CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2012-0001

WASTE DISCHARGE REQUIREMENTS

FOR
CARUTHERS RAISIN PACKING COMPANY, INC.
RAISIN PROCESSING PLANT
AND
MR. JON ROBINSON
FRESNO COUNTY

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

1. Caruthers Raisin Packing Company, Inc. (hereafter Caruthers Raisin) owns and operates a raisin processing plant at 12797 South Elm Avenue in Fresno County, Section 9, Township 16 South, Range 20 East, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order. Treated wastewater is discharged to 27 acres, a portion of which is owned Mr. Jon Robinson. Both Caruthers Raisin and Mr. Jon Robinson are named herein as Discharger.

2. Caruthers Raisin has operated its raisin processing plant (Plant) since 1985, where it receives, washes, stores, packages, and distributes raisins from local growers. Initially the Plant only processed raisins from adjacent fields. In 1985, the Board waived, under Resolution No. 82-036, waste discharge requirements (WDRs) for the discharge of process wastewater to land, since volumes were low and the operation was being overseen by Fresno County. Over the years Caruthers Raisin expanded its operation. In 1993, following several odor complaints, the Central Valley Water Board and Fresno County conducted a joint inspection of the Plant. Board staff required that Caruthers Raisin submit a Report of Waste Discharge (RWD). Caruthers Raisin submitted a RWD in September of 1993. The RWD indicated that Caruthers Raisin generated about 80,000 gallons per day (gpd) of raisin process wastewater, which was discharged to approximately 5 acres of cleared land to the northwest of the Plant.

3. In August 2003, Central Valley Water Board staff inspected the Plant following several odor complaints. Objectionable odors and standing water were observed in the discharge area. Following the inspection, Board staff required Caruthers Raisin to submit a revised RWD. Caruthers Raisin submitted a RWD on 22 November 2004. Staff notified Caruthers Raisin that the RWD was deficient in a 22 December 2004 letter. In the interim, Caruthers Raisin began hauling its wastewater to the Selma-Kingsburg-Fowler (SKF) Wastewater Treatment Facility for disposal. The Board also issued Caruthers Raisin a Monitoring and Reporting Program (MRP) R5-2005-0801 to characterize the discharge. Caruthers Raisin also installed a groundwater monitoring well network. Caruthers Raisin submitted several addendums to its RWD on 14 October 2004, 9 December 2004, 22 December 2005, and 31 March 2009.

4. SKF stopped accepting the wastewater in 2006, and Caruthers Raisin returned to a land discharge following Plant upgrades and improvements. The upgrades included new processing and packaging lines intended to improve efficiency and generate less wastewater. Along with the upgrades, Caruthers Raisin added screening and aeration to improve wastewater quality and increased its reuse area to 12 acres. In 2009, Caruthers Raisin leased a portion of land owned by Mr. Jon Robinson, increasing the reuse area to 27 acres. It also switched to sprinkler irrigation to improve irrigation efficiency and allow for more even distribution of wastewater.

Existing Facility and Discharge

5. The Plant's current processing capacity is approximately 30 to 40 tons of dry raisins per hour, though production varies throughout the year. During peak processing periods from late summer through fall, the Plant operates approximately 12 hours per day six days a week. During non-peak periods, Plant operation is limited to normal business hours (eight hours a day five days a week).

6. Wastewater at the Plant is generated from rinsing of raisins and wash down of the equipment lines. Caruthers Raisin installed a flow meter in April 2008. Flows vary significantly throughout the year depending on the rate of production. The average monthly discharge ranges from 0.06 mgd to as high as 0.12 mgd during peak season operation.

7. Wastewater is generated in batches from the raisin rinse tank and equipment wash down. The wastewater drains into a concrete standpipe where chemicals, such as Liquid Optomizer and lime, are added for odor and algae control and pH adjustment. In addition, Hasa-Chlor, a Sodium Hypochlorite solution, is used to clean the equipment.

8. The wastewater is pumped through a slotted rotating drum screen to remove solids. Screenings are collected in storage bins and sold for use as cattle feed. Following the screen, the wastewater is stored in a series of three 9,000-gallon aboveground tanks. The tanks are aerated to control odors and reduce the biochemical oxygen demand (BOD) of the wastewater. The treatment appears to have a side benefit in the observed reduction of nitrogen concentrations in the wastewater since 2006.

9. Typical wastewater contains high concentrations of BOD and total dissolved solids (TDS) as a result of the high sugar content of the raisins. The following table depicts average wastewater concentrations for constituents of concern based on analytical data from 2006 through 2010:

Constituent/Parameter	Units	2006	2007	2008	2009	2010
pH	s.u.	6.7	7.0	6.1	6.9	6.4
Electrical Conductivity (EC)	µmhos/cm	900	800	750	630	650
BOD	mg/L	7,300	4,500	5,200	3,500	3,700
Total Nitrogen (TN)	mg/L	60	40	31	31	41
Total Dissolved Solids (TDS)	mg/L	7,100	4,000	4,000	3,000	3,100

Constituent/Parameter	Units	2006	2007	2008	2009	2010
Fixed Dissolved Solids (FDS)	mg/L	575	436	440	300	250
Flow	mg	- - -	- - -	19	23	27

The data show that there has been a significant decrease in constituent concentrations since June 2006 when Caruthers Raisin began treating is wastewater. BOD and total nitrogen concentrations have been reduced almost 50% between 2006 and 2010.

10. The Plant's domestic wastewater is discharged separately to a septic tank/leachfield system regulated by Fresno County.

Reuse Area

11. Following treatment, the wastewater is distributed to a sprinkler irrigation system and used to irrigate about 27 acres of cropland, hereafter called the Reuse Area. The Reuse Area is divided into two areas identified as LAA-1 and LAA-2. LAA-1 consists of approximately 12-acres of land owned by Caruthers Raisin (APN No. 042-100-13S and 042-100-14S) and includes a portion of the former five-acre disposal area. The property leased from Mr. Robinson consists of approximately 15 acres, hereafter identified as LAA-2 (APN No. 042-100-07). Both areas are double-cropped with Sudan grass and a winter mix of wheat and oats. The crop in LAA-1 is harvested and sold as cattle feed, while LAA-2 is used as a pasture for cattle and horses owned by Mr. Robinson (about 10 to 15 animals).

12. The irrigation system is divided into seven sections and irrigation is rotated between the sections on a seven day cycle. Daily application areas range from six acres to approximately three acres in size. During the summer, additional irrigation water may be applied to meet crop demand.

13. A water balance provided in the May 2009 RWD addendum, and calculated based on a 100-year wet year, indicates that the Plant and reuse areas have sufficient hydraulic capacity to handle flows during winter months except during periods of heavy rainfall. The Discharger has indicated that processing operations will cease during periods of prolonged rainfall or when conditions become saturated since most of the support areas for the operation remain uncovered. This Order has specific conditions which prohibit the Discharger from applying process wastewater to the Reuse Area within 24 hours of a storm event of measurable precipitation or when soils become saturated.

14. To prevent overspray of process wastewater onto the athletic field of the Alvina Elementary School north of LAA-2, the irrigation system is set such that the sprinklers directly adjacent to the school are approximately 75 feet from the northern property line and are equipped with deflectors. In addition, the closest two irrigation lines to the school are set to operate on weekends when school is not in session. Earthen berms are also present along the northern property line to prevent runoff onto school property.

15. Food processing wastewater typically contains elevated concentrations of TDS resulting from the fruit and vegetable products or from 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, FDS is that portion of the TDS which consists of inorganic constituents which can accumulate in the soil. Excess salt loading can lead to salt accumulation in soil reducing plant yields. The excess salt is than leached to groundwater where it will degrade groundwater quality. Growing and harvesting crops provides a means to remove some of the salt constituents in soil.

Harvested crops are expected to remove a portion of the inorganic salt constituents (or FDS) from the soil, particularly calcium, magnesium, potassium, phosphorus, nitrate, and ammonia. Beneficial ions such as calcium, magnesium, and potassium improve the physical properties of the soil and are essential for plant growth.

16. In 2009, the TDS concentration of the discharge ranged from 1,000 to 5,500 mg/L. A comparison of TDS to FDS concentrations ranging from 150 to 400 mg/L shows an average ratio of organic to inorganic material in the waste stream of about 10:1. Assuming an average FDS concentration of 350 mg/L and an annual flow of 25 million gallons, the estimated salt load to the Reuse Area from process wastewater would be about 2,700 lbs/acre/year.

17. Nitrogen can be introduced to the Reuse Area through three main sources: process wastewater, manure, and fertilizers. Using the average total nitrogen concentration of the discharge of 31 mg/L and an annual flow limit of 25 million gallons, the estimated nitrogen load to the Reuse Area from process wastewater would be about 240 lbs/acre/year. Based on an annual nitrogen uptake of 440 lbs/acre/year for a double cropped field of Sudan grass and winter wheat (*Western Fertilizer Handbook*, 9th edition), it is estimated that the crops will obtain approximately 55% of their required nitrogen from process wastewater. The addition of fertilizers and/or manure from grazing animals on LAA-2 may contribute to the overall nitrogen loading to the Reuse Area. This Order includes a provision requiring Caruthers Raisin to prepare a Nutrient and Wastewater Management Plan that will address the use of LAA-2 for grazing animals and ensure agronomic loading rates will be maintained.

18. Based on information provided in Caruthers Raisin's Self-Monitoring Reports submitted in accordance with MRP R5-2005-0801, the discharge contains concentrations of total coliform organisms that often exceed 1,600 MPN/100 mL. In addition, samples collected for fecal coliform organisms occasionally exceed 1,600 MPN/100 mL. The source of the bacteria in the waste stream has yet to be determined, though the likely presence of birds and other animals attracted to the raisins as well as open aeration tanks and wash down of open surfaces around the processing equipment are possible sources. This Order requires Caruthers Raisin to continue monitoring for total and fecal coliform and includes a provision requiring Caruthers Raisin to identify the source and nature of the bacteria in the waste stream and ensure that it does not represent a hazard to human health or the environment.

Other Considerations for Food Processing Waste

19. Excessive application of food processing wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater. 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.

20. Irrigation with high strength wastewater results in high BOD loading on the day of application. If the rate of oxygen transfer into the soil is not adequate, anaerobic or reducing conditions may result and lead to nuisance conditions. In addition, anaerobic conditions in soil can cause dissolution and leaching of some metals. 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.

21. Historic average BOD loading rates to the former 5-acre disposal area were on the order of 700 to 800 lbs/acre/day. With treatment of the wastewater and expansion of the Reuse Area, current cycle average BOD loading rates range from less than 20 lbs/acre/day to about 350 lbs/acre/day, with an average annual BOD loading rate of about 74 lbs/acre/day.

    This Order sets a monthly cycle average BOD loading rate for the Reuse Area of 150 lbs/acre/day consistent with Risk Category 2 in the Guidance Manual prepared by the California League of Food Processors for discharges using sprinkler application to land with well drained soils. According to the Guidance Manual discharges to land under Risk Category 2 pose a minimal risk of unreasonable degradation to groundwater provided reasonable care is taken to properly manage the reuse area. The Order also includes Provisions requiring Caruthers Raisin to complete a site specific 2-year loading study and groundwater evaluation to confirm that the specified BOD loading rate will be protective of groundwater.

Site-Specific Conditions

22. The Plant is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual pan evaporation in the area is about 59 inches, according to information published by the California Department of Water Resources (DWR). Average annual precipitation in the area, based on a 30-year record, is about 8.8 inches, according to the National Weather Service Forecast Office. According to DWR, the annual precipitation with a 100-year return period is approximately 23 inches.

23. According to the USDA Natural Resources Conservation Service (NRCS) *Soil Survey of Eastern Fresno Area, 1971*, soils in the area consist of Delhi loamy sand, Hesperia

sandy loam, and Hanford sandy loam. These soils are moderately deep with a silty substratum at a depth of about three to six feet. Water holding capacity is low to moderate above the silty substratum. These soils are suitable for growing raisin grapes, cotton, corn, alfalfa, and row corps.

24. Runoff in and around the Plant is collected in onsite storm water basins. All storm water in an around the Plant is directed to these storm water basins. The main processing and storage areas are covered and there are no storm drains in the immediate vicinity of these areas. Caruthers Raisin is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit since all storm water runoff is retained onsite and does not discharge into a water of the United States.

25. According to Federal Emergency Management Agency (FEMA) maps, the Plant and Reuse Areas lay outside of the 500-year flood zone.

26. Land use in the vicinity is primarily agricultural and rural residential. There is an elementary school which adjoins LAA-2 to the north, and there are a few commercial businesses to the east of the Plant along Elm Avenue. According to DWR land use data for Fresno County published in 2000, primary crops grown in the area include grapes, and almonds. Orchard crops such as peaches, pears, pistachios, plums, and nectarines were also identified as well as some pasture and row crops. Irrigation water is supplied primarily by groundwater.

Groundwater Considerations

27. Regional groundwater in the area is encountered at about 130 feet below ground surface (bgs) and flows to the southwest according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer* (DWR, Spring 2009).

28. Source water for the Plant is provided by two on-site wells. The 2008 Consumer Confidence Report indicates that the source water is relatively good, with an EC of about 300 µmhos/cm, and NO_3-N of 2.8 mg/L. There are two additional water supply wells on the property: one is an irrigation well and the other is a non-potable well used to supply an emergency eye wash station.

29. Caruthers Raisin installed three monitoring wells at the site in July 2005. Data collected from 2005 to 2008 indicates groundwater flow was consistently to the southwest, which was also consistent with regional groundwater flow reported by DWR. Based on groundwater flow direction, monitoring well MW-1 was an up-gradient well and monitoring wells MW-2 and MW-3 were down-gradient of the Plant and Reuse Area LAA-1.

30. Historic groundwater monitoring shows that groundwater down-gradient of LAA-1 has been degraded for salinity and metals. Groundwater data shows an increase of 350 to 400 µmhos/cm in EC and an increase of about 200 mg/L in TDS between up-gradient and down-gradient monitoring wells.

31. Concentrations of iron, manganese, and arsenic are also elevated in down-gradient monitoring wells. Between 2005 and 2008, iron and manganese in MW-2 and MW-3 exceeded the secondary Maximum Contaminant Levels (MCLs) of 0.3 mg/L and 0.05 mg/L, respectively. Elevated metals and decreased NO_3-N and sulfate concentrations between up-gradient and down-gradient monitoring wells is evidence of reducing conditions associated with a high organic load that can cause leaching of metals from soil.

32. Since the monitoring wells were installed, groundwater levels in the area have dropped significantly. By October 2008, all three monitoring wells were dry. Following a recent rise in groundwater levels, Caruthers Raisin was able to sample two of its monitoring wells (MW-1 and MW-2), in May 2011. However, monitoring well MW-3 was still dry and water levels in MW-1 and MW-2 were low.

33. Though two wells are insufficient to establish groundwater flow and gradient, it is reasonable to assume, based on previous flow directions and similar differences in groundwater elevations between MW-1 and MW-2, that groundwater flow beneath the site remains to the south-southwest, making MW-1 the assumed up-gradient well and MW-2 the assumed down-gradient well. The following table compares average constituent concentrations for groundwater samples collected from 2005 to 2008 to concentrations reported during the May 2011 sampling event:

		Up-Gradient		Down-Gradient			
Constituent	Units	MW-1		MW-2		MW-3	
		Average	May 2011	Average	May 2011	Average	May 2011
EC	µmhos/cm	840	950	1,200	1,300	1,200	ns
TDS	mg/L	540	600	730	780	730	ns
Alkalinity	mg/L	230	230	640	680	500	ns
NO_3-N	mg/L	20	24	0.07	< 0.02	2.3	ns
Chloride	mg/L	48	50	52	38	69	ns
Sulfate	mg/L	60	74	40	26	55	ns
Calcium	mg/L	95	150	120	160	110	ns
Sodium	mg/L	69	68	132	95	136	ns
Magnesium	mg/L	22	56	35	58	28	ns
Iron	mg/L	1.8	< 0.05	3.0	< 0.05	5.4	ns
Manganese	mg/L	0.05	< 0.01	2.3	0.41	0.6	ns
Arsenic	ug/L	2.0	< 2	5.5	< 2	2.6	ns

ns = Not sampled (well was dry)

34. The May 2011 sampling shows that groundwater iron, manganese, and arsenic concentrations in down-gradient monitoring well MW-2 have decreased significantly compared to previous sampling events, showing an improvement in groundwater quality. In May 2011, iron and arsenic concentrations in MW-2 were both below water quality objectives, and manganese concentrations, while still above the secondary MCL of 0.05 mg/L, at 0.41 mg/L was almost six times lower than during previous sampling events.

35. EC and TDS concentrations in MW-2 at 1,300 umhos/cm and 780 mg/L increased slightly and still exceed the recommended lower secondary MCLs, but they remain below the upper secondary MCLs. EC and TDS concentrations also increased in up-gradient monitoring well MW-1 at the same magnitude observed in MW-2, indicating a possible source other than the discharge.

36. As discussed previously, with the treatment added in 2006, which has reduced the BOD concentration of the wastewater by almost 50%, and expansion of the Reuse Area, the organic load from the discharge is significantly less than in the past. In addition, Caruthers Raisin has implemented several irrigation best management practices, such as sprinkler irrigation, 7-day resting periods, and disking between harvests, to prevent or reduce the potential for the discharge to cause reducing conditions in soil. It is anticipated that with the reduced organic load and implementation of best management practices that water quality beneath the site will continue to improve over time. This Order includes a provision requiring Caruthers Raisin to complete a loading study and expand its monitoring well network to continue monitoring changes in groundwater quality.

Basin Plan, Beneficial Uses and Regulatory Considerations

37. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised January 2004* (hereafter Basin Plan) designates beneficial uses, establishes numerical and narrative 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. Pursuant to Water Code section 13263(a), these waste discharge requirements must implement the Basin Plan.

38. The Plant is in Detailed Analysis Unit 236 within the Kings Basin hydrologic unit. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply; agricultural supply; and industrial service and process supply.

39. Surface runoff is to the southwest toward Liberty Levee and Murphy Slough. The Basin Plan designates the beneficial uses of valley floor waters as: agricultural, industrial service and process supply, water contact and non-contact recreation, warm freshwater habitat, wildlife and rare threatened and endangered species habitat, and groundwater recharge.

40. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes and Odors, and Toxicity. The Toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated 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.

41. The Basin Plan's Chemical Constituents water quality objective requires that, at a minimum, waters designated as domestic or municipal supply must meet the MCLs specified in Title 22 of the California Code of Regulations ("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.

42. 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 valley wide drain is constructed to carry salts out of the basin. Until the drain is available, the Basin Plan establishes several salt management requirements, including:

    a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum electrical conductivity (EC) shall not exceed the EC of the source water plus 500 µmhos/cm. When the source water is from more than one source, the EC shall be a weighted average of all sources.

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

43. This Order sets Groundwater Limitations at the naturally occurring background water quality concentrations or the applicable water quality objectives, as follows:

    a. The applicable NO_3-N water quality objective for groundwater designated as municipal (MUN) is the Primary MCL of 10 mg/L NO_3-N. It is unclear whether the upgradient groundwater nitrate concentration of 20 mg/L is due to natural causes. Nonetheless, best practicable treatment and control (BPTC) for land application of food processing wastewater limits nitrogen loading of recycled wastes to agronomic rates protective of designated beneficial uses of groundwater as a MUN supply. Therefore, the Groundwater Limitation for NO_3-N in this Order is set at 10 mg/L.

    b. Wescot's *Water Quality for Agriculture, FAO Irrigation and Drainage Paper No. 29, Rev 1* (1985) and similar references indicate an EC of 700 umhos/cm minimizes salinity stress on the most salt-sensitive crops. There is no evidence that salt-sensitive crops are grown in the area; the predominant crops for the area, specifically grapes and almonds, can tolerate irrigation water with an EC up to 1,000 µmhos/cm with no reduction in crop yield. This Order sets a groundwater limit for EC of 1,000 µmhos/cm, and limits the EC in the discharge to the EC of the source water (12-month rolling average) plus 500 µmhos/cm. Considering predominant crop types and irrigation methods in the immediate area, these limits are expected to preclude impairment of agricultural beneficial uses and is within

the range of the secondary MCL for EC consistent with beneficial uses for municipal and domestic supply.

With an average EC of 600 to 750 µmhos/cm, the EC of the discharge is less than 1,000 µmhos/cm and will not unreasonably threaten present and anticipated beneficial uses.

c. Consistent with the Basin Plan and as described in with Finding 41, this Order limits the chemical constituent concentrations in groundwater to, at minimum, the MCLs specified in Title 22.

d. Also consistent with the Basin Plan, this Order prohibits the discharge from causing or contributing to groundwater containing taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Antidegradation Analysis

44. State Water Resources Control Board Resolution No. 68-16 ("*Policy with Respect to Maintaining High Quality Waters of the State*") (hereafter Resolution 68-16 or "Antidegradation Policy") 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;

    b. The discharger employs BPTC to minimize degradation;

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

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

45. Constituents of concern that have the potential to cause degradation include, in part, organics, nutrients, and salts.

    a. To reduce the organic load of its discharge, Caruthers Raisin has added treatment and reduced the strength of its wastewater by almost 50%, expanded its Reuse Area, and implemented best management practices (BMP) measures (switching to sprinkler irrigation, establishing resting periods of 7-days between applications, and disking between harvests) significantly reducing the organic load to the Reuse Area and minimizing the potential for anoxic and reducing conditions in soil. These measures are expected to prevent odor and nuisance conditions and preclude iron and manganese degradation of groundwater from organic loading. Groundwater iron and manganese concentrations from historic operations have improved in recent years and are expected to continue to improve over time. This Order requires

Caruthers Raisin to expand the Plant's groundwater monitoring well network to monitor changes in groundwater quality and to complete a 2-year loading study to evaluate existing BOD loadings and determine maximum cycle average BOD loading rates that will protect groundwater.

b. For nitrogen, shallow groundwater up-gradient of the Reuse Area already contains NO_3-N in excess of water quality objectives. Reduction of nitrogen through the treatment process and application of wastewater at agronomic rates for both nutrient and hydraulic loading should preclude degradation of groundwater by nitrates from the discharge. Groundwater down-gradient of the discharge does not exceed the MCL for NO_3-N of 10 mg/L, and is not expected to exceed it in the future.

c. For salinity, with a source water EC of 300 µmhos/cm, the discharge with an average EC of 600 to 750 µmhos/cm meets the Basin Plan limits for EC of 500 µmhos/cm over source or 1,000 µmhos/cm maximum for discharges to areas that may recharge good quality groundwaters. In addition, a portion of the EC of the discharge is from organic sources or from nutrients beneficial for plant growth (i.e., calcium, magnesium, and potassium), which will be further treated in the soil profile and removed by crops, and as such is not anticipated to result in the degradation of groundwater exceeding water quality objectives.

While the discharge is consistent with Basin Plan limits for salinity, groundwater monitoring data shows increases in EC and TDS concentrations over background in down-gradient monitoring wells. It is believed that the elevated EC and TDS concentrations are, in part, the result of increased bicarbonate, calcium, and magnesium in down-gradient wells due to past organic overloading of the reuse area. The reduced organic load and implementation of BPTC measures are expected to preclude the discharge from causing continued increases in bicarbonate alkalinity in groundwater.

46. Caruthers Raisin aids in the economic prosperity of the region by direct employment of 100 to 140 people, and provides a tax base for local and county governments. In addition, it provides needed services for valley raisin growers by providing a local processing center where they can take their raisins to be processed, packaged, and shipped for retail sale. Provided that discharges from the Plant comply with State and Central Valley Water Board plans and policies, authorized degradation due to the continued operation of Caruthers Raisin is to the maximum benefit to the people of the State.

Treatment and Control Practices

47. Caruthers Raisin provides treatment and control of the discharge that incorporates:

a. Dry sweeping to remove solids and reduce the amount of wastewater generated,

b. Screening to remove excess solids from the waste stream,

c. Hauling of solids offsite for use as cattle feed,

d. Aeration to reduce effluent BOD concentrations,

e. Sprinkler irrigation to more evenly distribute the wastewater,

f. Rest periods between applications to allow for reaeration of the soil,

g. Tilling between crop harvests to maintain soil structure, permeability, and treatment capacity;

h. Organic loading rates consistent with those recommended by the California League of Food Processors as unlikely to cause unacceptable groundwater degradation;

i. Application of nitrogen at agronomic rates;

j. Hydraulic loading at rates to preclude standing water on the reuse areas; and

k. Groundwater monitoring to monitor the impact of the discharge on groundwater.

Antidegradation Conclusions

48. This Order establishes groundwater limitations that allow some degradation, but that will not unreasonably threaten present and future anticipated beneficial uses of groundwater or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

49. The treatment and control measures described above in Finding 47 represent a higher level of water quality protection measures than those employed by other raisin processors in the Central Valley, and are consistent with the recommendations of the California League of Food Processors. In combination with the requirements of this Order, they represent BPTC.

50. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State. As described in Finding 46, Caruthers Raisin aids in the economic prosperity of the region by direct employment, supports the local economy, and provides a needed service for local raisin growers. In addition, the use of process wastewater for irrigation in place of higher quality groundwater is of further benefit to people of the State.

51. This Order requires monitoring to evaluate potential groundwater impacts from the discharge and confirm that the BPTC measures are sufficiently protective of groundwater. In addition, this Order includes provisions requiring Caruthers Raisin to prepare and implement a Salinity Control Plan and Nutrient and Wastewater Management Plan.

52. The discharge and the potential for groundwater degradation allowed in this Order (specifically for nitrates and EC) is consistent with the Antidegradation Policy since: (a) Caruthers Raisin has implemented BPTC to minimize degradation, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated

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.

Water Reuse

53. 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 recycled water.

Designated Waste and Title 27

54. California Code of Regulations, title 27 ("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 provisions that exempt wastewater and reuse. These exemptions, found at Title 27, section 20090, are 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 has issued WDRs, 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 … as a hazardous waste.
>
> …
>
> (h) Reuse – Recycling or other use of materials salvaged from waste, or produced by waste treatment, such as scrap metal, compost, and recycled chemicals, provided that discharges of residual wastes from recycling or treatment operations to land shall be according to applicable provisions of [Title 27].

55. 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 is in compliance with the Basin Plan, and;
    c. The treated effluent discharged to the LAAs does not need to be managed as hazardous waste.

In addition, the reuse of raisin process wastewater for irrigation as authorized by this Order is exempt from Title 27 under section 20090(h) for Reuse, since the wastewater is contained and treated to make it suitable for direct beneficial reuse and is discharged in a manner consistent with crop requirements. This Order sets terms and conditions of

discharge including effluent limits and discharge specifications to ensure the discharge will not impact present and anticipated beneficial uses of groundwater.

CEQA

56. On 27 July 1989, Fresno County, in accordance with the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) adopted a Negative Declaration in conjunction with a Conditional Use Permit (CUP) for commercial operation of the existing raisin processing plant at 12797 S. Elm Avenue. The operation, as specified in the Negative Declaration, would generate approximately 10,000 gallons per day of wastewater, which would be used to irrigate the adjacent vineyard.

57. On 24 March 2005, Fresno County adopted a Mitigated Negative Declaration and revision of the CUP for upgrades to the existing raisin processing plant, to include new processing and packaging lines, and reuse of process wastewater for irrigation on crops. The Mitigated Negative Declaration concluded that the new equipment would improve efficiency and generate less wastewater, and included the following mitigation measures:

    a. All parking, circulation, and storage areas shall be covered with an asphalt concrete surface;

    b. The applicant shall submit a complete Report of Waste Discharge to the Central Valley Water Board prior to discharging to the reuse areas; and

    c. All onsite discharge of liquid waste materials (i.e., wastewater) shall be done in such a manner as to not adversely impact groundwater supplies or create conditions of nuisance, and “Best Practicable Treatment or Control” shall be utilized as approved by the Central Valley Water Board in such a way as to preclude potential odor and vector nuisance and adverse groundwater quality impacts.

58. Central Valley Water Board staff reviewed and concurred with the findings in the Mitigated Negative Declaration. This Order includes specific conditions intended to mitigate or avoid environmental effects on water quality. Specifically, this Order:

    a. Sets limits for flow, EC, chloride, and BOD loading;

    b. Requires application of wastewater at agronomic rates;

    c. Establishes groundwater limits;

    d. Establishes a monitoring and reporting program; and

    e. Requires Caruthers Raisin to prepare a Nutrient and Wastewater Management Plan, and a Salinity Control Plan.

59. Although the Mitigated Negative Declaration does not specifically address the reuse of wastewater on Mr. Robinson’s property, this discharge has been ongoing since 2009,

and the sprinkler system has already been installed. This Order imposes additional regulatory requirements on the discharge of waste to this LAA, and no additional construction is authorized by this Order. Therefore, the imposition of additional regulatory requirements for this existing discharge is exempt from the requirements of CEQA in accordance with California Code of Regulations, title 14, section 15301.

General Findings

60. 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.

61. Based on the threat and complexity of the discharge, the Plant is determined to be classified 2-B as defined below:

    a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation 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 above 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."

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

> In conducting an investigation specified in subdivision (a), 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 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.

63. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2012-0001 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Plant that discharges the waste subject to this Order.

64. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, 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.

65. 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.

Public Notice

66. 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.

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

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13263 and 13267, Caruthers Raisin Packing Company, Inc., and Mr. Jon Robinson, and their 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 wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass or overflow of untreated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements, is prohibited.

3. Discharge of waste classified as ‘hazardous’, as defined in California Code of Regulations, title 23, section 2521(a) is prohibited. Discharge of waste classified as ‘designated waste’, as defined in Water Code section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

4. Application of treated wastewater in a manner or location other than that described herein is prohibited.

5. Storage of solids on areas without means to prevent leachate generation and infiltration into the ground is prohibited.

B. Discharge Specifications:

1. The average monthly flow of wastewater to the Reuse Areas shall not exceed 0.13 mgd and the total annual flow to the Reuse Areas shall not exceed 25 million gallons.

2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the Water Code section 13050.

3. Objectionable odors shall not be perceivable beyond the limits of the Plant or the Reuse Areas at an intensity that creates or threatens to create nuisance conditions.

4. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

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

6. No physical connection shall exist between wastewater piping and any domestic water supply or domestic well, or between wastewater piping and any irrigation well that does not have an air gap or reduced pressure principle devise.

C. Effluent Limitations:

1. The 12-month rolling average EC of the discharge shall not exceed the 12-month rolling average EC of the source water plus 500 µmhos/cm. Compliance with this effluent limitation shall be determined monthly.

2. The monthly average effluent EC shall not exceed 1,000 µmhos/cm.

3. The boron and chloride concentrations of the discharge shall not exceed 1.0 mg/L and 175 mg/L, respectively.

D. Reuse Area Requirements:

1. The perimeter of the Reuse Area shall be graded to prevent ponding along public roads or other public areas and prevent runoff or overspray onto adjacent properties not owned or controlled by the Discharger.

2. Crops shall be grown on the Reuse Area. Crops shall be selected based on nutrient uptake, consumptive use of water, and irrigation requirements to maximize crop uptake.

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

4. The BOD loading to the Reuse Area calculated as a cycle average as determined by the method described in the attached Monitoring and Reporting Program, shall not exceed 150 lbs/acre/day.

5. Application of waste constituents shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management. The annual nutritive loading to the Reuse Area, including the nutritive value of organic and chemical fertilizers and of the wastewater, shall not exceed the annual crop demand.

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

7. The Discharger may not discharge process wastewater to the Reuse Areas within 24 hours of a storm event of measurable precipitation or when soils are saturated.

8. The Reuse Area 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 recycled water.

E. Solids Specifications

1. Any handling and storage of solids and sludge at the Plant or the Reuse Area 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 groundwater limitations of this Order.

2. Collected screenings, and other solids removed from the liquid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, rendering plants, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy this specification.

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

F. Groundwater Limitations:

1. Release of waste constituents associated with the discharge shall not cause or contribute to groundwater:

   a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality, whichever is greater:

      (i) Nitrate as nitrogen of 10 mg/L.

      (ii) Electrical Conductivity of 1,000 µmhos/cm.

      (iii) For constituents identified in Title 22, the MCLs quantified therein.

b. Containing taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

G. Provisions:

1. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as *Standard Provisions*.

2. The Discharger shall comply with Monitoring and Reporting Program (MRP) R5-2012-0001, which is 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 keep at the Plant 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.

4. 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 the Order.

5. All technical reports 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. To demonstrate compliance with California Code of Regulations, title 16, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

6. 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.

7. 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).

8. To assume operation 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 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 California 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.

9. **By 2 August 2012**, Caruthers Raisin shall submit a Salinity Control Plan, with salinity source reduction goals and an implementation time schedule for Executive Officer approval. The control plan should identify any additional methods that could be used to further reduce the salinity of the discharge to the maximum extent feasible (i.e., switch from a sodium based to a potassium based cleaner), include an estimate on load reductions that may be attained through the methods identified, and provide a description of the tasks, cost, and time required to investigate and implement various elements in the salinity control plan. The Discharger shall implement the plan in accordance with the approved schedule.

10. **By 2 August 2012**, Caruthers Raisin shall submit a Nutrient and Wastewater Management Plan for the Reuse Area for Executive Officer approval. The Plan shall determine the amount of FDS and nutrients that crops grown in the Reuse Area(s) will take up. The objective of this Plan shall be to identify and utilize site specific data to determine the appropriate pounds per acre of process wastewater that may be applied to the Reuse Areas and identify appropriate protocols for the application of any supplemental fertilizers. The Plan should also take into account contributions from grazing animals on Reuse Area LAA-2. The Discharger shall comply with the approved Nutrient and Wastewater Management Plan.

11. **By 4 February 2013**, Caruthers Raisin shall submit a technical report detailing the results of an investigation into the source of coliform bacteria in the waste stream. At a minimum the investigation shall include a detailed analysis of the waste stream with multiple sampling locations to determine the source of the bacteria entering the waste stream. In addition, the analysis shall include specific pathogen monitoring (i.e., E coli, etc.) to establish the type of the bacteria entering the waste stream to determine if it represents a hazard to human health or the environment. In the event that, the bacteria does pose a health concern the technical report should

include a proposal and a time schedule to address these concerns and implement any mitigation measures necessary to protect human health and/or the environment.

12. **Groundwater Tasks:** Caruthers Raisin shall install and maintain a groundwater monitoring well network to monitor the horizontal and vertical impacts of historic and ongoing changes in groundwater quality associated with its discharge operations. As part of this Provision, Caruthers Raisin shall submit a Work Plan and Time Schedule to install monitoring wells to replace existing monitoring wells that have gone dry and to provide coverage of the expanded Reuse Areas.

    The Work Plan shall satisfy the information needs specified in the monitoring well installation section of Attachment B, *Standard Monitoring Well Provisions for Waste Discharge Requirements*. New and replacement wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger or county pursuant to CWC §13801.

    The Work Plan must also include:

    - A description of the area's hydrology.
    - A discussion of the potential horizontal and vertical extent of groundwater impacts from historical as well as current discharges.
    - A description of proposed statistical methods to be used to characterize groundwater and establish background groundwater quality.

    Caruthers Raisin shall comply with the following compliance schedule in implementing the work required by this Provision:

	Task	Compliance Date
a.	Submit Work Plan and Time Schedule for monitoring well installation.	**2 March 2012**
b.	Commence installation of additional monitoring wells	**2 April 2012**
c.	Submit technical report characterizing background groundwater quality and the results of the groundwater evaluation.	**3 February 2014**

    Technical reports and Work Plans submitted pursuant to this Provision shall be subject to the requirements of Provision G.5.

13. **Loading Study:** Caruthers Raisin shall conduct a Study to evaluate and identify the treatment and disposal capability of its reuse areas. The study shall look at current loading rates for BOD and nitrogen to the reuse areas and their potential to degrade groundwater quality. The Study shall determine the maximum loading rates that can be

applied without causing exceedences of applicable water quality objectives. As part of this Study, Caruthers Raisin shall prepare and submit a Work Plan detailing proposed investigative methods and monitoring parameters for the Study.

Technical Report. Study results must be compiled into a final Technical Report. If the study shows that the existing BOD loading limits are not sufficient to ensure ongoing groundwater improvements, the Technical Report shall include recommendations for additional treatment and/or BPTC measures to lower BOD loading rates and include a proposed Time Schedule for implementation. The study may incorporate data collected as part of the Groundwater Evaluation specified in Provision G.12.

Caruthers Raisin shall comply with the following compliance schedule in implementing the work required by this Provision:

	Task	Compliance Date
a.	Submit Work Plan	**2 April 2012**
b.	Implement Work Plan	**Thirty days** following Executive Officer approval of Task a.
c.	Submit Progress Report	**4 February 2013**
d.	Submit Technical Report summarizing results of the loading study, including recommendations for any improvements or additional treatment options.	**3 February 2014**

Technical Reports and Work Plans submitted pursuant to this Provision shall be subject to the requirements of Provision G.5.

Upon completion of the Tasks set forth in Provision G.13, the Central Valley Water Board will consider the evidence provided regarding the discharge and groundwater quality and, if necessary, reopen the WDRs to evaluate effluent limitations and conditions of this Order to ensure consistency with plans and policies of the Central Valley Water Board.

14. **By 2 April 2012**, the Discharger shall submit an engineering evaluation of the existing wastewater treatment units described in Finding Nos. 8 and 9 that characterize the treatment capacity of the system. The results of the evaluation shall be summarized in a Technical Report that provides the treatment capacity of each treatment unit in terms of appropriate BOD and nitrogen loading rates, monthly average and daily maximum influent and effluent BOD and nitrogen removal rates and concentrations, and average and peak hydraulic capacity. The Technical Report shall include all appropriate calculations and references cited.

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

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 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 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 2 February 2012.

Original Signed by:

_____

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A. Site Map
B. Standard Monitoring Well Provisions for Waste Discharge Requirements

Monitoring and Reporting Program R5-2012-0001
Information Sheet
Standard Provisions (1 March 1991) (separate attachment to Discharger only)

KC/WDH: 2/02/12

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2012- 0001

FOR
CARUTHERS RAISIN PACKING COMPANY, INC.
RAISIN PROCESSING PLANT
AND
MR. JON ROBINSON
FRESNO COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267 and is incorporated in Waste Discharge Requirements Order R5-2012-0001.

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 9.

INFLUENT MONITORING

Influent samples shall be collected prior to treatment and shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly[1]	BOD_5	mg/L	24-hr Composite
Monthly	Nitrate as N (NO_3-N)	mg/L	24-hr Composite
Monthly	Ammonia as N (NH_4-N)	mg/L	24-hr Composite
Monthly	TKN	mg/L	24-hr Composite
Monthly	Total Nitrogen	mg/L	Computed
Monthly	TDS	mg/L	24-hr Composite
Monthly	FDS	mg/L	24-hr Composite

1. For the first year following adoption of this Order and twice monthly thereafter.

EFFLUENT MONITORING

Effluent samples shall be collected after treatment, just prior to discharge to the Reuse Area, and shall be collected on the same day as influent samples for direct comparison. Effluent monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	Mgd	Meter[2]
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly[1]	BOD_5	mg/L	24-hr Composite
Monthly	Nitrate as N (NO_3-N)	mg/L	24-hr Composite
Monthly	Ammonia as N (NH_4-N)	mg/L	24-hr Composite
Monthly	TKN	mg/L	24-hr Composite
Monthly	Total Nitrogen	mg/L	Computed
Monthly	TDS	mg/L	24-hr Composite
Monthly	FDS	mg/L	24-hr Composite
Monthly	Fecal Coliform	MPN/100mL	Grab
Monthly	Total Coliform Organisms	MPN/100mL	Grab
Quarterly	General Minerals	mg/L	24-hr Composite

1. For the first year following adoption of this Order and twice monthly thereafter.
2. A flow meter shall be installed within 90 days following adoption of this Order to monitor wastewater discharge flow from the treatment system, and absent blending waters, to the reuse areas. A written report describing installation and calibration of the meter shall be provided in the monthly self monitoring report due following the date of installation.

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 volumes of the standing water within the well casing and screen, or filter pack pore volume.

The Discharger shall monitor all wells in its Groundwater Monitoring Well Network, and any subsequent additional wells, for the following:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Depth to groundwater	Feet[1]	Measured
Quarterly	Groundwater Elevation	Feet[2]	Computed
Quarterly	pH	pH Units	Grab
Quarterly	eH	mV	Grab
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate as N	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Ammonia as N	mg/L	Grab
Quarterly	Total Nitrogen	mg/L	Computed
Quarterly	Arsenic[3]	µg/L	Grab
Quarterly	Iron[3]	µg/L	Grab
Quarterly	Manganese[3]	µg/L	Grab
Quarterly	Total Organic Carbon	mg/L	Grab
Quarterly	General Minerals[3]	mg/L	Grab

[1] To nearest tenth of a foot

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

[3] Samples collected for metals shall be filtered with a 0.45 micron filter prior to preservation, digestion, and analysis.

SOURCE WATER MONITORING

For each source (either well or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements. Alternatively, the Discharger may establish representative sampling stations within the distribution system serving the same area as is served by the Plant.

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Flow-Weighted EC	µmhos/cm	Computed average
Annually	General Minerals	mg/L	Grab

REUSE AREA MONITORING

The Discharger shall perform the following routine monitoring and loading calculations for the Reuse Area. In addition the Discharger shall keep a log of routine monitoring observations for example: areas of ponding, broken sprinklers, odors and/or flies within the Reuse Area. Data shall be collected and presented in tabular format and shall include the following:

Frequency	Constituent/Parameter	Units	Sample Type
Daily	Application Area	Field # / Acreage	n/a
Daily	Wastewater flow	Gallons	Metered
Daily	Wastewater loading	inches/day	Calculated
Daily	Supplemental irrigation	Gallons	Metered
Daily	Precipitation	inches	Rain gage[1]
	BOD loading rate[2]		
Daily	day of application	lbs/acre	Calculated
Daily	cycle average	lbs/acre-day	Calculated
	Nitrogen loading		
Monthly	from wastewater[3]	lbs/acre	Calculated
Monthly	from fertilizer	lbs/acre	Calculated
Annually	Cumulative Nitrogen loading	lbs/acre-year	Calculated
Monthly	Salt loading[3]	lbs/acre	Calculated
Annually	Cumulative Salt loading	lbs/acre-year	Calculated

[1] National Weather Service data from the nearest weather station is acceptable.
[2] Loading rates to be calculated using the applied volume of wastewater, applied acerage, and average of the three most recent concentrations for BOD. The BOD loading rate shall be divided by the #days between applications to determine cycle average.
[3] Nitrogen and salt loading shall be calculated using the applied volume of wastewater, applied acerage, and average of the three most recent concentrations for total nitrogen and FDS.

SOIL MONITORING

The Discharger shall establish with the concurrence of Central Valley Water Board staff, at least five soil profile monitoring locations within the Reuse Area 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	6 feet[1]
Annually	Cation Exchange Capacity	meq/100 grams	6 feet[1]
Annually	Soil pH	pH units	6 feet[1]

Frequency	Constituent/Parameter	Units	Sample Type
Annually	Buffer pH	mg/kg as CaCO3	6 feet[1]
Annually	Sodium	mg/kg	6 feet[1]
Annually	Chloride	mg/kg	6 feet[1]
Annually	Nitrate as N	mg/kg	6 feet[1]
Annually	TKN	mg/kg	6 feet[1]

[1] Samples to be analyzed shall be collected at 6-inches, 2, 4, and 6 feet.

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are 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 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 facility 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 and annual reports, as well as any report transmittal letters, submitted to the Central Valley Water Board:

Discharger: Caruthers Raisin Packing Company
Facility: Caruthers Raisin Processing Plant
MRP: R5-2012-0001
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.

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.

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

Wastewater reporting

1. The results of influent and effluent monitoring specified on page 2.
2. For each month of the quarter, calculation of the maximum daily flow, monthly average flow, and cumulative annual flow.
3. For each month of the quarter calculate the 12-month rolling average EC of the discharge and compare it to the 12-month average EC of the source water.
4. For each month of the quarter, calculation of the average monthly effluent BOD, nitrogen, TDS, and FDS concentrations.

Groundwater reporting

1. The results of groundwater monitoring specified on page 3. 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 at least 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 under/around the Plant and/or Reuse Area(s). The map shall also include the locations of all monitoring wells and wastewater storage and/or discharge areas.

Source Water reporting

1. For each quarter including the results of monitoring for EC and General Minerals specified on page 3.

Reuse Area reporting

1. The results of the routine monitoring and loading calculations for BOD, nitrogen, and salts as specified on page 4.

2. Provide a Site Map of the Reuse Areas showing predominant features, and include field numbers and applied acreages.
3. For each month of the quarter, calculation of the monthly hydraulic load on each individual section for wastewater and supplemental irrigation water in millions of gallons.
4. A summary of the notations made in the Reuse Area monitoring log during each quarter. The entire contents of the log do not need to be submitted.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

Wastewater

1. The names and general responsibilities of all persons in charge of wastewater treatment and disposal.
2. The names and telephone numbers of persons to contact regarding the Plant for emergency and routine situations.
3. 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).
4. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.

Solids/Sludge Monitoring

1. Annual production totals in dry tons or cubic yards.
2. A description of disposal methods, including location, and Order number of regulatory permit (if appropriate). If more than one method is used, include the percentage disposed of by each method.

Soil Sampling

1. The results of soil monitoring specified on pages 4 and 5. The analytical results should be presented in tabular form and include depth of sample. If no sample is collected at a specified depth it should be noted in the table along with the reason no sample was collected.

2. A site map showing the location of each sampling point. The map shall also include the locations of all monitoring wells and wastewater storage and/or discharge areas.

Reuse Area

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

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 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 from irrigation efficiency such that the application rate is slightly greater than the crop utilization rate. A conservative design does not include this value.
    b. 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.
    c. Monthly average and annual average discharge flow rates.
    d. 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 reuse area(s), as calculated from the sum of the monthly loadings, and the total annual nitrogen loading to the reuse area(s) in lbs/acre-year.
6. The total pounds of fixed dissolved solids (FDS) that have been applied to the reuse area(s), as calculated from the sum of the monthly loadings, and the total annual FDS loading to the reuse area(s) in lbs/acre-year.

The Discharger shall implement the above monitoring program on the effective date of this Program.

_____
PAMELA C. CREEDON, Executive Officer

_____
(Date)

KC/WDH: 02/02/12

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-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.
Daily	Samples shall be collected every day except weekends or holidays.
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
µg/L	Micrograms per liter
µmhos/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 all major cations and anions including but not limited to at least the following:

Alkalinity	Chloride	Potassium
Bicarbonate	Hardness	Sodium
Boron	Magnesium	Sulfate
Calcium	Phosphorus	TDS
Carbonate		

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

INFORMATION SHEET

R5-2012-0001
CARUTHERS RAISIN PACKING COMPANY, INC.
RAISIN PROCESSING PLANT
AND MR. JON ROBINSON
FRESNO COUNTY

Background
Caruthers Raisin Packing Company (Caruthers Raisin) has owned and operated a raisin packing plant (Plant) near Caruthers, since 1985, where it receives, washes, stores, packages, and distributes raisins from local growers.

The Report of Waste Discharge (RWD) Caruthers Raisin submitted in 1985 was for the discharge of raisin process wastewater to the adjacent vineyards. Due to its small size and because Fresno County had a program in place to regulate food processing discharges, the Central Valley Water Board elected to waive Waste Discharge Requirements (WDRs) for the proposed discharge under Resolution 82-036.

In December 1992, Central Valley Water Board staff inspected the Plant in response to several odor complaints. The resulting inspection report transmittal letter required Caruthers Raisin to submit a RWD, but made no mention of the previous waiver. In September 1993, Caruthers Raisin submitted a RWD. The RWD stated that Caruthers Raisin generated an average of 80,000 gallons per day (gpd) of raisin process wastewater, which was discharged to approximately 5 acres of cleared land to the northwest of the Plant.

Following an August 2003 complaint inspection of the Plant, Central Valley Water Board staff required Caruthers Raisin to submit a revised RWD. Staff reiterated the request in August 2004 at which time, Caruthers Raisin's consultant requested an extension. Caruthers Raisin submitted the RWD in November 2004, but it was determined to be incomplete. Caruthers Raisin submitted several addendums on 14 October 2004, 9 December 2004, 22 December 2005, and 31 March 2009.

Between 2004 and 2006 Caruthers Raisin hauled its wastewater to the Selma-Kingsburg-Fowler Wastewater Treatment Facility (SKF) for disposal. However, this ceased in 2006 when SKF stopped accepting the wastewater. During this period Caruthers Raisin completed many upgrades and improvements, including installation of new processing and packaging lines intended to improve efficiency and generate less wastewater. Along with these upgrades, Caruthers Raisin added screening and aeration to improve wastewater quality and increased its reuse area to 12 acres. In 2009, Caruthers Raisin leased a portion of land owned by Mr. Jon Robinson, increasing the reuse area to 27 acres and switched to sprinkler irrigation to improve irrigation efficiency and to facilitate even distribution of wastewater.

Wastewater

Wastewater at the Plant is generated in batches from rinsing raisins and washing down the equipment lines. The wastewater drains into a concrete standpipe from which it is pumped through a slotted rotating drum screen to remove fine solids. Following the screen, the wastewater is aerated in a series of three, 9,000-gallon aboveground tanks. Aeration in the tanks is intended to control odors and reduce the biochemical oxygen demand (BOD) of the wastewater. The treatment appears to have a side benefit in the reduced nitrogen concentration of the wastewater.

Typical raisin wash water contains high concentrations of BOD and total dissolved solids (TDS) as a result of the high sugar content of the raisins. The following depicts Caruthers Raisin's average wastewater concentrations based on analytical data from 2006 through 2010:

Constituent/Parameter	Units	2006	2007	2008	2009	2010
pH	s.u.	6.7	7.0	6.1	6.9	6.4
EC	µmhos/cm	900	800	750	630	650
BOD	mg/L	7,300	4,500	5,200	3,500	3,700
Nitrate as Nitrogen (NO_3-N)	mg/L	4.2	3.5	3.8	4.2	4.0
Total Nitrogen (TN)	mg/L	60	40	31	31	41
Total Dissolved Solids (TDS)	mg/L	7,100	4,000	4,000	3,000	3,100
Fixed Dissolved Solids (FDS)	mg/L	575	436	440	300	250

Chemicals added to the wastewater include Liquid Optomizer and lime, which are added for odor and algae control and pH adjustment. In addition, Hasa-Chlor, a sodium hypochlorite solution, is used during the wash down to clean the equipment.

Source Water: Source water is provided by two on-site wells. The 2008 Consumer Confidence Report indicates that the source water is relatively good, with an average EC of about 300 µmhos/cm, and nitrate as nitrogen of 2.8 mg/L. There are two additional supply wells on-site. One is an irrigation well and the other is a non-potable well used to supply an emergency eye wash station.

Disposal Methods

Solids and screenings: Screenings removed from the wastewater are collected in storage bins and sold for use as cattle feed.

Reuse: After treatment, the wastewater is distributed to an irrigation system and used to irrigate about 27 acres of cropland, 15-acres of which are owned by Mr. Jon Robinson who is also named as a Discharger. The Reuse Area is divided into two distinct areas identified as LAA-1 and LAA-2. LAA-1 consists of approximately 12-acres of land owned by Caruthers Raisin and includes the previous five acre disposal area adjacent to the Plant. Reuse Area LAA-2 consists of the approximately 15-acres of land leased from Mr. Jon Robinson. Both

areas are double cropped with sudan grass and a winter mix of wheat and oats. The crop in LAA-1 is harvested and sold as cattle feed, while LAA-2 is used as a pasture for cattle and horses.

The irrigation system is divided into seven sections of approximately three to six acres each. Irrigation is rotated between sections on a seven day cycle. During the summer, additional irrigation water may be applied in order to meet crop demands.

Groundwater Conditions

Regional groundwater in the area is encountered at about 130 feet below ground surface (bgs) and flows to the southwest according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer* (DWR, Spring 2009).

Three monitoring wells were installed at the site in July 2005. Data collected from these wells indicates groundwater flow has been consistently to the southwest, which is also consistent with regional groundwater flow. Based on groundwater flow direction, monitoring well MW-1 was an up-gradient and monitoring wells MW-2 and MW-3 were down-gradient of the Plant and Reuse Area LAA-1. Since these monitoring wells were installed, groundwater levels have dropped 10 to 15 feet. By October 2008, all three monitoring wells were reported as dry. Following a recent rise in groundwater, Caruthers Raisin was able to sample two of its monitoring wells in 2011. The following table compares average constituent concentrations for groundwater samples collected from 2005 to 2008 to concentrations reported during the May 2011 sampling event:

		Up-Gradient		Down-Gradient			
Constituent	Units	MW-1		MW-2		MW-3	
		Average	2011	Average	2011	Average	2011
EC	µmhos/cm	840	950	1,200	1,300	1,200	ns
TDS	mg/L	540	600	730	780	730	ns
Alkalinity	mg/L	230	230	640	680	500	ns
Nitrate (NO_3-N)	mg/L	20	24	0.07	< 0.02	2.3	ns
Chloride	mg/L	48	50	52	38	69	ns
Sulfate	mg/L	60	74	40	26	55	ns
Calcium	mg/L	95	150	120	160	110	ns
Sodium	mg/L	69	68	132	95	136	ns
Magnesium	mg/L	22	56	35	58	28	ns
Iron	mg/L	1.8	< 0.05	3.0	< 0.05	5.4	ns
Manganese	mg/L	0.05	< 0.01	2.3	0.41	0.6	ns
Arsenic	ug/L	2.0	< 2	5.5	< 2	2.6	ns

The data show that historic discharges from the Plant have degraded groundwater down-gradient of LAA-1with salinity and metals. Down-gradient groundwater EC is about 350 µmhos/cm higher than up-gradient, and down-gradient TDS is about 200 mg/L higher than up-gradient. In addition, elevated concentrations of iron, manganese, and arsenic as well as low nitrate and sulfate concentrations in down-gradient monitoring wells, indicates that historic discharges have resulted in organic overloading of the soil causing reducing conditions and leaching metals from the soil.

The implementation of the treatment described above, expansion of the reuse area, and the switch to spray disposal has resulted in groundwater quality improvements. The May 2011 sampling shows that groundwater iron, manganese, and arsenic concentrations in MW-2 (down-gradient) have decreased significantly compared to previous sampling events, showing an improvement in groundwater quality. In May 2011, iron and arsenic concentrations in MW-2 were both below water quality objectives, and manganese concentrations, while still above the secondary MCL of 0.05 mg/L, at 0.41 mg/L was almost six times lower than during previous sampling events. EC and TDS concentrations in MW-2 at 1,300 umhos/cm and 780 mg/L increased slightly and still exceed recommended lower secondary MCLs, but are below the upper secondary MCLs. EC and TDS also increased in MW-1 (up-gradient) by the same magnitude as MW-2, indicating a possible source other than the discharge.

With the treatment added in 2006 to reduce the BOD concentration of the wastewater and expansion of the Reuse Area, the organic load from the discharge is significantly less than in the past. It is anticipated that with the reduced organic load and implementation of best management practices (BMPs) established by Caruthers Raisin to prevent odor and nuisance conditions and minimize the potential for reducing conditions in soil, that water quality beneath the site will continue to improve over time.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition,* revised January 2004 (hereafter 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 Resources Control Board (State Water Board). Pursuant to Water Code section 13263(a), these requirements must implement the Basin Plan.

The Basin Plan indicates the greatest long-term 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. The Central Valley Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental EC limitation of 500 µmhos/cm over source water or a maximum of 1,000 µmhos/cm, as the measure of the permissible addition of

salt constituents through use. In addition, discharges to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 µmhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.

Treatment and Control Practices
Caruthers Raisin provides treatment and control of the discharge that incorporates: (a) dry sweeping to remove solids and reduce the amount of wastewater, (b) screening to remove excess solids from the waste stream, (c) hauling solids offsite for use as cattle feed, (d) aeration to reduce effluent BOD concentrations, (e) sprinkler irrigation to more evenly distribute the wastewater, (f) rest periods between applications to allow for reaeration of the soil, (g) tilling between crop harvests to maintain soil structure, permeability, and treatment capacity; (h) organic loading rates consistent with those recommended by the California League of Food Processors as unlikely to cause unacceptable groundwater degradation; (i) application of nitrogen at agronomic rates; (j) hydraulic loading at rates to preclude standing water on the land application area; and (k) groundwater monitoring to monitor the impact of the discharge on groundwater.

These treatment and control measures represent a higher level of water quality protection measures than those employed by other raisin processors in the Central Valley, and are consistent with the recommendations of the California League of Food Processors. In combination with the requirements of this Order, these treatment and control measures represent BPTC.

Anitdegradation
The antidegradation directives of State Water Board Resolution No. 68-16, "*Statement of Policy With Respect to Maintaining High Quality Waters in California*," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents of concern that have the potential to cause degradation include, in part, organics, nutrients and salts.

a. To reduce the organic load of its discharge, since 2006, Caruthers Raisin has added treatment and reduced the strength of its wastewater by almost 50%, expanded its Reuse Area, and implemented BPTC measures (switching to sprinkler irrigation, establishing resting periods of 7-days between applications, and disking between harvests), significantly reducing the organic load to the Reuse Area and minimizing the potential for anoxic or reducing conditions in soil. These measures are expected to prevent odor and nuisance conditions and to preclude iron and manganese degradation of groundwater from organic loading. Groundwater iron and manganese concentrations from historic operations have improved in recent years, and are expected to continue to improve over time. This Order

requires Caruthers Raisin to expand the Plant's groundwater monitoring well network to monitor this improvement and to complete a 2-year loading study to evaluate site BOD loading capacity.

b. For nitrogen, shallow groundwater up-gradient of the Reuse Area already contains nitrate in excess of water quality objectives. Reduction of nitrogen through treatment and application of wastewater at agronomic rates for both nutrient and hydraulic loading should preclude degradation of groundwater by nitrates from the discharge. Groundwater down-gradient of the discharge does not exceed the MCL for nitrate as nitrogen (NO_3-N) of 10 mg/L, and is not expected to exceed it in the future.

c. For salinity, with an average source water EC of about 300 µmhos/cm, the discharge with an average EC of 600 to 750 µmhos/cm meets the Basin Plan limits for EC of 500 µmhos/cm over source or 1,000 µmhos/cm maximum for discharges to areas that may recharge good quality groundwaters. In addition, a portion of the EC of the discharge is from organic sources or from nutrients beneficial for plant growth (i.e., calcium, magnesium, and potassium), which will be further treated in the soil profile and removed by crops, and as such is not anticipated to result in the degradation of groundwater exceeding water quality objectives.

While the discharge is consistent with Basin Plan limits for salinity, groundwater monitoring data shows increases in EC and TDS concentrations over background in down-gradient monitoring wells. It is believed that the elevated EC and TDS concentrations are, in part, the result of increased bicarbonate, calcium, and magnesium in down-gradient wells, due to past organic overloading of the reuse area. The reduced organic load and implementation of BPTC measures are expected to preclude the discharge from causing continued increases in bicarbonate alkalinity in groundwater.

This Order establishes groundwater limitations that allow some degradation, but that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.

The discharge and the potential for groundwater degradation allowed by the proposed Order (specifically for nitrates and EC) is consistent with the Antidegradation policy since: (a) Caruthers Raisin has implemented BPTC to minimize degradation, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated 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, as the facility employs 100 to 140 people, supports the local economy, and provides a needed service to local raisin growers. In addition, the use of process wastewater for irrigation in place of higher quality groundwater will preserve a needed resource, which is of further benefit to people of the State.

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 exemption found at Title 27, section 20090(b) and pursuant to the reuse exemption found at Title 27, section 20090(h).

CEQA

On 27 July 1989, Fresno County adopted a Negative Declaration in conjunction with a Conditional Use Permit (CUP) for commercial operation of the existing raisin processing plant at 12797 S. Elm Avenue. The operation as specified in the Negative Declaration would generate approximately 10,000 gallons per day of wastewater, which would be used to irrigate the adjacent vineyard. Central Valley Water Board staff did not comment on this Negative Declaration

On 24 March 2005, Fresno County, adopted a Mitigated Negative Declaration with revision of the CUP for upgrades to the existing raisin processing plant, to include new processing and packaging lines, and reuse of process wastewater for irrigation on crops. The Mitigated Negative Declaration concluded that the new equipment would improve efficiency and generate less wastewater, and included the following mitigation measures:

1. All parking, circulation, and storage areas shall be covered with an asphalt concrete surface;

2. The applicant shall submit a complete Report of Waste Discharge to the Central Valley Water Board prior to discharging to the land; and

3. All onsite discharge of liquid waste materials (i.e., wastewater) shall be done in such a manner as to not adversely impact groundwater supplies or create conditions of nuisance, and “Best Practicable Treatment or Control” shall be utilized as approved by the Central Valley Water Board in such a way as to preclude potential odor and vector nuisance and adverse groundwater quality impacts.

Central Valley Water Board staff reviewed and concurred with the findings in the Mitigated Negative Declaration. The proposed Order includes specific conditions intended to mitigate or avoid environmental effects on water quality. Specifically, the proposed Order:

a. Sets limits for flow, EC, chloride, and BOD loading;

b. Requires application of wastewater at agronomic rates;

c. Establishes groundwater limits;

d. Establishes a monitoring and reporting program; and

e. Requires Caruthers Raisin to prepare a Nutrient and Wastewater Management Plan, a Salinity Control Plan, and complete a 2-year loading study.

Although the Mitigated Negative Declaration does not specifically address the reuse of wastewater on Mr. Robinson's property, this discharge has been ongoing since 2009, and the sprinkler system has already been installed. This Order imposes additional regulatory requirements on the discharge of waste to this LAA, and no additional construction is authorized by this Order. Therefore, the imposition of additional regulatory requirements for this existing discharge is exempt from the requirements of CEQA in accordance with California Code of Regulations, title 14, section 15301.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order prohibits discharge to surface waters and drainage courses.

The proposed Order sets a monthly average flow limit of 0.13 mgd with an annual flow limit of 25 million gallons, which is consistent with current practices.

The proposed Order sets an EC limit such that the 12-month rolling average EC of the discharge shall not exceed the average EC of the source water plus 500 µmhos/cm and sets a monthly average EC limit of 1,000 µmhos/cm. In addition, the proposed Order sets specific numerical effluent limits for chloride and boron of 175 mg/L and 1.0 mg/L, respectively consistent with the Basin Plan, and requires Caruthers Raisin to prepare and implement a Salinity Control Plan to control the salinity of the discharge to the extent practicable.

To address the potential for the discharge to impact groundwater quality due to organic loading or the creation of nuisance conditions, the proposed Order will set a cycle average BOD loading limit to the Reuse Areas of 150 lbs/acre/day and includes a provision requiring Caruthers Raisin to complete a 2-year site specific loading study to determine the capacity of its reuse areas. It also requires Caruthers Raisin to expand its groundwater monitoring network to ensure that changes in groundwater quality associated with historic and ongoing discharges are quantified.

The proposed Order also requires the Discharger to provide an engineering analysis of the capacity of its wastewater treatment units.

Samples of the wastewater contain high concentrations of total and fecal coliform organisms often in excess of 1600 MPN/100 mL. The source of the bacteria in the waste stream has yet to be determined. Though the likely presence of birds and other animals attracted to the raisins as well as open aeration tanks and open surfaces around the processing equipment are possible sources. The proposed Order includes continued monitoring and a Provision requiring Caruthers Raisin to identify the source and nature of the bacteria in the waste stream and ensure that it does not represent a hazard to human health or the environment.

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 site specific groundwater limits for nitrate and EC. The nitrate as nitrogen limit is set as the Primary MCL of 10 mg/L. The predominant crops for the area, specifically grapes and almonds, can tolerate irrigation water with an EC up to 1,000 µmhos/cm with no reduction in crop yield. Considering predominant crop types and irrigation methods the proposed Order sets a groundwater limit for EC of 1,000 µmhos/cm, which should preclude impairment of agricultural beneficial uses and is within the range of the secondary MCL for EC consistent with beneficial uses for municipal and domestic supply.

Monitoring Requirements

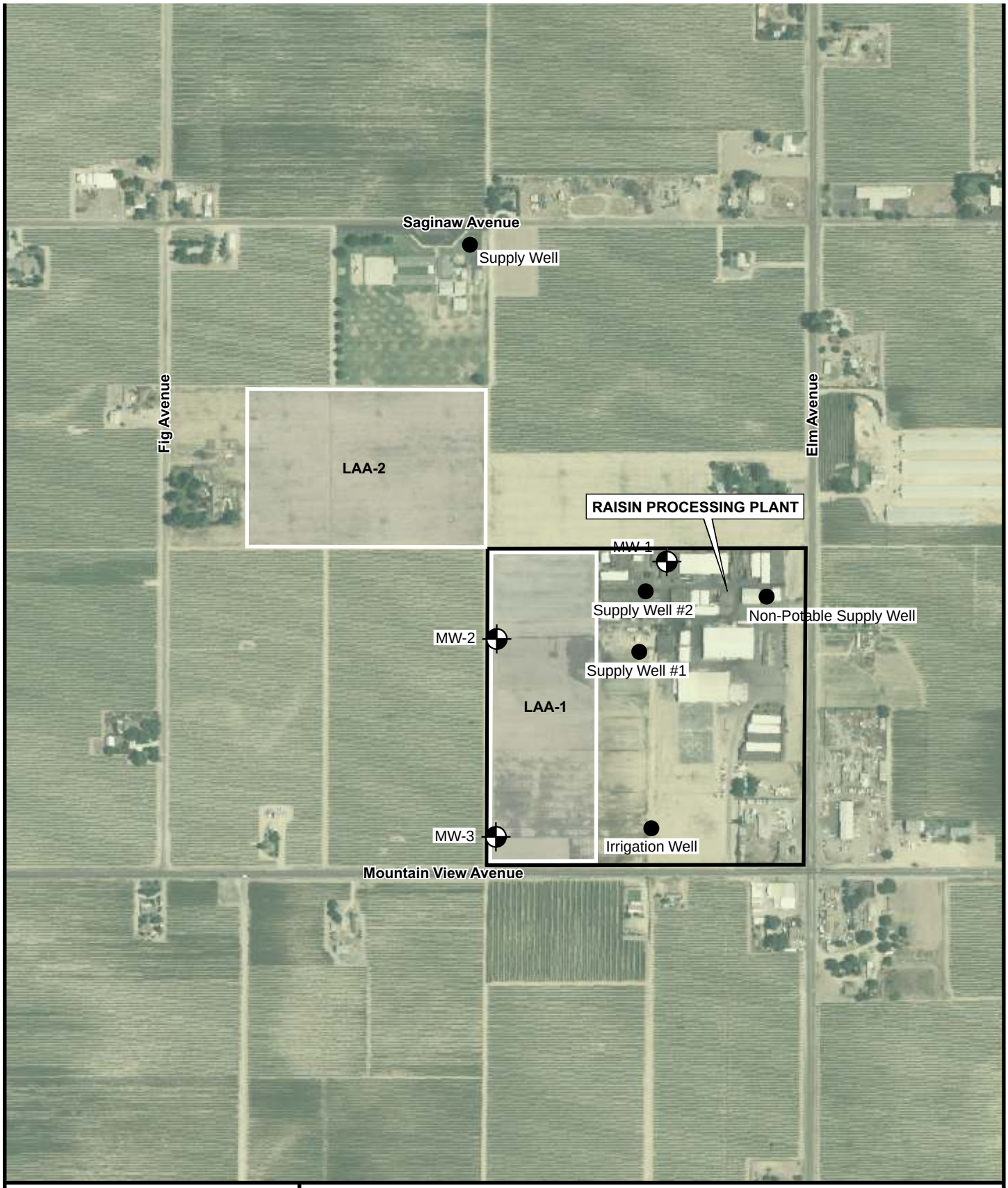
Water Code section 13267 authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Water Code section 13268 authorizes the assessment of administrative civil liability where appropriate.

The proposed Order includes influent and effluent monitoring requirements, soil sampling, and groundwater monitoring. In addition, the proposed Order requires monitoring of the Reuse Areas and loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, 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.

KC/WDH: 02/02/12



Map Source:
NAIP Aerial Photograph (2005)
Section 9, T16S, R20E, MDB&M

SCALE IN FEET
0 250 500

SITE MAP

ORDER NO. R5-2012-0001
WASTE DISCHARGE REQUIREMENTS
FOR
CARUTHERS RAISIN PACKING COMPANY, INC.
RAISIN PROCESSING PLANT
AND
MR. JON ROBINSON
FRESNO COUNTY

ATTACHMENT A

ORDER R5-2012-0001
ATTACHMENT B
STANDARD REQUIREMENTS FOR
MONITORING WELL INSTALLATION WORK PLANS AND
MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a work plan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approves the work plan. Upon installation, the Discharger shall submit a well installation report that includes the information contained in Section 2, below. All work plans and reports must be prepared under the direction of, and certified by, a California registered geologist or civil engineer.

SECTION 1 - Monitoring Well Installation Work Plan and Groundwater Sampling and Analysis Plan

The monitoring well installation work plan shall contain, at a minimum, the following information:

A. General Information:
   Purpose of the well installation project
   Brief description of local geologic and hydrogeologic conditions
   Proposed monitoring well locations and rationale for well locations
   Topographic map showing facility location, roads, and surface water bodies
   Large-scaled site map showing all existing on-site wells, proposed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
   On-site supervision of drilling and well installation activities
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Cuttings disposal methods
   Soil sampling intervals (if appropriate); logging methods; number and location of soil samples and rationale; and sample collection, preservation, and analytical methods

C. Monitoring Well Design (in graphic form with rationale provided in narrative form):
   Diagram of proposed well construction details
   - Borehole diameter
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
   - Anticipated depth of well, length of well casing, and length and position of perforated interval
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
   Method of development to be used (i.e., surge, bail, pump, etc.)
   Parameters to be monitored during development and record keeping technique
   Method of determining when development is complete
   Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
   Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
   Datum for survey measurements
   List well features to be surveyed (i.e., top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)
   The Groundwater SAP, a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities, shall contain, at a minimum, a detailed written description of standard operating procedures for:
   - Equipment to be used during sampling
   - Equipment decontamination procedures
   - Water level measurement procedures
   - Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
   - Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
   - Purge water disposal
   - Analytical methods and required reporting limits
   - Sample containers and preservatives
   - Sampling
     - General sampling techniques
     - Record keeping during sampling (include copies of record keeping logs to be used)
     - QA/QC samples
   - Chain of Custody
   - Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved work plan.

A. General Information:
   Purpose of the well installation project
   Number of monitoring wells installed and identifying label(s) for each
   Brief description of geologic and hydrogeologic conditions encountered during well installation
   Topographic map showing facility location, roads, surface water bodies
   Large-scaled site map showing all previously existing wells, newly installed wells, surface water bodies and drainage courses, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
   On-site supervision of drilling and well installation activities
   Drilling contractor and driller's name
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Well boring log (provide for each well)
   - Well boring number and date drilled
   - Borehole diameter and total depth
   - Total depth of open hole (i.e., total depth drilled if no caving or back-grouting occurs)
   - Depth to first encountered groundwater and stabilized groundwater depth
   - Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (provide for each well):
   Well construction diagram including:
   - Monitoring well number and date constructed
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Length of well casing
   - Length and position of slotted casing and size of perforations
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development (provide for each well):
- Date(s) and method of development
- How well development completion was determined
- Volume of water purged from well and method of development water disposal

F. Well Survey (provide for each well):
- Reference elevation at the top rim of the well casing with the cap removed (feet above mean sea level to within 0.01 foot)
- Ground surface elevation (feet above mean sea level to within 0.01 foot)
- Horizontal geodetic location, where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum, or acceptable alternative (provide rationale)
- Present the well survey report data in a table

G. Water Sampling:
- Date(s) of sampling
- How well was purged
- How many well volumes purged
- Levels of temperature, EC, and pH at stabilization
- Sample collection, handling, and preservation methods
- Sample identification
- Analytical methods used
- Laboratory analytical data sheets
- Water level elevation(s)
- Groundwater contour map

H. Soil Sampling (if applicable):
- Date(s) of sampling
- Sample collection, handling, and preservation methods
- Sample identification
- Analytical methods used
- Laboratory analytical data sheets
- Present soil sampling data in a table

I. Well Completion Report(s) (as defined in California Water Code §13751). Blank forms are available from California Department of Water Resources' website **www.water.ca.gov**. Submit this section under separate cover.

J. Appendix - include, at a minimum, copies of the following:
- County-issued well construction permits
- Registered engineer or licensed surveyor's report and field notes
- Field notes from well development