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Mr. Clay Rodgers, Assistant Executive Officer  
Sent via email to W. Dale Harvey, Senior Water Quality Control Engineer  
California Regional Water Quality Control Board  
Fresno, California

**TENTATIVE WASTE DISCHARGE REQUIREMENTS ORDER FOR HARRIS WOOLF ALMONDS, BALLICO PROCESSING FACILITY, MERCED COUNTY**

This letter transmits my comments on the subject Tentative Order. I am a resident of Fresno County and a California registered civil engineer with expertise in evaluating the effects to soil and groundwater from discharges of food processing wastewater to land for treatment and disposal. I gained this expertise during the years that I worked as a Senior Water Resources Control Engineer in the Fresno Office of the Central Valley Water Board.

Gold Hills Nut Company discharged almond processing wastewater from its Ballico Processing Facility for over 20 years without regulation by the Regional Board through waste discharge requirements (WDRs) or waiver from WDRs, in violation of California Water Code section 13260. The tentative WDRs Order indicates Harris Woolf California Almonds, a division of “Woolf Farming of California, Inc.”, purchased Gold Hills Nut Company in August 2010. The California Business Portal (<http://kepler.sos.ca.gov>) lists “Harris Woolf California Almonds, LLC” that has a “CANCELLED” status, and lists “Woolf Farming Co. of California, Inc.” that has an “ACTIVE” status. Either the company, Harris Woolf California Almonds, is no longer in existence, or perhaps it is registered in another state. The tentative WDRs Order should provide information to clarify the business status of Harris Woolf California Almonds and its state of registration, or should identify the Discharger as Woolf Farming Co. of California, Inc.

**Recommendation 1: Identify the correct legal entity that currently owns the Ballico Processing Facility and is responsible for the discharge and revise the tentative Order accordingly.**

The tentative Order describes an ongoing discharge of 30,000 gallons per day of almond processing wastewater to 14 acres of almonds in two separate land application areas (LAAs) near the Facility. Based on information presented in the tentative Order, the discharge’s organic and salt loadings to the LAAs are relatively light compared to other food processing wastewater discharges regulated by the Regional Board. However minor this discharge to the LAAs may be in comparison to the Central Valley’s big wineries and fruit and vegetable processing plants, the discharge does pose a threat of nuisance and unreasonable groundwater degradation due to the impoundment of high BOD almond processing wastewater in an unlined pond. The tentative Order does not provide the wastewater retention pond’s dimensions or depth, but I estimate its area to be about one acre based on satellite images of the Facility available from Google Maps. Soils in the area of the wastewater retention pond and nearby firewater pond are Delhi sand and there is a hardpan layer underlies areas of the western portion of the Discharger’s property where the two ponds are situated. Because the tentative Order does not identify the depth of the wastewater retention pond, it is not possible to know whether it extends below the hardpan layer. The tentative Order states that the Discharger’s water balance assumes 15% of the wastewater discharged to the unlined pond is lost by percolation and evaporation. As such, the tentative Order at least recognizes that waste constituents discharged to the unlined wastewater retention pond will infiltrate into the soil profile.

Groundwater monitoring well No. 1 (MW-1) is located about 100 feet south of the unlined wastewater retention pond. The tentative Order characterizes this well as an upgradient well, even though it contains elevated concentrations of sodium (105 mg/L) compared to the Discharger's other two wells (47 mg/L in MW-2 and 61 mg/L in MW-3) and compared to shallow groundwater monitoring wells two miles west of the Facility (68 mg/L in USGS Well 372742120443601 and 59 mg/L in USGS Well 371746120443601). The tentative Order does not remark on the elevated sodium concentration in MW-1, and on the elevated concentrations of bicarbonate and hardness evident in this well compared to MW-2. The tentative Order does not provide sufficient information to conclude that groundwater passing through MW-1 has not already been impacted by past discharges of almond processing wastewater to the unlined pond. The Information Sheet indicates that nitrate concentrations in all three wells exceed the water quality objective.

Finding 10 characterizes the discharge as containing almost 550 mg/L BOD, 54 mg/L TKN, and 11.8 mg/L Ammonia as Nitrogen, 52 mg/L sodium, and 72 mg/L chloride. The discharge BOD concentration is comparable to high-strength municipal sewage. The discharge nitrogen concentrations are high compared to municipal sewage. When this waste is discharged to the LAA at the proposed loading rates, soil microorganisms should effectively degrade the applied BOD and transform the applied organic nitrogen into forms that should be consumed by almond trees during the growing season. When this waste is impounded in the unlined retention pond, solids will settle and form a nutrient- and organic-rich sludge blanket. Some of the wastewater discharged to the pond will flow through the sludge blanket then infiltrate into the soil and, in time, percolate 75 feet to area groundwater. Without the level of aeration typical of land treatment systems and uptake of applied nitrogen by crops, decomposable waste constituents in the percolating wastewater may be released to groundwater in concentrations exceeding applicable water quality objectives.

Excessive nitrogen loading to the unlined pond may cause nitrogen to be released to groundwater in the form of nitrate in concentrations that exceed water quality objectives, thereby exacerbating an existing condition of nitrate pollution. Excessive organic overloading to the unlined pond may increase groundwater bicarbonate and hardness levels and, if prolonged, may denitrify groundwater and solubilize iron and manganese to concentrations exceeding water quality objectives. Some decomposition of infiltrating BOD and nitrogen waste constituents may occur in the soil profile under the unlined pond. However, the tentative Order provides no evidence or discussion of 'best professional judgment' to conclude the decomposition is sufficient to ensure waste constituents released from the unlined pond will not contribute to waste constituents being released to groundwater in concentrations that threaten to violate the tentative Order's Groundwater Limitations and, consequently, threaten to violate Discharge Specification B.6.

Because the Discharger can equip the wastewater retention pond with a liner to preclude or substantially retard the infiltration of waste constituents to soil, any groundwater degradation that may be caused by the impoundment of wastewater in the unlined pond is unreasonable and not consistent with the State Antidegradation Policy. Finding 48, regarding the Antidegradation Analysis, focuses on the discharge to the 14 acres of almonds comprising the Discharger's two LAAs, and totally ignores the threat to groundwater posed by the impoundment of high-BOD high-nitrogen wastewater in the unlined pond. Finding 49 indicates that the Discharger contributes to the economic prosperity of valley communities and, as such, degradation of groundwater "by some of the typical waste constituents released with discharge from an almond processor after effective source reduction, treatment, and control, and considering the best efforts of the Discharger and magnitude of degradation, is of maximum benefit to the people of the State." The discharge of high-BOD, high-nitrogen wastewater to an unlined pond does not reflect effective control and the resulting degradation is not of maximum public benefit.

This is not a small business venture that is operating the discharge. Woolf Farming Co. of California is one of the most productive farming operations in California. It has \$22.7 Million in estimated annual revenue.<sup>i</sup> The website for Harris Woolf California Almonds states, “Harris Woolf Almonds prides itself on our reputation for quality almonds. We maintain the highest standards during every step of the growing, handling and marketing process—resulting in a consistent high-quality product.”<sup>ii</sup> If it extended this aspiration for high quality to the groundwater affected by its discharge of almond processing wastewater, then it should expend some of its extensive financial resources to line the wastewater retention pond (and equip it with sufficient mechanical aeration to maintain pond dissolved oxygen to at least 1 mg/L).

**Recommendation 2: Revise the tentative Order to include a provision requiring the Discharger to equip the wastewater retention pond with a liner of suitable design and construction to preclude or substantially retard the release of waste constituents to soil within one year of order adoption, and revise the tentative Monitoring and Reporting Program to require the Discharger perform a liner leak detection test at least once every five years.**

The tentative Order is curiously mute on the topic of pond dissolved oxygen (DO), as well as pond freeboard. Without mechanical aeration, wastewater impounded in the one-acre pond will, depending on the residence time, become septic and malodorous. The tentative Order should require pond DO to be maintained to at least 1 mg/L to preclude the development of objectionable odors, and should require periodic monitoring of pond DO to evaluate compliance with this requirement. Older WDRs had a straightforward minimum pond DO limit of 1 mg/L to be maintained at all times. For the past several years, this requirement has become diminished to apply to several consecutive pond DO readings. In any event, the tentative Order should contain the same specification and monitoring requirements that other recent WDRs have regarding minimum pond DO levels.

**Recommendation 3. Revise the tentative Order to include specifications and monitoring requirements for minimum pond DO and for minimum pond freeboard.**

Finding 52 classifies the discharge as level 3 Threat to Water Quality for annual billing purposes. The impoundment of high-BOD almond processing wastewater in a retention pond may create objectionable odors that threaten nuisance. Therefore, the discharge is more appropriately classified as level 2 Threat to Water Quality, “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or **cause a nuisance.**” (Title 23, CCR, Section 2200) (emphasis added).

**Recommendation 4. Revise the tentative Order to classify the discharge as level 2 Threat to Water Quality for annual billing purposes, or include technical information that shows the impoundment of wastewater with BOD concentration of 550 mg/L without mechanical aeration will not cause objectionable odors perceivable beyond the Discharger’s property to levels that threaten nuisance.**

The tentative Order prescribes an annual average EC limit of 900 umhos/cm. Discharge EC is about 670 umhos/cm, or about 490 umhos/cm above source water EC. Establishing a discharge limit for EC is appropriate for this discharge to ensure the Discharger continues to implement salinity source control measures. But, setting the limit applicable to the annual average discharge EC essentially eviscerates the

requirement, because if discharge EC frequently (or worse, always) exceeds 900 umhos/cm, the Discharger would only commit one violation per year.

**Recommendation 5. Revise the tentative Order to prescribe a discharge EC limit of 900 umhos/cm applicable to the monthly average discharge EC.**

The tentative Order does not require monitoring of LAA soils (or soils underlying the unlined wastewater retention pond). As a civil engineer working in the Regional Board's Fresno office, I frequently relied on soil monitoring data to evaluate the extent to which a waste discharge had adversely impacted soil quality and threatened to degrade or pollute groundwater. Perhaps staff in the Fresno office have not been provided with sufficient training on how to evaluate soil monitoring data, therefore they do not see the benefit of soil monitoring. However, soil monitoring has long been a requirement in WDRs, especially for discharges that rely on soil biological and chemical processes for waste attenuation. This tentative Order should not be an exemption to this long-established requirement.

**Recommendation 6. Revise the tentative MRP to require annual soil monitoring for nitrogen compounds, EC, sodium, and chloride, at two-foot intervals to a depth of six feet within the two LAAs and in an area of similar soil type not receiving waste applications to represent background conditions. If the tentative Order still authorizes a discharge of high-BOD, high-nitrogen wastewater to the unlined pond, then the annual soil monitoring should also include at least two soil sampling locations in the area of the wastewater retention pond at two-foot intervals to at least a depth of 10 feet below pond invert.**

I offer these recommendations in the hope that staff will revise the tentative WDRs Order accordingly, or provide justification why staff believes the recommended changes are not warranted.



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<sup>i</sup> <http://companies.findthecompany.com/1/9072169/Woolf-Farming-Co-Of-California-Inc-in-Fresno-CA>

<sup>ii</sup> <http://www.goldhills.com/quality>