CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0007

FOR

NICHOLS PISTACHIO
PISTACHIO PROCESSING PLANT
KINGS AND TULARE COUNTIES

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

1. Nichols Pistachio, a California corporation, owns and operates a Pistachio Processing Plant (Plant) at 13762 First Avenue in Kings County, Section 16, T19S, R23E, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference.

2. The Plant, which has been in operation since 1991, processes and packs pistachio nuts for export and sale. In general the pistachio processing season takes place over a 30 to 40 day period within the six to eight weeks between late August and the middle of October.

3. The Plant is currently regulated by Waste Discharge Requirements (WDRs) Order 93-006, which authorizes a maximum daily discharge of up to 0.244 million gallons to adjacent farmland during the six to eight week pistachio processing season.

4. In February 1994, Nichols Pistachio (hereafter Discharger) submitted a Report of Waste Discharge (RWD) for expansion of its Pistachio Processing Plant and subsequent increase in flows. The RWD projected that flows would increase over several years to 1.2 million gallons per day (mgd) calculated as a seasonal average with a daily maximum of 2.0 million gallons. Addendums to the RWD were submitted in April 1998 and October 2012 to update the RWD and addressed further expansion of the Plant. The addendums propose to increase flows up to 2.4 mgd calculated as a seasonal average with a daily maximum of 5.0 million gallons.

5. Update of Order 93-006 is necessary to reflect changes and expansion of the Plant's operation and discharge and to ensure that the discharge is consistent with the Board's plans and policies.

Existing Plant and Discharge

6. During the 30 to 40 day pistachio processing season, the Plant may operate up to 24 hours a day, seven days a week. Pistachios brought in from the fields are cleaned and processed to remove the hulls. Wastewater, generated from the cleaning and hulling process, is screened to remove solids and discharged to four temporary retention basins.

7. The temporary retention basins consist of four lined ponds operated in series. The ponds are lined with a 36-mil scrim-reinforced polypropylene synthetic liner and have a combined capacity of about two million gallons that provides about 12 to 24 hours of temporary storage.

8. At the average flow rate of 2.4 mgd, the annual volume of wastewater generated during the 40 day pistachio processing season will be about 96 million gallons.

9. Wastewater from the Plant is collected and analyzed for constituents of concern on a weekly basis during the pistachio processing season. The following table presents wastewater quality data for the discharge collected from 2006 through 2011.

Constituent	Units	Minimum	Maximum	Average
pH	s.u	5.0	7.5	5.6[1]
Electrical Conductivity (EC)	umhos/cm	840	2,400	1,700
Total Dissolved Solids (TDS)	mg/L	518	1,478	1,041
Biochemical Oxygen Demand (BOD)	mg/L	880	3,100	1,712
Nitrate as Nitrogen	mg/L	0.7	60	4.8
Total Kjeldahl Nitrogen (TKN)	mg/L	10	159	89
Total Nitrogen	mg/L	30	161	94
Chloride	mg/L	11	89	46
Sodium	mg/L	25	64	50
Potassium	mg/L	80	754	416

[1] Average pH values were calculated by converting the values into hydrogen ion concentrations averaging the data and then converting the resulting concentration back to a pH value.

10. Wastewater is applied as irrigation water on about 675 net acres of farmland (hereafter Reuse Area). Crops grown within the Reuse Area include almonds, pistachios, and field crops. The Reuse Area includes parcels 016-230-21, 016-230-32, and 016-230-29 in Kings County and parcels 118-050-01, 118-050-29, 147-030-09, and 147-030-011 in Tulare County.

11. Wastewater is applied via flood, sprinkler, or drip irrigation depending on crop type. To remove fine solids and minimize clogging of the drip and irrigation lines the wastewater is pumped through a series of sand filters prior to entering the irrigation system.

12. Solids, consisting principally of hulls, are collected on a concrete slab and removed daily during the processing season. Water from the solids piles drains to a collection trough and is returned to the waste stream. Solids are applied as a soil amendment over portions of the Reuse Area that do not receive wastewater during the processing season or on nearby farmland. In addition, a portion or all of the solids may be used off-site for animal feed or composting. This Order requires the Discharger to monitor and track where and how the solids are disposed.

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

salts, and metals) to percolate below the root zone. Typically, irrigation with high-strength wastewater can result in high BOD loading on the day of application, which can deplete oxygen in the soil and lead to anoxic conditions. When insufficient oxygen is present below the ground surface, anaerobic decay of organic matter can create reducing conditions that convert metals naturally present in the soils as relatively insoluble (oxidized) forms to more soluble (reduced) forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If reducing conditions do not reverse as the percolate travels thorough the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.

14. 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.

15. With an average nitrogen concentration of 94 mg/L, the annual nitrogen load to the 675-acre Reuse Area with an annual discharge of about 96 million gallons would be about 110 lbs/acre/year. This is less than the annual nitrogen uptake for almonds and pistachio trees of 200 and 250 lbs/acre/year (*Western Fertilizer Handbook*, 9th edition).

16. The maximum BOD loading rate that can be applied to land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental protection Agency (USEPA Publication 625/3-77-0007), cites BOD loading rates for irrigation purposes in the range of 36 to 100 lbs/acre/day to prevent nuisance, but indicates that loading rates can be even higher under certain conditions. The studies that supported this report did not evaluate actual or potential groundwater degradation associated with those loading rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have are not readily adapted to varying soil, groundwater, and climate conditions that are prevalent throughout the region.

17. With an average flow rate of 2.4 mgd and an average BOD concentration of 1,712 mg/L, the daily BOD loading rate to the Reuse Area would be between 340 and 2,300 lbs BOD/acre/day depending on the type of application (i.e., furrow, sprinkler, or drip). With 675 acres, the average BOD loading rate for the season would be about 50 lbs/acre/day. With the short processing season and careful management of the Reuse Area including implementation of best management practices, such as allowing for sufficient resting periods and tilling the soil following applications, the discharge is not expected to cause reducing and/or nuisance conditions.

18. Food processing wastewater may contain elevated concentrations of total dissolved solids (TDS) resulting from the fruit and vegetable products or materials used for production. Typically, a percentage of the TDS is organic, which will generally decompose into its

component elements and can be utilized by plants and microorganisms in the soil. In contrast, the fixed dissolved solids (FDS) is that portion of the TDS which consists of inorganic constituents, which can accumulate in the soil. Excessive salt is then leached to groundwater where it can degrade groundwater quality. Growing and harvesting crops provides a means to remove some of these constituents, particularly calcium, magnesium, potassium, phosphorus, nitrate, and ammonia.

19. Samples of the discharge were collected in 1996 and again in 2012 to compare organic and inorganic dissolved solids in the discharge. The results of the sampling are presented in the following table:

Date	BOD (mg/L)	EC (umhos/cm)	TDS[1] (mg/L)	FDS[2] (mg/L)	Bicarbonate (mg/L)	Sodium (mg/L)	Chloride (mg/L)	Potassium (mg/L)
9/18/1996	2,220	1,450	2,370	1,115	738	36	155	414
9/25/1996	600	690	800	516	366	37	21	57
10/9/1996	2,160	2,240	2,464	1,496	1,043	39	35	100
9/6/2012	1,100	1,100	1,600	860	260	43	18	290

1. Total dissolved solids
2. Fixed dissolved solids

20. Based on the results of the difference between the TDS and FDS in the samples presented in Finding 19 and compared with discharges from other similar pistachio processing facilities, in general, there is a 30% to 40% increase due to concentrations of organic dissolved solids in the discharge.

21. Domestic wastewater generated at the Plant is discharged to an on-site septic tank/leachfield system regulated by Kings County.

Site-Specific Conditions

22. Source water for the Plant is provided by an on-site supply well. A sample collected from the source water well reported an EC of 240 umhos/cm, a TDS of 150 mg/L, and a nitrate as nitrogen concentration of 2.2 mg/L. A well log provided by the Discharger indicates the well is screened from 204 feet below ground surface to 576 feet below ground surface.

23. The Plant and Reuse Areas are in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through April. Occasional rains occur during the spring and fall months, but summer months are dry. Based on publications from the Department of Water Resources and the Western Regional Climate Center, the average annual rainfall for the Hanford area is about 9.5 inches, with a 100-year-return-period wet year rainfall of about 20.65 inches. The mean reference evapotranspiration rate (ETo) is about 65.6 inches per year for nearby Stratford.

24. United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey maps characterize approximately the top six feet of soil. Soils within the Reuse Area are primarily Colpien loam, Grangeville fine sandy loam, and Tagus loam. These soils are non-saline to slightly saline, moderately well drained with a hydraulic conductivity between

0.5 and 2 inches per hour, and an irrigated land capability classification of I and IIw. The soils do not present any restrictions on the types of crops that may be grown.

25. The Plant and Reuse Area is generally surrounded by agricultural land. According to the 2003 and 2007 land use surveys from the Department of Water Resources, primary crops grown in the area include hay and grain crops, almonds, pistachios, and plums. There are also approximately 490 acres of salt sensitive dried beans grown within roughly a two mile radius of the Reuse Area. In addition, there are several dairies within five miles of the site.

26. Storm water around the Plant is absorbed into soils at the site, or on paved areas, is collected in drains and diverted into an on-site storm water retention basin. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit since all storm water runoff is reportedly retained on-site and does not discharge into a water of the U.S.

27. Federal Emergency Management Agency (FEMA) maps show that the Plant and Reuse Areas are within Flood Zone A, an area subject to potential flooding by a 100-year flood though no base flood elevation or flood hazard factors have been determined. Flood control features and berms are intended to prevent inundation or runoff from the Reuse Areas during floods.

Groundwater Considerations

28. According to Department of Water Resources Groundwater Elevation Maps (Spring 2010), first-encountered groundwater beneath the Reuse Area occurs in an unconfined aquifer at about 130 to 150 feet below ground surface (bgs), and flows to the west-southwest.

29. The Discharger is not required to conduct groundwater monitoring and there are no monitoring wells in the immediate vicinity of the Reuse Area. Groundwater data for the San Joaquin Valley from 1971 to 1975 indicates that groundwater in the area is reasonably good with an EC of less than 500 umhos/cm and nitrate concentrations of less than 45 mg/L (Tulare Lake Basin Plan).

30. First encountered groundwater data from monitoring wells for the City of Visalia's Wastewater Treatment Facility 3 to 8 miles up-gradient of the site report up-gradient EC and TDS levels of 300 umhos/cm and 250 mg/L, respectively, and down-gradient EC and TDS levels of 2,000 umhos/cm and 1,200 mg/L, respectively (2004 through 2011). Nitrate (as N) is varied throughout the area in some cases exceeding the primary MCL of 10 mg/L with concentrations ranging from 3 to 52 mg/L. The higher constituent levels downgradient of the WWTF are due to historically high salinity effluent concentrations associated with an olive briner and impacts from nearby dairies.

31. Nichols Pistachio will not be required to conduct groundwater monitoring at this time. This Order requires wastewater effluent monitoring and loading calculations. Should constituent concentrations and loadings exceed those described in Findings 9, 15, and 17, the monitoring and reporting program will be modified to require a groundwater monitoring evaluation work plan to evaluate any potential impacts from the discharge.

Basin Plan, Beneficial Uses, and Water Quality Objectives

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

33. The Plant and Reuse Area lie within the Kaweah Delta Hydrologic Area (No. 558.10), as depicted on interagency hydrologic maps prepared by the State Water Resources Control Board and the Department of Water Resources, revised in August 1986. Surface water drains by sheet flow toward Mill Creek. Beneficial uses of surface waters include agricultural supply, industrial service and process supply, water contact and non-contact recreation, warm freshwater habitat, wildlife, and rare threatened or endangered species habitat, and groundwater recharge.

34. The Plant and Reuse Area lie within Detailed Analysis Unit (DAU) 242, in the Kaweah Basin Hydrologic Unit. The Basin Plan identifies the beneficial uses of groundwater in the DAU as municipal and domestic supply, agricultural supply, industrial service and process supply, and contact and non-contact recreation.

35. 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.

36. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Taste and Odors, and Toxicity. The Toxicity objective, in summary, 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. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

37. The Basin Plan Chemical Constituents water quality objective requires, at a minimum, waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of CCR. 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.

38. The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. Until then, the Basin Plan establishes several salt management requirements, including:

    a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC of the effluent discharged to land shall not exceed

the EC of the source water plus 500 umhos/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 umhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

39. The Basin Plan allows the Board to make exceptions to the presumptive EC limit of source water plus 500 umhos/cm for food processing industries, where the discharge exhibits a disproportionate increase in EC over source water due to unavoidable concentrations of organic dissolved solids from the raw food product. The Board may make this exception upon showing that the Discharger employs best available technology and best management practices that control inorganic solids to the maximum extent practicable.

40. As discussed in Findings 19 and 20, sampling of the wastewater shows a 30% to 40% difference between the TDS and FDS of the discharge due to the presence of organic dissolved solids. In addition, the Discharger implements best management practices for constituents that are expected to degrade groundwater including use of cleaning chemicals at labeled rates, storage of wastewater in lined ponds, and application to the Reuse Area at agronomic rates for reuse on crops. This Order also requires the submittal of a Salinity Control Plan. These treatment and control measures represent a level of water quality protection consistent with those employed by comparable food processing facilities in the Central Valley and the Board finds that the Discharger employs practices that control inorganic dissolved solids to the extent feasible. Therefore, an EC limit of source water plus 500 umhos/cm need not be applied to this discharge.

41. The Municipal and Domestic Wastewater section in the Basin Plan also includes an effluent limit cap for EC of 1,000 umhos/cm for discharges overlying good quality groundwater. Under the Industrial Wastewater section of the Basin Plan it says that "Generally, the effluent limits established for municipal and domestic discharges will apply to industrial wastes." However, the general application of an EC limit cap would be inappropriate in this case since: (a) The discharge meets the exemption for the EC limit of 500 umhos/cm over source water due to unavoidable increases of organic dissolved solids, (b) The Discharger implements best management practices for constituents that are expected to degrade groundwater that will minimize the potential for the discharge to degrade groundwater including storage in lined ponds, use of chemicals at labeled rates, and application of wastewater to crops at agronomic rates; and (c) The short processing season means that the overall salt load from the discharge will be relatively low (about 1,000 lbs/acre/year).

Antidegradation Analysis

42. State Water Board Resolution No. 68-16, the *Policy with Respect to Maintaining High Quality Water of the State* (the "Antidegradation Policy"), prohibits the Board from permitting the degradation of groundwater unless it has been shown that:

a. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;

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

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

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

43. Constituents of concern in the discharge (those with the greatest potential to affect beneficial uses of receiving water) include organics, nutrients, and salts. However, the discharge is not expected to cause groundwater to exceed water quality objectives because:

a. For organics, with an average BOD concentration of 1,700 mg/L, the average BOD loading rate to the Reuse Area at 2.4 mgd would be about 50 lbs/acre/day.

To minimize the potential for reducing and/or nuisance conditions, this Order sets a BOD loading limit for the Reuse Area, and requires the Discharger to prepare a Nutrient and Wastewater Management Plan.

b. For nitrogen, with and average nitrogen concentration of 94 mg/L and an annual flow of 96 million gallons the annual nitrogen load to the Reuse Area would be about 110 lbs/acre/year. This is significantly less than the nitrogen uptake for crops being grown in the Reuse Area. With proper management of the wastewater and proper application of additional fertilizers, the discharge should not degrade groundwater for nitrates.

c. For salinity, with an average EC of 1,700 umhos/cm, the discharge exceeds the Basin Plan limits of 500 umhos/cm over source water or 1,000 umhos/cm for discharges overlying good quality groundwater. However, as discussed in Findings 39 and 40, a portion of the EC is from organic sources which will generally decompose into its component elements and can be utilized by plants and microorganisms in the soil. In addition, a significant portion of the remaining inorganic dissolved solids in the discharge is from constituents beneficial for plant growth, particularly potassium as well as calcium, magnesium, and phosphorus which will be further removed by crops or bound up in the soil.

Area agriculture includes salt sensitive crops. However, there are several site specific factors that should preclude groundwater degradation with salts to the extent that it would adversely affect beneficial uses: (1) the processing season is short resulting in low salt loading rates (i.e., around 1,000 lbs/acre/year), (2) prior to discharge, the wastewater is stored in lined ponds precluding direct discharges from the ponds to groundwater, (3) applied wastewater constitutes only about one seventh of the irrigation demand of the crop, meaning any percolating water is diluted with high quality irrigation water, (4) given the makeup of the wastewater, a significant portion of the salt applied will be taken up by crops, and (5) as water percolates over the 130 feet to groundwater many salinity constituents will be transformed/fixed within the soil column. For these reasons the discharge is not anticipated to cause groundwater degradation that exceeds applicable water quality objectives or adversely affects beneficial uses.

This Order sets groundwater limits such that the discharge shall not cause or contribute to constituent concentrations in groundwater that will cause nuisance or adversely affect beneficial uses.

Treatment and Control Practices

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

    a. Screening of solids from the waste stream;

    b. A maximum BOD loading rate of 100 lbs/acre/day;

    c. Discharge effluent to lined ponds prior to discharge for irrigation;

    d. Application of wastewater at rates that will not allow wastewater to stand for more than 48 hours;

    e. At least daily inspection of the Reuse Area during times of discharge;

    f. Preparation of a Salinity Control Plan;

    g. Preparation of a Nutrient and Wastewater Management Plan; and

    h. Appropriate solids disposal practices.

    The treatment or control practices described above represent “best practical treatment or control practices” of the discharge.

Antidegradation Conclusions

45. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason exists to allow limited groundwater degradation around the Plant and Reuse Areas to accommodate the Discharger’s growth. The Discharger has demonstrated that the limited degradation that is anticipated to occur as a result of the discharges authorized by this Order will only occur after implementation of source reduction, treatment, and control of the discharges, and the Discharger has shown that it has made best efforts to reduce the magnitude of the degradation.

46. This Order establishes terms and conditions to ensure that the discharge does not unreasonably affect present and anticipated future beneficial uses of groundwater or result in groundwater quality worse than background or the water quality objectives set forth in the Basin Plan.

47. This Order is consistent with the Antidegradation Policy since: (a) the Discharger has implemented best practicable treatment or control of the constituents that will result in the degradation, (b) the limited degradation allowed by this Order will not unreasonably affect present and anticipated future beneficial uses of groundwater, or result in water quality less than water quality objectives, and (c) the limited degradation is of maximum benefit to people of the State.

CEQA

48. On 7 March 1994, Kings County Planning Agency, in accordance with the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) adopted a Negative Declaration for the expansion of the Nichols Pistachio Processing Plant, including the discharge of process wastewater on surrounding farmland. The Central Valley Water Board, as a responsible agency, commented on the Negative Declaration and agreed with the conclusion that the proposed expansion and discharge would have a less than significant effect on water quality.

49. This Order includes specific conditions intended to mitigate or avoid environmental effects on water quality. Specifically, this Order:

    a. Sets maximum and average daily flow limits;

    b. Requires the application of wastewater be at rates that reflect crop demand (except for potassium) and prohibits discharge in the event soils become saturated;

    c. Establishes groundwater limitations;

    d. Establishes a monitoring and reporting program; and

    e. Requires the Discharger to prepare and implement a Nutrient and Wastewater Management Plan to ensure application at agronomic rates.

Designated Waste and Title 27

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

    (b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

        (1) The applicable regional water quality control board has issued WDRs, reclamation requirements, or waived such issuance;

        (2) The discharge is in compliance with applicable water quality control plan; and

        (3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

51. 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 Reuse Area does not need to be managed as hazardous waste.

Other Regulatory Considerations

52. The annual fee for the discharge is based on a Threat to Water Quality rating of 2 and Complexity of B (Cal. Code Regs., tit. 23, § 2200.). The Threat rating is based on the potential of the discharge to degrade water quality without violating water quality objectives, or cause a minor impairment of designated beneficial uses. The Complexity rating is based on the use of screens, wastewater ponds, and blending and reuse of the wastewater, which are forms of physical and biological treatment that add complexity to staff assessment.

General Findings

53. 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.

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

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

55. The technical reports required by this Order and monitoring reports required by the attached MRP R5-2013-0007 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the Plant that discharges the waste subject to this Order.

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

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

Public Notice

58. 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.

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

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order 93-006 be rescinded and that, pursuant to sections 13263 and 13267 of the Water Code, Nichols Pistachio, 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 waste, including storm water containing waste, to surface waters or surface water drainage courses is prohibited.

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

3. Discharge of hazardous wastes, as defined in California Code of Regulations, title 22, section 66261.3, is prohibited. Discharge of waste classified as 'designated', as defined in Water Code section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

4. Discharge of 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 discharge shall not exceed a maximum daily flow of 5 million gallons or an average daily flow for the season of 2.4 million gallons per day (mgd).

2. The pH of the discharge shall not be less than 4.5 or greater than 9.0.

3. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of Groundwater Limitations of this Order.

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

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

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

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

8. Irrigation pipelines and drip lines used to convey wastewater to the application areas shall be flushed with fresh water after application of wastewater, as needed, to ensure compliance with Discharge Specification B.7.

9. The Plant and all wastewater ponds shall be operated and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

10. The Discharger shall monitor solids accumulation in the temporary retention basins, and shall periodically remove solids as necessary to maintain adequate treatment and storage capacity.

C. Reuse Area Specifications

1. For the purpose of this Order, “Reuse Area” refers to the discharge area described in Finding 10.

2. The cycle average BOD loading rate to the Reuse Area shall not exceed 100 lbs/acre/day.

3. 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.

4. 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.

5. 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).

6. 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, except for potassium, which may be applied at rates exceeding crop demand, due to the fact that the crops grown in the Reuse Area can take up more potassium than that which is required with no decrease in yield.

7. Discharge to areas within the Reuse Area shall cease in the event that soils become saturated.

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

9. The 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.

D. Solids Specifications

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

2. Hulls and other solids shall be removed from sumps, screens, wastewater ponds, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Solids drying operations, if any, shall be designed and operated to prevent leachate generation.

3. 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 adopted by a regional water quality control board will satisfy this specification.

4. Solids and sludges applied to the Reuse Area shall be evenly spread and incorporated into the soil, as needed, to prevent odors and nuisance conditions.

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

E. Groundwater Limitations

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

1. Nitrate (as N) of 10 mg/L.

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

F. Provisions

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

2. The Discharger shall comply with MRP R5-2013-0007, 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 report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

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

5. To assume operation under this Order, the succeeding owner or operator must 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 Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly-scheduled meetings.

6. The Discharger shall keep at the 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.

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

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

9. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

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

11. As a means of discerning compliance with Discharge Specification B.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the discharger shall report the findings to the Central Valley Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

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

13. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code

sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professionals(s) in a manner such that all work can be clearly attributed to the professional responsible for the work. All reports required herein are required pursuant to Water Code section 13267.

14. **By 1 August 2013**, the Discharger 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, 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.

15. **By 1 August 2013**, the Discharger shall submit a Nutrient and Wastewater Management Plan. At a minimum the Plan must include procedures for monitoring the Reuse Area including daily records of wastewater applications and acreages, an action plan to deal with objectionable odors and/or nuisance conditions, a discussion on blending of wastewater and supplemental irrigation water, supporting data and calculations for monthly and annual water and nutrient balances, and management practices that will ensure wastewater, irrigation water, and commercial fertilizers are applied at agronomic rates, except for potassium. For potassium, the Plan must describe how potassium loading to the Reuse Area will not impact groundwater quality over the long term.

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

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

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

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

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 and following.

The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filling petitions may be found on the Internet at:

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 1 February 2013.

Original signed by

PAMELA C. CREEDON, Executive Officer

Order Attachments:
A Site Location Map
Monitoring and Reporting Program R5-2013-0007
Information Sheet
Standard Provisions (1 March 1991)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0007

FOR

NICHOLS PISTACHIO
PISTACHIO PROCESSING PLANT
KINGS AND TULARE COUNTIES

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267. This MRP also serves as a Mitigation Monitoring Program for the purposes of compliance with the California Environmental Quality Act Guidelines (Cal. Code Regs., tit. 14, § 15370.).

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

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

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

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

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

A glossary of terms used within this MRP is included on page 8.

EFFLUENT MONITORING

Samples shall be collected during the pistachio processing season at the point the wastewater leaves the last pond just prior to discharge to the irrigation system. Time of collection of the sample shall be recorded. Discharge monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Daily	Flow	mgd	Continuous
Daily	pH	pH Units	Grab
Daily	EC	umhos/cm	Grab
Weekly	BOD_5	mg/L	Grab
Weekly	TDS	mg/L	Grab
Weekly	FDS	mg/L	Grab
Weekly	Nitrate as N	mg/L	Grab
Weekly	TKN	mg/L	Grab
Weekly	Total Nitrogen	mg/L	Computed
Weekly	Potassium	mg/L	Grab
Once[1]	Metals[2]	mg/L	Grab

1. A sample shall be collected once during the middle of the processing season following adoption of this Order and analyzed for metals to evaluate the potential concern for metals in the effluent.

2. Metals analysis shall include; aluminum, chromium, copper, lead, molybdenum, nickel, and zinc.

POND MONITORING

Permanent markers (e.g. staff gauges) shall be placed in all ponds. The markers shall have calibrations indicating the water level at design capacity and available operational freeboard. For each wastewater pond, monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	Freeboard	feet[1]	Grab
Weekly	pH	pH Units	Grab
Weekly	Dissolved Oxygen[2]	mg/L	Grab

[1] To nearest tenth of a foot

[2] If there is less than 1 foot of water in the ponds no sample shall be collected for dissolved oxygen.

The ponds shall be visually inspected for any rips, tears, or damage prior to the start of each season. In addition, the Discharger shall conduct a geoelectrical leak detection test of all the ponds prior to the start of the 2013 season and then once every five years following that.

During the processing season, the Discharger shall inspect the condition of wastewater ponds daily and record observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether grease, dead algae, vegetation, scum, or debris are accumulating on the pond surface and their location; whether odors

are emanating from the pond and their strength (e.g. pungent sour smell noticeable from 100 feet away, mild organic odor at pond surface, etc.); whether burrowing animals or insects are present; and the color of the wastewater (e.g., dark green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log shall be included in the subsequent monitoring report.

REUSE AREA MONITORING

The Discharger shall monitor the Reuse Area daily throughout the processing season and while wastewater is being discharged. The monitoring report shall identify specific parcels, the acreage to which wastewater is applied, and type of crops grown and shall be submitted as part of the annual monitoring report.

In addition, the Discharger shall perform the following routine monitoring and loading calculations for each discrete irrigation area within the Reuse Area. The data shall be collected and presented in tabular format and shall include the following:

Frequency	Constituent/Parameter	Units	Sample Type
Daily	Application Area	Acres	n/a
Daily	Wastewater flow	Gallons	Metered
Daily	Wastewater loading	inches/day	Calculated
Daily	Supplemental irrigation	Gallons	Estimated
Daily	Precipitation	Inches	Rain gage[1]
Monthly	Total Hydraulic Loading[2]	inches/acre-month	Calculated
BOD Loading[3]			
Daily	Day of Application	lbs/acre	Calculated
Average	Cycle Average[4]	lbs/acre-day	Calculated
Nitrogen loading[3]			
Annual	From wastewater	lbs/acre-year	Calculated
Annual	From fertilizers	lbs/acre-year	Calculated
Salt and Potassium loading[3]			
Annual	From wastewater	lbs/acre-year	Calculated

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

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

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

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

In addition, the Discharger shall inspect the application areas on a daily basis. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions (i.e., flies, ponding, etc.) shall be noted in field logs and included as part of the annual monitoring report.

SOIL MONITORING

Prior to the initial sampling event, the Discharger shall submit a Soil Sampling Plan prepared by a registered Civil Engineer or certified agronomist with experience in soil sampling. The Sampling Plan shall evaluate soil conditions within the Reuse Area and establish with concurrence from Central Valley Water Board staff at least six soil profile monitoring locations within the Reuse Area and at least one representative background location (i.e., that historically has not received process wastewater) that will be representative of the soil and irrigation conditions within the Reuse Area. At least two sampling locations will be selected in areas for each irrigation practice utilized (i.e., furrow, sprinkler, and drip). The samples shall be collected and analyzed for the following:

Frequency	Constituent/Parameter	Units	Sample Type
Annually[1]	Cation Exchange Capacity	meq/100 grams	6 feet[2]
Annually[1]	Soil pH	pH units	6 feet[2]
Annually[1]	Buffer pH	mg/kg as $CaCO_3$	6 feet[2]
Annually[1]	Nitrate as N	mg/kg	6 feet[2]
Annually[1]	Total Kjeldahl Nitrogen	mg/kg	6 feet[2]
Annually[1]	Calcium	mg/kg	6 feet[2]
Annually[1]	Magnesium	mg/kg	6 feet[2]
Annually[1]	Potassium	mg/kg	6 feet[2]
Annually[1]	Sodium	mg/kg	6 feet[2]

1 Samples to be collected annually in November following the processing season.
2 Samples to be analyzed shall be collected at 2, 4 and 6 feet below grade.

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.

Frequency	Constituent/Parameter	Units	Sample Type
Annually[1]	EC	umhos/cm	Grab
Annually[1]	TDS	mg/L	Grab
1/three years[2]	General Minerals	various	Grab

1 Sample to be collected annually during the pistachio processing season.
2 Sample to be collected once every three years during the pistachio processing season. Starting the season following adoption of this Order

REPORTING

All monitoring results shall be tabulated and submitted in an **Annual Monitoring Report,** which shall be due by **1 February** of the year following the year the samples were collected in.

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

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

Nichols Pistachio
Pistachio Processing Plant
R5-2013-0007
Contact Information (telephone number and email)

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

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

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

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

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

The Annual Monitoring Report, shall include the following:

Facility Information

1. The names and general responsibilities of all persons in charge of wastewater management and reuse.

2. The names and telephone numbers of persons to contact regarding the discharge 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.

Wastewater Reporting

1. Tabulated results of effluent and pond monitoring specified on page 2.

2. Calculation of the maximum daily flow, seasonal average flow, and cumulative annual flow.

3. Results of preseason inspection of the ponds and geoelectrical leak detection test, if required. Include description of any resulting repairs made.

4. A summary of the notations made in the pond monitoring log. The entire contents of the log do not need to be submitted.

Reuse Area Reporting

1. The results of the routine monitoring and loading calculations specified on page 3,

2. The type of crop(s) grown in the Reuse Area, include planting and harvesting dates,

3. A summary of the notations made in the Reuse Area monitoring log. The entire contents of the log do not need to be submitted.

Soil Reporting

1. The results of the soil monitoring specified on page 4.

Solids Reporting

1. Annual production totals for solids (excluding trash and recyclables) in dry tons or cubic yards.

2. A description of disposal methods, including the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.

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

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

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

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

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

Source Water Reporting

1. The results of annual monitoring for EC and TDS specified on page 4. Results must include supporting calculations, if required.

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

Ordered by: _____
Pamela C. Creedon, Executive Officer

_____
(Date)

GLOSSARY

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

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

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

INFORMATION SHEET

INFORMATION SHEET - ORDER R5-2013-0007
NICHOLS PISTACHIO
PISTACHIO PROCESSING
KINGS AND TULARE COUNTIES

Background
Nichols Pistachio (Discharger) owns and operates a Pistachio Processing Plant (Plant) at 13762 First Avenue in Kings County. The Plant, which has been in operation since 1991, processes and packs pistachio nuts for export and sale. The pistachio processing season takes place over 30 to 40 days during the six to eight week period between late August and the middle of October when the pistachios are harvested.

The Plant is regulated by Waste Discharge Requirements (WDRs) Order 93-006, which authorizes a maximum daily discharge of up to 0.244 million gallons to farmland during the six to eight week pistachio processing season.

In February 1994, the Discharger submitted a Report of Waste Discharge (RWD) for expansion of its Plant and subsequent increase in flows. The RWD projected that flows would increase over several years to 1.2 million gallons per day (mgd) calculated as a seasonal average with a daily maximum of 2.0 million gallons. Addendums to the RWD were submitted in April 1998 and October 2012 to update the RWD and address further expansion of the Plant. The addendums propose to increase flows up to 2.4 mgd, calculated as a seasonal average with a daily maximum of 5.0 million gallons.

Existing Plant and Discharge
During the pistachio harvest, the Plant may operate 24 hours a day seven days a week. Pistachios brought in from the fields are cleaned and processed to remove the hulls. Wastewater, generated from the cleaning and hulling process is screened to remove solids and discharged into temporary retention basins. Starting in 2008, the Discharger elected to line its existing retention basins. Two additional retention basins were added prior to the start of the 2012 processing season to allow for longer retention and settling times. The addition of the two temporary retention basins brings the total to four. The four temporary retention basins are lined with a 36-mil scrim-reinforced polypropylene synthetic liner, and operated in series with a combined capacity of about two million gallons. The retention basins provide 12 to 24 hours of temporary storage in case of upsets.

The following table presents wastewater quality data for the discharge collected from 2006 through 2011.

Constituent	Unit	Minimum	Maximum	Average
pH	s.u.	5.0	7.5	5.6[1]
Electrical Conductivity (EC)	umhos/cm	840	2,400	1,700
Total Dissolved Solids (TDS)	mg/L	518	1,478	1,041
Biochemical Oxygen Demand (BOD)	mg/L	880	3,100	1,712
Nitrate as Nitrogen	mg/L	0.7	60	4.8
Total Kjeldahl Nitrogen	mg/L	10	159	89

Constituent	Unit	Minimum	Maximum	Average
Total Nitrogen	mg/L	30	161	94
Chloride	mg/L	11	89	46
Sodium	mg/L	25	64	50
Potassium	mg/L	80	754	416

[1] Average pH values were calculated by converting the values into hydrogen ion concentrations averaging the data and then converting the resulting concentration back to a pH value.

Solids, consisting primarily of hulls, removed from the waste stream are collected on a concrete slab and removed daily during the processing season. Water from the solids piles is collected and returned to waste stream. Solids are applied as a soil amendment over portions of the Reuse Area, which will not receive wastewater during the processing season, or to nearby farmland. In addition, a portion or all of the solids may be sent off-site for use as animal feed or composting.

Food processing wastewater may contain elevated concentrations of total dissolved solids resulting from the fruit and vegetable products or materials used for production. Typically, a percentage is from organic constituents, which will generally decompose into its component elements and can be utilized by plants and microorganisms in the soil. In contrast, the fixed dissolved solids are that portion of the total which consists of inorganic constituents that can accumulate in the soil. Samples of the discharge were collected in 1996 and again in 2012 to compare the total and fixed dissolved solids in the discharge. The increase in total verses the fixed dissolved solids was calculated by taking the difference between the total and fixed dissolved solids for an individual sampling event and dividing that by the total dissolved solids concentration in the discharge. Taking the samples from 1996 and 2012, the increase in total dissolved solids in the discharge due to organic constituents ranges from 35 to 53 percent. In looking at additional data from similar pistachio processers, it appears that, in general, there is a 30 to 40 percent increase in total dissolved solids due to organic constituents in the discharge.

Source water for the Plant is provided by an on-site well. A sample recent collected from the source water well reported an EC of 240 umhos/cm, a TDS of 150 mg/L, and a nitrate as nitrogen concentration of 2.2 mg/L.

Groundwater Conditions

According to Department of Water Resources Groundwater Elevation Maps (Spring 2010), first-encountered groundwater beneath the Reuse Area occurs in an unconfined zone between 120 and 130 feet below ground surface (bgs) and flows to the west-southwest.

The Discharger is not required to conduct groundwater monitoring and there are no monitoring wells in the immediate vicinity of the Reuse Area. Groundwater data for the San Joaquin Valley from 1971 and 1975 indicates that groundwater in the area is reasonably good with an EC of less than 500 umhos/cm and nitrate (NO3) concentrations of less than 45 mg/L.

First encountered groundwater data from monitoring wells for the City of Visalia's Wastewater Treatment Facility approximately 3 to 8 miles up-gradient of the site report up-gradient EC and TDS levels of 300 umhos/cm and 250 mg/L, respectively, and down-gradient EC and TDS levels of 2,000 umhos/cm and 1,200 mg/L, respectively (2004 through 2011). Nitrate (as N) varies throughout

the area in some cases exceeding the primary MCL of 10 mg/L with concentrations ranging from 3 to 52 mg/L. The higher constituent levels down-gradient of the wastewater treatment facility are due to historically high salinity effluent concentrations associated with an olive briner and impacts from nearby dairies.

Basin Plan, Beneficial Uses, and Regulatory Considerations

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

a. The incremental increase in salts from use and treatment must be controlled to the extent possible. The maximum EC of the effluent discharged to land shall not exceed the EC of the source water plus 500 umhos/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 what may recharge good quality groundwater shall not exceed and EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or boron content of 1.0 mg/L.

The Basin Plan Chemical Constituents water quality objective requires, at a minimum, waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

The Basin Plan establishes narrative water quality objectives for groundwater for Chemical Constituents, Taste and Odors, and Toxicity. The Toxicity objective, in summary, 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. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. Beneficial uses of groundwater for the area include municipal and domestic supply, agricultural supply, industrial service and process supply, and contact and non-contact recreation. Given the high quality of groundwater in the area, the prevalence of salt sensitive crops (specifically beans), and lack of cropping restrictions based on source water quality and soil conditions, beneficial uses for agriculture are likely to be the most limiting in terms of salinity.

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

Antidegradation

Constituents of concern in the discharge (those with the greatest potential to affect beneficial uses) include organics, nutrients, and salts.

a. For organics, with an average BOD concentration of 1,712 mg/L, the average BOD loading rate to the Reuse Area at 2.4 mgd would be about 50 lbs/acre/day.

   To minimize the potential for reducing and/or nuisance conditions, this Order sets a BOD loading limit for the Reuse Area, and requires the Discharger to prepare a Nutrient and Wastewater Management Plan.

b. For nitrogen, with and average nitrogen concentration of 94 mg/L and an annual flow of 96 million gallons the annual nitrogen load to the Reuse Area would be about 110 lbs/acre/year. This is significantly less than the annual nitrogen demand for crops being grown in the Reuse Area. With proper management of the wastewater and proper application of additional fertilizers, the discharge should not degrade groundwater for nitrates.

c. For salinity, with an average EC of 1,700 umhos/cm the discharge exceeds the Basin Plan limits of 500 umhos/cm over source water or 1,000 umhos/cm for discharges overlying good quality groundwater. However, a portion of the EC is from organic sources which will generally decompose into its component elements and can be used by plant and microorganisms in the soil. A significant portion of the remaining inorganic dissolved solids in the discharge is from constituents beneficial for soil conditions and plant growth, particularly potassium as well as calcium, magnesium, and phosphorus which will be further removed by crops or bound up in the soil.

   With an average effluent potassium concentration of 416 mg/L, the annual potassium load from the discharge would be about 500 lbs/acre/year. This is above the general annual potassium requirements for crops being grown within the Reuse Area of 100 lbs/acre to 300 lbs/acre. Crops can and will take up more potassium than what is required with no significant yield reduction. Potassium not taken up by crops will readily bind to soil. Given the short processing season, excess uptake of potassium by crops, low mobility in soil, and greater than 130 feet to groundwater, the discharge is not expected to degrade groundwater quality for potassium.

   Area agriculture includes salt sensitive crops. However, there are several site specific factors that should preclude groundwater degradation with salts to the extent that it would adversely affect beneficial uses: (1) the processing season is short resulting in low salt loading rates (i.e., around 1,000 lbs/acre/year), (2) prior to discharge, the wastewater is stored in lined ponds precluding direct discharges from the ponds to groundwater, (3) the applied wastewater constitutes only about one seventh of the irrigation demand of the crops, therefore any percolating water will be diluted with high quality irrigation water, (4) given the makeup of the wastewater, a significant portion of the salt applied will be taken up by crops, and (5) as water percolates over the 130 feet to groundwater many salinity constituents will be transformed/fixed within the soil column. For these reasons the discharge is not anticipated to cause groundwater degradation that exceeds applicable water quality objectives, or adversely affects beneficial uses.

This Order establishes terms and conditions to ensure that the discharge does not unreasonably affect present and anticipated future beneficial uses of groundwater or result in groundwater quality worse than background or the water quality objectives set forth in the Basin Plan. This Order is

consistent with the Antidegradation Policy in that the Discharger has implemented BPTC to minimize degradation, the limited degradation allowed by this Order will not unreasonably affect present and future beneficial uses, or result in water quality less than water quality objectives, and the limited degradation is of maximum 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 exemptions found at Title 27, sections 20090(b), since:

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

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions
The proposed Order prohibits discharge to surface waters and drainage courses. The proposed Order limits the average flow to 2.4 million gallons per day (mgd) for the season and sets a maximum daily flow of 5 mgd.

The proposed Order sets a pH limit such that the pH of the discharge shall not be less than 4.5 or greater than 9.0. The pH limit takes into account the day to day variability in the discharge pH. The lower pH limit is not expected to contribute to soil acidity within the Reuse Area due to the limited seasonal discharge, collection in lined ponds, and supplemental irrigation with high quality water. Required soil monitoring and effective management of the Reuse Area should mitigate any adverse effects on crops and would be preferable to chemically adjusting the pH of the effluent on a continuous basis.

The proposed Order requires that wastewater and constituents therein be applied at agronomic rates except for potassium, which may be applied at rates exceeding crop demand, because the crops grown in the Reuse Area can take up excess potassium with no decrease in crop yield and because the potassium not taken up by crops will readily bind to soil. In addition, the proposed Order requires the Discharger to prepare a Salinity Control Plant and Nutrient and Wastewater Management Plan to control the salinity of the discharge and ensure application at agronomic rates.

The proposed Order requires monitoring of the discharge for biochemical oxygen demand, nitrogen, and total and fixed dissolved solids. The Order also requires a detailed accounting of the application of wastewater to the Reuse Area. For each discrete area to which wastewater is applied, the Order requires calculated hydraulic loading rates, and loading rates of biochemical oxygen demand, nutrients, and salts.

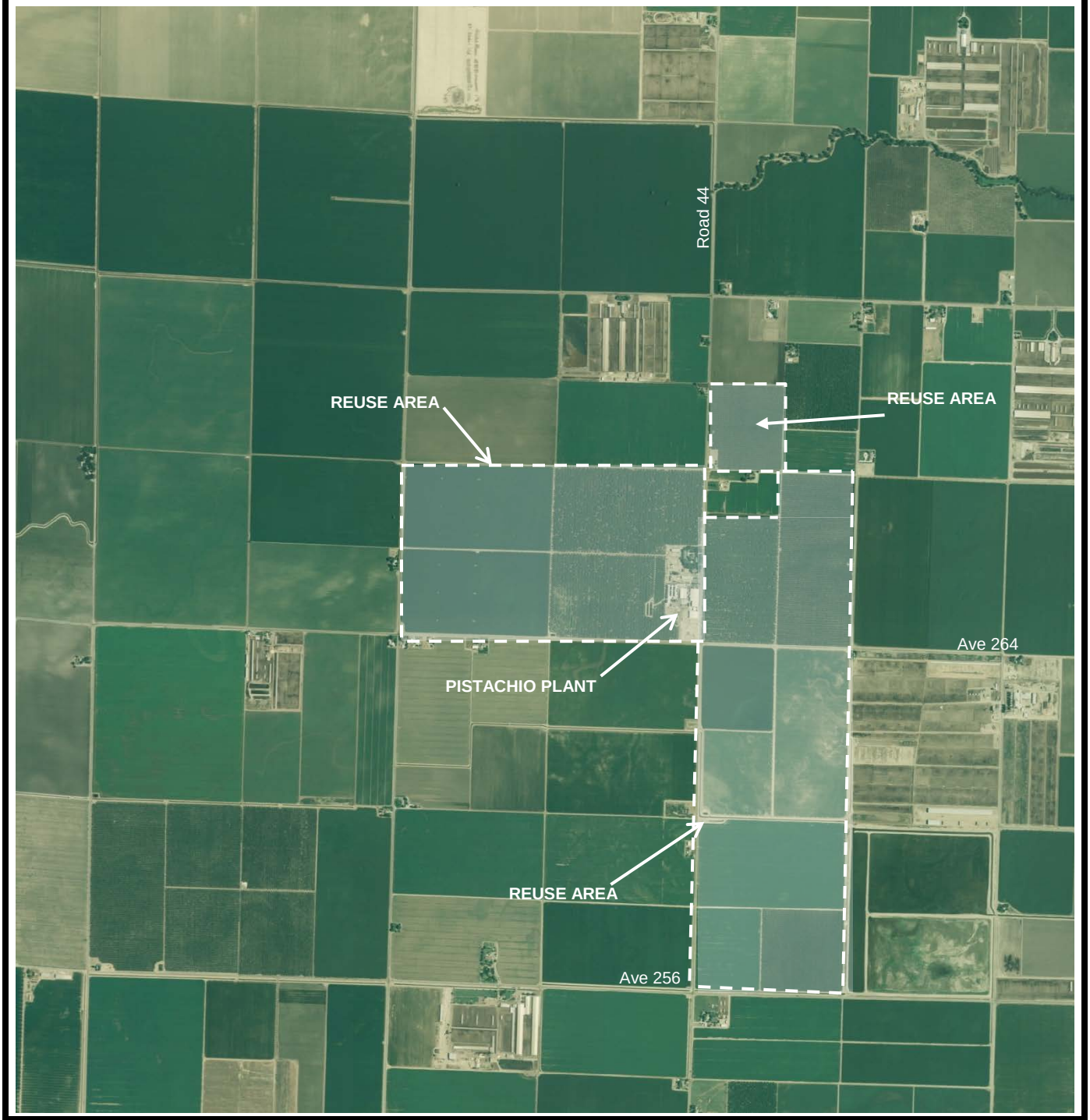
The proposed Order would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greater.

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 effluent and pond monitoring requirements. In addition, the proposed Order requires groundwater monitoring and monitoring of the Land Application Site and loading calculations for organics, nutrients, and salts. This monitoring is necessary to characterize the discharge, and evaluate compliance with effluent limitations and discharge specifications prescribed in the Order.

Reopener

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



Map Source:
NAIP Aerial Photograph (2005)
Section 16, T19S, R23E MDB&M

N

Not to Scale

SITE LOCATION MAP

WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0007
FOR
NICHOLS PISTACHIO
PISTACHIO PROCESSING PLANT
KINGS AND TULARE COUNTIES

ATTACHMENT A