFICATIONS

- A. All containment structures shall be designed by a California registered civil engineer, and construction shall be supervised and certified by a California registered civil engineer or a certified engineering geologist as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge. WMUs shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the WMU commences [27 CCR §22490(d)].
- B. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a WMU's containment features or monitoring systems shall be approved by a registered civil engineer or a certified engineering geologist, as appropriate [27 CCR §21710(d)].
- C. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [27 CCR §22490(e) and §20320(a)].
- D. WMU liners shall be designed and constructed to contain the fluid, including gas, waste, and leachate [27 CCR §20330(a)].
- E. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities

as long as a reasonable number of field hydraulic conductivity tests are also conducted [27 CCR §20320(c)].

- F. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [27 CCR §20320(b)].
- G. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the WMU and during the post-closure maintenance period. The systems shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [27 CCR §20340(d)].
- H. Leachate collection and removal systems shall be designed and constructed to ensure that there is no buildup of hydraulic head on the liner. The depth of fluid in the collection sump shall be kept at the minimum needed to ensure efficient pump operation [27 CCR §20340(c)].
- I. For Units constructed (or reconstructed) after July 18, 1997, all construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [27 CCR §20323] and approved by the Executive Officer.

VIII. REPORTING REQUIREMENTS

A. General Requirements

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall **notify the Central Valley Water Board by telephone** as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within two weeks. The written notification shall state the nature, time and cause of **noncompliance**, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. The Discharger shall **immediately notify the Central Valley Water Board** of any **evidence of a release**, or of any flooding, equipment failure, slope failure, or other **change in site**

conditions which could impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.

3. The Discharger shall **mail a copy of each** monitoring **report** and any other reports required by this Order to the appropriate office or the current address if an office relocates. Addresses for each office as of November 2008 are:

California Regional Water Quality Control Board
Central Valley Region
11029 Sun Center Drive #200
Rancho Cordova, CA 95670

California Regional Water Quality Control Board
Central Valley Region
1685 "E" Street
Fresno, CA 93706-2007

California Regional Water Quality Control Board
Central Valley Region
415 Knollcrest Drive, Suite 100
Redding, CA 96002

4. The Discharger shall **retain records of all monitoring information**, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Central Valley Water Board Executive Officer.

Such records shall show the following for each sample:

- a. Identity of sample and of the Monitoring Point or Background Monitoring Point from which it was taken, along with the identity of the individual who obtained the sample;
- b. Date, time, and manner of sampling;
- c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

- d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e. Calculation of results; and
- f. Results of analyses, and the method detection limit (MDL) and practical quantitation limit (PQL) for each analysis.

Such records shall also include legible records of the volume and type of each waste discharged at each WMU and the manner and location of discharge. These waste discharge records shall be maintained at the facility until the beginning of the post-closure maintenance period, at which time copies of these records shall be sent to the Central Valley Water Board.

5. **All reports and transmittal letters shall be signed** by persons identified below:
- a. *For a corporation:* by a principal executive officer of at least the level of senior vice-president.
 - b. *For a partnership or sole proprietorship:* by a general partner or the proprietor.
 - c. *For a municipality, state, federal or other public agency:* by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b or c above if;
 - i. the authorization is made in writing by a person described in a, b, or c of this provision;
 - ii. the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a WMU, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - iii. the written authorization is submitted to the Central Valley Water Board.

Any person signing a document under this Section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for

obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

6. In reporting the monitoring data, the Discharger shall arrange the **data in tabular form** so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or lack thereof.
7. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Central Valley Water Board.

B. **Reports to be Filed with the Central Valley Water Board**

1. A transmittal **letter** explaining the essential points in each report shall accompany each report. Such a letter shall include a discussion of any violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the Discharger has previously submitted a detailed time schedule for correcting the violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal.
2. Each monitoring report (e.g., Detection Monitoring Report, Constituents of Concern 5-Year Report) shall include a **compliance evaluation summary**. The summary shall contain at least:
 - a. For each monitored ground water body, a description and graphical presentation of the gradient and direction of **ground water flow** under/around the WMU, based upon water level elevations taken during the collection of the water quality data submitted in the report.
 - b. For each monitoring well addressed by the report, a description of the method and time of water level measurement, the type of pump used for **purgings** and the placement of the pump in the well, and the method of purging (pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of pH,

- temperature, conductivity, and turbidity testing, well recovery time, and method of purge water disposal).
- c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the type of pump (or other device) used and its placement for **sampling**, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations).
 - d. A **map or aerial photograph** showing the locations of observation stations, Monitoring Points, and Background Monitoring Points.
 - e. **Laboratory** statements of results of all analyses evaluating compliance with requirements.
 - f. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
 - g. A summary and certification of completion of all Standard Observations for the WMU, for the perimeter of the WMU, and for the receiving waters. The terms 'Standard Observations' and 'receiving waters' as used in this document are defined below in section **XII. Definitions**.
 - h. The quantity and types of wastes discharged and the locations in the WMU where waste has been placed since submittal of the last such report.
3. The Discharger shall report by telephone concerning any **seepage from the disposal area** immediately after it is discovered. A written report shall be filed with the Central Valley Water Board within seven days, containing at least the following information:
 - a. a map showing the location(s) of seepage;
 - b. an estimate of the flow rate;

- c. description of the nature of the discharge (e.g., all pertinent observations and analyses); and
- d. corrective measures underway or proposed, and corresponding time schedule.

See **RESPONSE TO A RELEASE** below.

- 4. The Discharger shall submit an **Annual Monitoring Summary Report** to the Central Valley Water Board summarizing the monitoring results from the previous year. This report shall contain:
 - a. For each Monitoring Point and Background Monitoring Point, submit in **graphical format** the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given Monitoring Point or Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month Reporting Periods, presented in tabular form as well as on computer disk, either in EXCEL format or in another file format acceptable to Central Valley Water Board staff. Data may be submitted in commonly available compressed format. The Central Valley Water Board regards the submittal of data in hard copy and electronic format as "...the form necessary for..." statistical analysis (27 CCR §20420(h)), in that this facilitates periodic review by the Central Valley Water Board's statistical consultant.
 - c. A **comprehensive discussion of the compliance record**, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.

- d. A **map** showing the area and elevations in which filling has been completed during the previous calendar year.
- e. A **written** summary of the monitoring results, indicating any changes made or observed since the previous annual report.
- f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

IX. PROVISIONS FOR MONITORING

A. General

1. The Discharger shall maintain a **written sampling and analysis plan** sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the Discharger shall be familiar with the sampling and analysis plan.
2. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and regularly **calibrated** to ensure their continued accuracy.
3. The Discharger shall construct or abandon all **monitoring wells** to meet or exceed the standards stated in the State Department of Water Resources Bulletin 74-81 and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.
4. All sample analyses shall be conducted at a **laboratory accredited** for such analyses by the State Department of Health Services. The **Quality Assurance-Quality Control Program** must conform to EPA guidelines (e.g., "Laboratory Documentation Requirements for Data Validation," January 1990, USEPA Region 9) or to procedures approved by the Central Valley Water Board.
5. The director **of the laboratory** whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Central Valley Water Board.
6. Unless samples are from water supply wells or unless otherwise specified by Central Valley Water Board staff, all ground water samples to be analyzed for **metals** shall be field-filtered.

Filtration methods shall minimize the entrainment of air into the sample (by using, for example, in-line pressure filtration).

B. Sampling and Analytical Methods

1. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken within a span not to exceed 30 days, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.
2. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
3. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
4. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied by both the estimated MDL and PQL values for that analytical run.
5. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than

simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.

6. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
7. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
8. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
9. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to §20415(e)(7) of Title 27 that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are

available to the facility. The Discharger's technical report, pursuant to §20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

10. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.
11. The Discharger may propose an alternate statistical method [to the methods listed under title 27 section 20415(e)(8)(A-D)] in accordance with title 27 section 20415(e)(8)(E), for review and approval by the Executive Officer. Upon receiving written approval, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
12. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
 - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary

indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:

- i. The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
 - ii. The data contains one or more analyte that equals or exceeds its PQL.
- b. **Discrete Retest** [27 CCR §20415(e)(8)(E)]:
- i. In the event that the Discharger concludes (pursuant to paragraph 12.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated.
 - ii. For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
 - a. **Immediately** notify the Central Valley Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
 - b. Comply with section **IX.B.14** of this document, **Sampling and Analytical Methods**, if any constituent or constituents were verified to be present.
 - iii. Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list

such that it is monitored during each regular monitoring event.

13. If the Executive Officer determines, after reviewing the submitted report in 12.b. above, that the detected constituent most likely originated from the WMU(s), the Discharger shall **immediately** implement the requirements of section **X.C., Release Has Been Verified**, of this document.
14. If the Discharger determines that there is measurably significant evidence of a release from the WMU at any monitoring point, the Discharger shall **immediately** implement the requirements of section **X.C., Release Has Been Verified**, of this document.

X. RESPONSE TO A RELEASE

A. Monitoring Point Evidence of a Release

If the Discharger determines that there is “measurably significant” evidence of a release from the WMU (i.e. the initial statistical comparison or nonstatistical comparison indicates, for any constituent of concern or monitoring parameter, that a release is tentatively identified), the Discharger shall [27 CCR §20420(j)]:

- a. **Notification — immediately notify Central Valley Water Board staff verbally** of the finding and **provide** written notification by certified mail **within seven days** of such determination. The notification shall, for each affected monitoring point, identify the monitoring parameters and constituents of concern that have indicated “measurably significant” evidence of a release from the WMU [27 CCR §20420(j)(1)];
- b. **Retest Optional** — can immediately initiate the verification (retest) procedure pre-approved by the Central Valley Water Board [pursuant to §20415(e)(8)(E) of Title 27] to verify that there is “measurably significant” evidence of a release from the WMU for a parameter or constituent which has indicated a release at a monitoring point [27 CCR §20420(j)(2)]; and

- c. **Next Step** — immediately following detection of a release [or after completing the retest pursuant to b) above and confirming the existence of a release], shall comply with the requirements of C. (Release Has Been Verified) below [27 CCR §20420(j)(3)].

B. **Physical Evidence of a Release**

If the Discharger determines there is significant **physical** evidence of a release, the Discharger shall notify the Central Valley Water Board **by certified mail within 7 days** of such determination, and within 90 days shall submit an amended report of waste discharge to make any appropriate changes to the detection monitoring program [27 CCR §20420(l)(1) & (2)].

C. **Release Has Been Verified**

1. If the detection was made based upon sampling and analysis for monitoring parameters, **immediately** sample all monitoring points in the affected medium at that WMU and determine the concentration of all constituents of concern. Because this constituent of concern scan does not involve statistical testing, the Discharger need collect and analyze only a single water sample from each monitoring point in the affected medium [27 CCR §20420(k)(1)].
2. The Discharger, **within 90 days** of determining “measurably significant” evidence of a release, shall submit an amended report of waste discharge to establish an evaluation monitoring program meeting the requirements of §20425 of Title 27 [27 CCR §20420(k)(5)].
3. The Discharger, **within 180 days** of determining “measurably significant” evidence of a release, shall submit to the Central Valley Water Board an initial engineering feasibility study for a corrective action program necessary to meet the requirements of §20430 of Title 27. At a minimum, the engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [27 CCR §20420(k)(6)].
4. If the Discharger determines that there is “measurably significant” evidence of a release from the WMU at any monitoring point, the Discharger may demonstrate that a source other than the WMU

caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to §20420(k)(7) of Title 27 in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements of §20420(k)(6) & (7) of Title 27 unless the demonstration successfully shows that a source other than the WMU caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In making this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining “measurably significant” evidence of a release. The report shall be submitted to the Central Valley Water Board **within 90 days** of determining “measurably significant” evidence of a release demonstrating that a source other than the WMU caused the evidence [27 CCR §20420(k)(7)].

5. The Discharger, **within 90 days** of establishing an Evaluation Monitoring Program, shall conduct an evaluation monitoring program to assess the nature and extent of the release from the WMU and to design a corrective action program meeting the requirements of §20430 of Title 27. At a minimum, an evaluation monitoring program for a WMU shall include:
 - a. An assessment of the nature and extent of the release from the WMU. This assessment shall include a determination of the distribution and concentration of each constituent of concern throughout the zone affected by the release. The Discharger shall submit this assessment to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(b)].
 - b. Update the initial engineering feasibility study for corrective action based on the data collected to delineate the release and from the ongoing monitoring program. The Discharger shall submit this updated engineering feasibility study to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(c)].

- c. Submit an amended report of waste discharge to establish a corrective action program meeting the requirements of §20430 of Title 27 based on the data collected to delineate the release and on the updated engineering feasibility study. The Discharger shall submit this report to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(d)].

D. **Release Beyond Facility Boundary**

1. Any time the Discharger concludes that a release from the WMU has proceeded beyond the facility boundary, the Discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).
2. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
3. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
4. Each time the Discharger sends a notification to Affected Persons, the Discharger shall provide the Central Valley Water Board, within seven days of sending such notification, with both a copy of the notification and a current mailing list of Affected Persons.

XI. **STANDARD CONDITIONS**

A. **Supervision and Certification**

1. All WMUs shall be **designed and constructed** under the direct supervision of a California registered civil engineer or a certified engineering geologist, as appropriate, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, and performance goals of Title 27 prior to waste discharge.
2. Designs of WMUs shall include a **Construction Quality Assurance Plan**, which shall:

- a. be submitted for review and approval by the Central Valley Water Board prior to construction;
 - b. demonstrate that the WMU has been constructed according to the specifications and plans as approved by the Central Valley Water Board; and
 - c. provide quality control on the materials and construction practices used to construct the WMU and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.
3. **Closure** of each WMU shall be performed under the direct supervision of a California registered civil engineer or California certified engineering geologist.

B. Operations

1. The Discharger shall maintain in **good working order** and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
2. For any **electrically** operated equipment at the site, the **failure** of which could cause loss of control or containment of waste materials, or violation of this Order, the Discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.
3. The fact that it would have been necessary to halt or reduce the permitted activity in Order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
4. The discharge shall remain within the designated disposal area at all times.
5. By the effective date of waste discharge requirements, the Discharger shall have a plan for preventing and controlling **accidental discharges**, and for minimizing the effect of such events. This plan shall:

- a. Identify the possible sources of accidental loss or leakage of wastes from each waste storage, treatment, or disposal unit.
- b. Evaluate the effectiveness of present WMUs and operational procedures, and identify needed changes or contingency plans.
- c. Predict the effectiveness of the proposed changes in waste management facilities and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

The Central Valley Water Board, after review of the plan, may establish conditions that it deems necessary to control leakage and minimize its effects.

6. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overflowing.
7. Surface impoundments shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the waterline.
8. Leachate removed from a surface impoundment LCRS shall be discharged to the impoundment from which it originated.
9. Solids which accumulate in a surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for the surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to the Central Valley Water Board for review. The solids will be discharged to an appropriate WMU based on characterization.
10. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

C. Siting

1. New WMUs for Group A and B wastes shall not be located on Holocene faults. Units for Group C wastes may be located on Holocene faults if displacement will not allow escape of wastes or cause irreparable damage to containment structures [27 CCR §22490(a)(1)].
2. New WMUs shall be outside areas of rapid geologic change. Exemptions may be allowed by the RWQCB if containment structures are designed and constructed to preclude failure [27 CCR §22490(a)(2)].
3. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes, and shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

D. Closure

1. New and existing WMUs shall be closed so that they no longer pose a threat to water quality. No post closure land uses shall be permitted that might impair the integrity of containment structures [27 CCR §22510(a)].
2. WMUs shall be closed according to an approved closure and post closure maintenance plan which provides for continued compliance with applicable standards for waste containment, precipitation and drainage controls and monitoring throughout closure and the post closure maintenance period [27 CCR §22510(b)].
3. Closed WMUs shall be provided with at least two **permanent monuments**, installed by a licensed land surveyor or by a registered civil engineer authorized to perform land surveying, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period [27 CCR §20950(d)].
4. Final cover slopes for Group A and Group B waste piles shall not be steeper than a horizontal to vertical ratio of one and three quarters to one, and shall have minimum of one fifteen-foot wide bench for every fifty feet of vertical height [27 CCR §21090(a)].

E. Post-Closure

1. WMUs shall be closed so that they no longer pose a threat to water quality. No post closure land uses shall be permitted that might impair the integrity of containment structures [27 CCR §22510(a)].
2. The post-closure maintenance period shall end when the Central Valley Water Board determines that water quality aspects of reclamation are complete and waste no longer poses a threat to water quality [27 CCR §22510(h)].
3. The owner of the mine shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the WMUs and during subsequent use of the property for other purposes.

XII. DEFINITIONS

Unless otherwise stated, all terms are as defined in Chapter 2, Division 7, of the California Water Code (Section 13050 et.seq.), in Article 2, Chapter 2, Division 2, Title 27 of the California Code of Regulations (27 CCR §20005 et seq.), and in Section 258.2, and elsewhere in Part 258, Title 40 of the Code of Federal Regulations.

The following additional definitions apply to the Order:

- A. **“Affected Persons”** means all individuals who either own or occupy land outside the boundaries of the parcel upon which the WMU is located that has been or may be affected by the **release** of leachate or waste constituents (in gas or liquid phase) from a WMU.
- B. **“Background Monitoring Point”** means a device (e.g., well) or location (e.g., a specific point along a lakeshore), upgradient or sidegradient from the WMU, or as otherwise approved by the Executive Officer, where water quality samples are taken that are not affected by any release from the WMU and that are used as a basis of comparison against samples taken from downgradient Monitoring Points.
- C. **“Composite liner”** means a liner that consists of two or more components, which include a Synthetic Liner in direct and uniform contact with an underlying layer of prepared, low-permeability soil such that the net permeability of the resulting combination is significantly less

than would be expected by reference to the permeability of the individual components layers.

- D. Unless otherwise specified, “**composite sample**” means a combination of individual samples either collected over a specified sampling period or collected over an area at one time (synoptically):
1. at equal time intervals,
 2. at varying time intervals so that each sample represents an equal portion of the media to be sampled.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results. “**Constituents of Concern (COC)**” means those constituents which are likely to be in the waste in the WMU or which are likely to be derived from waste constituents in the event of a release.

- E. “**Daily maximum concentration**” means the highest measurement made on any single discrete sample or composite sample.
- F. “**Grab sample**” means a discrete sample collected in less than 15 minutes.
- G. “**Matrix effect**” means any change in the method detection limit or practical quantitation limit for a given analyte as a result of the presence of other constituents - either of natural origin or introduced **by** humans as a result of a release or spill - that are present in the sample of water or soil-pore gas being analyzed.
- H. “**Method detection limit (MDL)**” means the lowest constituent concentration associated with a 99% reliability of a “non-zero” analytical result. The MDL shall reflect the detection capabilities of the specific analytical procedure and equipment used by the laboratory. MDLs reported by the laboratory shall not simply be restated from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs are expected to closely agree with published USEPA MDLs. If the lab suspects that, due to matrix or other effects, the detection limit for a particular analytical run differs significantly from the laboratory-derived MDL, the results should be flagged accordingly, along with an estimate of the detection limit achieved.
- I. “**Monitoring Parameters**” means the short list of constituents and parameters used for the majority of monitoring activity at a given WMU. Monitoring for the short list of Monitoring Parameters constitutes

“indirect monitoring,” in that the results are used to indicate indirectly the success or failure of adequate containment for the longer list of Constituents of Concern.

- J. **“Monitored Media”** means those water-, solid-, or gas-bearing media that are monitored pursuant to the Monitoring and Reporting Program. The Monitored Media may include:
1. Ground water in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the WMU could be detected, and in any perched zones underlying the WMU,
 2. Any bodies of surface water that could be measurably affected by a release,
 3. Soil pore liquid beneath and/or adjacent to the WMU, and
 4. Soil pore gas beneath and/or adjacent to the WMU.
- K. **“Monitoring Point”** means a device (e.g., well) or location (e.g., a specific point along a lakeshore), downgradient from the WMU and that is assigned in this Order, at which samples are collected for the purpose of detecting a release by comparison with samples collected at Background Monitoring Points.
- L. **“Monthly average concentration”** means the arithmetic mean of measurements made during the month.
- M. **“Monthly average discharge”** means the total discharge by volume during a calendar month divided by the number of days in the month that the facility was discharging (e.g. gallons per day, cubic feet per day).
- Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges divided by the number of days during the month when the measurements were made.
- N. **“Order,”** as used throughout this document, means the Waste Discharge Requirements. The Monitoring and Reporting Program and Standard Provisions and Reporting Requirements are incorporated by reference into the Waste Discharge Requirements.
- O. **“Practical quantitation limit (PQL)”** means the lowest constituent concentration at which a numerical concentration can be assigned with

reasonable certainty that its value represents the constituent's actual concentration in the sample. Normally PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply be restated from U.S. EPA analytical method manuals. In relatively interference-free water, laboratory-derived PQLs are expected to closely agree with published U. S. EPA PQLs. If the lab suspects that, due to matrix or other effects, the quantitation limit for a particular analytical run differs significantly from the laboratory-derived PQL, the results should be flagged accordingly, along with an estimate of the quantitation limit achieved.

- P. **"Reporting Period"** means the time interval during which samples are collected and analyzed, and the results then reported to the Central Valley Water Board, to comply with a specified monitoring and reporting frequency. The maximum reporting period for analysis of all Constituents of Concern is five years; for Monitoring Parameters it is six months (generally, Spring/Summer = April 1 to September 30, and Fall/Winter = October 1 to March 31). The Reporting Period for the Annual Summary Report extends from April 1 of the previous year to March 31 of the current year. The due date for the submittal of any given report will be 15 days after the end of its Reporting Period, unless otherwise stated.
- Q. **"Receiving Waters"** refers to any surface or ground water which actually or potentially receives waste constituents, leachate, or surface or ground waters which come in contact with waste materials or contaminated soils.
- R. **"Sample size"**:
1. For Monitoring Points, means the number of data points obtained from a given Monitoring Point during a given Reporting Period used for carrying out the statistical or non-statistical analysis of a given analyte during a given Reporting Period; or
 2. For Background Monitoring Points, means the number of new and existing data points collected under §20415(e)(11 and 12) from all applicable Background Monitoring Points in a given monitored medium—used to collectively represent the background concentration and variability of a given analyte in carrying out statistical or non-statistical analysis of that analyte during a given Reporting Period.

S. **“Standard Observations”** means:

1. For Receiving Waters:
 - a. Floating and suspended materials of waste origin: presence or absence, source, and size of affected area;
 - b. Discoloration and turbidity: description of color, source, and size of affected area;
 - c. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
 - d. Evidence of water uses: presence of water-associated wildlife;
 - e. Flow rate; and
 - f. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of observation;
2. Along the perimeter of the WMU:
 - a. Evidence of liquid leaving or entering the WMU, estimated size of affected area, and flow rate (show affected area on map);
 - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and
 - c. Evidence of erosion and/or of daylighted refuse.
3. For the WMU:
 - a. Evidence of ponded water at any point on the waste management facility (show affected area on map);
 - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
 - c. Evidence of erosion and/or of daylighted refuse; and

T. **“Standard Analysis and Measurements”** means:

1. Turbidity, in NTU;

2. Water elevation to the nearest 1/100th foot above mean sea level; and
 3. Sampling and statistical/non-statistical analysis of the Monitoring Parameters.
- U. **“Synthetic Liner”** means a layer of flexible, man-made material that is installed in accordance with the standard of the industry over an area of land prior to the discharge of waste there.
- V. **“VOC_{water}”** (Volatile Organics Monitoring Parameter for Water) means the composite monitoring parameter encompassing all VOCs that are detectable in less than ten percent of applicable background samples from a monitored water-bearing medium (e.g., the unsaturated zone, the uppermost aquifer, a zone of perched groundwater, or a surface water body). This parameter is analyzed via the non-statistical analytical method described elsewhere in this Order to identify a release to waters of the state of VOCs whose presence in background water is detected too infrequently to allow statistical analysis.
- W. **“VOC_{spg}”** (Volatile Organics Monitoring Parameter for Soil Pore Gas) means Monitoring Parameters addressing all volatile organic constituents detectable in a sample of soil pore gas.
- X. **“Volatile organic constituents (VOCs)”** means the suite of organic constituents having a high vapor pressure. The term includes at least the 47 organic constituents listed in Appendix I to 40 CFR Part 258.