

ITEM: 8

SUBJECT: Dairies With Anaerobic Digesters – Consideration of Waste Discharge Requirements, Fresno County

REPORT: Thermophilic anaerobic digesters are planned at seven dairies in Fresno and Kings Counties. Four of the dairies are in Fresno County, and are presented for consideration at this meeting. Three of the dairies are in Kings County and will be presented for consideration at a later meeting. The methane that would be produced will be sold to Pacific Gas and Electric Company (PG&E), the regional gas and electricity supplier.

At the dairies, digesters will be built to receive the dairy's waste. However, for optimum production of gas, a supplemental feedstock of highly organic waste will be added. The digester systems will be owned and operated by Microgy Inc. (Microgy). Each digester system will consist of above ground steel tanks (AGTs) to store manure and supplemental feedstock, and one or two digester AGTs, and appurtenant piping and pumps. Gas will be piped to three of the dairies, which will also be equipped with scrubbers to remove water and hydrogen sulfide from the biogas prior to it being injected into PG&E gas pipelines.

The supplemental feedstock will compose approximately 40 percent of the digester feed, and with manure, will be added to the digesters daily. The digestion process will take approximately 21 days. Digester effluent will pass through a screw separator to remove solids, and the liquid waste will be stored in existing dairy wastewater retention ponds until applied to cropland to use nutrients and moisture for the benefit of crops. Fresh water will be added to wastewater retention ponds during the irrigation season to lower the salt concentration to 3,000 to 4,000 milligrams per liter (mg/L), approximately that of normal dairy manure. During the rainy season, fresh water will not be added so capacity for normal operations and the 25-year, 24 hour storm event can be maintained within the wastewater retention system. Solid wastes will be stored and used onsite as bedding material or fertilizer, or exported offsite.

Three of the dairies will be equipped with hydrogen sulfide scrubber units that will produce approximately 2,400 gallons per day of sulfuric acid with an estimated pH of 1.4 standard units. Waste with pH of 2.0 or less is considered hazardous, and the proposed orders prohibit the discharge of hazardous wastes at the dairies. However, sulfuric acid is often used by the irrigated agriculture industry as a soil amendment. These Orders would require appropriate disposal or use of the scrubber effluent.

The Orders would require the Dischargers to prepare and

implement a Waste Management Plan (WMP) to demonstrate that waste management facilities, equipment, and practices meet the requirements of the Orders; a Nutrient Management Plan (NMP) to ensure that nutrients are used on cropland at appropriate rates; a Salinity Evaluation and Minimization Plan (SEMP) to identify sources of salts and evaluate measures that can be taken to minimize salt in the waste; and a technical evaluation of each component of the facility's waste treatment and control system to determine for each waste constituent the best practicable treatment or control (BPTC).

While the WMP, NMP, SEM, and BPTC evaluations and implementation are ongoing, interim groundwater limitations reflecting water quality objectives are set to ensure protection of the beneficial use of groundwater.

The Orders would require a hydrogeologic reports on groundwater conditions, groundwater monitoring plans, and groundwater monitoring for nutrients and salinity to monitor compliance with the interim groundwater limitations, and Groundwater Limitations Analysis reports, which must propose specific numeric groundwater limitations for each waste constituent that reflects full implementation of BPTC.

Following completion of the WMP, NMP, SEM, BPTC evaluation, hydrogeologic report, and the Groundwater Limitations Analysis, the Orders would provide for the Regional Water Board to consider the evidence provided, and to make a determination regarding whether the discharger has justified BPTC and proposed appropriate final numeric groundwater limitations.

The Orders would provide for the Regional Water Board to review these Orders periodically, and revise requirements where necessary. If upon completion of the BPTC evaluation reports the Regional Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of any Groundwater Limitation, these Orders may be reopened for consideration of revised numerical effluent or groundwater limitations for the problem constituents.

The Fresno County Department of Public Works and Planning is the lead agency with respect to compliance with the California Environmental Quality Act (CEQA) for the digester projects in Fresno County. The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the lead agency with respect to CEQA compliance for the Bar 20 Dairy No. 2 expansion project in Fresno County. The Regional Water Board is a responsible agency with respect to CEQA for all of the digester projects. On 21 December 2007, Fresno County Department of Public Works and Planning published Initial Studies and Mitigated Negative Declarations for

the digester projects in Fresno County. On 24 December 2007, the San Joaquin Valley Air Pollution Control District (SJVAPCD) published a proposed Mitigated Negative Declaration for the Bar 20 Dairy No. 2 expansion. Regional Board staff will review the CEQA documents and provide written comments to the lead agencies. Specific findings regarding CEQA will be added to each proposed WDR as late revisions once the documents have been reviewed.

Each of these four dairies, with the exception of Bar 20 Dairy No. 2, is currently regulated under Order No. R5-200700035, General Order for Existing Milk Cow Dairies. New Waste Discharge Requirements are being proposed to address the effects of digester discharges on the existing wastewater management systems and cropland. Disposal of hazardous waste would be prohibited, and appropriate disposal or use of the scrubber waste would be required at those dairies with hydrogen sulfide scrubbers.

	<p>a. Richard Shehadey and John Shehadey of Bar 20 Partners, LTD. operate the expanded Bar 20 Dairy No. 2 in Fresno County, which houses 9,400 milk cows, 1,500 dry cows, and 8,200 heifers and calves. The original portion of the dairy began operations in the early 1970s, and has operated under Order No. R5-2007-0035, Waste Discharge Requirements General Order for Existing Milk Cow Dairies since June 2007. The expanded portion of the dairy initiated discharge in December 2005 and has not operated under waste discharge requirements. The dairy wastewater generated on-site consists of milk barn wash-water, and water used to flush manure from free stall barns and feed lanes. The dairy wastewater treatment system includes separator ponds and holding ponds at the original portion of the dairy, and a weeping-wall separator system and holding ponds at the expanded portion of the dairy. A portion of the solid manure that accumulates within the corrals and separator systems is retained on-site and applied to the associated cropland, while the balance of the solids is exported from the facility for use by neighboring farmers. The liquid waste retained in the holding ponds at the dairy is blended with irrigation water and applied to the 2,792 acres of associated cropland. The proposed digester system will add an estimated 65,000 gallons of supplemental feedstock to the existing dairy wastes, and an unknown amount of freshwater to dilute the wastewater retained in the holding ponds. The biogas generated in the digester system will be processed through an on-site scrubber and then delivered to the off-site gas distribution system via pipelines.</p>
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	<p>b. Bernard te Velde and The 2000 te Velde Trust, and Terra Nova Ranch Inc., operate the Lone Oak Dairy #2, and its associated cropland, in Fresno County. The dairy currently houses 2,560 Holstein milk cows, 430 dry cows, 2,020 heifers, and 260 calves, and is covered under Order No. R5-2007-0035, General Order for Existing Milk Cow Dairies (General Order). Currently, manure and wastewater enter two settling basins to remove solids, which are stored for use as fertilizer, or removed offsite. The liquid waste from the settling basins is transferred to two wastewater retention ponds prior to application to 1,247 acres of cropland. The proposed digester system will add approximately 16,200 gallons per day of supplemental feedstock to existing dairy wastes, and an unknown amount of fresh water to dilute wastewater retention pond contents to typical concentrations for dairy wastewater. The biogas generated in the digester system will be processed through an on-site scrubber and then delivered to the off-site gas distribution system via pipelines.</p>
	<p>c. John B. Verwey, Ann M. Verwey, the Verwey Revocable Trust, operate the Johann Dairy in Fresno County. The dairy currently houses a herd of 3,750 Holstein milk cows, 600 dry cows, 2,825 heifers, and 375 calves, and is covered under Order No. R5-2007-0035, General Order for Existing Milk Cow Dairies (General Order). Currently, manure and wastewater are pumped over a sloped-screen separator to remove solids. The liquid waste is stored in two wastewater retention ponds prior to application to 825 acres of cropland. Solids removed by the sloped screen separator are stored for use as bedding, or are removed offsite for use as fertilizer. The proposed digester system will add approximately 30,000 gallons per day of supplemental feedstock to existing dairy wastes, and an unknown amount of fresh water to dilute wastewater retention pond contents to typical concentrations for dairy wastewater. The biogas generated in the digester system will be piped to the Lone Oak Dairy # 2 where it will be processed through an on-site scrubber and then delivered to the off-site gas distribution system via pipelines.</p>
	<p>d. Maddox Dairy LTD, a California limited partnership; Maddox Dairy General, a California general partnership; Maddox Farms, a California general partnership; Burrel Farms, Inc., a California corporation; and Vininvest, Inc., a California corporation, own and operate the Maddox Dairy in Fresno County. The dairy currently houses a herd of 3,470 Holstein milk cows, 399 dry cows, 2,408 heifers, and</p>

	<p>2,627 calves, and is covered under Order No. R5-2007-0035, General Order for Existing Milk Cow Dairies (General Order). Currently, manure and wastewater are pumped over a sloped-screen separator to remove solids. The liquid waste is store in a wastewater retention pond prior to application to 3,400 acres of cropland. Solids removed by the sloped screen separator are stored for use as bedding, or are removed for use as fertilizer. The proposed digester system will add approximately 21,000 gallons per day of supplemental feedstock to existing dairy wastes, and an unknown amount of fresh water to dilute wastewater retention pond contents to typical concentrations for dairy wastewater. The biogas generated in the digester system will be piped to the Lone Oak Dairy # 2 where it will be processed through an on-site scrubber and then delivered to the off-site gas distribution system via pipelines.</p>
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ISSUES

Comments are due after agenda preparation. CEQA documents for the four Fresno County digester projects were received in late December and are currently being reviewed by staff. Staff response to comments will be provided to the Regional Water Board and interested parties as soon as possible after receipt of comments.

RECOMMENDATION: Adopt the proposed WDRs.

Mgmt. Review _____
 Legal Review _____

25 January 2008
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