INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2008-____
JOHN FISCALINI, DBA FISCALINI FARMS, STANISLAUS COUNTY

Background

Mr. John Fiscalini is the owner and operator of Fiscalini Farms, a dairy and cheese plant. The facility is about twelve miles northwest of the city of Modesto, Stanislaus County. The dairy is not regulated by Waste Discharge Requirement General Order R5-2007-0035 for Existing Milk Cow Dairies (General Order), adopted 3 May 2007, because whey is discharged into the dairy wastewater management system. The cheese plant is currently regulated under General Industrial Storm Water Permit – WQ Order No. 97-03-DWQ, NPDES NO. CAS000001, and is identified by WDID No. 5S501013935. Mr. Fiscalini has received several Notices of Non-Compliance under the General Industrial Storm Water Permit for failure to submit annual reports. Although the Discharger has indicated that the cheese plant may be expanded in the future, this Order only address waste generated by the cheese plan as currently operated.

On 2 January 2007, Mr. Fiscalini notified Regional Board staff that they were planning to install a mesophilic anaerobic digester on the facility to use waste from the dairy operations and supplemental feedstock (whey from the cheese plant operations and sudan silage chop) to produce electricity for use at the dairy and the cheese plant. Excess electricity produced will be sold through a Power Purchase Agreement with Modesto Irrigation District. Staff has been advised that the digester system is being constructed using grant money that is conditioned on the commencement of energy production by 1 July 2008. Therefore, this Order requires submittal of groundwater data, the Nutrient Management Plan, and the Waste Management Plan according to a schedule rather than requiring submittal of this information prior to issuance of Waste Discharge Requirements.

Herd population data was reported in the October 2005 ROWD as 1,650 milking and dry cows. The dairy's Preliminary Dairy Facility Assessment in December 2007 reported the herd size as 1,700 milking and dry cows.

The digester installation will include an above ground flush collection tank with a moisture barrier between the soil and the tank floor, a thickening tank, two 850,000 gallon capacity concrete above ground tanks with a moisture barrier between the soil and tank floor, and a combined heat and power (CHP) unit.

The feed lanes and free stalls will be flushed six times a day. In addition 4,000 gallons per day of whey is also used to flush. Manure gathered by flushing will be routed to the flush collection tank and thickening tank. In the thickening tank the manure will be separated so material on the bottom of the tank is about eight to ten percent (8-10%) solids.

A total of 40,000 gallons per day of the 8 – 10% solids material will be removed from the bottom of the thickening tank and added to the digester tanks daily. In addition up to 30

tons of sudan green chop will be added to the two digester tanks daily. Of the remaining liquid in the thickening tank, 1,000,000 gallons is returned to the flush tank system and 160,000 gallons is sent to the wastewater storage lagoons daily. The hydraulic retention time is approximately 24-30 days in the tanks. Digester effluent will be removed from the digester daily and passed through two screw press separators. Separated digester liquid effluent will go to the two wastewater storage lagoons; the separated digester solids will be stored on a concrete pad until they are either used onsite for animal bedding or sold off site.

There will be three waste streams entering the wastewater retention ponds: liquids coming out of the mix tank, digester effluent, and storm water runoff from the production area. Given the operational parameters described in the Report of Waste Discharge, the salinity concentration in the wastewater retention pond should not exceed 1,069 mg/L total dissolved solids (TDS) in the winter (December – March) or 4,736 mg/L TDS in the summer (April – November.

Groundwater Conditions and Existing Land Use

There are nine monitoring wells, eight domestic wells and two irrigation wells at the facility; however, irrigation well number 05 is not used and irrigation well number 04 is only used when the MID water is not flowing. Samples were collected from the domestic and irrigation wells in October 2007 and analyzed for electrical conductivity and nitrate-nitrogen (see Table 1). Nine of the ten supply wells had very high levels of nitrogen.

Table 1: Summary of Selected Constituents from Onsite Domestic and Irrigation Wells (October 2007)

Well Identification	Electrical Conductivity umhos/cm[1]	Nitrate – Nitrogen mg/L
04 Irrigation Well	850	20.7
05 Irrigation Well	1400	29.3
02 Domestic Well	1280	22.6
03 Domestic Well	810	8.3
06 Domestic Well	620	14.9
07 Domestic Well	880	16.4
08 Domestic Well	890	17.6
09 Domestic Well	1520	51.9
10 Domestic Well	227	31.6
11 Domestic Well	341	15.8
mg/L - milligrams per liter	umhos/cm - micromhos per centimeter	

In May 2003, groundwater monitoring wells at the facility were sampled and analyzed for several constituents. Water quality as indicated by the analytical results shows very high levels of nitrogen in seven of the ten groundwater monitoring wells. A summary of the electrical conductivity and nitrate as nitrogen is shown in Table 2.

[1] Results for Electrical Conductivity were reported in mmhos/cm. This result was then converted to umhos/cm by multiplying by 1,000.

Table 2: Summary of Selected Constituents from Onsite Groundwater Monitoring Wells (May 2003

Well Identification	Electrical Conductivity umhos/cm[2]	Nitrate – Nitrogen mg/L
FMW1	2515	83.5
FMW2	2300	0.7
FMW3	3052	4.8
FMW4	1972	42.9
FMW7	1456	20.9
FMW8	1548	No Data
FMW9	1471	37.8
FMW10	1880	37.5
FMW11	2011	42.2
FMW12	1248	39.2
mg/L - milligrams per liter	umhos/cm - micromhos per centimeter	

Groundwater levels from the groundwater monitoring wells at the facility were recorded in May 2003. The groundwater flow could not be determined based on the data provided. Groundwater levels in 2003 averaged around 40.8 feet elevation above sea level for the area and depth to groundwater varied from 7 to 24 feet below the ground surface. As part of the requirements of this Order, the Discharger will be providing a Hydrogeologic Report that provides additional information on the hydrogeology of the facility.

Land use surrounding the facility is predominantly agricultural. The most prevalent soils on the facility are classified as: Dinuba Fine Sandy Loam with moderate permeability; Dinuba Sandy Loam with moderate permeability; Fresno Sandy Loam with slow to very slow permeability, Hanford Sandy Loam with rapid permeability; and Modesto Loam with very slow permeability.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Central Valley Water Board has adopted a Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins (4th ed.). This Basin Plan designates the beneficial uses of groundwater and surface waters of the Region, specifies water quality objectives to protect those uses, and includes implementation

[2] Results for Electrical Conductivity were reported in micro Siemens per centimeter (uS/cm). This result is equivalent to umhos/cm.

programs for achieving water quality objectives. The Basin Plan also includes plans and policies of the State Water Board incorporated by reference, including State Water Board Resolution No. 68-16 (*Statement of Policy with Respect to Maintaining High Quality Waters in California*), State Water Board Resolution 88-63 (*Sources of Drinking Water Policy*), and State Water Board Resolution No. 92-49 (*Policies and Procedures for Investigation and Cleanup or Abatement of Discharges Under Water Code Section 13304*).

The procedure for the Regional Water Board to follow in establishing numerical limitations in waste discharge that will implement Basin Plan narrative objectives is described in pages IV-16 through IV-18 of the Basin Plan. The Regional Water Board must consider, among other things, information submitted by a Discharger and other interested parties and relevant numerical criteria and guidelines developed or published by other agencies and organizations on harmful concentrations of constituents.

The constituent concentrations to be included in the proposed Order and summarized in Table 3 below are what the Basin Plan and referenced documents of recognized authorities indicate cannot be exceeded without causing some adverse impact on the listed beneficial uses. For agricultural use and the waste constituents listed, crop application is consistently more sensitive than animal uses, but there may be several concentration thresholds that apply dependent upon the crop and how irrigation takes place.

While insufficient data has been reported to establish background groundwater conditions, it appears that groundwater in the regional production aquifer beneath the facility is heavily impacted for beneficial uses. This Order requires the continued monitoring of the groundwater monitoring network to monitor the impact of the discharge and help develop long-term groundwater limits, the development of which is discussed further in the Antidegradation section below.

The Order uses the constituent concentrations summarized in Table 3 as interim groundwater limitations while a Groundwater Limitations Analysis is performed to determined if more stringent groundwater limitations are needed to protect water quality. These interim groundwater limitations are based on either the maximum contaminant level (MCL) for the constituent as published in Title 22 CCR or other designated Basin Plan objectives.

Table 3: Summary of Interim Receiving Water Numerical Limitations

Constituent	Units	Value	Beneficial Use	Criteria or Justification
Boron	mg/L	1.0	AGR[2]	Boron sensitive crops[3]
Chloride	mg/L	250	MUN[1]	Recommended Secondary MCL[5]
Conductivity (EC)	µmhos/cm	900	MUN[1]	Recommended Secondary MCL[5]
Nitrate as N	mg/L	10	MUN[1]	Primary MCL[4]
Total Coliform Organisms	MPN/100 mL	2.2	MUN[1]	Basin Plan
Total Dissolved Solids	mg/L	500	MUN[1]	Recommended Secondary MCL[4]

Notes:

1 - Municipal and domestic supply

2 - Agricultural supply

3 - Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome, (1985)

4 - Title 22, CCR, section 64431, Table 64431-A

5 – Title 22, CCR, section 64449, Table 64449-B

Antidegradation

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

Certain dairy and digester wastewater constituents are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Degradation is likely to occur from waste handling and storage and application of wastes to cropland. However, there is some uncertainty over the degree of that degradation. This Order takes a phased approach. Interim groundwater limitations assure protection of the existing beneficial uses of groundwater while this process takes place.

The Order first requires technical reports in the form of a BPTC technical evaluation for each component of the facility's waste treatment and control to determine for each waste constituent BPTC as used in Resolution 68-16, a Nutrient Management Plan (NMP) for the cropland, and Salinity Evaluation and Minimization Plan for salinity control of facility waste. The results of these technical evaluations and water quality data from required groundwater monitoring will be used to develop numeric groundwater limitations for each waste constituent that reflects full implementation of BPTC and compliance with the most stringent applicable water quality objectives for each constituent. Lastly, the Order may be reopened to incorporate changes to the interim

groundwater water limitations, or waste handling and treatment technologies, deemed necessary to implement BPTC.

Proposed Order Terms and Conditions

The recently adopted Waste Discharge Requirement General Order R5-2007-0035 for Existing Milk Cow Dairies (Dairy General Order) has set new standards for waste management on dairy facilities. The requirements specified in the propose Order largely reflect those of the Dairy General Order expect where specific circumstances require different or more stringent discharge specifications or provisons.

California Environmental Quality Act (CEQA)

With respect to the existing dairy facility, this Order is exempt from the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et. seq.) under 14 CCR 15301.

Stanislaus County Planning and Community Development served as the lead agency for the digester project for purposes of the California Environmental Quality Act (CEQA). An Initial Study for the dairy facility was circulated by Stanislaus County Planning and Community Development on 20 January 2007. The Initial Study determined that the proposed project could not have a significant effect on the environment; therefore, a Negative Declaration was prepared. On 5 April 2007, Stanislaus County Planning and Community Development adopted the Negative Declaration and Use Permit No. 2006-36.

Discharge Prohibitions, Specifications and Provisions

This proposed Order prohibits the discharge of wastes to surface water. This includes natural and man-made water bodies and conveyances whether surface water is present or not at the time of discharge. In the event such a discharge occurs due to a failure of proper waste management, the proposed Order specifies monitoring and mitigation of the surface water body affected. The actions required by the proposed Order include:

- Immediate termination of the discharge.
- Notification of regulatory agencies (Regional Water Board, County Health Department, Fish & Game, etc.) within 24 hours of discovery.
- Investigation to determine the extent and magnitude of the discharge impact.
- Mitigation of the degradation caused by the discharge.
- A plan to prevent recurrence of the discharge.

This proposed Order prohibits discharge of waste to groundwater that causes or contributes to exceedances of water quality objectives. This proposed Order reduces the threat of degradation of groundwater by requiring the Discharger to:

- Submit a hydrogeologic report for the area affected or potential affected by the facility to the Executive Officer. The technical report shall describe the underlying geology, existing wells (active or otherwise), well restrictions, and hydrogeology, including flow direction. The report shall include a summary of well construction on all groundwater monitoring wells. The plan shall also include data collected from May 2008 for the General Order spring sampling requirements.
- Conduct a performance evaluation of existing waste handling equipment, facilities, and an evalution of BPTC for the waste handling and disposal activity. A critical waste management element to be evaluated is the existing wastewater retention system. The wastewater retention ponds must be evaluated for their effectiveness to control seepage of wastewater to the shallowest groundwater beneath the facility. The report must include a review of treatment and control technologies, and propose BPTC measures for retention ponds.
- Develop and implement a Waste Management Plan (WMP) to document waste handling and management measures. If the existing conditions do not comply with Title 27 confined animal facility regulations, interim modifications would be proposed to mitigate the problems. The WMP will include a schedule of milestones and completion dates for any necessary construction and/or retrofitting of the existing physical plant.
- Develop and implement a Nutrient Management Plan (NMP) to implement waste applicaton practices in the cropland. The NMP will provide a schedule of waste and irrigation water application formulated to meet the crop needs in each field. The NMP will include a sampling plan for wastewater, soil, crop tissue, and irrigation water, to collect the data needed to manage waste applications.
- Develop a Salinity Evaluation and Minimization Plan that identifies sources of salt in waste generated at the facility both in the dairy and digester operations. The report should evaluate measures that can be taken to minimize salt in the facility waste, and provide a schedule to implement these measures identified to minimize salt in the waste with the NMP.
- Use monitoring to assess the performance of the facility in meeting this proposed Order's specfications and limitations.
- Prepare a final Groundwater Limitations Analysis to propose specific numeric groundwater limitations for each waste constituent that reflects full

implementation of BPTC and compliance with the most stringent applicable water quality objectives for each constituent. The data from the groundwater monitoring program and the monitoring provisions of the NMP will be used to measure the facilitiy's performance This data will be used in the the Groundwater Limitations Analysis to formulate the subsequent final groundwater limitations.

Initial Compliance Monitoring

This Order prescribes monitoring of digester effluent, wastewater in the retention ponds, and fresh irrigation water. It prescribes monthly (and weekly during the rainy season) monitoring of wastewater retention ponds' freeboard to verify the wastewater retention system has sufficient capacity to meet the requirements of Title 27 §22562 (a) (i.e., sufficient to retain facility wastewater generated and stormwater runoff from the 25-year, 24-hour storm). Monitoring of the wastewater application amount(s) to cropland by field and monitoring of the mineral and nitrogen character of the digester effluent, wastewater in the retention ponds, and fresh irrigation water are necessary to determine: 1) the amount and basic quality characteristics of the discharge, 2) if the application to cropland is meeting crop needs and not exceeding the salt application limitations, and 3) if there is a material charge in the discharge.

The Discharger must monitor groundwater for waste constituents expected to be present in the discharge, capable of reaching groundwater, and exceeding the groundwater limitations if treatment, control, and environmental attenuation proves inadequate. For each constituent listed in Section D Interim Groundwater Limitations, of the Order, the Discharger must, as part of each monitoring event compare concentrations of constituents found in each monitoring well (or water supply well) to the background concentration or to prescribe numerical limitations to determine compliance.

Reopener

The conditions of discharge in the proposed 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. However, information is presently insufficient to develop final groundwater limitations, so the proposed Order sets limitations for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible that could involve substantial cost. It may be appropriate to reopen the Order if applicable laws, regulations, or site conditions change.