CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2017-XXXX

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. <u>The Lower Spanish Mine (the A-001 Adit)</u> 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. <u>The Upper Spanish Mine (the A-003 Adit)</u> 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 year[1] and the 10- year, annual return period is estimated to be 93.14 inches[2]. The normal-year pan evaporation is estimated to be 57 inches[3], 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 (HCO3)	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 (SO4)	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)

	A-001				A-003				Groundwater WQOs
	INF		EFF		INF		EFF		
Constituent	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 acid[4] (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 and 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 conditions[5]. 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-XXXX 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-XXXX, 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 XX June 2017.

_____

PAMELA C. CREEDON, Executive Officer

JSH/WMH