CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

WASTE DISCHARGE REQUIREMENTS ORDER R5-2014-XXXX

FOR

O'NEILL BEVERAGES COMPANY, LLC
REEDLEY WINERY
FRESNO COUNTY

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

1. On 16 December 2011, O'Neill Beverages Company, LLC (hereafter O'Neill or Discharger) submitted a revised Report of Waste Discharge (RWD) for an existing Winery at 8418 South Lac Jac Avenue near Reedley. Two previous RWDs were submitted in 2006 and 2007. Both previous RWDs were withdrawn by the Discharger.

2. O'Neill has owned and operated the Winery since July 2004 and is responsible for compliance with these Waste Discharge Requirements (WDRs). The Winery has been in operation since prior to the 1950's; previous owners include Golden State Vintners, Heublein Wine, and Christian Brothers.

3. The Winery and land application areas consist of approximately 296 acres in Section 20, Township 15 South, Range 23 East, MDB&M. The Winery occupies Assessor's Parcel Numbers (APN) 363-061-55, 363-061-32, 363-061-18, 363-061-16, 363-061-15, 363-061-14, 363-051-21, and 363-051-20 as shown on Attachment A, which is attached hereto and a part of this Order.

4. In 2011, the Discharger purchased an additional 77 acres of agricultural land immediately north of its existing land application areas, and is in the process of obtaining approximately 62 acres of agricultural land immediately south of its existing land application areas. These additional lands include APNs 363-061-06,363-031-11, 363-061-15, 363-061-19, and 363-061-22.

5. Waste Discharge Requirements Order 95-014 was adopted by the Central Valley Water Board on 27 January 1995 to regulate wastewater and stillage waste discharges associated with Winery operations to land. The Monitoring and Reporting Program was revised on 2 January 2001 to increase effluent and groundwater sampling requirements. Order 95-014 allows for a maximum daily discharge of up to 0.526 million gallons per day (mgd) from 1 May to 30 September, up to 0.299 mgd from 1 October to 30 November, and up to 0.179 mgd from 1 December to 30 April.

6. The Winery includes an administrative office building, wine production and fermentation buildings, warehouses, a distillery, grape receiving/crush areas, and land application areas. The Winery also includes a bottling plant constructed in 2001.

7. The Discharger proposes to expand its Winery operations to meet the increasing demand for wine. Expansion plans include construction of additional stainless steel storage and fermentation tanks, two additional grape crush pits, two crushers/destemmers, and two to four

tank/screw presses. The proposed expansion will result in increased wastewater flows to the land application areas.

Existing Facility and Discharge

8. The Winery currently crushes approximately 150,000 tons of grapes annually. Wastewater from Winery operations consists of stillage waste, tank wash, cooling water, boiler blow down, and general wash water. The stills generally operate for approximately 110 days each year from mid-August through October. Wastewater from the stills is combined with tank wash and general wash water prior to discharge to the land application areas. Winery stillage was characterized in 1999. Average concentrations were reported as, 4,287 mg/L for BOD, 190 mg/L for total nitrogen, and 2,712 umhos/cm for EC. Additional sampling of the stillage was done in 2000 for individual constituents that contribute to the EC of the stillage. Average concentrations reported were 1,200 mg/L for potassium, 23 mg/L for sodium, 1,200 mg/L for sulfate, 64 mg/L for chloride, 80 mg/L for calcium, 61 mg/L for magnesium, and 73 mg/L for nitrate.

9. In 2001, a Class II surface impoundment was constructed at the site to receive discharges from its bottling plant. In 2003, the Discharger began segregating high salinity waste streams from Winery operations including cooling water blow down, boiler blow down, and water softener regenerant to its Class II surface impoundment along with the wash water from its bottling plant. Discharges to the Class II surface impoundment are regulated separately under WDRs Order 5-01-141. A flow schematic is included as Attachment B, which is incorporated by reference herein.

10. The Winery operates year-round, with maximum wastewater flows occurring during the crush/stillage season from mid-August through November. Currently, the Winery produces an average annual discharge of about 0.16 mgd or about 60 million gallons per year.

11. Source water for the Winery is provided by two on-site supply wells. PW-1 is the primary supply well for the Winery. A new standby well was constructed in 2012. Samples for PW-1 are analyzed quarterly for Electrical Conductivity (EC) and annually for general minerals. The following Table presents a summary of analytical results from PW-1 collected in October 2012 and samples from the new standby well collected in July 2013:

TABLE 1. Supply Water

Constituent	PW-1	Standby Well
pH	7.8	8.0
EC, umhos/cm	366[1]	305
TDS, mg/L	263	190
Nitrate as N, mg/L	3.2	2.4
Bicarbonate, mg/L	149	150
Calcium, mg/L	35.4	25
Magnesium, mg/L	10.5	8
Sodium, mg/L	25	25
Potassium, mg/L	4.7	4
Chloride, mg/L	16.4	12
Sulfate, mg/L	14.6	9
Iron, mg/L	<0.01	0.2

Manganese, mg/L	< 0.02	<0.01

[1] Average of quarterly samples collected in 2012

12. Wine processing wastewater includes a mixture of organic materials comprised of grape skins, seeds, and stems, plus rinse waters and chemical additives. The following is a list of chemicals currently in use at the Winery and the approximate quantities used on an annual basis.

TABLE 2. Chemical Additives

Chemical	Use	Annual Usage
Sodium Hypochlorite	Cellar-Cleaning	2,080 gallons
Caustic Soda	Cellar-Cleaning	9,900 pounds
HD Spec Cleaner 650	Cellar-Cleaning	3,875 gallons
Citric Acid	Cellar-Cleaning	6,500 pounds
Soda Ash	Cellar-Cleaning	19,600 pounds
Sodium Chloride	Water Softener[1]	24,000 pounds
Sanatherm 8112	Boiler[1]	2,700 pounds
Sanatherm 8331	Boiler[1]	110 gallons
Sanicor 2621	Cooling Towers[1]	480 gallons
Purge	Cooling Towers[1]	40 gallons
Kathon	Cooling Towers[1]	50 gallons
Sanatox 2080	Cooling Towers[1]	900 pounds
Sanasperse 2702	Cooling Towers[1]	100 pounds

1. Process waste stream containing identified chemical now discharged to Class II surface impoundment.

13. Samples of the wastewater are collected and analyzed on a weekly, monthly, or quarterly basis consistent with the January 2001 revised Monitoring and Reporting Program. The chemical makeup of the wastewater varies throughout the year depending on the season and facility operations. Table 3 presents average flows and wastewater characteristics broken down by month from 2008 through 2012:

TABLE 3. Wastewater Quality

	Flows (mgd)	BOD (mg/L)	Total Nitrogen (mg/L)	EC (umhos/cm)	TDS[1] (mg/L)	FDS[2] (mg/L)
January	0.049	2,908	36	845	1,018	426
February	0.054	2,862	14	692	817	513
March	0.045	2,310	11	817	752	395
April	0.052	2,244	11	809	424	242
May	0.049	1,214	7.1	706	354	220
June	0.084	998	6.8	835	430	275
July	0.108	1,165	6.6	835	410	258
August	0.223	3,045	10	1,054	505	253

September	0.429	5,034	121	2,230	3,928	1,200
October	0.373	5,771	163	2,310	4,123	1,633
November	0.273	4,638	172	1,746	3,441	1,120
December	0.101	2,959	78	1,013	1,491	580

1. TDS= total dissolved solids
2. FDS= fixed dissolved solids

14. The Discharger also collects samples for analysis of individual salt constituents on a quarterly basis. Table 4 presents average wastewater concentrations for individual salt constituents broken down by quarter from 2008 through 2012:

TABLE 4. Salinity Constituents

	Bicarbonate as $CaCO_3$ (mg/L)	Dissolved Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
1st Quarter	134	31.5	7	224[1]	47.8	76.6[1]	53.4
2nd Quarter	167	38.3	10.2	46.8	11.4	27.1	20.4
3rd Quarter	120	36.7	10.9	39	22.8	28.5	28.1
4th Quarter	19	59.9	27.3	47	463	28.1	394

1. Elevated concentration due to spikes in samples collected in 2008 and 2009. Since 2009 sodium and chloride concentrations during the first quarter are similar to samples collected during the rest of the year.

15. The wastewater is high in organics, nitrogen, and salts, particularly potassium. As shown in the tables above, wastewater flows and constituent concentrations are significantly higher during the crush and stillage seasons from mid-August through November.

16. Wastewater from the Winery is collected and routed through a screening unit to remove larger solids before it is discharged to the land application areas. Prior to 1995, the land application area consisted of approximately 36.8 acres adjacent to the Winery. Starting in 2000 the land application area was expanded to a total of 106 acres. Starting in 2004, O'Neill switched to sprinkler irrigation to more evenly distribute its wastewater and to provide for better management of its land application areas.

17. Various residual solid wastes including pomace (grape seeds, pulp, and skins), grape stems and leaves, spent diatomaceous earth from wine filtration, and recovered material from the wastewater screens are generated at the Winery on a regular basis. These materials are stored on an asphalt pad and removed daily by an off-site contractor. According to O'Neill, the organic material is distributed to local dairies for use as animal feed, while the diatomaceous earth and green waste is taken to a composting facility.

This Order requires the Discharger to prepare a Solids Management Plan to characterize solids removed during the grape processing and wine making processes and determine appropriate disposal methods.

Proposed Changes

18. The Discharger plans to increase its winery production, ultimately crushing approximately 200,000 tons of grapes, and producing up to 20 million gallons of wine annually. No increase in distillation activities or volume of stillage waste is proposed.

19. To address increased wastewater generation associated with the Winery expansion, the Discharger purchased approximately 50 acres of land just east of its existing land application areas. With the additional 50 acres, the land currently available for the application of wastewater will total about 156 acres. The Discharger has an additional 50 acres of land west of Lac Jac Avenue, and has purchased or is in the process of purchasing an additional 139 acres of farmland to the north and south of its existing land application areas that could be potentially used for land application of wastewater in the future, if needed to comply with these WDRs. The following Table identifies the individual field designations and approximate acreages that make up the available land application areas:

TABLE 5. Field Designations

APNs	Field Designation	Acres
Existing Land Application Areas		
363-061-15	A East Block	15
363-061-15	A West Block	15
363-061-15	B Block	14
363-061-16	C Block	5
363-061-16	D Block	11
363-061-16, and 363-061-18	E Block	21
363-061-16, and 363-061-18	F Block	15
363-061-18	G Block	5
363-061-15	H Block	5
363-061-14	I Block	50
	Total	**156**
Potential Future Additions		
363-051-20, and 363-061-21		50
363-061-06		30
363-031-11		47
363-061-53, 363-061-19, and 363-061-22		62
	Total	**189**

20. The Discharger plans to change its cropping plan to better utilize the land application areas and improve crop uptake of waste constituents. According to the RWD, the Discharger will switch to a double crop plan with field crops such as sudan grass and winter forage. The RWD includes various scenarios for existing (60 million gallons per year) and future flows (80 million gallons per year) utilizing a mixture of single or double-cropped fields to evaluate nutrient and hydraulic loading rates.

21. The RWD includes a water balance that addresses current and future flows to the land application area. Based on the water balance, at 80 million gallons, wastewater from the Winery will account for about 30 to 35 percent of the crops' irrigation requirements.

Supplemental irrigation water will be primarily surface water with a TDS of about 27 mg/L from the Consolidated Irrigation District, or groundwater with a TDS of about 190 mg/L from the newly-installed standby well.

22. Currently, wastewater from the Winery is screened then discharged directly to the land application areas and there is no storage in the event of a significant storm event or if soils become saturated. This Order includes a provision and time schedule requiring the Discharger to evaluate its wastewater flows and provide an appropriate plan that accommodates allowable wastewater storage and seasonal precipitation.

Other Considerations

23. Excessive application of food processing wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the soil profile and causing waste constituents (i.e., organic carbon, nitrates, other salts, and metals) to percolate below the root zone.

24. Typically, irrigation with high-strength wastewater can result in high BOD loading on the day of application, which can deplete oxygen in the soil. If the rate of oxygen transfer into the soil is not adequate, anaerobic or reducing conditions may result and lead to odor or nuisance conditions. When insufficient oxygen is present below the ground surface, anaerobic decay of organic matter can cause dissolution and leaching of some metals (primarily iron, manganese, and arsenic) and increases in groundwater alkalinity that can degrade groundwater quality. Excessive BOD loading over extended periods may impact beneficial uses. The maximum BOD loading rate that can be applied to land without creating the conditions described above can vary significantly depending on soil conditions and operation of the land application system.

25. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and the cation exchange capacity of the soil may immobilize some salinity constituents.

26. According to the RWD, the flow-weighted average nitrogen load to the 156 acre land application area at 80 million gallons per year would be between 422 and 505 lbs/acre/year. This is near or slightly above the nitrogen requirement of a double crop of sudan grass and winter forage. This Order requires nitrogen loading be at reasonable agronomic rates. In addition, this Order requires routine monitoring and preparation of a Nutrient and Wastewater Management Plan to ensure wastewater and fertilizer applications to the fields are at rates that will not cause or contribute to exceedances of the Groundwater Limitations of this Order.

27. The maximum BOD loading rate that can be applied to land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency (USEPA Publication 625/3-77-0007), cites BOD loading rates for irrigation purposes in the range of 36 to 100 lbs/acre/day to prevent nuisance, but indicates that loading rates can be even higher

under certain conditions. The studies that supported this report did not evaluate actual or potential groundwater degradation associated with those loading rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have are not readily adapted to varying soil, groundwater, and climate conditions that are prevalent throughout the region.

28. Self-monitoring reports from 2012 report cycle average BOD loading rates to the land application areas ranging from less than 10 to about 200 lbs/acre/day, with instantaneous loads as high as 8,000 or 9,000 lbs/acre/day during the crush/stillage season. With further expansion of the land application area, BOD loading rates should be lower than historic discharges. The RWD estimates maximum future cycle BOD loading rates of 160 to 190 lbs/acre/day.

29. Field studies for the land application of stillage process water and winery process water were conducted by the Wine Institute in 2002 and 2003 (Kennedy/Jenks 2004*. Land Application of Winery Stillage and Non-Stillage Process Water: Study Results and Proposed Guidelines*). A number of BOD loadings were applied to each field plot each year. Lysimeter water sample measurements at 1-foot and 5-foot depths showed that much of the BOD was removed in the surface foot of soil where aerobic conditions favor microbial oxidation. Between 66 and 79% of averaged applied BOD concentrations were removed in the surface foot of soil. At 5 feet, between 80 and nearly 100% of averaged BOD concentration was removed. Similarly, the study indicates average BOD loading was reduced by 89 to almost 100% in the percolate at 5 feet. Results for individual lysimeter readings were highly variable. The study results do indicate that careful management of land application of stillage and non-stillage process water can result in significant BOD removal.

30. The California League of Food Processor's (CLFP) *Manual of Good Practice for Land Application of Food Processing/Rinse Water* proposes risk categories associated with particular BOD loading rate ranges as follows:

    a. Risk Category 1: (less than 50 lbs/acre/day; depth to groundwater greater than 5 feet) Indistinguishable from good farming operations with good distribution important.
    b. Risk Category 2: (less than 100 lbs/acre/day; depth to groundwater greater than 5 feet) Minimal risk of unreasonable groundwater degradation with good distribution more important.
    c. Risk Category 3: (greater than 100 lbs/acre/day; depth to groundwater greater than 2 feet) Requires detailed planning and good operation with good distribution very important to prevent unreasonable degradation, as well as use of oxygen transfer design equations that consider site specific application cycles and soil properties and special monitoring.

    The Manual of Good Practice recommends allowing a 50 percent increase in the BOD loading rates in cases where sprinkler irrigation is used, but recommends that additional safety factors be used for sites with heavy and/or compacted soils.

31. Although it has not been subject to a scientific peer review process, the Manual of Good Practice provides science-based guidance for BOD loading rates that, if fully implemented,

may be considered management practices to help prevent groundwater degradation due to reducing conditions.

32. Due to existing groundwater pollution observed beneath the long-used 36.8 acre land application area and the area around it (Specifically fields A-West Block, A-East Block, and B Block), the BOD loading rate has been set at 100 lbs/acre/day. For the remaining fields, the BOD loading rate has been set at 150 lbs/acre/day consistent with the CLFP Manual of Good Practices for a Risk Category 2 with sprinkler irrigation on well drained soils. In addition, the Discharger is required to conduct soil and vadose zone monitoring to ensure these loading rates are protective of groundwater. A performance evaluation is required to be submitted as part of Task 2 of the accompanying Cease and Desist Order (CDO) R5-2014-XXXX. Following this evaluation, the Order may be reopened to adjust BOD loading rates as necessary.

33. Food processing wastewater may contain elevated concentrations of total dissolved solids (TDS) resulting from the fruit and vegetable products or materials used for production. Typically, a percentage of the TDS is organic, which will generally decompose into its component elements and can be utilized by plants and microorganisms in the soil. In contrast, the fixed dissolved solids (FDS), is primarily that portion of the TDS that consists of inorganic constituents, which can accumulate in the soil. Excessive salts may leach to groundwater where they can degrade groundwater quality. Growing and harvesting crops provides a means to remove some of these constituents, particularly calcium, magnesium, potassium, phosphorus, nitrate, and ammonia.

Site-Specific Conditions

34. The Winery and land application areas lie adjacent to the Kings River on the east side of the San Joaquin Valley. The area is primarily underlain by river channel deposits. An unlined canal (Smith Ferry Canal) bisects the land application area from north to south. Surface topography within the land application area is relatively level, with a surface elevation between 340 and 350 feet above mean sea level (AMSL). There is a drop in elevation of about 25 feet to the east toward the Kings River. The new 50-acre addition to the land application area lies on this lower elevation at about 320 feet AMSL, adjacent to the Kings River.

35. Federal Emergency Management Agency (FEMA) maps show that the Winery and land application areas, including the new 50-acre addition, are not within a 100-year flood plain. According to the RWD, there are also berms and a raised perimeter road to prevent runoff from the new 50-acre addition to the land application area from discharging into the Kings River.

36. Storm water originating from the Winery east of Lac Jac Avenue is discharged into the process water system and is applied to the land application areas. Storm water runoff from areas west of Lac Jac Avenue are captured and discharged to a small storm water basin near the northwest corner of the site. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System Industrial Storm Water Permit for the discharges because all storm water runoff is retained on-site and does not discharge into a water of the U.S.

37. United States Department of Agriculture, Natural Resources Conservation Service (NRCS), soil survey maps characterize approximately the top six feet of soil. Soils in the vicinity of the site consist primarily of Hanford fine sandy loam, Hesperia fine sandy loam, and Hanford fine sandy loam hard substratum. Permeability for these soil types is low to moderately rapid ranging from about 0.13 to 3.75 inches per hour. Hanford and Hesperia fine sandy loams have a land capability classification of 1 with no restrictions on use. Hanford fine sandy loam hard substratum has a land capability classification of 3s, which has severe limitations due to shallow rooting depth, stones, or low water holding capacity.

38. The climate in the Central Valley is characterized by hot dry summers and mild winters. The rainy season generally extends from November through April. Occasional rains occur during the spring and fall months, but summer months are dry. Based on publications from the Department of Water Resources and the Western Regional Climate Center, the annual rainfall for the Reedley area averages about 10.1 inches, with a 100-year-return-period wet year rainfall of about 23.65 inches. From the California Irrigation Management System (CIMIS), the mean reference evapotranspiration rate (ETo) for the nearby Parlier station is about 52.5 inches per year.

39. Land use in the vicinity of the site is primarily rural agricultural. The Kings River runs along the eastern boundary of the site, and the Riverview Elementary School directly adjoins the Winery to the south. Riverview Elementary has its own on-site well and septic system, which serves approximately 430 students and 20 staff. Average flows to the septic system are estimated at about 6,500 to 7,000 gallons per day (gpd) when school is in session.

40. Crops currently grown in the immediate vicinity of the site include grapes, fruit trees, and hay or grain crops. However, given climate and soil conditions on the east side of the San Joaquin Valley and the presence of good quality groundwater, it is possible that salt sensitive crops can be grown in the area.

41. Domestic wastewater generated at the site is discharged to three on-site septic systems regulated by Fresno County. The septic system for the main Winery just south of the Winery buildings and west of the Class II surface impoundment consists of a 6,800 gallon septic tank with two leachfields totaling approximately 10,800 square feet. Flows to the septic system average about 1,200 gpd with flows up to about 1,600 gpd during the crush/stillage season. The design of the other two septic systems is unknown; however; both serve only a few seasonal employees. One is located adjacent to the warehouse buildings west of Lac Jac Avenue and the other is near the northern boundary of the site just west of the land application areas.

Groundwater Considerations

42. According to Department of Water Resources Groundwater Elevation Maps (Spring 2010), first-encountered groundwater in the vicinity of the site occurs in an unconfined aquifer at about 40 to 60 feet bgs, and flows to the southwest away from the Kings River.

43. Groundwater data in recent years shows that groundwater flow has been predominantly to the west-southwest away from the Kings River at gradients ranging from about 5 to 10 feet/mile. Occasionally, groundwater flow has shifted to the northeast, likely due to seasonal changes in

surface flows in the Kings River and area pumping. The Kings River serves as a source of high quality groundwater recharge up-gradient of the site.

44. Soil borings show predominantly fine to medium grained sand with interbedded lenses of silty sands and clays down to about 65 feet below ground surface (bgs). Some borings show a dense layer of silt (or hardpan) down at about 10 to 15 feet bgs.

45. There are seventeen monitoring wells used to monitor groundwater beneath the Winery and land application areas. Four monitoring wells (MW-1 through MW-4) were installed in 1995 to monitor the original 36.8 acre land application area and are currently inside of the expanded land application area. Ten additional monitoring wells (MW-5 through MW-14) were installed in 2001. Monitoring wells MW-5 and MW-6 were installed east and up-gradient between the Kings River and land application areas. The remaining monitoring wells, MW-7 through MW-14, were installed around the perimeter of the site to the north, south, and east of the land application areas. Monitoring wells SI-1, SI-2, and SI-3 were also installed in 2001, south of the land application area to monitor groundwater around the Class II surface impoundment. Attachment C is a Site Plan with the monitoring well locations in relation to the land application areas and prominent site features, and is incorporated by reference herein.

46. Table 6 below presents average groundwater concentrations for selected constituents for the period between 2008 through 2012:

TABLE 6. Groundwater Quality

Wells	EC umhos/cm	TDS mg/L	HCO_3^- mg/L	NO_3-N mg/L	Ammonia mg/L	Na mg/L	Cl mg/L	K mg/L	Fe mg/L	Mn mg/L	TOC mg/L
Interior and down-gradient monitoring wells											
MW-1	**1730**	**1116**	693	6	26	54	26	288	<0.1	**0.81**	9
MW-2	**1065**	**661**	513	0.4	20	33	18	109	0.2	**0.83**	8
MW-3	**1308**	**951**	670	1.2	2.9	57	29	235	**0.3**	**2.54**	6.8
MW-4	**1695**	**1155**	625	**16**	24	50	25	260	<0.1	**0.58**	7
MW-14	**1534**	**872**	614	3.4	28	63	30	171	**1.4**	**0.38**	11
Up-gradient and perimeter monitoring wells											
MW-5	464	362	189	9.6	<0.5	57	18	4.2	<0.1	<0.01	<1
MW-6	**1074**	**765**	658	4.2	0.6	55	25	5.2	0.2	**2.84**	5.2
MW-7	**1013**	476	451	4.8	5.5	42	19	87	<0.1	**0.39**	3.1
MW-8	**1259**	**906**	462	**33**	0.6	148	64	6	<0.1	0.04	1.9
MW-9	631	448	133	**27**	<0.5	35	10	2.6	<0.1	<0.01	1
MW-10	**1618**	**1193**	406	**69**	0.6	155	45	5.6	<0.1	<0.01	2.1
MW-11[1]	**1554**	**1118**	399	**39**	<0.5	101	56	5.9	<0.1	<0.01	2.5
MW-12	816	**862**	261	**38**	0.6	111	16	4.9	<0.1	<0.01	1.1
MW-13	**1153**	**992**	401	**16**	0.6	120	88	3.7	<0.1	<0.01	1.5
Monitoring wells around the Class II surface impoundment											
SI-1	**1114**	**765**	350	**36**	0.6	150	31	5.2	0.1	<0.01	1.1
SI-2	696	438	260	**13**	1	20	13	29	0.1	0.05	1.4

TABLE 6. Groundwater Quality

Wells	EC umhos/cm	TDS mg/L	HCO_3^- mg/L	NO_3-N mg/L	Ammonia mg/L	Na mg/L	Cl mg/L	K mg/L	Fe mg/L	Mn mg/L	TOC mg/L
SI-3	880	**618**	295	**30**	3.9	82	20	15	0.1	0.02	1.9
MCL[2]	900/1600[4]	500/ 1000[4]		10[3]			250/ 500[4]		0.3[4]	0.05[4]	

EC= electrical conductivity, TDS= total dissolved solids, HCO_3-= bicarbonate as $CaCO_3$, NO_3-N= nitrate as nitrogen, Ammonia= ammonia as nitrogen, Na= sodium, Cl= chloride, K= potassium, Fe= iron, Mn= manganese, and TOC= total organic carbon

1. Well dry from 2008 through December 2011.
2. MCLs = Maximum Contaminant Levels. Concentrations that exceed these water quality objectives are bolded.
3. Primary MCL for NO_3-N + NO_2-N.
4. Secondary MCL. Recommended/Upper.

47. Two additional monitoring wells MW-15 and MW-16 were installed in May 2007 along the eastern boundary of the proposed 50-acre addition to the land application area to evaluate groundwater conditions prior to the application of wastewater to this area. These wells were sampled three times in 2007 following their installation and twice in 2011. Analytical results from limited sampling of MW-15 and MW-16 are presented in the Table below:

TABLE 7. Groundwater data for MW-15 and MW-16

Wells	Date	EC umhos/cm	TDS mg/L	HCO_3^- mg/L	NO_3-N mg/L	Ammonia mg/L	Na mg/L	Cl mg/L	K mg/L	Fe mg/L	Mn mg/L	TOC mg/L
MW-15	6/4/07	**1090**	**740**	335	**16.8**	<0.5	94	84	6.7	<0.1	<0.01	1.9
	7/26/07	**1080**	**720**	388	7.7	0.11	108	71	8.6	0.2	<0.01	ns
	8/1/07	**1100**	**762**	314	**20.9**	<0.5	89	69	6.8	<0.1	<0.01	ns
	7/19/11	694	**530**	229	9.1	<0.5	58	34	4.4	<0.1	<0.01	<1
	8/22/11	772	**540**	272	10	<0.5	64	39	3.6	<0.1	<0.01	<1
MW-16	6/4/07	772	**673**	335	7.3	<0.5	79	34	5	<0.1	<0.01	7.7
	7/26/07	716	480	307	5.5	<0.5	89	32	6.5	0.14	<0.01	ns
	8/1/07	783	**566**	314	7.7	<0.5	78	31	5.7	<0.1	<0.01	ns
	7/19/11	561	425	234	2.6	<0.5	57	16	3.8	<0.1	<0.01	<1
	8/22/11	551	420	245	2.6	<0.5	60	17	3.2	<0.1	<0.01	<1
MCL[1]		900/1600[3]	500/ 1000[3]		10[2]			250/ 500[3]		0.3[3]	0.05[3]	

EC= electrical conductivity, TDS= total dissolved solids, HCO_3-= bicarbonate as $CaCO_3$, NO_3-N= nitrate as nitrogen, Ammonia= ammonia as nitrogen Na= sodium, Cl= chloride, K= potassium, Fe= iron, Mn= manganese, and TOC= total organic carbon

1. MCL = Maximum Contaminant Level. Concentrations that exceed these water quality objectives are bolded.
2. Primary MCL NO_3-N + NO_2-N.
3. Secondary MCL. Recommended/Upper.

48. The elevated EC and salinity constituents in MW-15 and MW-16 in 2007 may be the result of inadequate development of the wells. Samples collected in 2011 for EC, TDS, sodium, chloride, and bicarbonate were significantly lower than those in 2007, immediately following installation of the monitoring wells.

49. Based on the information discussed in Findings 42 through 48 above:

    a. Up-gradient groundwater quality is best defined by MW-5 on the southeast corner of the existing land application areas, MW-15 and MW-16 on the eastern boundary of the expansion area and closer to the Kings River, and MW-9 north and west of the Winery and outside of the influence from the land application areas. The average EC and TDS in these wells range from 445 to 772 umhos/cm and 321 to 540 mg/L, respectively.

    b. Groundwater beneath the land application areas has been degraded/polluted due to discharges from the Winery. The interior and down-gradient, monitoring wells (MW-1, MW-2, MW-3, MW-4, and MW-14) contain EC and TDS concentrations in excess of the recommended secondary Maximum Contaminant Levels (MCLs) of 900 umhos/cm and 500 mg/L, and in some cases the upper secondary MCLs of 1,600 umhos/cm and 1,000 mg/L, respectively. These wells also contain manganese in excess of the secondary MCL of 0.05 mg/L with average concentrations ranging from 0.33 mg/L in MW-4 and MW-14 to 1.71 mg/L in MW-3. These wells show little or no nitrate but high ammonia, confirming reducing conditions beneath the site. Bicarbonate, calcium, magnesium, and total organic carbon (TOC) are also elevated, indicating general organic overloading of the land application areas. These wells also show high potassium at concentrations of 100 to 300 mg/L, indicating overloading for potassium as well.

    c. Monitoring well MW-6, just inside of the land application areas and north of MW-5, is impacted by the discharge with an average EC and TDS of 1,044 umhos/cm and 749 mg/L, respectively. MW-6 also shows elevated concentrations of TOC and bicarbonate, as well as manganese at 2.45 mg/L, which exceeds the secondary MCL for manganese of 0.05 mg/L. Prior to 2007, however, this well was similar in quality to MW-5. Since 2007 this well has shown a steady increase in constituent concentrations, possibly due to over application of wastewater in this area or damage to the well.

    d. Monitoring wells MW-10 and MW-11, on the far western boundary of the site outside of the land application areas, have the highest reported concentrations of NO_3-N at 68 and 39 mg/L, respectively. These monitoring wells also have some of the highest EC and TDS concentrations at 1,608 and 1,156 umhos/cm, and 1,183 and 1,118 mg/L, respectively. However, these wells do not show elevated bicarbonate, potassium, or TOC typical of groundwater impacted by the discharge. In addition, monitoring wells MW-9 and MW-12, with lower salinity and nitrate, lie between these monitoring wells and the land application areas. These monitoring wells are likely influenced by surrounding activities or unknown discharges from the Winery.

    e. Monitoring well MW-13, just south of the Winery buildings, has an average EC and TDS of 1,163 umhos/cm and 1,018 mg/L respectively. This monitoring well also shows high sodium and chloride at 121 mg/L and 92 mg/L, but bicarbonate, potassium, and TOC are low. This monitoring well may be influenced by the Winery's main septic system just up-gradient of MW-13 and/or the septic system for Riverview Elementary School to the south.

50. A detailed groundwater study has not yet been performed and therefore the accompanying Cease and Desist Order (CDO) R5-2014-XXXX requires the Discharger to complete a detailed study to

evaluate the vertical and horizontal extent of impacted groundwater beneath and down-gradient of the site.

51. This Order includes specific groundwater limits for NO_3-N at the Primary MCL of 10 mg/L and EC at the lower recommended secondary MCL of 900 umhos/cm to protect beneficial uses. However, the Discharger cannot immediately comply with these groundwater limits. This Order is therefore accompanied by CDO R5-2014-XXXX, which will require that the Discharger take the necessary steps to come into compliance with the groundwater limits. Due to the fact that the Discharger has already expanded the land application areas and has already implemented significant salinity control measures, the Water Board expects that groundwater conditions will improve as the Discharger comes into compliance with the conditions in this Order.

Basin Plan, Beneficial Uses, and Water Quality Objectives

52. The *Water Quality Control Plan for the Tulare Lake Basins, Second Edition, revised January 2004* (Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, contains implementation plans and policies for protecting all waters of the Basin, and incorporates, by reference, plans and policies of the State Water Board. In accordance with Water Code section 13263(a), these requirements implement the Basin Plan.

53. The Facility lies within the Consolidated Hydrologic Area (551.70), as depicted on interagency hydrologic maps prepared by the State Water Resources Control Board and the Department of Water Resources, revised in August 1986. Local drainage is to the Kings River. The Basin Plan designates beneficial uses for the Kings River from the Friant-Kern Canal to Peoples Weir as: municipal and domestic supply, agricultural supply, industrial process supply, water contact recreation, non-contact water recreation, warm fresh water habitat, wildlife habitat, and groundwater recharge.

54. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

55. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater.

56. The Basin Plan's narrative water quality objective for chemical constituents requires that, at a minimum, waters designated as domestic and municipal supply to meet the State drinking water maximum contaminant levels (MCLs) specified in Title 22 of the California Code of Regulations. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

57. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

58. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific

beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

59. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigating with water having an EC less than 700 umhos/cm, a sodium of 69 mg/L or less, and a chloride of 106 mg/L or less. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 umhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

60. The list of crops in Finding 40 is not intended as a definitive inventory of crops that are or can be grown in the area affected by the discharge but is representative of agricultural practices in the area. Agricultural operations in the area typically irrigate with groundwater or surface water provided by Consolidated Irrigation District, which exhibits good quality with respect to minerals. Based on climate and soil type, it is likely that salt sensitive crops can be grown in the area.

61. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes effluent salinity limits for both municipal and industrial discharges and states that effluent limits established for municipal discharges shall generally apply to industrial discharges. Limits potentially applicable to the proposed discharge, include:

    a. The incremental increase in salts from use and treatment must be controlled to the extent possible. Dischargers must limit the increase in EC of a point source discharge to land to a maximum of 500 umhos/cm.

    b. Discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1 mg/L.

62. The Basin Plan does allow for an exception to the incremental EC increase limit for food processing industries that discharge to land, where the discharge exhibits a disproportionate increase in EC over source water due to unavoidable concentrations of organic dissolved solids, provided the Discharger implements BPTC to minimize the salinity of the discharge and beneficial uses are protected.

63. The Discharger collects samples for TDS and FDS on a monthly basis. Average monthly concentrations for TDS and FDS range from about 350 to 4,000 mg/L and 220 to 1,600 mg/L, respectively. In general, the results of this sampling show a 30 to 60 percent increase in TDS due to the presence of organic dissolved solids. The Discharger also implements best management practices including segregation of its high salinity waste streams to minimize the salinity of its discharge. Thus, the discharge is eligible for the Basin Plan exception to the

incremental increase limit. Given this, it is not appropriate to generally apply the 1,000 umhos/cm EC limit to this industrial discharge.

This Order will require effluent monitoring for TDS and FDS to ensure exception eligibility continues.

64. The Basin Plan encourages the reuse of wastewater and identifies crop irrigation as a reuse option where the opportunity exists to replace an existing or proposed use of fresh water with reused water.

Antidegradation Analysis

65. State Water Board Resolution No. 68-16, the Statement of Policy with Respect to Maintaining High Quality Waters in California (Anti-Degradation Policy), prohibits the Board from authorizing activities that will result in the degradation of groundwater unless it has been shown that:

a. 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;

b. The degradation will not unreasonably affect present and anticipated future beneficial uses;

c. The Discharger employs Best Practicable Treatment or Control (BPTC) to minimize degradation; and

d. The degradation is consistent with the maximum benefit to the people of the State.

66. Constituents of concern in the discharge (those with the greatest potential to affect beneficial uses of receiving water) include organics, nitrogen and salts. However, the discharge as regulated by these WDRs, is not expected to cause groundwater to exceed water quality objectives because:

a. Organic loading from past discharges to the land application areas and historic land management practices have polluted groundwater beneath the site for EC, TDS, iron and manganese and degraded groundwater beneath the site with bicarbonate. To ensure that the discharge authorized herein does not result in further pollution and impermissible degradation, this Order sets a weekly average BOD loading limit of 100 lbs/acre/day for areas where historic discharges have degraded and/or polluted underlying groundwater and 150 lbs/acre/day for the remainder of the land application areas. The Discharger currently employs management practices that include sprinkler applications and supplementing with fresh irrigation water.

As discussed in Finding 28, with expansion of the land application areas and proper management of the land application areas, the BOD loading from the discharge will be less than historic discharges. However, the discharge still has the potential to exceed the average BOD loading limits specified in Land Application Area Specification D.2 during the crush/stillage season. Pursuant to CDO R5-2014-XXXX, the Discharger is required to implement treatment and/or control measures to ensure that the discharge will comply with the BOD limits in this Order within four years following the issuance of this Order.

b. For nitrogen, groundwater up-gradient of the site is of good quality with respect to nitrates as seen in monitoring well MW-5 with an average NO_3-N concentration of about 7 mg/L. However, groundwater in and around the site contains nitrogen either as NO_3-N in excess of the primary MCL, or contains elevated concentrations of ammonia (indicative of reducing conditions in groundwater). Once in an oxygenated environment, the ammonia may oxidize to form NO_3-N in concentrations that will exceed the primary MCL of 10 mg/L.

When the Winery discharges up to 80 million gallons per year, the RWD estimates nitrogen loads to the land application areas will be between 422 and 505 lbs/acre/year; this could exceed typical crop uptake rates.

In order to ensure that the discharge will not result in further nitrate degradation, this Order sets a groundwater limit for NO_3-N of 10 mg/L to protect beneficial uses, requires that nitrogen loading to the land application areas be at agronomic rates, and requires the Discharger to prepare a Nutrient and Wastewater Management Plan. The Water Board expects that application of wastewater and fertilizers at reasonable agronomic rates for nitrogen will preclude further degradation of groundwater for nitrates.

c. For salinity, with an average effluent EC and TDS of about 1,200 umhos/cm and 1,500 mg/L, respectively, the discharge exceeds background groundwater quality for the area. However, as discussed in Findings 33 and 63, a significant portion of the salinity of the discharge is from organic dissolved solids or from constituents that are important for plant growth such as calcium, magnesium, potassium, phosphorus, nitrate, and ammonia. Many of these constituents will break down and be taken up by crops and microorganisms in the soil profile. Growing and harvesting crops provides a means to remove some of these constituents. In addition, as discussed in Finding 21, the discharge at 80 million gallons per year will account for about 30 to 35 percent of the crops' irrigation requirements. Supplemental irrigation water is high-quality surface water or groundwater with a TDS of about 27 or 190 mg/L, respectively. Supplementing with high-quality irrigation water will reduce the overall TDS of the percolate reaching groundwater.

Groundwater in the area has already been degraded/polluted for salinity as a result of historical discharges from the Winery. However, the Discharger has implemented several salinity control measures, including the segregation of its high-salinity waste streams to the Class II surface impoundment, the reuse of wastewater on crops, and the minimization of the use of cleaning chemicals. A breakdown of the individual constituents in groundwater shows that a large portion of the EC and TDS in groundwater is from calcium, bicarbonate, and potassium, which likely are the results of overloading the land application areas for organics and nutrients. In order to minimize degradation from these constituents, this Order sets a weekly average BOD loading rate of 100 lbs/acre/day over older land application areas and 150 lbs/acre/day for newer areas and requires nutrient loading, including nitrogen and potassium, as well as hydraulic loading, to be at reasonable agronomic rates that will not cause or contribute to exceedances of the Groundwater Limitations of this Order. With the implementation of salinity control measures, and limits to reduce organic and nutrient loading to the land application areas the discharge is not expected to cause further groundwater degradation for salinity.

d. For potassium, with an average concentration of about 140 mg/L, the potassium load from the discharge at 80 million gallons per year will be about 600 lbs/acre/year. Average uptake of potassium ranges from about 245 to 392 lbs/acre/year for sudan grass based on two to three cuttings per year yielding between 5 to 8 tons per acre, and about 160 to 166 lbs/acre/year for winter wheat based on yields of about 2.5 to 3 tons per acre. These rates were calculated based on general uptake rates for potassium from the Western Fertilizer Handbook, 9th edition. Excess concentrations of potassium can cause or contribute to EC and TDS violations in groundwater, and given that groundwater beneath the site already contains potassium at concentrations of 100 to 300 mg/L, which is greater than ten times background concentrations, there is no assimilative capacity in soil or groundwater for potassium.

   To minimize the potential for further groundwater degradation for potassium, this Order requires that nutrient loading from wastewater and fertilizers including potassium, be at reasonable agronomic rates consistent with crop types and irrigation methods. This Order requires the Discharger to prepare a Nutrient and Wastewater Management Plan to evaluate potassium uptake by crops to ensure application of potassium at reasonable agronomic rates that will be protective of groundwater. However, given the proposed crop types and concentrations of potassium, the discharge is still likely to exceed agronomic rates for potassium loading. Pursuant to CDO R5-2014-XXXX, the Discharger is required to implement treatment and/or control measures to ensure that the application of wastewater complies with provisions specifying that the application must be at reasonable agronomic rates for nutrients, including potassium, within four years following issuance of this Order.

e. Concentrations of sodium and chloride in groundwater up-gradient of the Winery are about 53 mg/L and 20 mg/L, respectively. Groundwater data shows that concentrations of sodium and chloride in many of the interior and perimeter monitoring wells exceed these levels, with sodium ranging from 33 mg/L in MW-2 to 155 mg/L in MW-10 and with chloride ranging from 15 mg/L in MW-12 to 92 mg/L in MW-13.

   The Basin Plan includes narrative water quality objectives to protect groundwater for agricultural beneficial uses. Interpretation of narrative water quality objectives is done on a case-by-case basis. The most stringent water quality goals for sodium and chloride are the agricultural water quality goals of 69 mg/L and 106 mg/L, respectively, for protection of salt sensitive crops based on Ayers and Westcot's *Water Quality for Agriculture*. Since 2003, the Discharger has implemented several salinity control measures to reduce the salinity of its discharge. Given current average effluent concentrations for sodium and chloride of about 45 mg/L and 28 mg/L, respectively, the discharge is not expected to cause groundwater to exceed these water quality goals.

Treatment and Control Practices

67. The Discharger provides or will provide, as required by this Order and CDO R5-2014-XXXX, treatment and control of the discharge that incorporates:

a. Segregation of high salinity waste streams to a Class II surface impoundment;

b. Screening to remove solids;

c. Reuse of wastewater for irrigation of crops at reasonable agronomic rates;

d. Weekly average BOD loading rates of 100 and 150 lbs/acre/day;

e. Standard operating procedures for cleaning and sanitation to promote water conservation efforts and minimize the use of cleaning chemicals;

f. Employee training programs to address water conservation and source reduction;

g. Sprinkler irrigation of crops;

h. Supplementing with higher quality irrigation water;

i. Appropriate solids handling and disposal practices; and

j. Preparation and implementation of a Nutrient and Wastewater Management Plan.

These Treatment and Control Practices are reflective of BPTC of the discharge.

Antidegradation Conclusions

68. This Order, along with CDO R5-2014-XXXX, establishes terms and conditions to ensure that the authorized discharge will not further degrade groundwater, contribute to existing pollution, or unreasonably affect present and anticipated future beneficial uses of groundwater.

69. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State and, therefore, sufficient reason exists to accommodate growth and limited groundwater degradation around the Winery, provided that the terms of the Basin Plan are met. The Discharger aids in the economic prosperity of the region by direct employment of about 86 full time and 37 seasonal employees. Wages and benefits for these 123 employees average approximately $55 thousand per employee per year. Following the expansion, the Winery will employ up to 113 full time and 64 seasonal employees. The Winery also provides additional benefits to California and Fresno County by providing a local market for suppliers, farmers, and truckers in and around the area as well as providing a tax base for local and county governments. This Order does authorize degradation of groundwater for salinity, but the degradation is not anticipated to result in water quality less than water quality objectives or unreasonably affect beneficial uses.

70. This Order is consistent with the *Anti-Degradation Policy* since: (a) the Discharger must implement BPTC to minimize degradation, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated future beneficial uses of groundwater, or result in water quality less than water quality objectives, and (c) the limited degradation is of maximum benefit to people of the State.

CEQA

71. On 21 December 2007, the Fresno County Department of Public Works and Planning circulated a Notice of Intent to adopt a Mitigated Negative Declaration that was prepared in conjunction with a proposal to approve a Conditional Use Permit (CUP 3205) that would allow the then-existing Winery and land application areas to be expanded. Staff of the Central Valley Water Board commented on the Mitigated Negative Declaration and expressed concern regarding existing groundwater degradation and potential overloading in the land application

areas, and required that the applicant prepare an antidegradation analysis to evaluate the potential for the discharge to degrade groundwater.

On 24 January 2008, Fresno County approved the Mitigated Negative Declaration and found that the project, as proposed, would not have a significant effect on water quality. As a responsible agency, the Central Valley Water Board has responsibility for mitigating or avoiding only the direct or indirect environmental effects of those parts of the project that fall under its authority. The two mitigation measures identified in the Mitigated Negative Declaration are not related to the discharge of wastewater to land.

Designated Waste and Title 27

72. California Code of Regulations, Title 27 (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste, which includes designated waste, as defined by Water Code section 13173. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to a provision that exempts wastewater under specific conditions. This exemption, found at Title 27, section 20090, is described below:

> (b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
>
> (1) The applicable regional water quality control board is issuing WDRs, reclamation requirements, or waived such issuance;
>
> (2) The discharge is in compliance with applicable water quality control plan; and
>
> (3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

73. The discharge authorized herein is exempt from the requirements of Title 27 in accordance with Title 27, section 20090(b) because:

a. The Central Valley Water Board is issuing WDRs.

b. The discharge will comply with the Basin Plan, and;

c. The treated effluent discharged to the land application areas does not need to be managed as hazardous waste.

Other Regulatory Considerations

74. The annual fee for the discharge is based on a Threat to Water Quality and Complexity rating of 2B (Cal. Code Regs., tit. 23, § 2200.) as defined below:

a. Category 2, threat to water quality: "those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations or water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."

b. Category B complexity: "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 management unit."

General Findings

75. 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.

76. 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.

77. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

78. Water Code section 13267(b) states that:

> In conducting an investigation…the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region…shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring these 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.

79. The technical reports required by this Order and monitoring reports required by the attached Monitoring and Reporting Program (MRP) R5-2014-XXXX are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

80. All the above and the supplemental information and details in the attached Information Sheet, which is a part of this Order, were considered in establishing the conditions of discharge in this Order.

Public Notice

81. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

82. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED, that Waste Discharge Requirements 95-014 is rescinded and that, pursuant to sections 13263 and 13267 of the Water Code, O'Neill Beverage Company, LLC, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. Discharge of waste, including storm water containing waste, to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated or partially treated wastes, except as allowed by Standard Provisions E.2 in *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, is prohibited.

3. The discharge of hazardous wastes, as that term is defined in California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.

4. Discharge of wastewater in a manner or location other than that described in the Findings herein or in the Report of Waste Discharge is prohibited.

B. Flow Limitations

1. Discharge to the land application areas shall not exceed a monthly average daily flow of 0.61 mgd or an annual flow of 80 million gallons per year. [Monitored at EFF-001]

C. 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 violation of the Groundwater Limitations of this Order.

2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

3. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

5. Objectionable odors shall not be perceivable beyond the limits of the Winery or land application areas at an intensity that creates or threatens to create nuisance conditions.

D. Land Application Area Specifications

1. For the purposes of this Order, "land application areas" refers to the discharge areas described in Finding 19.

2. The weekly average BOD loading rate to fields A-West Block, A-East Block, and B Block, as shown on Attachment C, shall not exceed 100 lbs/acre/day. The weekly average BOD loading rate on the remaining land application areas shall not exceed 150 lbs/acre/day.

3. Crops shall be grown within the land application areas. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake of waste constituents.

4. Hydraulic loading of wastewater and supplemental irrigation water shall be at reasonable agronomic rates designed to minimize the percolation of waste constituents below the root zone (i.e., deep percolation).

5. Application of waste constituents shall be at reasonable agronomic rates to preclude creation of a nuisance or cause or contribute to exceedances of the Groundwater Limitations in this Order, considering crop, soil, climate, and irrigation management.

6. The Discharger shall maximize the use of available land application areas to minimize waste constituent loading rates.

7. Discharge to the land application areas shall not be performed within 24 hours of a storm event of measurable precipitation or when soils become saturated.

8. The resulting effect of the discharge on soil pH shall not exceed the buffering capacity of the soil profile.

9. The land application areas shall be managed to prevent breeding of mosquitoes. More specifically:

    a. All applied irrigation water must infiltrate completely within 48-hours;

    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation; and

    c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes, shall not be used to store wastewater.

E. Solids Specifications

Solids as used in this document, means the residual solids, including grape stems and pomace, diatomaceous earth, semisolid, and liquid residues removed during grape processing, wine making, or cleaning of wine making equipment.

1. Any handling and storage of residual solids shall be temporary and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the Groundwater Limitations of this Order.

2. Solids shall be disposed of in a manner approved by the Executive Officer. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, composting, and soil

amendment sites) operated in accordance with valid waste discharge requirements issued by a regional board will satisfy this specification.

3. Any proposed change in solids handling or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

F. Groundwater Limitations

1. Release of waste constituents from any treatment, reuse, or storage component associated with the discharge shall not cause or contribute to groundwater containing constituent concentrations in excess of the concentrations specified below or background quality, whichever is greater:

    a. Nitrate as nitrogen of 10 mg/L,
    b. EC of 900 umhos/cm, and
    c. For constituents identified in Title 22, the MCLs quantified therein.

G. Provisions

1. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements,* dated 1 March 1991 (Standard Provisions), which are hereby incorporated by reference and made a part of this Order.

2. The Discharger shall comply with Monitoring and Reporting Program (MRP) R5-2014-XXXX, which is hereby incorporated by reference and made a part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer.

3. 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.

4. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the appropriate Central Valley Water Board office (currently, the Fresno office).

5. To assume operation under this Order, the succeeding owner or operator must have the Central Valley Water Board transfer ownership of these WDRs, a process which begins by submitting an application 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 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.

6. The Discharger shall keep at the Facility a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.

7. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Central Valley Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

8. The Discharger must 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 include 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 only when the operation is necessary to achieve compliance with the conditions of this Order.

9. As a means of discerning compliance with Discharge Specification C.5, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond (other than those that require an anoxic or anaerobic environment for the designed treatment) shall not be less than 1.0 mg/L for three consecutive sampling events. In the event that this occurs, the Discharger will switch to daily DO monitoring and shall report the findings to the Central Valley Water Board in writing within 10 days along with a specific plan to resolve the low DO issue. Daily monitoring for DO shall continue until the issue has been resolved.

10. The Discharger shall maintain and operate wastewater ponds, if constructed, in a manner that protects the integrity of containment levees and prevents overtopping or overflows. Unless a California registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain a permanent marker with calibration that indicates the water level at the design capacity and enables determination of available operational freeboard.

11. The Discharger shall submit all technical reports and work plans required by this Order for Central Valley Water Board staff consideration and incorporate comments they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.

12. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professionals(s) in a manner such that all work can be clearly attributed to the professional responsible for the work. All reports required herein are required pursuant to Water Code section 13267.

13. **By (6 months following adoption of this Order)**, the Discharger shall submit a Nutrient and Wastewater Management Plan. At a minimum the Plan must include procedures for monitoring the land application areas including daily records of wastewater applications and acreages, tissue sampling to establish crop uptake, an action plan to deal with objectionable odors and/or nuisance conditions, calculations for monthly and annual water and nutrient balances including BOD, nitrogen, and potassium, and management practices to ensure wastewater, irrigation water, and commercial fertilizers are applied at reasonable agronomic rates.

14. **By (6 months following adoption of this Order)**, the Discharger shall submit a Solids Management Plan. The Plan shall characterize the various solids removed during the grape processing and wine making processes with respect to organic matter, nutrients, salts, and metals; identify any practicable beneficial uses (i.e., soil supplement, animal feed, biomass fuel, etc.); provide a description of the tasks, costs, and time required to investigate and implement various beneficial reuse elements in the Plan; and provide an implementation time schedule for Executive Officer approval. The Discharger shall implement the approved plan in accordance with the approved schedule.

15. **By (1 year following adoption of this Order)**, the Discharger shall submit a technical report containing the results of a study re-evaluating the need to incorporate wastewater storage and/or implement other structural or operational measures into its treatment and disposal system design to ensure continuous compliance with this Order. At a minimum, the technical report shall include a detailed water balance prepared by and properly signed and stamped by a California registered engineer, with calculations to accommodate allowable wastewater flows and seasonal precipitation calculated using an annual precipitation return period of 100 years.

    The technical report shall include a work plan and proposed time schedule to design and construct the necessary storage capacity. Storage units shall be designed and constructed to preclude groundwater degradation. If ponds will be used to provide the necessary storage, the work plan shall include the following; (a) design calculations demonstrating adequate containment will be achieved and that the pond liner will be protective of groundwater quality; (b) details on the pond liner and the leachate collection and removal system (if applicable); and (c) a construction quality assurance plan describing testing and observations needed to document construction of the liner in accordance with the design criteria.

    Upon written acceptance of the work plan by the Executive Officer, the Discharger shall begin construction to be completed by the date in the approved schedule **not to exceed**

four years following adoption of this Order. The Discharger shall submit a post-construction report within 30-days of completion of the pond improvements.

16. **By (60 days following adoption of this Order)** the Discharger shall submit a work plan and time schedule, subject to Executive Officer approval, for the installation and sampling of a Vadose Zone Monitoring System. The System shall be designed to measure the quality of percolate beneath land application areas and determine whether the discharge will degrade, or contribute to continued degradation/pollution, of underlying groundwater.

17. If the Central Valley Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of an objective for groundwater, this Order may be reopened for consideration of addition or revision of appropriate numerical effluent or groundwater limitations for potential constituents.

18. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan amendment that will establish a salt and nitrate management plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objectives are to be interpreted for the protection of agricultural use. If new information or evidence indicates that groundwater limitations different than those prescribed herein are appropriate, this Order will be reopened to incorporate such limits.

19. 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, and 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, section 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 filling 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 the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A Location Map
B Flow Schematic
C Site Plan

Monitoring and Reporting Program R5-2014-XXXX
Information Sheet
Standard Provisions (1 March 1991)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2014-XXXX

FOR

O'NEILL BEVERAGES COMPANY, LLC
REEDLEY WINERY
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267.

The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP. Changes to sample location shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as pH) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program). The Discharger may propose alternative methods for approval by the Executive Officer.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 months of monitoring, the Discharger may request this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency.

A glossary of terms used within this MRP is included on page 10.

Monitoring Location Name	Monitoring Location Description
EFF-001	Location where a representative sample of the Winery's effluent can be obtained after all treatment units, prior to discharge to the land application areas.
PW-001	Water supply well for Winery operations.
PW-002	Irrigation water supply well.
SW-001	Surface water provided for irrigation.
MW-1 through MW-16	Groundwater monitoring wells around the land application areas.
SI-1 through SI-3	Groundwater monitoring wells around the Class II surface impoundment

EFFLUENT MONITORING

The Discharger shall monitor the effluent from the Winery at EFF-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Daily	Flow	mgd	Continuous
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	BOD_5	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	TDS	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	FDS	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	Potassium	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	Nitrate as nitrogen	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	Nitrite as nitrogen	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	Ammonia as nitrogen	mg/L	24-hour Composite
Twice Monthly / Monthly[1]	Total Kjeldahl nitrogen	mg/L	24-hour Composite
Quarterly / Monthly[2]	General minerals[3]	mg/L	24-hour Composite
1/three years[4]	Metals[5]	mg/L	24-hour Composite

1. Samples to be collected twice monthly, in non-consecutive weeks, during the crush/stillage season from August through November, and monthly the rest of the year.
2. Samples shall be collected quarterly in January, April, and July, and then monthly during the crush/stillage season from August through November.
3. At a minimum the General Mineral analysis shall include alkalinity, bicarbonate, boron, calcium, carbonate, chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, phosphorus, sodium, and sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis
4. Samples to be taken once every three years in September during the crush/stillage season, starting the year following adoption of this Order.
5. Metals analysis shall include aluminum, chromium, copper, lead, molybdenum, nickel, and zinc. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

SOURCE WATER MONITORING

The Discharger shall monitor the Winery's source water supply and irrigation supply wells at PW-001 PW-002, and SW-001 as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Supply Water			
Annually	Flow-Weighted EC[1]	umhos/cm	Computed Average
Annually	General minerals[2]	mg/L	Grab
Irrigation Water			
Quarterly[3]	Flow-Weighted EC	umhos/cm	Computed Average
Annually[3]	General minerals[2]	mg/L	Grab

1 Flow-weighted EC to be calculated if more than one water supply is used for production in the Winery.

2 At a minimum the General Mineral analysis shall include alkalinity, bicarbonate, boron, calcium, carbonate, chloride, hardness, iron, magnesium, manganese, nitrate as nitrogen, potassium, phosphorus, sodium, and sulfate, and TDS. Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

3 If surface water is not used for irrigation of crops within the land application areas no sampling of SW-001 is required.

LAND APPLICATION AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for each discrete irrigation area within the Land Application Areas. The data shall be collected and presented in tabular format and shall include the following:

Frequency	Constituent/Parameter	Units	Sample Type
Daily[1]	Application area	field/acres	n/a
Daily[1]	Wastewater flow	gallons	Metered
Daily[1]	Wastewater loading	inches/day	Calculated
Daily[1]	Supplemental irrigation	inches/day	Estimated
Daily[1]	Precipitation	inches	Rain gage[2]
Monthly[1]	Total hydraulic loading[3]	inches/acre-month	Calculated
Weekly[4]	Application area conditions	observations	n/a
BOD Loading[5]			
Daily	Day of application	lbs/acre	Calculated
Average	Weekly average[6]	lbs/acre-day	Calculated
Nitrogen loading[5]			
Annual	From wastewater	lbs/acre-year	Calculated
Annual	From fertilizers	lbs/acre-year	Calculated
Salt and Potassium loading[5]			
Annual	From wastewater	lbs/acre-year	Calculated

1 Throughout the processing season, and while wastewater is applied to the land application areas.

2 National Weather Service or CIMIS data from the nearest weather station is acceptable.

3 Combined loading from wastewater, irrigation water, and precipitation.

Frequency	Constituent/Parameter	Units	Sample Type

[4] The Discharger shall inspect and document the condition of active fields within the land application areas at least once per week. Notations shall be made in a bound log book and include observations of ponding water, soil clogging, insects, or other potential nuisance conditions, and shall document any corrective actions taken or planned. The log book shall also note changes in cropping including planting and harvesting dates for each field. A summary of the entries made in the log book during each month shall be submitted as part of the quarterly monitoring reports.

[5] Loading rates shall be calculated using the applied volume of wastewater, applied acreage, and average effluent concentrations for BOD, total nitrogen, FDS, and potassium.

[6] The weekly average BOD loading rate shall be calculated by dividing the lbs of BOD applied each week divided by seven days. The weekly average BOD loading rate shall be reported individually for each discrete land application area that received wastewater during the week.

GROUNDWATER MONITORING

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 well casing volumes.

The Discharger shall monitor the wells in its monitoring well network at MW-1 through MW-16 around the land application areas, and at SI-1 through SI-3 around the Class II surface impoundment, and any subsequent additional monitoring wells as follows:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Depth-to-Water	Feet[1]	Measured
Quarterly	Groundwater elevation	Feet[2]	Calculated
Quarterly	pH	s.u.	Grab
Quarterly	EC	umhos/cm	Grab
Quarterly	TDS	mg/L	Grab
Quarterly	General minerals[3]	mg/L	Grab
Quarterly	Nitrate as nitrogen	mg/L	Grab
Quarterly	Nitrite as nitrogen	mg/L	Grab
Quarterly	Ammonia as nitrogen	mg/L	Grab
Quarterly	Total Kjeldahl nitrogen	mg/L	Grab
Quarterly	Total nitrogen	mg/L	Calculated
Quarterly	Arsenic	mg/L	Grab
Quarterly	Total Organic Carbon	mg/L	Grab

[1] To the nearest hundredth of a foot.

[2] Groundwater elevation shall be calculated based on depth-to-water measurements from a surveyed measuring point.

[3] At a minimum the General Mineral analysis shall include alkalinity, bicarbonate, boron, calcium, carbonate, chloride, hardness, iron, magnesium, manganese, potassium, phosphorus, sodium, sulfate, TDS, and a cation/anion balance. Samples collected for metals analysis shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

SOIL MONITORING

The Discharger shall establish with the concurrence of Central Valley Water Board staff, at least six soil profile monitoring locations within the Land Application Areas and at least two representative

background location(s) (i.e., that historically have not received process wastewater). The Discharger shall submit a map to the Central Valley Water Board with the identified sample locations no fewer than **60 days** prior to the first sampling event in October following adoption of this Order. The samples shall be collected and analyzed for the constituents and frequencies specified below:

Frequency	Constituent/Parameter	Units	Sample Type
Annually	Moisture Content	% volume	10 feet[1]
Annually	Cation Exchange Capacity	meq/100 grams	10 feet[1]
Annually	Soil pH	pH units	10 feet[1]
Annually	Buffer pH	mg/kg as CaCO3	10 feet[1]
Annually	Sodium	mg/kg	10 feet[1]
Annually	Chloride	mg/kg	10 feet[1]
Annually	Potassium	mg/kg	10 feet[1]
Annually	Nitrate as nitrogen	mg/kg	10feet[1]
Annually	Ammonia as nitrogen	mg/kg	10feet[1]
Annually	Total Kjeldahl nitrogen	mg/kg	10 feet[1]

[1] Samples to be analyzed shall be collected at 6-inches, 2.5, 5, 7.5, and 10 feet bsg.

VADOSE ZONE MONITORING

Installation and sampling of the lysimeters shall be conducted in accordance with the approved Work Plan. The samples shall be collected and analyzed for the constituents and frequencies specified below:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly[1]	pH	s.u.	Grab[2]
Quarterly[1]	EC	umhos/cm	Grab[2]
Quarterly[1]	BOD_5	mg/L	Grab[2]
Quarterly[1]	Total Organic Carbon	mg/L	Grab[2]
Quarterly[1]	Nitrate as nitrogen	mg/L	Grab[2]
Quarterly[1]	Nitrite as nitrogen	mg/L	Grab[2]
Quarterly[1]	Ammonia as nitrogen	mg/L	Grab[2]
Quarterly[1]	Total Kjeldahl nitrogen	mg/L	Grab[2]
Quarterly[1]	General minerals	mg/L	Grab[2]
Quarterly[1]	Iron	mg/L	Grab[2]
Quarterly[1]	Manganese	mg/L	Grab[2]

[1] Samples to collected immediately following application of wastewater to the area where each lysimeter is located.

[2] Samples to be collected at 2, 5, and 10 feet bsg..

[3] At a minimum the General Mineral analysis shall include alkalinity, bicarbonate, boron, calcium, carbonate, chloride, hardness, iron, magnesium, manganese, potassium, phosphorus, sodium, sulfate, TDS, and a cation/anion balance. Samples collected for metals analysis shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

REPORTING

All monitoring results shall be tabulated and submitted in **Quarterly Monitoring Reports,** which shall be due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report	**1 May**
Second Quarter Monitoring Report	**1 August**
Third Quarter Monitoring Report	**1 November**
Fourth Quarter Monitoring Report	**1 February**

A transmittal letter shall accompany each Quarterly Monitoring Report. The transmittal letter shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or Plant modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

The following information is to be included on all monitoring reports, as well as any report transmittal letters, submitted to the Central Valley Water Board:

O'Neill Beverages Company, LLC
Reedley Winery
R5-2014-XXXX
Contact Information (telephone number and email)

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements. In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

At any time henceforth, the State or Central Valley Regional Water Board may notify the Discharger to electronically submit monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html) or similar system. Until such notification is given, the Discharger shall submit hard copy monitoring reports.

A. All Quarterly Monitoring Reports, shall include the following:

Wastewater Reporting:

1. Tabulated results of effluent monitoring specified on page 2.
2. For each month of the quarter, calculation of the maximum daily, monthly average, and cumulative discharge flows to the land application areas.

Land Application Area Reporting:

1. Results of routine monitoring and loading calculations specified on pages 3 and 4, broken down for each individual field.
2. For each month of the quarter, calculation of the monthly hydraulic load to individual fields for wastewater, precipitation, and supplemental irrigation water.
3. A summary of the notations made in the land application area monitoring log. The entire contents of the log do not need to be submitted.

Groundwater Reporting:

1. The results of groundwater monitoring specified on page 4. If there is insufficient water in the well(s) for sampling the monitoring well(s) shall be reported as dry for that quarter.
2. For each monitoring well, a table showing groundwater depth, elevation, and constituent concentrations for the five previous years, up through the current quarter.
3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow. The map shall also include the locations of all monitoring wells and wastewater storage and/or disposal areas.

Source Water Reporting

1. The results of quarterly monitoring of irrigation supply including groundwater and surface water for EC as specified on page 3. If multiple sources are used the Discharger, shall calculate the flow-weighted average concentrations for the specified constituents. Results must include supporting calculations, if required.

Vadose Zone Reporting

1. The results of quarterly monitoring as specified on page 5.

B. Fourth Quarter Monitoring Reports:

Facility Information:

1. The names and telephone numbers of persons to contact regarding the discharge for emergency and routine situations.

2. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).
3. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

Wastewater Reporting:

1. A summary of tabulated results of effluent monitoring specified on page 2.
2. Calculation of the maximum daily flow, monthly average flow, and cumulative annual flow.

Solids Reporting

1. Annual production totals for solids (excluding trash and recyclables) in dry tons or cubic yards.
2. A description of disposal methods, including the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.

    a. For landfill disposal, include: the name and location of the landfill, and the Order number of WDRs that regulate it.

    b. For land application, include: the location of the site (field identification), and the Order number of any WDRs that regulate it.

    c. For incineration, include: the name and location of the site where incineration occurs, the Order number of WDRs that regulate the site, the disposal method of ash, and the name and location of the facility receiving ash (if applicable).

    d. For composting, include: the location of the site, and the Order number of any WDRs that regulate it.

    e. For animal feed, include: the location of the site, and the Order number of any WDRs that regulate it.

Source Water Reporting

1. The results of annual monitoring of source water and irrigation supply including groundwater and surface water for EC and general minerals as specified on page 3. If multiple sources are used the Discharger, shall calculate the flow-weighted average concentrations for the specified constituents. Results must include supporting calculations, if required.

Land Application Area Reporting:

1. The type of crop(s) grown, planting and harvest dates, and the quantified nitrogen and fixed dissolved solids uptakes including potassium (as estimated by technical references or, preferably, determined by representative plant tissue analysis).

2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.

3. A monthly balance for the reporting year that includes:

   a. Monthly average ET_o (observed evapotranspiration) – Information sources include California Irrigation Management Information System (CIMIS) http://www.cimis.water.ca.gov/

   b. Monthly crop uptake

      i. Crop water utilization rates are available from a variety of publications available from the local University of California Davis extension office.

      ii. Irrigation efficiency – Frequently, engineers include a factor for irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.

   c. Monthly average precipitation – this data is available at http://www.cimis.water.ca.gov/ or at http://www.ncdc.noaa.gov/oa/climate/online/ccd/nrmlprcp.html.

   d. Monthly average and annual average discharge flow rate.

   e. Monthly estimates of the amount of wastewater percolating below the root zone (i.e., amount of wastewater applied in excess of crop requirements)

4. A summary of average and cycle BOD loading rates.

5. The total pounds of nitrogen applied to the land application areas in lbs/acre-year, as calculated from the sum of the monthly loadings.

6. The total pounds of fixed dissolved solids (FDS) and potassium that have been applied to the land application areas in lbs/acre-year, as calculated from the sum of the monthly loadings.

Soil Reporting

1. The tabulated results of Soil Monitoring as specified on pages 4 and 5.

The Discharger shall implement the above monitoring program on the first day of the calendar quarter following adoption of this Order.

Ordered by: _____
Pamela C. Creedon, Executive Officer

_____
(Date)

GLOSSARY

BOD_5	Five-day biochemical oxygen demand
CBOD	Carbonaceous BOD
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-Hour Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day.
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.
Weekly	Samples shall be collected at least once per week.
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.
Monthly	Samples shall be collected at least once per month.
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in January, April, July, and October.
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in April and October.
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
ug/L	Micrograms per liter
umhos/cm	Micromhos per centimeter
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
General Minerals	Analysis for General Minerals shall include at least the following:

Alkalinity (as $CaCO_3$)	Chloride	Nitrate as nitrogen
Bicarbonate (as $CaCO_3$)	Hardness	Potassium
Boron	Iron	Sodium
Calcium	Magnesium	Sulfate
Carbonate (as CaCO3)	Manganese	TDS

General Minerals analyses shall be accompanied by documentation of cation/anion balance.

INFORMATION SHEET

INFORMATION SHEET - ORDER R5-2014-XXXX
O'NEILL BEVERAGES COMPANY, LLC
REEDLEY WINERY
FRESNO COUNTY

Background

O'Neill Beverages Company, LLC (O'Neill or Discharger) owns and operates a Winery at 8418 South Lac Jac Avenue near Reedley in Fresno County. The Winery has been in operation since prior to the 1950's; previous owners include Golden State Vintners, Heublein Wine, and Christian Brothers. O'Neill purchased the Winery in July of 2004.

The Winery is currently regulated by Waste Discharge Requirements (WDRs) Order 95-014 adopted by the Central Valley Water Board on 27 January 1995 to regulate wastewater and stillage waste discharges to land associated with Winery operations. Order 95-014 allows for a maximum daily discharge of up to 0.526 million gallons per day (mgd) from 1 May to 30 September, up to 0.299 mgd from 1 October to 30 November, and up to 0.179 mgd from 1 December to 30 April. The Monitoring and Reporting Program was revised in January 2001 to increase effluent and groundwater monitoring.

On 16 December 2011, O'Neill Beverages Company, LLC (hereafter O'Neill or Discharger) submitted a revised Report of Waste Discharge (RWD) to address increased flows and an expanded land application area. Two previous RWD were submitted in 2006 and 2007. Both previous RWDs were withdrawn by the Discharger. The Winery expansion is planned to meet the increasing demand for wine in the Central Valley. The expansion includes the construction of additional stainless steel storage and fermentation tanks, two additional grape crush pits, two crushers/destemmers, and two to four tank/screw presses, and will result in increased wastewater flows to the land application areas.

Existing Plant and Discharge

The Winery facility includes an administrative office building, wine production and fermentation buildings, warehouses, distillery, grape receiving/crush areas, and land application areas. The Winery also includes a bottling plant and Class II surface impoundment constructed in 2001. Discharges from the bottling plant to the Class II surface impoundment are regulated separately under WDRs Order 5-01-141.

The Winery currently crushes approximately 150,000 tons of grapes annually. The Winery operates year round. Wastewater from Winery operations consists of stillage waste, tank wash, cooling water, boiler blow down, and general wash water. The stills generally operate for approximately 110 days each year from mid-August through October. Wastewater from the stills is combined with tank wash and general wash water prior to discharging to the land application areas. Prior to 1995, the land application area consisted of approximately 36.8 acres adjacent to the Winery. Starting in 2000 the land application area was expanded in stages to a total of 106 acres. Starting in 2004, O'Neill switched to sprinkler irrigation to more evenly distribute its wastewater and to provide for better management of its land application areas.

Wastewater from the Winery is collected and routed through a single screening unit to remove larger solids before it is discharged to the land application areas. In 2003, the Discharger began segregating its high salinity waste streams including cooling water blow down, boiler blow down, and water softener regenerant to its Class II surface impoundment.

Samples of the wastewater are collected and analyzed on a weekly, monthly, or quarterly basis. The chemical makeup of the wastewater varies throughout the year depending on the season and facility

operations. Table 1 presents average flows and wastewater characteristics from 2008 through 2012 broken down by month:

TABLE 1. Wastewater Characteristics

	Flows (mgd)	BOD (mg/L)	Total Nitrogen (mg/L)	EC (umhos/cm)	TDS (mg/L)	FDS (mg/L)
January	0.049	2,908	36	845	1,018	426
February	0.054	2,862	14	692	817	513
March	0.045	2,310	11	817	752	395
April	0.052	2,244	11	809	424	242
May	0.049	1,214	7.1	706	354	220
June	0.084	998	6.8	835	430	275
July	0.108	1,165	6.6	835	410	258
August	0.223	3,045	10	1,054	505	253
September	0.429	5,034	121	2,230	3,928	1,200
October	0.373	5,771	163	2,310	4,123	1,633
November	0.273	4,638	172	1,746	3,441	1120
December	0.101	2,959	78	1,013	1,491	580

The Discharger also collects samples for analysis of individual salt constituents on a quarterly basis. Table 2 presents wastewater concentrations for individual salt constituents from 2008 through 2012 broken down by quarter:

TABLE 2. Salinity Constituents

	Bicarbonate as $CaCO_3$ (mg/L)	Dissolve Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
1st Quarter	134	31.5	7	224[1]	47.8	76.6[1]	53.4
2nd Quarter	167	38.3	10.2	46.8	11.4	27.1	20.4
3rd Quarter	120	36.7	10.9	39	22.8	28.5	28.1
4th Quarter	19	59.9	27.3	47	463	28.1	394

1 Elevated concentration due to spikes in samples collected in 2008 and 2009. Since 2009 sodium and chloride concentration during the first quarter are similar to samples collected during the rest of the year.

The wastewater is high in organics, nitrogen, and salts particularly potassium. As shown in the tables above, wastewater flows and constituent concentrations are significantly higher during the crush and stillage seasons from mid-August through November. The Winery stillage was characterized in 1999 and 2000. Average concentrations were reported as, 4,287 mg/L for BOD, 190 mg/L for total nitrogen, 2,712 mg/L for EC, 1,200 mg/L for potassium, 23 mg/L for sodium, 1,200 mg/L for sulfate, 64 mg/L for chloride, 80 mg/L for calcium, 61 mg/L for magnesium, and 73 mg/L for nitrate.

Various residual solid wastes, including pomace (grape seeds, pulp, and skins), grape stems and leaves, spent diatomaceous earth from wine filtration, and recovered material from the wastewater

screens are generated at the Winery on a regular basis. These materials are stored on an asphalt pad and remove daily by an off-site contractor. According to O'Neill, the organic material is distributed to local dairies for use as animal feed, while the diatomaceous earth and green waste is taken to a composting facility.

Proposed Changes

The Discharger plans to increase its winery production ultimately crushing approximately 200,000 tons of grapes, and producing up to 15 million gallons of wine annually. No increase in distillation activities or volume of stillage waste is proposed. To address increased wastewater generation associated with the Winery expansion, the Discharger purchased approximately 50 acres of land just east of its existing land application areas. With the additional 50 acres, the land available for the application of wastewater will total about 156 acres. In 2011, the Discharger purchased an additional 77 acres of agricultural land north of the existing land application area and is in the process of purchasing an additional 62 acres of agricultural land south of its existing land application area. In the future, the Discharger could potentially add this 139 acres of land in addition to approximately 50 acres of vineyard west of Lac Jac Avenue, to its land application area for a total of about 345 acres, if needed.

The Discharger also plans to change its cropping plan to better utilize the land application areas and improve crop uptake of waste constituents. According to the RWD the Discharger will switch to a double crop plan with field crops such as sudan grass and a winter forage. The RWD includes various scenarios for existing (60 million gallons per year) and future flows (80 million gallons per year) utilizing a mixture of single or double cropped fields to evaluate nutrient and hydraulic loading rates.

The RWD includes a water balance that addresses current and future flows to the land application area. Based on the water balance, at 80 million gallons, wastewater from the Winery will account for about 30 to 35 percent of the crops irrigation requirements. Supplemental irrigation water will be primarily surface water from the Consolidated Irrigation District with a TDS of about 27 mg/L, or groundwater from the newly installed standby well with a TDS of about 190 mg/L.

Groundwater Conditions

The Winery and land application areas lie adjacent to the Kings River on the eastern side of the San Joaquin Valley. The area is underlain by river channel and alluvial fan deposits. Soil borings logs show predominantly fine to medium grained sand with interbedded silts and clays down to about 65 feet below ground surface (bgs). Some borings show a dense layer of silt (or hardpan) at about 10 to 15 feet bgs.

There are seventeen monitoring wells used to monitor groundwater beneath the Winery and land application areas. Four monitoring wells (MW-1 through MW-4) were installed in 1995 to monitor the original 36.8 acre land application area and are currently inside of the expanded land application area. Ten additional monitoring wells (MW-5 through MW-14) were installed in 2001. Monitoring wells MW-5 and MW-6 were installed east and up-gradient between the Kings River and land application areas. The remaining monitoring wells MW-7 through MW-14 were installed around the perimeter of the site to the north, south, and east of the land application areas. Three additional monitoring wells SI-1, SI-2, and SI-3 were also installed in 2001, south of the land application area to monitor

groundwater around the Class II surface impoundment. Groundwater is first encountered at approximately 45 to 60 feet bgs.

Groundwater flow beneath the site is predominantly to the west-southwest away from the Kings River. Infiltration from the Kings River provides a source of high quality groundwater up-gradient of the site. Average groundwater quality for selected constituents calculated using quarterly sampling data from 2008 through 2012 is presented in Table 3 below:

TABLE 3. Groundwater Quality

Wells	EC umhos/cm	TDS mg/L	HCO_3^- mg/L	NO_3-N mg/L	Ammonia mg/L	Na mg/L	Cl mg/L	K mg/L	Fe[1] mg/L	Mn[1] mg/L	TOC mg/L
Interior and down-gradient monitoring wells											
MW-1	**1730**	**1116**	693	6	26	54	26	288	<0.1	**0.81**	9
MW-2	**1065**	**661**	513	0.4	20	33	18	109	0.2	**0.83**	8
MW-3	**1308**	**951**	670	1.2	2.9	57	29	235	**0.3**	**2.54**	6.8
MW-4	**1695**	**1155**	625	**16**	24	50	25	260	<0.1	**0.58**	7
MW-14	**1534**	**872**	614	3.4	28	63	30	171	**1.4**	**0.38**	11
Up-gradient and perimeter wells											
MW-5	464	362	189	9.6	<0.5	57	18	4.2	<0.1	<0.01	<1
MW-6	**1074**	**765**	658	4.2	0.6	55	25	5.2	0.2	**2.84**	5.2
MW-7	**1013**	476	451	4.8	5.5	42	19	87	<0.1	**0.39**	3.1
MW-8	**1259**	**906**	462	**33**	0.6	148	64	6.1	<0.1	0.04	1.9
MW-9[1]	631	448	133	**27**	<0.5	35	10	2.6	<0.1	<0.01	1
MW-10	**1618**	**1193**	406	**69**	0.6	155	45	5.6	<0.1	<0.01	2.1
MW-11[2]	**1554**	**1118**	399	**39**	<0.5	101	58	5.9	<0.1	<0.01	2.5
MW-12	816	**862**	261	**38**	0.6	111	16	4.9	<0.1	<0.01	1.1
MW-13	**1153**	**992**	401	**16**	0.6	120	88	3.7	<0.1	0.01	1.5
Wells around Class II surface impoundment											
SI-1	**1114**	**765**	350	**36**	0.6	150	31	5.2	0.1	<0.01	1.1
SI-2[3]	696	438	260	**13**	1	20	13	29	0.1	0.05	1.4
SI-3	880	**618**	295	**30**	3.9	82	20	15	0.1	0.02	1.9
MCL[4]	900/1600[6]	500/ 1000[6]		10[5]			250/ 500[6]		0.3[6]	0.05[6]	

EC =Electrical Conductivity, TDS=Total Dissolved Solids, HCO_3^- = bicarbonate as $CaCO_3$, NO_3-N=Nitrate as nitrogen, Ammonia=ammonia as nitrogen, Na=Sodium, Cl=Chloride, K=Potassium, Fe=Iron, Mn=Manganese, and TOC=Total Organic Carbon

1. Well periodically dry. Average based on 10 samples.
2. Well dry from 2008 through most of 2011. Average based on 3 samples.
3. Well periodically dry. Average based on 13 samples.
4. MCL = Maximum Contaminant Level. Concentrations that exceed these water quality objectives are bolded.
5. Primary MCL for NO_3-N + NO_2-N.
6. Secondary MCL. Recommended/Upper.

In May 2007, O'Neill installed two additional up-gradient monitoring wells (MW-15 and MW-16) along the eastern boundary of the expanded land application area to evaluate groundwater conditions prior

to the application of wastewater to this area. These wells were sampled three times in 2007 following their installation and twice in 2011. Analytical results from the limited sampling of MW-15 and MW-16 are presented in Table 4.

TABLE 4. Groundwater data for MW-15 and MW-16

Wells	Date	EC umhos/cm	TDS mg/L	HCO_3- mg/L	NO_3-N mg/L	Ammonia mg/L	Na mg/L	Cl mg/L	K mg/L	Fe mg/L	Mn mg/L	TOC mg/L
MW-15	6/4/07	**1090**	740	335	**16.8**	<0.5	94	84	6.7	<0.1	<0.01	1.9
	7/26/07	**1080**	720	388	7.7	0.11	108	71	8.6	0.2	<0.01	ns
	8/1/07	**1100**	762	314	**20.9**	<0.5	89	69	6.8	<0.1	<0.01	ns
	7/19/11	694	530	229	9.1	<0.5	58	34	4.4	<0.1	<0.01	<1
	8/22/11	772	540	272	10	<0.5	64	39	3.6	<0.1	<0.01	<1
MW-16	6/4/07	772	**673**	335	7.3	<0.5	79	34	5	<0.1	<0.01	7.7
	7/26/07	716	480	307	5.5	<0.5	89	32	6.5	0.14	<0.01	ns
	8/1/07	783	**566**	314	7.7	<0.5	78	31	5.7	<0.1	<0.01	ns
	7/19/11	561	425	234	2.6	<0.5	57	16	3.8	<0.1	<0.01	<1
	8/22/11	551	420	245	2.6	<0.5	60	17	3.2	<0.1	<0.01	<1
MCL[1]		900/1600[3]	500/ 1000[3]		10[2]			250/ 500[3]		0.3[3]	0.05[3]	

EC=Electrical Conductivity, TDS=Total Dissolved Solids, HCO_3^-=bicarbonate as $CaCO_3$, NO_3-N=Nitrate as nitrogen, ammonia=ammonia as nitrogen, Na=Sodium, Cl=Chloride, K=Potassium, Fe= Iron, Mn=Manganese, and TOC=Total Organic Carbon

1. MCL = Maximum Contaminant Levels. Concentrations that exceed these water quality objectives are bolded.
2. Primary MCL for NO_3-N + NO_2-N.
3. Secondary MCL. Recommended/Upper.

The elevated EC and salinity constituents in MW-15 and MW-16 in 2007 are likely the result of inadequate development of the wells. Samples collected in 2011 for EC, TDS, sodium, chloride, and bicarbonate were significantly lower than those in 2007, following installation of the monitoring wells.

Groundwater quality is discussed below:

a. Up-gradient groundwater quality is best defined by monitoring well MW-5 on the southeast corner of the existing land application areas, MW-15 and MW-16 on the eastern boundary of the expansion area and closer to the Kings River, and MW-9 north and west of the Winery and outside of the influence from the land application areas. The average EC and TDS in these wells ranges from 445 to 772 umhos/cm and 321 to 540 mg/L, respectively.

b. The interior, and down-gradient monitoring wells, (MW-1, MW-2, MW-3, MW-4, and MW-14) contain EC and TDS concentrations in excess of the recommended secondary Maximum Contaminant Levels (MCLs) of 900 umhos/cm and 500 mg/L, and in some cases the upper secondary MCLs of 1,600 umhos/cm and 1,000 mg/L, respectively. These wells also contain manganese in excess of the secondary MCL of 0.05 mg/L with average concentrations ranging from 0.33 mg/L in MW-4 and MW-14 to 1.71 mg/L in MW-3. These wells show little or no nitrate but high ammonia confirming reducing conditions beneath the site. Bicarbonate, calcium, magnesium, and total organic carbon (TOC) are also elevated, indicating general

organic overloading of the land application areas. These wells also show high potassium at concentrations of 100 to 300 mg/L, indicating overloading for potassium as well.

c. Monitoring well MW-6, just inside of the land application areas and north of MW-5, appears to be impacted by the discharge with an average EC and TDS of 1,044 umhos/cm and 749 mg/L, respectively. MW-6 also shows elevated concentrations of TOC and bicarbonate, as well as manganese at 2.45 mg/L, which exceeds the secondary MCL for manganese of 0.05 mg/L. Prior to 2007, however, this well was similar in quality to MW-5. Since 2007 this well has shown a steady increase in constituent concentrations, possibly due to over application of wastewater in this area or damage to the well.

d. Monitoring wells MW-10 and MW-11 on the far western boundary of the site have the highest concentration of NO_3-N at 68 and 39 mg/L, respectively. These monitoring wells also have some of the highest EC and TDS concentrations at 1,608 to 1,156 umhos/cm and 1,183 to 1,118 mg/L, respectively. However, MW-10 and MW-11 do not show elevated bicarbonate, potassium, and TOC typical of groundwater impacted by the discharge. In addition, monitoring wells MW-9 and MW-12, with lower salinity and nitrate, lie between MW-10 and MW-11 and the land application areas. These monitoring wells are likely influenced by surrounding activities or unknown discharges from the Winery.

e. Monitoring well MW-13, just south of the Winery buildings, has an average EC and TDS of 1,163 umhos/cm and 1,018 mg/L respectively. This monitoring well also shows high sodium and chloride at 121 mg/L and 92 mg/L, but bicarbonate, potassium, and TOC are low. This monitoring well may be influenced by the Winery's main septic system just up-gradient of MW-13 and/or from the septic system for Riverview Elementary School to the south.

With the conditions in this Order and accompanying Cease and Desist Order (CDO) R5-2014-XXXX, expansion of the land application areas, and salinity control measures previously implemented by the Discharger groundwater conditions are expected to improve over time.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Facility lies within the Consolidated Hydrologic Area (551.70). Local drainage is to the Kings River.

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, revised January 2004 (Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, and contains implementation plans and policies for protecting all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. The receiving water for this discharge is groundwater. The beneficial uses of underlying groundwater in the area include municipal and domestic supply, agricultural supply, industrial process supply, and industrial service supply.

The Basin Plan identifies the greatest long-term water quality problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including the following discharge limits:

a. The incremental increase in salts from use and treatment must be controlled to the extent possible. Dischargers are required to limit the increase in EC of a point source discharge to land to a maximum of 500 umhos/cm.

b. Discharges to areas that may recharge good quality groundwater shall not exceed and EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L

According to the Basin Plan effluent limits established for Municipal discharges "generally" apply to industrial discharges. The Basin Plan does allow for an exception to the incremental EC increase limit for food processing industries that discharge to land, where the discharge exhibits a disproportionate increase in EC over source water due to unavoidable concentrations of organic dissolved solids, provided the Discharger implements BPTC to minimize the salinity of the discharge and beneficial uses are protected. The Discharger collects samples for TDS and FDS on a monthly basis. Average monthly concentrations for TDS and FDS range from about 350 to 4,000 mg/L and 220 to 1,600 mg/L, respectively. In general, the results of this sampling show a 30 to 60 percent increase in TDS due to the presence of organic dissolved solids. The Discharger also implements best management practices including segregation of its high salinity waste streams to minimize the salinity of its discharge. Thus, the discharge is eligible for the Basin Plan exception. Given this, it is not appropriate to generally apply the 1,000 umhos/cm EC limit to this industrial discharge.

Antidegradation

State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*Anti-Degradation Policy*), requires the regional water boards to maintain high quality waters of the State until it is demonstrated that any change in quality will not result in water quality less than that described in State and Regional Water Board policies or exceed water quality objectives, will not unreasonably affect beneficial uses and is consistent with the maximum benefit to the people of the State.

As explained in the Findings in the WDRs, the Discharger provides or will provide treatment and control measures that includes: (a) segregation of high salinity waste streams to a Class II surface impoundment; (b) screening to remove solids; (c) reuse of wastewater for irrigation of crops at agronomic rates; (d) weekly average BOD loading rates of 100 and 150 lbs/acre/day; (e) standard operating procedures for cleaning and sanitation to promote water conservation efforts and minimize the use of cleaning chemicals; (f) employee training programs to address water conservation and source reduction; (g) sprinkler irrigation of crops; (h) dilution with higher quality irrigation water; and (i) appropriate solids handling and disposal practices.

While this Order authorizes degradation for salinity, the degradation is not anticipated to result in water quality less than water quality objectives or unreasonably affect beneficial uses after the Discharger implements all the required provisions of both the WDRs and CDO R5-2014-XXXX. Therefore, this Order is consistent with the Anti-Degradation Policy since: (a) the Discharger has or will implement BPTC to minimize degradation, (b) the degradation will not unreasonably affect present and anticipated future beneficial uses of groundwater, or result in water quality less that water quality objectives, and (c) the limited degradation is of maximum benefit to people of the State, due to the economic benefits provided by the operation of the Winery.

CEQA
On 24 January 2008, Fresno County adopted a Mitigated Negative Declaration in conjunction with a Conditional Use Permit (CUP 3205) for expansion of the existing Winery and land application area.

Title 27
Unless exempt, the release of designated waste is subject to full containment pursuant to Title 27 requirements. Here, the discharge is exempt from the requirements of Title 27 pursuant to the wastewater exemptions found at Title 27, sections 20090(b), since:

a. The Central Valley Water Board is issuing WDRs;
b. The discharge is in compliance with the Basin Plan; and
c. The treated effluent does not need to be managed as hazardous waste.

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions
The proposed Order prohibits discharge to surface waters and drainage courses. The proposed Order sets a monthly average daily flow limit of 0.61 mgd, and sets a flow limit of 80 million gallons per year.

The proposed Order sets a weekly average BOD loading limit of 100 lbs/acre/day where historic discharges have degraded and/or polluted underlying groundwater, and 150 lbs/acre/day for the remaining land application areas, and requires wastewater and fertilizer applications be at reasonable agronomic rates considering climate, soil, crop type, and irrigation that will not cause or contribute to exceedance of the Groundwater Limitations of this Order. The proposed Order includes a Provision requiring the Discharger to prepare a Nutrient and Wastewater Management Plan to that includes procedures for monitoring the land application areas, record keeping, and tissue sampling to establish crop uptake to ensure application at reasonable agronomic rates. The accompanying CDO R5-2014-XXXX requires compliance with these limits within 4 years following adoption of this Order.

The proposed Order requires monitoring of the discharge for BOD, nitrate, TKN, ammonia, TDS, FDS, and general minerals. The Order also requires daily inspections of the land application areas. The proposed Order also includes a provision to establish a vadose zone monitoring system to measure the quality of the percolated beneath the land application areas. In addition, the proposed Order includes Provisions that requires the Discharger to evaluate its wastewater flows and provide an appropriate plan that accommodates allowable wastewater storage and seasonal precipitation with a time schedule to provide adequate wet weather storage, if necessary, and to prepare a Solids Management Plan to characterize solids removed during the grape processing and wine making processes and determine appropriate disposal methods.

The proposed Order would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greater. The proposed Order sets specific groundwater limits for nitrate as nitrogen at the Primary MCL of 10 mg/L and EC at the lower recommended secondary MCL of 900 umhos/cm.

Monitoring Requirements

Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. Water Code section 13268 authorizes the assessment of administrative civil liability where appropriate. The proposed Order includes effluent and groundwater monitoring requirements. In addition, the proposed Order requires loading calculations for organics, nutrients, and salts including potassium. This monitoring is necessary to characterize the discharge, and evaluate compliance with effluent limitations and discharge specifications prescribed in the Order.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if new technical information is provided or if applicable laws and regulations change.