CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-0087

WASTE DISCHARGE REQUIREMENTS

FOR
MODERN DEVELOPMENT COMPANY A LIMITED PARTNERSHIP
dba BIANCHI VINEYARDS
EMERALD GLEN WINERY
FRESNO COUNTY

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

1. Modern Development Company a Limited Partnership (Discharger) dba Bianchi Vineyards (Bianchi) owns and operates the Emerald Glen Winery (Winery). Waste Discharge Requirements (WDRs) Order 95-166, adopted by the Central Valley Water Board on 23 June 1995, prescribes requirements for the discharge of winery wastewater to ponds. The Discharger no longer discharges to ponds; wastewater is discharged to a seven acre vineyard (Land Application Area or LAA). Order 95-166 will be rescinded and replaced with this Order.

2. The Discharger owns and operates the Winery that generates the waste and the LAA and is responsible for compliance with these WDRs.

3. The Winery is at 5806 North Modoc Avenue near Biola and is in Section 11, T13S, R17E, MDB&M. The Winery and LAA occupy Assessor's Parcel Number (APN) 015-350-16, as shown on Attachment A, which is attached hereto and made part of this Order by reference.

Existing Facility and Discharge

4. The Winery operates year-round. Grapes are generally crushed from July through September. Fermented wine is filtered and bottled/boxed for shipment. The Winery does not distill. The Winery also provides custom storage and blending services for other wineries.

5. Winery wastewater consists of tank and line wash water, diatomaceous earth filter rinse water, equipment wash water, and water softening regenerate. The water softener is currently regenerated using sodium chloride. Tank and line sanitation generally consists of a fresh water rinse, a caustic rinse (potassium hydroxide), a fresh water rinse, a citric acid rinse, and a fresh water rinse. The Winery's boiler is self-contained and does not produce blow-down water. Winery wastewater is initially routed to 9 tanks with a total storage capacity of 200,903 gallons. Wastewater is periodically pumped through a diatomaceous earth filter and stored in 3 tanks with a total storage capacity of 88,143 gallons. Upon the accumulation of sufficient volume for discharge (approximately 40,000 to 45,000 gallons), the treated wastewater is then mixed with agricultural supply well water at a ratio of approximately 10 parts well water to each part wastewater and applied to the seven-acre LAA. Wastewater is discharged at a rate of 42 gallons per minute (gpm) and blended with about 420 gpm of agricultural supply well water. The Discharger grows between the vines a cover crop that consists of a non-specific blend of plants, including clover. The cover crop is mowed, dried, and disked into the vineyard.

6. The average quality of the wastewater, agricultural supply well water, and resulting blend for 2013 is shown in the table below:

Wastewater and Agricultural Supply Well Data

Constituent (Units)	Wastewater Average	Agricultural Supply Well Average	Blended Water Average
EC[1] (umhos/cm)	2,142	360	530
TDS[2] (mg/L)	1,979	304	588
FDS[3] (mg/L)	1,133	210	312
Sodium (mg/L)	244	7	59.8
Chloride (mg/L)	59	16	19.8
Potassium (mg/L)	247	2.3	28
Nitrate as Nitrogen (mg/L)	4	3	1.2
Total Nitrogen (mg/L)	37	3	3.7
BOD[4] (mg/L)	2,477	--	272
Bicarbonate (as $CaCO_3$) (mg/L)	732	127	193
pH (range)	5.1-8.3	7.4-8.1	6.3-8.0

[1] EC = electrical conductivity at 25 ° C.
[2] TDS = total dissolved solids.
[3] FDS = fixed dissolved solids.
[4] BOD = Five-day biochemical oxygen demand

7. Source water supply is provided by an on-site domestic well. Results from a sample collected in 2009 indicate the source water EC is approximately 560 umhos/cm.

8. The Discharger indicated during a March 2014 inspection that the crush season average daily flows of 8,000 gpd, seven days per week, authorized by Order 95-166 are consistent with present and foreseeable operations at the Winery. The Discharger also indicated that a change in allowable off-season flows from 2,300 gpd to 3,000 gpd, five days per week, would increase operational flexibility and better reflect the variability of existing Winery operations. Operation at the flows described herein would result in an annual discharge of approximately 1.13 million gallons.

9. At the flows authorized in this Order, as described in Finding 8, approximately 50 lbs/acre/year of total nitrogen would be applied to the LAA. The nitrogen uptake rate for grapes specified in the Western Fertilizer Handbook is 125 lbs/acre/year. The potassium loading rate would be about 333 lbs/acre/year. The potassium uptake rate for grape vines is about 162 lbs/acre/year. If the cover crop was removed, it could also remove about 300 lbs/acre/year of nitrogen and 300 lbs/acre per year of potassium.

10. At a discharge flow rate of 42 gpm, it would take about 18 hours to discharge 45,000 gallons of wastewater. The 24-hour BOD loading rate would be about 137 lbs/acre/day. Assuming a minimum 5-day cycle, the cycle average BOD loading rate would be about 27 lbs/acre/day.

11. At the proposed flows, the hydraulic loading rate of the wastewater and irrigation water would be about 5.5 acre-feet per year, which would exceed the typical agronomic application rate for grape vines, but could be reasonable for grape vines and a properly managed cover crop.

12. Solids generated at the Winery include leaves, stems, and grape skins and seeds associated with the initial crushing/pressing process; tank lees associated with tank cleaning; and spent diatomaceous earth associated with wine and wastewater filtration. The leaves, stems, and grape skins and seeds historically have been discharged to a small plot land to the north of the winery, as shown on Attachment A. During a March 2014 inspection, the Discharger indicated that it has contracted with a local solid waste hauler to remove the leaves, stems, and grape skins and seeds that are generated in the future. Tank lees and spent diatomaceous earth are bagged and hauled off-site by a solid waste hauler for disposal.

Site-Specific Conditions

13. Surface water drainage is to the San Joaquin River, which is adjacent to the Winery to the north, as shown in Attachment A, attached hereto and part of this Order by reference. The site is within the South Valley Floor Hydrologic Unit, Fresno Hydrologic Area (No. 551.30), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986. The disposal ponds and vineyard appear to be within the 100-year flood plain, as shown on Federal Emergency Management Agency's Flood Insurance Rate Map No. 06019C1525H.

14. Several residential homes are scattered within a mile radius of the Winery. The Winery is surrounded primarily by agricultural land. Based on pesticide use permits from the Fresno County Department of Agriculture, crops grown in the area include almonds, grapes, pecans, pistachios, pomegranates, and walnuts. A March 2014 inspection of the area also shows that areal lands are also used for irrigated pasture.

15. The wind in the area blows predominantly from the northwest.

16. Soils in the area are Hanford coarse sandy loam, and Hanford sandy loam, benches. These soils are well drained and prime farmlands with 2s and 2e classifications.

Groundwater Conditions

17. The California Department of Water Resources' map titled, *Lines of equal Depth to Water Wells in Unconfined Aquifer, Spring of 2010*, indicates that groundwater beneath the site is about 60 to 70 feet below ground surface in an unconfined aquifer. The groundwater gradient is variable.

18. A portion of the boring log for an on-site domestic well is presented below. The well is drilled to a depth of 232 feet.

Well Log Results

Depth (feet)	Soil Type
0-15	Sand with rock
15 to 23	Green clay
23 to 34	Coarse sand
34 to 67	Sandy brown clay
67 to 75	Coarse sand
75 to 93	Brown clay

It is not known whether the clay layers are continuous or extensive such that they would inhibit the migration of wastewater to groundwater.

19. The U.S. Geological Survey (USGS) sampled a well on the south east corner of the Winery property in 1955. The well reportedly had a hole depth of 105 feet. Specific water quality results from the sampling event are presented below:

USGS Well Data

Constituent (Units)	**USGS Well 364912120050101**
EC[1] (umhos/cm)	872
TDS (mg/L)	480
Sodium (mg/L)	49
Chloride (mg/L)	14
Calcium (mg/L)	49
Magnesium (mg/L)	19
Sulfate (mg/L)	12
Bicarbonate (mg/L)	340
pH (range)	7.7

[1] Calculated from TDS.

20. Available agricultural supply well, source water well, and USGS well data indicate that groundwater underlying the Winery is of good quality and meets the State drinking water Primary and Secondary Maximum Contaminant Levels (MCLs), discussed below.

Basin Plan, Beneficial Uses, and Regulatory Considerations

21. The Winery and Vineyard are geographically located in the Tulare Lake Basin; however, site surface water drainage is to the San Joaquin River. Groundwater is in the San Joaquin Valley Groundwater Basin, Kings Subbasin No. 5-22-08, which is in the Tulare Lake Basin.

22. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (Revised January 2004) and the *Water Quality Control Plan for the Sacramento River Basin and San Joaquin*

River Basin, Fourth Edition (Revised October 2011) (hereafter individually Tulare Lake Basin Plan and Sacramento-San Joaquin Basin Plan or collectively Basin Plans) designate beneficial uses, establish water quality objectives, contain implementation plans and policies for protecting waters of the basins, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plans.

23. The beneficial uses of the San Joaquin River, as stated in the Sacramento-San Joaquin Basin Plan, are municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat; cold freshwater habitat; wildlife habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development.

24. The beneficial uses of underlying groundwater, as set forth in the Tulare Lake Basin Plan, are MUN, AGR, industrial service supply (IND), PRO, REC-1, and REC-2.

25. The Tulare Lake Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

26. The Tulare Lake Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

27. The Tulare Lake Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Tulare Lake 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.

28. 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.

29. 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 Tulare Lake 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.

30. In the absence of specific numerical water quality limits, the Tulare Lake 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 irrigation water has an EC less than 700 µmhos/cm. 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 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

31. The list of crops in Finding 14 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area.

32. The Tulare Lake 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 Tulare Lake Basin Plan recognizes that degradation is unavoidable until a mechanism to carry salts out of the basin is established. To limit the degradation, the Tulare Lake Basin Plan establishes several salt management requirements, including:

    a. Industrial dischargers shall be required to limit the increase in EC of a point source discharge to surface water or land to a maximum of 500 umhos/cm. A lower limit may be required to assure compliance with water quality objectives.

    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 1.0 mg/L.

33. The Tulare Lake Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm when the discharger technically demonstrates that allowing a greater net incremental increase in EC will result in lower mass emissions of salt and in conservation of water, provided that beneficial uses are protected.

34. Neither surface nor ground waters shall be used to dilute wastes for the primary purpose of meeting waste discharge requirements, where reasonable methods for treating the wastes exist. Blending of wastewater with surface or ground water to promote beneficial reuse of wastewater in water short areas may be allowed here the Central Valley Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein.

35. Excessive application of high organic (as measured by Biochemical Oxygen Demand or BOD) strength wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater with nitrogen species and metals, as discussed below. Such groundwater degradation can be prevented or minimized through implementation of best management practices which include planting crops to take up plant nutrients and maximizing oxidation of BOD to prevent nuisance conditions.

36. With regard to BOD, excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals. Over application of organic wastes to land can also cause groundwater increases in bicarbonate alkalinity.

37. Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the ground surface, within the

evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. 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.

38. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency, cites BOD loading rates in the range of 36 to 600 lb/acre-day to prevent nuisance, but indicates the 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 rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have been done are not readily adapted to the varying soil, groundwater, and climate conditions that are prevalent throughout the region.

39. The California League of Food Processors' *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 lb/ac/day; depth to groundwater greater than 5 feet) Indistinguishable from good farming operations with good distribution important.

    b. Risk Category 2: (less than 100 lb/ac/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 lb/ac/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.

40. 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 prevent groundwater degradation due to reduced metals.

41. This Order sets a cycle average BOD loading rate for the LAAs of 100 lbs/acre/day.

Antidegradation Analysis

42. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits 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, and

    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.

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

43. Constituents of concern that have the potential to degrade groundwater include salts (primarily EC, TDS, sodium, potassium, and chloride), nitrogen, and organics, as discussed below:

    a. **TDS and EC.** The ratio of TDS to EC to is approximately 0.9. The FDS makes up about 57% of the TDS. The TDS and FDS results indicate that volatile dissolved solids (VDS) make up the remainder of the TDS or 43%. This with the EC results indicates that a large fraction of the TDS is likely organic in nature and the unblended Winery wastewater qualifies for an exception to the Basin Plan EC limit increase of 500 umhos/cm. Under such circumstances, it normally is also not reasonable to generally apply the Tulare Lake Basin Plan effluent EC limit of 1,000 umhos/cm for discharges over good quality groundwater. However, both limits are moot in this case as the Basin Plan does allow dilution to meet effluent limits where beneficial uses are protected. In this case, the average blended water EC at 530 umhos/cm is protective of the most stringent beneficial use for irrigation of the most salt sensitive crops. This Order carries over from Order 95-166 the FDS limit of source water plus 330 mg/L and applies it at the mixed discharge to the vineyard. The discharge is not expected to cause groundwater to exceed applicable groundwater quality objectives for EC or TDS. Nonetheless, there may be room to improve wastewater EC levels and TDS concentrations. Therefore, this Order requires the Discharger to submit and implement a Salinity Management Plan.

    b. **Sodium.** The average winery wastewater sodium concentration of 244 mg/L is not ideal for direct discharge, and the Winery currently uses sodium chloride to regenerate its water softening unit. The average sodium concentration of 60 mg/L in the blended water, however, is suitable for irrigation of the most salt sensitive crops. Therefore, the discharge is not expected to degrade groundwater with sodium to the extent that it causes exceedances of water quality objectives. As described above, this Order does require the Discharger to submit a Salinity Management Plan. The Plan must examine whether there are measures that can be implemented to reduce wastewater sodium concentrations.

    c. **Potassium.** As described in Finding 9, the potassium loading rate would be about 333 lbs/acre/year. This is about twice the crop uptake rate for grape vines of 162 lbs/acre/year. There is no water quality objective for potassium, but excess potassium leached to groundwater can contribute to increases in EC and TDS. Generally, plants will take up more potassium than required if it is available. Removal of the cover crop could also remove an additional 300 lbs/acre/year of potassium from the vineyard soils. To ensure that potassium in the discharge does not cause exceedances of water quality objectives or adversely impact designated beneficial uses of groundwater, this Order requires the submittal and implementation of a Salinity Management Plan and a Wastewater and Nutrient Management Plan.

    d. **Chloride.** Both the average wastewater and blended water chloride concentrations of 59 mg/L and 20 mg/L, respectively, are less than the Basin Plan effluent limit of 175 mg/L and suitable for the irrigation of the most salt sensitive crops. The discharge is not expected to degrade underlying groundwater with chloride to the extent that it exceeds an applicable water quality objective or adversely affects designated beneficial uses.

    e. **Nitrogen and Nitrate.** For nutrients such as nitrate, the potential for groundwater degradation depends on wastewater quality, crop uptake, and the ability of the vadose zone below the LAAs to support nitrification and denitrification to convert the nitrogen to nitrogen gas before it reaches the water table. The wastewater is stored in concrete tanks prior to discharge. As described in Finding 9, at the flows authorized by this Order, the wastewater will add approximately 50 lbs/acre/year, which is less than half of the uptake

rate for grape vines. The Discharger also grows a cover crop between the vines. The Discharger will likely have to fertilize the vines to meet crop nitrogen requirements. To ensure that nitrogen in the wastewater soil amendments do not cause degradation of underlying groundwater to the extent that it causes an exceedance of the State Secondary MCL of nitrate nitrogen and nitrite nitrogen of 10 mg/L, this Order requires the Discharger to submit and implement a Wastewater and Nutrient Management Plan.

Solids consisting of leaves, stems, seeds, and skins historically have been piled on a small plot of land just north of the winery. If not properly managed and/or disposed of, these solids could be a source of nitrogen discharges to groundwater that could cause impermissible degradation and/or pollution. This Order requires the Discharger to characterize and remove the solids and to dispose of them properly. Any future onsite application of solids must be performed in a manner consistent with an approved Wastewater and Nutrient Management Plan.

f. **Organics.** As described in Findings 35 through 37, excessive organic loading can cause the dissolution of metals, particularly iron, manganese, and arsenic that can migrate to groundwater and cause exceedances of water quality objectives. It can also cause increased groundwater bicarbonate alkalinity, which can contribute to increases in EC and TDS. Finding 10 indicates that, at the flows authorized by this Order, the cycle average BOD loading rates will be low at 27 lbs/acre and should not cause or contribute to groundwater degradation that exceeds water quality objectives or to an extent that adversely affects beneficial uses.

As mentioned above (Finding 43.e), solids consisting of leaves, stems, seeds, and skins historically have been piled on a small plot of land just north of the winery. Land application in this manner may create anaerobic conditions in the soils that are conducive to the migration of metals to groundwater increases in groundwater alkalinity, as described above. This Order requires the Discharger to characterize and remove the existing solids and to dispose of them properly. Any future onsite application of solids must be performed in a manner consistent with an approved Wastewater and Nutrient Management Plan.

44. This Order establishes effluent and groundwater limitations for the Winery that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Tulare Lake Basin Plan.

45. The Discharger provides, or will provide, as required by this Order, treatment and control of the discharge that incorporates:

a. Mechanical removal of leaves, stems, and solids;

b. Storage of wastewater in concrete tanks;

c. Fine filtration of wastewater to remove solids and lower BOD concentrations;

d. Blending of wastewater for reuse in a water short area;

e. Application of wastewater at agronomic rates to facilitate the uptake of salts and nutrients at agronomic rates;

f. Appropriate solids handling practices; and

g. Preparation and implementation of a Salinity Management Plan and a Wastewater and Nutrient Management Plan.

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

Antidegradation Conclusions

46. This Order establishes terms and conditions to ensure that the authorized discharge will not degrade groundwater to the extent that it exceeds water quality objectives or unreasonably affects present and anticipated future beneficial uses of groundwater.

47. 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 4 full time and 8 seasonal employees. The Winery also provides additional benefits to California and Fresno County and Madera 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 some limited degradation of groundwater for salinity and nitrate, but the degradation is not anticipated to result in water quality less than water quality objectives or unreasonably affect beneficial uses.

48. This Order is consistent with the *Anti-Degradation Policy* since: (a) the Discharger has or will 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.

Other Regulatory Considerations

49. 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.

50. Domestic wastes generated onsite are discharged to septic systems regulated by Fresno County.

51. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2B 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 of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

    b. Category B complexity, defined as: “Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units.”

52. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Title 27, section 20090 states in part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
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> ***
>
> (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 RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) the discharge is in compliance with the 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.

53. The discharges authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 section 20090(b) because:

i. The Central Valley Water Board is issuing WDRs.

ii. The discharge is in compliance with the Basin Plan, and;

iii. The treated effluent discharged to the ponds does not need to be managed as hazardous waste.

54. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger is covered under NPDES General Permit CAS000001.

55. Water Code section 13267(b) states:

> In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region … shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2014-0087 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

56. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California*

Well Standards Bulletin 74-90 (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

57. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with the California Code of Regulations, title 14, section 15301.

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

Public Notice

59. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

60. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

61. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order 95-166 is rescinded except for purposes of enforcement and, pursuant to Water Code sections 13263 and 13267, Modern Development Company a Limited Partnership (Discharger) dba Bianchi Vineyards, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following at the Emerald Glen Winery:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

3. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

5. Discharge of industrial wastewater to septic systems is prohibited.

6. Discharge of domestic waste to anything other than septic system or regularly serviced portable toilets is prohibited.

B. Flow Limitations

1. The average daily wastewater generation flow during the crush season (generally July through September) shall not exceed 8,000 gpd. The average daily wastewater generation flow the remainder of the year shall not exceed 3,000. The annual wastewater discharge flow shall not exceed 1.13 million gallons.

C. Discharge Specifications

1. The cycle average discharge BOD loading rate shall not exceed 100 lbs/acre/day.

2. 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.

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

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

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

6. All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

7. Objectionable odors shall not be perceivable beyond the limits of the property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions.

8. Storage of residual solids, including leaves, stems, skins, seeds, pomace and/or diatomaceous earth on areas not equipped with means to prevent infiltration, or a paved leachate collection system is prohibited.

9. The inorganic fraction of TDS (fixed dissolved solids or FDS) of the discharge shall not exceed the TDS of the water supply by more than 330 mg/L.

D. Land Application Area Specifications

1. For the purposes of this Order, “land application area” (LAA) refers to the discharge area described in Findings 1 through 3.

2. Tailwater shall not be discharged outside of the LAA.

3. Crops shall be grown in the LAA. 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. Discharge to the land application areas shall not be performed during a storm event, within 24 hours after a storm event of measurable precipitation, or when soils become saturated.

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

8. Land application of wastewater shall be managed to minimize erosion.

9. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:
   a. There shall be no standing water 48 hours after irrigation ceases;
   b. Tailwater ditches shall be maintained essentially 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 recycled water.

10. Irrigation of the LAAs shall occur only when appropriately trained personnel are in responsible charge of the operation.

11. LAAs shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.

12. Any tailwater shall be confined to the LAAs and shall not enter any surface water drainage course or storm water drainage system.

E. Groundwater Limitations

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:

1. Nitrate as nitrogen of 10 mg/L; and

2. For constituents identified in Title 22, the MCLs quantified therein.

F. Solids Disposal Specifications

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

1. Solids shall be removed from screens and sumps as needed to ensure optimal operation and adequate storage capacity.

2. Any handling and storage of residual solids shall be 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.

3. Residual solids may be discharged to the LAA only in a manner that is consistent with an approved Nutrient Management Plan and the Land Application Area Specifications of this Order.

4. If removed from the site, sludge, solid waste, and residual solids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for reuse as animal feed, or land disposal at facilities (i.e., landfills, composting facilities, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

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

G. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program R5-2014-0087, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

2. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

3. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain work plans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

4. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer

may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

5. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. 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.

6. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.

7. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

8. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

9. In the event of any change in control or ownership of the facility, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

10. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

11. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

13. **By 8 December 2014**, the Discharger shall submit a plan and schedule to characterize and remove the leaves, stems, and grape skins and seeds that have been piled on the property, as shown on Attachment A, and propose a suitable method for disposal. If application to the LAA is proposed as a method of removal and disposal, the plan must be consistent with an approved Wastewater and Nutrient Management Plan. The Discharger shall implement the approved plan and schedule as directed by the Executive Officer.

14. **By 8 December 2014**, the Discharger shall submit a Wastewater and Nutrient Management Plan. At a minimum the Plan must include proposed procedures for monitoring the land application areas including daily records of wastewater applications and acreages, proposed methods for establishing crop uptake of salts and nutrients, 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 proposed management practices to ensure wastewater, irrigation water, and commercial and organic fertilizers are applied at reasonable agronomic rates.

15. **By 8 December 2014**, the Discharger shall submit a Salinity Management Plan for Executive Officer approval describing methods it will use to determine all sources of salinity in the wastewater and measures it can implement to further reduce wastewater salinity. The plan shall include a proposed implementation schedule that the Discharger shall follow upon plan approval by the Executive Officer.

16. **By 8 December 2014,** the Discharger shall submit evidence, including appropriate photographs, demonstrating that the wastewater piping to the old wastewater ponds has been permanently severed.

17. If the Central Valley Water Board determines that the discharge has a reasonable potential to cause or contribute to an exceedance of a water quality objective, or to create a condition of nuisance or pollution, this Order may be reopened for consideration of additional requirements.

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.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water

Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

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

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, on 6 June 2014.

Original signed by:

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2014-0087

FOR
MODERN DEVELOPMENT COMPANY A LIMITED PARTNERSHIP
dba BIANCHI VINEYARDS
EMERALD GLEN 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 8.

Monitoring Location Name	Monitoring Location Description
INF-001	Location where a representative sample of the wastewater generation flow to the Winery's wastewater storage tanks can be obtained.
EFF-001	Location where a representative sample of the treated winery wastewater can be obtained.
EFF-002	Location where a representative sample of the irrigation supply water well can be obtained.
EFF-003	Location where a representative sample of the effluent blended with irrigation supply water can be obtained.
SW-001	Domestic well used for Winery operations.
SM-1 through SM-3	Soil monitoring.

INFLUENT MONITORING

The Discharger shall monitor the following at INF-001:

Frequency	Constituent/Parameter	Units	Sample Type
Daily	Flow	gpd	Continuous Meter

EFFLUENT MONITORING

The Discharger shall monitor effluent from the Winery at EFF-001, EFF-002, and EFF-003 as follows:

Frequency[1]	Constituent/Parameter	Units	Sample Type
Daily	Flow	gpd	Continuous Meter
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	BOD_5[2]	mg/L	Grab
Monthly	TDS	mg/L	Grab
Monthly	FDS	mg/L	Grab
Monthly	Potassium	mg/L	Grab
Monthly	Nitrate as nitrogen	mg/L	Grab
Monthly	Nitrite as nitrogen	mg/L	Grab
Monthly	Ammonia as nitrogen	mg/L	Grab
Monthly	Total Kjeldahl nitrogen	mg/L	Grab
Twice/Year[3]	General minerals[4]	mg/L	Grab

[1] Samples shall be collected as directed during discharges. If there is not discharger during a particular day, week, or month, self-monitoring reports shall note the absence of discharge.

[2] Samples from EFF-002 need not be sampled for BOD_5.

[3] Samples shall be taken once during the crush and once during the non-crush season.

[4] 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

SOURCE WATER MONITORING

The Discharger shall monitor the Winery's source water supply at SW-001:

Frequency	Constituent/Parameter	Units	Sample Type
Annually	EC	umhos/cm	Grab
Annually	General minerals[1]	mg/L	Grab

1 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.

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 gauge[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	Cycle average[6]	lbs/acre-day	Calculated
Nitrogen loading[5]			
Annual	From wastewater	lbs/acre-year	Calculated
Annual	From fertilizers	lbs/acre-year	Calculated
Potassium loading[5]			
Annual	From wastewater	lbs/acre-year	Calculated

1 Throughout the year 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.

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, and potassium.

6 The BOD loading rate shall be divided by the # of days between applications to determine the cycle average.

SOIL MONITORING

The Discharger shall establish with the concurrence of Central Valley Water Board staff, at least two soil profile monitoring locations within the Land Application Area and at least one 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[1]
Annually	Moisture Content	% volume	Grab
Annually	Soil pH	pH units	Grab
Annually	EC	umhos/cm	Grab
Annually	Sodium	mg/kg	Grab
Annually	Chloride	mg/kg	Grab
Annually	Potassium	mg/kg	Grab
Annually	Nitrate as nitrogen	mg/kg	Grab
Annually	Ammonia as nitrogen	mg/kg	Grab
Annually	Total Kjeldahl nitrogen	mg/kg	Grab

[1] Discrete samples to be analyzed shall be collected at 6-inches, 2-feet, 4-feet and 6-feet below ground surface (bgs).

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:

Modern Development Company a Limited Partnership
dba Bianchi Vineyards
Emerald Glen Winery
R5-2014-0087
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 Influent an 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 page 3.
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.

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 Influent and 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 monitoring.

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). For the purposes of crop uptake calculations, fixed dissolved solids uptake may be estimated as the sum macronutrients, micronutrients, and other ions (including sodium) taken up by the crop.
2. The monthly and annual discharge volumes during the reporting year expressed as million gallons and inches.
3. A monthly water 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/data-access/land-based-station-data/.

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 Monitoring Reporting

1. The results of the annual soil monitoring described on page 4.

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

Original signed by:

Ordered by:_____
PAMELA C. CREEDON, Executive Officer

6 June 2014

_____
(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 – ORDER R5-2014-0087
MODERN DEVELOPMENT COMPANY A LIMITED PARTNERSHIP
dba BIANCHI VINEYARDS
EMERALD GLEN WINERY
FRESNO COUNTY

Background
Modern Development Company a Limited Partnership (Discharger) dba Bianchi Vineyards (Bianchi), owns and operates the Emerald Glen Winery (Winery). Waste Discharge Requirements (WDRs) Order 95-166, adopted by the Central Valley Water Board on 23 June 1995, prescribes requirements for the discharge of winery wastewater to ponds. The Discharger no longer discharges to ponds; wastewater is now blended with high quality irrigation water and discharged to a seven acre vineyard (Land Application area or LAA).

Existing Facility and Discharge

The Winery operates year-round. Grapes are generally crushed from July through September. At a minimum, grapes from the seven acre vineyard or land application area (LAA) are crushed each year. Fermented wine is filtered and bottled/boxed for shipment. The Winery also provides custom storage and blending services for other wineries.

Winery wastewater consists of tank and line wash water, diatomaceous earth filter rinse water, equipment wash water, and water softening regenerate. The water softener is currently regenerated using sodium chloride. Tank and line sanitation generally consists of a fresh water rinse, a caustic rinse (potassium hydroxide), a fresh water rinse, a citric acid rinse, and a fresh water rinse. The Winery's boiler is self-contained and does not produce blow-down water.

Winery wastewater is initially routed to 9 tanks with a total storage capacity of 200,903 gallons. Two of the nine tanks are currently out of service but are being repaired. Wastewater is periodically pumped through a diatomaceous earth filter and stored in 3 tanks with a total storage capacity of 88,143 gallons. Total wastewater storage, assuming that the two out of service tanks are repaired is approximately 288,000 gallons or 36 days at the crush season flows authorized by this Order. Actual flows have been significantly less over the past several years. Upon the accumulation of sufficient volume for discharge (approximately 40,000 to 45,000 gallons), the treated wastewater is then mixed with agricultural supply well water at a ratio of approximately 10 parts well water to each part wastewater and applied to the seven-acre LAA. Wastewater is discharged at a rate of 42 gallons per minute (gpm) and blended with about 420 gpm of agricultural supply well water. The Discharger grows between the vines a cover crop that consists of a non-specific blend of plants, including clover. The cover crop is mowed, dried, and disked into the vineyard.

The average quality of the wastewater, agricultural supply well water and resulting blend for 2013 is shown in the table below:

Wastewater and Agricultural Supply Well Data

Constituent (Units)	Wastewater Average	Agricultural Supply Well Average	Blended Water Average
EC[1] (umhos/cm)	2142	360	530
TDS[2] (mg/L)	1979	304	588
FDS[3] (mg/L)	1133	210	312
Sodium (mg/L)	244	7	59.8

Constituent (Units)	Wastewater Average	Agricultural Supply Well Average	Blended Water Average
Chloride (mg/L)	59	16	19.8
Potassium (mg/L)	247	2.3	28
Nitrate as Nitrogen (mg/L)	4	3	1.2
Total Nitrogen (mg/L)	37	3	3.7
BOD[4] (mg/L)	2477	--	272
Bicarbonate (as CACO3) (mg/L)	732	127	193
pH (range)	5.1-8.3	7.4-8.1	6.3-8.0

[1] EC = electrical conductivity at 25 ° C.
[2] TDS = total dissolved solids.
[3] FDS = fixed dissolved solids.
[4] BOD = Five-day biochemical oxygen demand

Source water supply used for Winery sanitation operations is provided by an on-site domestic well. Results from a sample collected in 2009 indicate the source water EC is approximately 560 umhos/cm.

The Winery generates wastewater flows sporadically, particularly in the non-crush season. Winery personnel stated in a March 2014 inspection that the crush season average daily flows of 8,000 gpd, seven days per week, authorized by Order 95-166 are consistent with present and foreseeable operations at the Winery. They also stated changing the non-crush season flow limit from 2,300 gpd to 3,000 gpd, five days per week, would increase operational flexibility and better reflect the variability of existing Winery operations. Operation at the flows described herein would result in an annual discharge of approximately 1.13 million gallons.

At flows of 8,000 gpd, seven days per week, from July through September, and 3,000 gpd, five days per week the remainder of the year, approximately 50 lbs/acre/year of total nitrogen would be applied to the vineyard. The nitrogen uptake rate for grapes specified in the Western Fertilizer Handbook is 125 lbs/acre/year. The potassium loading rate would be about 333 lbs/acre/year. The potassium uptake rate for grape vines is about 162 lbs/acre/year. If the cover crop was removed, it could also remove an additional 300 lbs/acre/year of nitrogen and 300 lbs/acre per year of potassium.

At a discharge flow rate of 42 gpm, it would take about 18 hours to discharge 45,000 gallons of wastewater. The resulting 24-hour BOD loading rate would be about 137 lbs/acre/day. Assuming a minimum 5-day cycle, the cycle average BOD loading rate would be about 27 lbs/acre/day.

At the proposed flows, the hydraulic loading rate of the wastewater and irrigation water would be about 5.5 acre-feet, which would exceed the typical agronomic application rate for grape vines, but could be reasonable for grape vines and a properly managed cover crop.

Solids generated at the Winery include leaves, stems, and grape skins and seeds associated with the initial crushing/pressing process; tank lees associated with tank cleaning; and spent diatomaceous earth associated with wine and wastewater filtration. The leaves, stems, and grape

skins and seeds historically have been discharged to fallow land to the north of the winery. During a March 2014 inspection, Winery personnel stated that the Winery has contracted with a local solid waste hauler to remove the leaves, stems, and grape skins and seeds that are generated in the future. Tank lees and spent diatomaceous earth are bagged and hauled off-site by a solid waste hauler for disposal.

Site-Specific Conditions

The site is adjacent to the San Joaquin River. Surface water drainage is to the San Joaquin River, although the site is in the Tulare Lake Basin. The disposal ponds and vineyard appear to be within the 100-year flood plain, as shown on the Federal Emergency Management Agency's Flood Insurance Rate Maps.

Several residential homes are scattered within a mile radius of the Winery. Crops grown in the area include almonds, grapes, pecans, pistachios, pomegranates, and walnuts. Irrigated pasture can also be found in the area.

Soils in the area are well drained coarse sandy loams.

Groundwater Conditions

Groundwater data in the vicinity of the site is limited. The California Department of Water Resources' map titled, *Lines of equal Depth to Water Wells in Unconfined Aquifer, Spring of 2010*, indicates that groundwater beneath the site is about 60 to 70 feet below ground surface in an unconfined aquifer. Groundwater gradient is variable.

A portion of the boring log for an on-site domestic well is presented below. The well is drilled to a depth of 232 feet.

Well Log Results

Depth (feet)	Soil Type
0-15	Sand with rock
15 to 23	Green clay
23 to 34	Coarse sand
34 to 67	Sandy brown clay
67 to 75	Coarse sand
75 to 93	Brown clay

It is not known whether the clay layers are continuous or extensive such that they would inhibit the migration of wastewater to groundwater.

The U.S. Geological Survey (USGS) sampled a well on the south east corner of the Winery property in 1955. The well reportedly had a hole depth of 105 feet. Specific water quality results from the sampling event are presented below:

USGS Well Data

Constituent (Units)	USGS Well 364912120050101
EC[1] (umhos/cm)	872
TDS (mg/L)	480
Sodium (mg/L)	49
Chloride (mg/L)	14
Calcium (mg/L)	49
Magnesium (mg/L)	19
Sulfate (mg/L)	12
Bicarbonate (mg/L)	340
pH (range)	7.7

[1] Calculated from TDS.

Available agricultural supply well, source water well, and USGS well data indicate that groundwater underlying the Winery is of good quality and meets the State drinking water Primary and Secondary Maximum Contaminant Levels (MCLs).

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Winery and Vineyard are geographically located in the Tulare Lake Basin; however, site surface water drainage is to the San Joaquin River. Groundwater is in the San Joaquin Valley Groundwater Basin, Kings Subbasin No. 5-22-08, which is in the Tulare Lake Basin.

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (Revised January 2004) and the *Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin, Fourth Edition* (Revised October 2011) (hereafter individually Tulare Lake Basin Plan and Sacramento-San Joaquin Basin Plan or collectively Basin Plans) designate beneficial uses, establish water quality objectives, contain implementation plans and policies for protecting waters of the basins, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plans.

The beneficial uses of the San Joaquin River, as stated in the Sacramento-San Joaquin Basin Plan, are municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat; cold freshwater habitat; wildlife habitat; migration of aquatic organisms; and spawning, reproduction, and/or early development.

The beneficial uses of underlying groundwater, as set forth in the Tulare Lake Basin Plan, are MUN, AGR, industrial service supply (IND), PRO, REC-1, and REC-2.

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

The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). 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.

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.

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.

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 irrigation water has an EC less than 700 µmhos/cm. 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 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

The list of crops described above is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area.

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 a mechanism to carry salts out of the basin is established. To limit the degradation, the Basin Plan establishes several salt management requirements, including:

Industrial dischargers shall be required to limit the increase in EC of a point source discharge to surface water or land to a maximum of 500 umhos/cm. A lower limit may be required to assure compliance with water quality objectives.

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 1.0 mg/L.

The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm when the discharger technically demonstrates that allowing a greater net incremental increase in EC will result in lower mass emissions of salt and in conservation of water, provided that beneficial uses are protected.

The Basin Plan states, neither surface nor ground waters shall be used to dilute wastes for the primary purpose of meeting waste discharge requirements, where reasonable methods for treating the wastes exist. Blending of wastewater with surface or ground water to promote beneficial reuse of wastewater in water short areas may be allowed here the Central Valley Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein.

Excessive application of high organic strength wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater with nitrogen species and metals, as discussed below. Such groundwater degradation can be prevented or minimized through implementation of best management practices which include planting crops to take up plant nutrients and maximizing oxidation of BOD to prevent nuisance conditions.

With regard to BOD, excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals. Over application of organic wastes to land can also cause groundwater increases in bicarbonate alkalinity.

Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the ground surface, within the evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. 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.

Antidegradation Analysis

Generally, the quality of the blended discharge is such that it is not expected to degrade groundwater to the extent that it exceeds applicable water quality objectives or adversely affects beneficial uses.

The Nitrogen loading rate of 50 lbs/acre/year of nitrogen are less than half of the projected crop uptake rate and should not degrade groundwater with nitrate nitrogen to the extent that it exceeds the State Primary MCL of 10 mg/L.

The potassium loading rate of 333 lbs/acre/year is high for a single vineyard crop but well within the requirements of a vineyard crop combined with a cover crop of clover. Combined with the overall salinity of the discharge as measured by EC (specific conductivity) and FDS (fixed dissolved solids), the potassium in the discharger should not cause exceedances of water quality objectives or adversely impact designated beneficial uses of groundwater.

At the flows authorized by this Order, the cycle average BOD loading rates will be low at 27 lbs/acre/day and should not cause or contribute to groundwater degradation that exceeds water quality objectives or adversely affects beneficial uses.

This Order establishes effluent and groundwater limitations for the Winery that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Tulare Lake Basin Plan.

This Order is consistent with the *Anti-Degradation Policy* since: (a) the Discharger has or will 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.

Other Regulatory Considerations

The discharges are exempt from the requirements of Title 27 pursuant to section 20090(b) because:

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

CEQA

The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with the California Code of Regulations, title 14, section 15301. This Order does not authorize an increase in production or discharge flows over those already occurring at the Winery.

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ATTACHMENT A
ORDER R5-2014-0087
WASTE DISCHARGE REQUIREMENTS
FOR
MODERN DEVELOPMENT COMPANY A LIMITED PARTNERSHIP
dba BIANCHI VINEYARDS
EMERALD GLEN WINERY
FRESNO COUNTY