

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
LANSING, LLC., WREDEN RANCH, LLC, AND MICROGY, INC.
WREDEN RANCH DAIRY
KINGS COUNTY

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

1. Lansing, LLC, a limited liability company and Wreden Ranch, LLC, a limited liability company owners and operators of the Wreden Ranch Dairy, submitted a Report of Waste Discharge (RWD) on 13 September 2007 describing the proposed addition of a thermophilic anaerobic digester system (hereafter "digester") to the current waste handling and treatment system at the Wreden Ranch Dairy. The digester will be owned and operated by Microgy Inc., and will digest a mixture of manure generated at the facility and a supplemental feedstock comprised of organic waste materials, to generate biogas. Lansing, LLC, a limited liability company Wreden Ranch, LLC, a limited liability company, and Microgy, Inc., a New Hampshire Corporation, are collectively referred to in this Order as "Discharger". The Wreden Ranch Dairy, including the digester system after it is installed, is referred to in this order as "facility."
2. The facility currently operates under Order No. R5-2007-0035, Waste Discharge Requirements (WDR) General Order for Existing Milk Cow Dairies (hereafter "General Order").
3. The facility occupies the southeastern quarter of Section 13 and the northeastern quarter of Section 24, Township 20 South, Range 21 East; and all of Section 17, the southern half and northeastern quarter of Section 18, and the northern half of Section 19, Township 20 South, Range 22 East Mount Diablo Base and Meridian. The facility address is 8749 Lansing Avenue, approximately nine miles south of Hanford and eight miles northwest of Corcoran, Kings County, as shown on Attachment A, which is attached hereto and made a part of this Order by reference.

Existing Dairy Facility

4. Wreden Ranch Dairy has been operating on the site since 2004. The RWD submitted by the Discharger in October 2005 reported the facility houses 5,460 Holstein milk cows and dry cows.
5. The existing dairy includes a milking parlor, wash pens, free stalls, feed lanes, open corrals, flush water processing pit, a slope screen separator, four settling basins, and two wastewater retention ponds as shown in Attachment B, which is attached hereto and made a part of this Order by reference.
6. Currently, manure is washed from the milk barn and wash pens using fresh water recycled from the milk cooling and cleaning operations. Manure in feed lanes is periodically removed by flushing with recycled wastewater from one of the wastewater retention ponds. Storm water runoff that contacts manure or waste feed in corrals, and leachate from feed and manure storage areas, are conveyed to the wastewater retention ponds. Manure in corrals is currently removed by periodic scraping and is applied to facility cropland or removed from the facility for use elsewhere.

Proposed Digester Facility and Operation

7. The September 2007 RWD describes the proposed addition of a thermophilic anaerobic digester to the Facility that will generate biogas for sale to the regional gas company. The digester installation will include a 230,000-gallon capacity steel above ground tank (AGT) to store the supplemental feedstock, a 325,000-gallon capacity steel AGT mix tank, and two 1.2 million-gallon AGT digester tanks, with appurtenant pumps and piping. The digester has not yet been constructed. A diagram of the digester installation is shown on Attachment C, which is attached hereto and made a part of this Order by reference.
8. Digester operations will require some modification in dairy waste handling. Feed lanes and free stalls will be vacuumed or scraped rather than routinely flushed. Manure gathered by vacuuming or scraping will be added to the mix tank and diluted with freshwater and supplemental feedstock to about eight percent (8%) solids.
9. Approximately 77,560 gallons of manure from the mix tank and 31,439 gallons of supplemental feedstock from the storage tank will be added to the two digesters daily. The digesters will function as complete-mix reactors with a hydraulic retention time of approximately 21 days. Digester effluent will be removed from the digester daily and pass through a screw press separator. Separated effluent liquid will be recycled to the manure mix tank or conveyed to the wastewater retention system for holding until it is applied to cropland. Separated digester solids will be

stored on a concrete pad until they are used either onsite for animal bedding or exported from the facility.

10. Biogas produced during the digestion will be continuously extracted and conveyed to a moisture removal system. Then the biogas will be piped to a central cleaning facility on the Hollandia Dairy where carbon dioxide and hydrogen sulfide will be removed prior to delivery to the natural gas pipeline.
11. To optimize gas production, a supplemental feedstock material will be imported to the facility and combined with manure for digester feedstock. The character of this supplemental feedstock is not known at this time, but reportedly, may include a combination of materials such as non-saleable ice cream or salad dressing, used frying oil from fast food restaurants, grape seed oil, cotton seed oil protein powders and sugary flavorings, stillage from corn-based ethanol manufacturing, and fatty water skimmings. Cheese process wastewater, or whey, will not be used.
12. Wastewater will be blended with irrigation water in the wastewater retention system prior to application to cropland. The total dissolved solids (TDS) concentrations will vary over the storage period (November to February) with the input of storm water runoff into the wastewater retention system. The expected range of constituent concentrations are: total nitrogen between 500 and 1,500 mg/L, total phosphorous between 150 to 470 mg/L, and total dissolved solids between 2,500 and 7,700 mg/L, depending upon the season.
13. For purposes of this Order, "waste" includes, but is not limited to, manure, leachate, process wastewater, digester effluent, gas treatment effluent, precipitation that contacts raw materials, products, or byproducts such as manure, supplemental feedstock, digester effluent, compost piles, silage, milk, or bedding.

Wastewater Ponds and Volume of Liquid Waste

14. The facility's existing wastewater retention system comprises four in-ground settling basins and one in-ground wastewater retention ponds with an approximate total retention capacity of 6.82 million cubic feet (with two feet of freeboard). The basin depths average 15 feet and pond depth averages 19 feet below ground surface (bgs). The Confined Animal Regulations in Title 27 of the California Code of Regulations (Title 27 CCR) §22562 (d) require that, as a minimum, each pond shall be lined with, or underlain by, soils which contain at least 10 percent clay and not more than 10 percent gravel or artificial materials of equivalent impermeability.

On 30 July 2002, the Kings County Board of Supervisors adopted the Dairy Element of the Kings County General Plan (Dairy Element). The Dairy Element contains policies and standards relative to design, operation, monitoring, and reporting for the expansion of existing dairies and the establishment of new dairies. A Program Environmental Impact Report (PEIR) was prepared by the county which

analyzed the environmental impacts associated with dairies, identified measures necessary to mitigate potentially significant impacts, and presented a Dairy Element that included the mitigations in the form of policies and standards. Concerns with the minimum soil texture requirements were identified in the Program Environmental Impact Report (PEIR) prepared by Kings County in 2002. The PEIR report recommend a more protective standard that limits seepage to no more than 10^{-6} centimeters per second.

Between 23 August 2004 and 30 March 2005 Regional Water Board staff reviewed several pond certification reports. These reviews indicated that the information submitted by the discharger does not satisfactorily address Regional Water Board concerns. The Discharger did not sufficiently demonstrate that the ponds' liner is adequate to limit seepage to 10^{-6} centimeters per second as proposed by the Dischargers consultant and identified in the Kings County Environmental Impact Report as a mitigation to protect groundwater quality. Staff requested that, the Discharger provide a demonstration that the five wastewater retention ponds were constructed to meet the designed seepage rate of 10^{-6} centimeters per second or demonstrate the expected seepage from the ponds will not result in measurable degradation of underlying groundwater quality prior to commencing waste discharges to the wastewater retention ponds. To date, the Discharger has not sufficiently demonstrated that the ponds' liner is adequate to limit seepage to 10^{-6} centimeters per second. **Provision E.12.** of this Order requires the Discharger to evaluate the best practicable treatment or control (BPTC) of the facility's waste treatment and control system to minimize degradation.

15. Title 27 CCR §22563(a) requires that application of manure and wastewater to cropland shall be at rates reasonable for the crop, soil, climate, special local situations, management system, and type of manure. The generally accepted best management practice for dairies is to provide for 120 days of wastewater storage during the winter months (December to March) when there is little, if any, irrigation demand. The existing retention capacity of the facility is sufficient to hold dairy wastewater through the winter months. However, digester operation could add over 3.0 million cubic feet of effluent and dilution water during the 120-day storage period.

Waste Application to Cropland

16. Best management practices for protection of water quality underlying the croplands include application of waste at rates which are reasonable for the crop, soil, climate, special local situations, management system, and type of manure consistent with Title 27 CCR §22563(a). Reasonable application is considered to be application of wastes at a rate that does not unreasonably degrade and does not pollute the waters of California or create a nuisance condition. The constituents of concern in this facility's wastes are nutrients (primarily nitrogen compounds, but also potassium and phosphorus) and non-nutrient salts. Recent

information published by the University of California (UC) indicates that an appropriate nutrient loading rate is between 1.4 to 1.65 times the nitrogen harvest rates¹. Reasonable application requires careful timing and prudent monitoring of crop nutrient requirements, available nutrients in the soil, and water inputs. Reasonable application is achieved by the implementation of an appropriate Nutrient Management Plan (NMP) to maximize harvest and minimize leaching. Reasonable application of irrigation water (including leaching fraction) results in an irrigation efficiency of no less than 75 percent.

17. Based on a study conducted by J.L. Meyer in 1973², “reasonable” salt loading rates under normal situations were determined to help prevent the vertical migration of salts within the soil profile. Unless environmental conditions show differently, “reasonable” is accepted to be a maximum annual non-nitrate salt loading rate of 2,000 pounds per acre for single-cropped land and 3,000 pounds per acre for double-cropped land in addition to the non-nutrient salts contained in the irrigation waters.
18. The Discharger owns and farms 1,627 contiguous acres of cropland divided into 10 separate fields where dairy waste is applied as shown in Attachment D, which is attached to and hereto made a part of this order. In 2007, crops grown on this acreage were: 8-acres of pasture, 242-acres of alfalfa, 1,282-acres of double cropped wheat and corn silage, and 95-acres of oats. The current dairy operation is estimated to produce liquid and dry waste containing approximately 460 pounds of nitrogen and 1,900 pounds of inorganic salts per acre of cropland, respectively.

Site Specific Conditions

19. The facility is in an arid climate characterized by hot dry summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and pan evaporation rates in the discharge area are about 7.3 inches and 79 inches, respectively, according to information published by the California Department of Water Resources (DWR). The 25-year, 24-hour precipitation event for the area around the facility is approximately 2.5 inches, according to National Weather Service data for the Kings County area near the facility (Corcoran).
20. The current United States Geological Survey (USGS) topographic maps (Guernsey 7.5 Minute Quadrangle, 1954 and Waukena 7.5 Minute Quadrangle, 1954) of the facility’s area (as shown in Attachment A) depicts the land within and surrounding

¹ University of California, Division of Agriculture and Natural Resources, Committee of Experts on Dairy Manure Management, *Managing Dairy Manure in the Central Valley of California*, September 2003, Revised February 2004, July 2004, and June 2005. pp 47.

² Meyer, J. L., 1973, *Manure Waste Pounding and Field Application Rates*, U. C. Agricultural Extension, Stanislaus, San Joaquin, and Merced Counties.

the facility as being relatively level with several elevated ditches and sloughs bisecting the cropland. The land area of these basins was re-graded and developed for cropland. The Atchison-Topeka and Santa Fe Railroad bisects the facility.

21. Area soils are classified as Kimberlina saline-alkali Garces Complex Series, a fine sandy loam; Westcamp Series, a loam; Lakeside Series, a loam to clay loam; and Armona Series, a loam; according to the USDA Natural Resources Conservation Service.
22. The facility is not within a 100-year floodplain according to Federal Emergency Management Agency maps.
23. Land use in the vicinity of the facility is agricultural, including other confined animal operations. A railroad right-of-way, used by Amtrack and Southern Pacific Railroad, bisects the associated cropland from the southeast to the northwest. The City of Hanford is approximately nine-miles north, and the City of Corcoran is approximately six-miles southeast, of the facility. Crops grown in the within five miles of the facility include corn (forage), wheat (forage), alfalfa, cotton, grain sorghum, sudan, according to DWR land use data published in 2003. Irrigation water is supplied primarily by groundwater.
24. Consistent with the United States Clean Water Act (CWA) §502(14) and 40 CFR §§122.2 and 122.23, the facility is a “concentrated animal feeding operation” and a “point source” and subject to the National Pollutant Discharge Elimination System (NPDES) permit program for any discharge to waters of the United States, other than discharges of agricultural storm water as defined in 40 CFR § 122.23(e).

Groundwater Considerations

25. According to Department of Water Resources hydrographs for production wells screened within the unconfined to semi-confined, regional production aquifer within one mile of the facility, the shallowest groundwater depth recorded since 1963 was at 57.5 feet bgs in February 1984. More recently, groundwater has been recorded at 179.5 feet bgs in March 2007. Groundwater near the facility flows southwesterly, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2006.
26. The western-half of the facility, which includes cropland only, is underlain by a shallow, semi-confining clay layer which supports a shallow water zone that can be encountered a depths from 5 to 10 feet bgs. The shallow water zone is recharged by areal infiltration of surface water applied with irrigation and underflow from unlined canals and ditches. Vertical flow toward the regional unconfined aquifer is impeded by the semi-confining clay layer. The average salinity of this shallow

water exceeds the Title 22 CCR short-term exposure maximum contaminant level (MCL) for total dissolves solids (TDS).

27. The western-half of the facility, which includes cropland, is underlain by a shallow clay layer (the "A" clay) which supports a shallow water zone that can be encountered a depths from 5 to 10 feet bgs.³ The shallow water zone, recharged from areal leaching of irrigation water and underflow from unlined canals and ditches, is contained vertically by the A clay

The eastern-half of the facility, which includes cropland, the production area, and the wastewater retention system, is underlain by a semi-confined to confined aquifer that occurs below the E-Clay layer of the Tulare Formation at depths below 500 feet bgs. The E-Clay separates the upper unconfined to semi-confined, aquifer from this lower aquifer. Although flow between the two aquifers was originally restricted, some agricultural wells within the vicinity are likely screened within the upper and lower aquifers. These wells allow hydraulic continuity between the upper and lower aquifers, resulting in lower quality water from the upper aquifer migrating into the higher quality waters below the E-Clay.

28. The production facility obtains its water supply from an on-site supply well. No information on the construction of the water supply well has been provided.
29. The associated cropland obtains its source water from at least nine wells depicted in the September 2002 RWD. Well logs for the nine wells were included in the September 2002 RWD. The wells are drilled from 440 to 730 feet bgs. Six wells were not constructed with any surface seal. Samples collected on 31 May and 1 June 2007 from five of the nine wells were analyzed for general mineral constituents. Water quality as indicated by the analytical results is excellent. Selected results of these analyses follow.

1. 3 Department of Water Resources Map entitled, "1997, Areas of Shallow Groundwater" <http://www.sjd.water.ca.gov/images/drainage/sgw/02sgw.pdf>

Selected Constituents From Supply Wells

Analyte	Units	Ag Well 1	Ag Well 5	Ag Well 6	Ag Well 8	Ag Well 12
EC	µmhos/cm	491	411	417	303	327
TDS	mg/L	358	300	282	602	215
Nitrate (as Nitrogen)	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chloride	mg/L	24.1	21.6	26.3	21.6	41.4
Sulfate	mg/L	0.6	0.7	2.0	4.7	5.2
Calcium	mg/L	2.7	2.6	2.5	2.2	2.0
Magnesium	mg/L	0.9	0.9	0.4	0.4	< 0.1
Sodium	mg/L	108	88	88	63	66
Iron	mg/L	0.05	0.04	< 0.01	< 0.01	< 0.01
Manganese	mg/L	0.03	0.04	0.01	< 0.01	< 0.01
Potassium	mg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

EC – Electrical Conductivity
 TDS – Total Dissolved Solids

mg/L - milligrams per liter
 µmhos/cm - micromhos per centimeter

30. Wreden Ranch Dairy currently has a groundwater monitoring well network of eight groundwater monitoring wells. The groundwater monitoring wells were installed in 2004 and 2005. The monitoring wells are in the production area with the exception of MW-3, which is south of the wastewater retention ponds. The eight monitoring wells were completed to depths of 62 to 99 feet below ground surface. Five wells (MW-1, MW-2, MW-3, MW-4, and MW-5) have thirty-five feet of 0.020 inch slotted casing, and three wells (MW-6, MW-7, and MW-8) have thirty feet of 0.020 inch slotted casing. Based on the 2005 information, the eight monitoring wells have between 7 and 47 feet of slotted casing installed into their respective average groundwater elevation. Samples for monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5 were collected on 14 October 2004. Samples for monitoring wells MW-6, MW-7, and MW-8 were collected weekly between 3 June to 24 June 2005 (4 sample events per well). All of the samples were analyzed for selected constituents. Water quality as indicated by the analytical results has exceeded maximum contaminant levels (MCLs) established by the EPA for TDS, nitrate (as nitrogen, chloride, sulfate, calcium, manganese, and arsenic since the dairy has become operational. Selected results of these analyses follow.

Selected Constituents From Monitoring Wells

Analyte	Units	MCL	MW-1 ¹	MW-2 ¹	MW-3 ¹	MW-4 ¹	MW-5 ¹	MW-6 ²	MW-7 ²	MW-8 ²
Electric Conductivity	µmhos/cm	900-2200	1,200	1,900	310	2,800	2,100	1,643	1,905	2,340
Total Dissolved Solids	mg/L	500	920	1,500	210	2,500	1,600	1,055	1,350	1,883
Nitrate (as Nitrogen)	mg/L	10.0	9.7	30	1.6	13	18	7.3	16.6	11.2
Nitrite (as Nitrogen)	mg/L	3.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	NA	NA
Chloride	mg/L	250	230	350	32	720	490	210	399	547
Sulfate	mg/L	250	120	270	14	400	250	220	167	219
Calcium	mg/L	NONE	140	250	26	340	310	164	186	272
Magnesium	mg/L	NONE	29	40	15	41	92	13	7	14
Sodium	mg/L	NONE	95	190	42	260	190	160	168	149
Ammonia (as Nitrogen)	mg/L	NONE	0.12	0.11	0.073	0.12	0.17	< 0.2	< 0.2	< 0.2
Bicarbonate (as CaCO ₃)	mg/L	NONE	120	250	110	270	170	408	200	153
Potassium	mg/L	NONE	1.6	1.5	< 0.5	3.0	3.0	< 1	< 1	< 1
pH	NU	NONE	7.59	7.05	7.53	7.38	7.58	7.3	7.4	7.4
Iron	mg/L	0.3	NA	NA	NA	NA	NA	< 0.05	< 0.05	< 0.05
Manganese	mg/L	0.1	NA	NA	NA	NA	NA	0.35	< 0.01	0.01
Carbonate (as CaCO ₃)	mg/L	NONE	NA	NA	NA	NA	NA	< 3	< 3	< 3
Total Kjeldahl Nitrogen	mg/L	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.2	< 0.2
Total Organic Nitrogen	mg/L	NONE	NA	NA	NA	NA	NA	< 0.2	< 0.2	< 0.2
Arsenic	mg/L	0.050	NA	NA	NA	NA	NA	0.006	0.003	0.003
Total Organic Carbon	mg/L	NONE	NA	NA	NA	NA	NA	70	70	0.3

NOTES: ¹Samples collected 14 October 2004
²Range of four samples, collected weekly from 3 through 24 June 2005
 MCL – Maximum contaminant level
 mg/L - milligrams per liter
 µmhos/cm - micromhos per centimeter
 NA – not analyzed

Basin Plan, Beneficial Uses, and Water Quality Objectives

31. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, 1995, Revised 2004* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for protecting waters of the basin.
32. The facility is in Detailed Analysis Unit (DAU) No. 241 within the Tulare Lake Basin. The beneficial uses of groundwater in the Tulare Lake Basin include: municipal and domestic supply, agricultural supply, and industrial supply.
33. The facility is within the South Valley Floor Hydrologic Unit, No. 558. The beneficial uses of surface waters in the South Valley Floor Hydrologic Unit include: agricultural supply, industrial supply; industrial process supply; water contact recreation; non-contact recreation; warm freshwater habitat; wildlife habitat; rare, threatened or endangered species; and groundwater recharge.
34. The Basin Plan includes water quality objectives for chemical constituents that, at a minimum, require water designated as domestic or municipal supply to meet the MCLs specified in Title 22, CCR. The Basin Plan recognizes that the Regional Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely effect beneficial uses.
35. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Tastes 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.
36. 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.

Antidegradation

37. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter "Resolution 68-16"), prohibits degradation of groundwater unless it has been shown that:
 - a. The degradation is consistent with the maximum benefit to people of the State;

- b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. 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; and,
 - d. The discharger employs the best practicable treatment or control (BPTC) of the wastes to minimize degradation.
38. Constituents of concern that have the potential to degrade groundwater underlying the facility include salt (primarily sodium and chloride), nutrients (nitrogen), and boron. This Order requires the Discharger to implement BPTC of the wastes to minimize degradation. Degradation can occur from seepage to groundwater from three waste management areas on the facility: the corral area (including dry waste, and feed storage areas); the wastewater retention ponds; and the cropland. This Order, therefore, establishes schedules of tasks to evaluate BPTC for each waste management area of the facility and to characterize groundwater and all waste constituents. The evaluation of BPTC is required in the Order as outlined in the Provisions section below. Completion of this evaluation and implementation of the approved strategies developed from that work, will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.
39. The Regional Water Board finds that some short-term degradation of groundwater beneath the facility is consistent with Resolution 68-16 provided that :
- a. The degradation is confined to a localized area and is temporarily limited;
 - b. The Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating BPTC measures;
 - c. The degradation is limited to waste constituents typically encountered in confined animal operations as specified in the groundwater limitations in this Order; and,
 - d. The degradation does not result in water quality less than that prescribed in the Basin Plan.
40. Some degradation of groundwater by some of the typical waste constituents released with discharge from a confined animal facility (after effective source management, treatment, and control) is consistent with maximum benefit to the people of California. Global Warming Solutions Act (AB-32) signed by the Governor on 27 September 2006 requires the development of market mechanism that will reduce greenhouse gas emissions. The proposed project's reduction of

greenhouse gas emissions from the dairy and the production of renewable energy are in keeping with the intent of AB-32. Secondary benefits include a reduction in ozone precursor compounds and hydrogen sulfide, which will improve air quality. Therefore sufficient reason exists to accommodate groundwater degradation around the facility, provided that the terms of the Water Quality Control Plan for the Tulare Lake Basin Plan is met. Therefore, sufficient reason exists to accommodate groundwater degradation around the facility, provided that the terms of the Water Quality Control Plan for the Tulare Lake Basin are met. Degradation of groundwater by constituents (e.g., toxic chemicals) other than those specified in the groundwater limitations of this Order is prohibited.

41. This Order establishes interim groundwater limitations for the facility that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order contains tasks for assuring BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. Based on the results of the scheduled tasks, the Regional Water Board may reopen this Order to consider groundwater and other limitations to comply with Resolution 68-16.

California Environmental Quality Act

42. The Kings County Planning Agency is the lead agency for the dairy project for the purposes of the California Environmental Quality Act (CEQA). On 30 July 2002, the Kings County Board of Supervisors adopted the Dairy Element of the Kings County General Plan (Dairy Element). The Dairy Element contains policies and standards relative to design, operation, monitoring, and reporting for the expansion of existing dairies and the establishment of new dairies. A Program Environmental Impact Report (PEIR) was prepared by the county which analyzed the environmental impacts associated with dairies, identified measures necessary to mitigate potentially significant impacts, and presented a Dairy Element that included the mitigations in the form of policies and standards.
43. For the digester project at this facility, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is the lead agency pursuant to CEQA and has prepared an Initial Study and a mitigated negative declaration. [This finding will be revised to reflect actions by the SJVAPCD. Regional Water Board staff has consulted with SJVAPCD regarding the scope of the project and water quality issues that should be considered in the CEQA documents. Once the Initial Study and mitigated negative declaration are complete, Regional Water Board staff will review the documents and, if necessary, revise the proposed Order or delay it for consideration at a future date.]

General Findings

44. Pursuant to California Water Code (CWC) §13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue this discharge. Failure to prevent conditions that create or threaten to create pollution or nuisance or that may unreasonably degrade water of the State will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.
45. This Order does not authorize violation of any federal, state, or local law or regulation. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the Discharger from his liabilities under federal, state, or local law.
46. CWC §13267(b) states that “In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including cost, 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 these 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.”
47. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2008-_____ are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the wastes subject to this Order.
48. These requirements are consistent with Title 27 CCR, Division 2, Chapter 7, Subchapter 2, regulating confined animal facilities.
49. The California Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to CWC §13801, apply to all monitoring wells.

Public Notice

50. 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.
51. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order No. R5-2007-0035 and the MRP R5-2007-0035 no longer applies to Lansing, LLC, and Wreden Ranch, LLC, at this dairy facility, and that, pursuant to §§13263 and 13267 of the CWC, the Lansing, LLC, Wreden Ranch, LLC, and Microgy Inc., a New Hampshire Corporation and their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge of waste other than as defined in Finding 13 above, or of hazardous waste as defined in the CWC §13150 (p) and Title 22 CCR §66261.3 et seq., respectively, is prohibited.
2. Bypass or overflow of undigested supplemental feedstock into the wastewater retention system or application cropland, is prohibited.
3. The direct or indirect discharge of waste and/or storm water from the production area of the facility to surface waters without an NPDES permit is prohibited. The production area is defined as the part of the facility that includes the animal confinement areas, manure storage area, raw material storage area, and waste containment area. It also includes the digester works, feedstock handling and storage area, and digester effluent handling area.
4. The discharge of wastewater to surface waters from the cropland without an NPDES permit, is prohibited. Irrigation supply water that comes into contact or is blended with waste or wastewater shall be considered wastewater under this Prohibition.
5. Precipitation-related discharges of manure, litter, or process wastewater from cropland without an NPDES permit are prohibited, unless the discharges are agricultural storm water discharges as defined in 40 CFR §122.23(e).
6. The disposal of dead animals in any liquid manure or wastewater system is prohibited. The disposal of dead animals at the facility is prohibited except when federal, state, or local officials declare a State of Emergency and where all other

options for disposal have been pursued and failed and the onsite disposal complies with all state and local policies for disposal of dead animals.

7. All animals shall be prohibited from entering any surface water within the animal confinement area (Title 27 CCR §22561).
8. The application of waste to lands not owned, leased, or controlled by the Discharger as described in Finding 3 without written permission from the landowner or in a manner not approved by the Executive Officer, is prohibited.
9. The direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells is prohibited.
10. Exceeding the mature herd size (milk and dry cows) as reported in Finding 4 by more than fifteen percent is prohibited.

B. Discharge Specifications

1. The collection, treatment, storage, or disposal of wastes at the facility shall not result in:
 - a. Discharge of waste constituents in a manner or place, or at concentrations or in a mass, which could cause exceedance of water quality objectives of surface water or groundwater;
 - b. Contamination or pollution of surface water or groundwater;
 - c. A condition of nuisance; or
 - d. Unreasonably affect beneficial uses (as defined by the CWC §13050 and the Basin Plan, Chapter 2).
2. The Discharger shall ensure that the annual average salinity concentration in the wastewater retention ponds will not exceed 4,700 milligrams per liter (mg/L) total dissolved solids (TDS) or 8,700 micromhos per centimeter ($\mu\text{mhos/cm}$) electrical conductivity. This interim specification will be reconsidered upon completion of the BPTC review.
3. Wastes shall not be stored on site for more than 12 months. Any wastes not used within this time period must be removed from the property and disposed of properly.

C. Waste Application to Cropland Specifications

1. Title 27 CCR §22563(a) requires that application of manure and wastewater to cropland shall be at rates reasonable for the crop, soil, climate, special local situations, management system, and type of manure. This Order requires a review of BPTC, which will better define what are "reasonable" application rates. In the interim, reasonable application shall mean annual non-nutrient salt application rates shall not exceed 2,000 pounds per acre for fields that are single-cropped or

3,000 pounds per acre for fields that are double-cropped. For purposes of this Order, non-nutrient salts are defined as the mass of Total Dissolved Solids minus the mass of nitrogen, potassium, and phosphorus utilized by the crop(s) being grown in the field.

2. Land application of all waste from the facility shall be conducted in accordance with a NMP prepared by a specialist who is certified in developing NMPs. The NMP shall reflect actual crops grown at the facility, the actual form of nutrients and non-nutrient salts applied to each cropland field, and reasonable application rates. A certified specialist is a Professional Soil Scientist, Professional Agronomist, or Crop Advisor certified by the American Society of Agronomy or a Technical Service Provider certified in nutrient management in California by the Natural Resources Conservation Service (NRCS). The Executive Officer may approve alternative proposed specialists. Only NMPs prepared and signed by these parties will be considered certified.
3. The application of waste to the cropland shall be at rates that preclude development of vectors or other nuisance conditions and meet the conditions of the certified NMP. All wastewater applied to cropland must infiltrate completely within 72 hours after application. Tailwater must be conveyed back to the wastewater retention system for storage and reuse.
4. Application of waste shall be timed to minimize nutrient movement below the root zone. Wastewater shall not be applied to cropland during periods when the soil is at or above field moisture capacity.
5. Cropland that receives dry manure shall be managed to minimize erosion. Crops must be planted within one month of waste solids application.
6. Waste solids and wastewater shall not be applied closer than 100-feet to any down gradient surface waters, open tile line structures, sinkholes, or other conduits to surface waters unless a 35-foot wide vegetated buffer (for surface waters) or physical barrier is substituted for the 100-foot setback or alternative conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions achieved by the 100-foot setback.
7. Waste and cropland shall be managed to prevent contamination of crops grown for human consumption. The term "crops grown for human consumption" refers only to crops that will not undergo subsequent processing which adequately removes potential microbial danger to consumers.

D. Interim Groundwater Limitations

1. These interim groundwater limitations are to be applied at the unconfined to confined aquifer below the shallow water zone beneath the facility. These limitations are based on either the maximum contaminant level (MCL) for the constituent as published in Title 22 CCR or other applicable Basin Plan objectives.

Release of waste constituents from any treatment, storage, or disposal component associated with the facility shall not cause or contribute to groundwater:

- a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality (as determined in the Findings and updated as appropriate as a result of ongoing monitoring), whichever is greater:
 - i. Nitrate as nitrogen of 10 mg/L (Title 22 CCR MCL);
 - ii. Chloride of 250 mg/L (Title 22 CCR Secondary MCL);
 - iii. Boron of 1.0 mg/L (crop sensitivity);
 - iv. Total Dissolved Solids of 500 mg/L (Title 22 CCR Secondary MCL);
 - v. Electrical Conductivity of 900 μ mhos/cm (Title 22 CCR Secondary MCL);
 - vi. Most probable number of total coliform (either *E. coli* or fecal coliform bacteria) not to exceed 2.2/100 milliliters (Title 22 CCR MCL);
 - vii. For constituents identified in Title 22 CCR, the MCLs quantified therein; and
 - viii. For salinity, a maximum average annual EC increase of no more than 3 μ mhos/cm (Basin Plan Groundwater Quality Objective).
 - b. Containing taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.
2. Final groundwater limitations will be developed based upon the results of the BPTC evaluations and monitoring conducted as directed by this Order and reported consistent with the Provisions below.

E. Provisions

1. The Discharger shall comply with all applicable provisions of the CWC, Title 27 CCR, and the Water Quality Control Plan for the Tulare Lake Basin, Second Edition, 1995, Revised 2004.
2. The Discharger shall comply with the attached Monitoring and Reporting Program No.R5-2008-____ which is part of this Order, and future revisions thereto as specified by the Regional Water Board or the Executive Officer.
3. The Discharger shall submit a complete Report of Waste Discharge in accordance with the CWC §13260 at least 140 days prior to any material change or proposed change in the character, location, or volume of the discharge, including any expansion of the facility, addition of waste storage facilities or equipment, closure of the facility, or development of any new treatment technology.

4. In the event of any change in control or ownership of land or waste discharge 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 forwarded to the Regional Water Board at least 60 days in advance of the change.
5. If site conditions threaten to violate Discharge Prohibitions A.3. or A.4. or Specification B.1., the Discharger shall take immediate action to preclude the violation, documenting the condition and all corrective actions. Such actions shall be immediately reported to the Regional Water Board and summarized in the annual monitoring report. Alterations for the production area to avoid a recurrence shall be submitted as a modification to the facility's Waste Management Plan (WMP).
6. Any instance of noncompliance with this Order constitutes a violation of the CWC and its regulations. Such noncompliance is grounds for enforcement action, and/or termination of the authorization to discharge.
7. This Order shall become effective upon adoption by the Regional Water Board.
8. If during the performance of the inspections required by the MRP attached to this order, deficiencies, defects, and/or impending failures are observed in any of the wastewater conveyance, control, and/or retention structures, the Discharger shall take immediate action to correct and/or prevent unauthorized release. The corrective action(s) should be documented and these records attached to the pertinent inspection report.
9. Technical reports required by this Order must be certified by an appropriately licensed professional as required in this Order and its Attachments. If the Executive Officer provides comments on any technical report, the Discharger shall address those comments.
10. **By 30 May 2008**, the Discharger shall 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. The report shall include a Monitoring Well Installation Work Plan that recommends a monitoring well network to collect data from the unconfined to semi-confined, regional production aquifer up gradient from the influence of the facility and down gradient from each of the waste management areas (e.g., corrals, wastewater retention ponds, digester works, and cropland). The network shall be sufficient to evaluate performance of BPTC measures and to determine compliance with the Order's Groundwater Limitations. The recommendations shall be reviewed and approved by the Executive Officer.
11. The Discharger shall comply with the following compliance schedule in implementing the groundwater monitoring approved by the Executive Officer in Provision 10:

<u>Task</u>	<u>Compliance Date</u>
a. Complete Monitoring Well Installation (if hydrogeologic report finds additional monitoring wells are needed)	120 days following Work Plan approval by Executive Officer
b. Commence Groundwater Monitoring	30 days following completion of Task 11. a
c. Submit Monitoring Well Installation Report of Results	60 days following completion of Task 11. b.
d. Submit technical report that characterizes water quality in approved groundwater monitoring network for all monitored constituents	Two years following completion of Task 11. c.

12. By **1 October 2008**, the Discharger shall submit a written work plan for a BPTC technical evaluation that sets forth a schedule for a systematic and comprehensive 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. The work plan shall contain a time schedule for completing the comprehensive technical evaluation. The schedule to complete the BPTC Technical Evaluation shall be as short as practicable, and shall not exceed two years. Upon written determination of adequacy of the technical report by the Executive Officer, the Provision shall be considered satisfied.

13. By **1 October 2008**, the Discharger shall formulate and implement a Waste Management Plan (WMP) to demonstrate that waste management facilities, equipment, and practices in the production area meet the requirements of this Order. Additional requirements for preparing the WMP can be found in Attachment B of the Waste Discharge Requirements General Order R5-2007-0035 for Existing Milk Cow Dairies (Dairy General Order) at:

http://www.waterboards.ca.gov/centralvalley/adopted_orders/GeneralOrders/R5-2007-0035.pdf.

The Discharger shall comply with all requirements of Attachment B of the Dairy General Order except as otherwise explicitly stated in this Order. If the design, construction, operation, and/or maintenance of the facility does not comply with those requirements, the WMP must propose modifications and a schedule for modifications that will bring the dairy facility into compliance. The schedule must comply with the due dates in this Order. If the Executive Officer determines that any provisions of Attachment B of the Dairy General Order do not apply to this

facility, the Executive Officer shall notify the Discharger that compliance with those provisions is not required.

In addition to the elements outlined in Attachment B of the Dairy General Order, the elements of the WMP for this facility shall include certification that the facility operations and maintenance (O&M) instructions for the dairy and digester operations that address each waste handling component of the facility (dairy and digester), and standard and emergency procedures. The O&M instructions should include the facility Emergency Response Plan. The O&M should contain instructions for the wastewater conveyance and storage features (including tailwater recovery), feed and waste storage areas, the digester area and handling of digester feed stock and effluent, and the handling and disposal/removal of cattle mortalities. The O&M instructions should be written to ensure that all specifications, limitations, and provisions of this Order are met and violations of prohibitions are prevented. A copy of these instructions should be available to employees at all times.

14. By **1 October 2008**, the Discharger shall formulate and implement an NMP for application of the facility waste to the facility's cropland. The NMP shall be submitted to the Executive Officer for review and approval. Failure to comply with the NMP is a violation of this Order. A copy of the NMP must be maintained at the dairy. The NMP must provide for protection of both surface water and groundwater. The purpose of the NMP is to control the recycling of waste generated on the facility to minimize their potential to degrade groundwater quality. The objective of the NMP is to manage the application of the waste to the cropland and disposal off-site to achieve a balance between nutrients and salts generated, crop requirements, and leaching to underlying groundwater. Additional requirements for preparing a typical NMP can be found in Attachment C of the Dairy General Order at:

http://www.waterboards.ca.gov/centralvalley/adopted_orders/GeneralOrders/R5-2007-0035.pdf.

The Discharger shall comply with all requirements of Attachment C of the Dairy General Order except as otherwise explicitly stated in this Order. If the Executive Officer determines that any provisions of Attachment C of the Dairy General Order do not apply to this facility, the Executive Officer shall notify the Discharger that compliance with those provisions is not required.

In addition to the elements outlined in Attachment C of the Dairy General Order, the elements of the NMP for this facility shall include:

- a. Formulating a water balance for the entire facility to estimate the amount of wastewater generated, the amount of irrigation water added to the wastewater retention system, and the amount of blended wastewater and irrigation water applied to the cropland. The NMP shall reflect a goal of 75 percent irrigation efficiency, determined for each field.

- b. Adoption of salt reduction actions as specified in the Salinity Evaluation and Minimization Plan (when approved).
 - c. Yearly evaluation of the results to modify the next year's NMP to maximize crop yield and minimize leaching potential and to be included in the facility's annual report.
 - d. **By 1 January 2010**, total nitrogen applied to the cropland shall not exceed 1.4 times the nitrogen removed by the harvested portion of the crop. Additional application of nitrogen is allowable if plant tissue testing indicates it is necessary to obtain typical crop yield on written recommendations from a professional agronomist and records are maintained documenting the need.
15. **By two years from satisfaction of Provision 12**, the written BPTC Technical Evaluation report shall be submitted with the Discharger's written recommendations for any facility modifications (e.g., component upgrade and retrofit) and/or operations modifications that are necessary to ensure BPTC. The proposed schedule for modifications shall be identified. The schedule shall be as short as practicable but in no case shall completion of the necessary improvements exceed four years past the Executive Officer's determination of the adequacy of the comprehensive technical evaluation submitted pursuant to this provision unless the schedule is reviewed and specifically approved by the Regional Water Board. The adequacy of the component evaluation, recommended improvements, and schedule are subject to the Executive Officer's review and determination.
16. **By 1 July 2009**, the Discharger shall submit a Salinity Evaluation and Minimization Plan that identify sources of salt in waste generated at the facility both in the dairy and digester operations. This report must evaluate measures that can be taken to minimize salt in the facility waste, and commit to implement these measures identified to minimize salt in the waste within the NMP. The report must include a proposed implementation schedule. The adequacy of the salinity evaluation, recommended measures to minimize salt in the wastes, and schedule are subject to the Executive Officer's review and determination.
17. The groundwater limitations set forth in this Order are not final and not an entitlement. **By 1 July 2012**, the Discharger shall submit a Groundwater Limitations Analysis report proposing specific numeric groundwater limitations for each waste constituent that reflects full implementation of BPTC and reflecting applicable water quality objectives for that waste constituent. The report shall describe in detail how these were determined, considering actual data from monitoring wells comprising the approved groundwater monitoring program, impact reductions through full implementation of BPTC, the factors in CWC §13241, Resolution 68-16, the Basin Plan, etc. The Discharger may submit results of a validated groundwater model or other hydrogeologic information to support its proposal.

18. Upon completion of tasks set forth in Provision **E.17.**, the Regional Water Board shall consider the evidence provided and make a determination regarding (a) whether the Discharger has justified BPTC and (b) the appropriate final numeric groundwater limitations that comply with Resolution 68-16.
19. Modification of any existing pond or construction of any new pond shall not begin until the Executive Officer notifies the Discharger in writing that the design report is acceptable.
20. Waste shall not be placed into any new or modified wastewater retention pond until the Executive Officer notifies the Discharger in writing that the post construction report is acceptable.
21. In the event the monitoring implemented under this Order detects evidence of a failure to meet Discharge Specification **B.1.**, the NMP shall be modified within 90 days. The modifications must be designed to bring the facility into compliance with this Order. The Discharger shall notify the Regional Water Board in writing with details of any proposed changes before the changes are made in the field. Any plan shall be updated as necessary or if the Executive Officer requests that additional information be included.
22. If the Regional Water Board or Executive Officer notifies the Discharger that the NMP is not consistent with this Order, revisions shall be made by a specialist who is certified in developing Nutrient Management Plans and submitted to the Regional Water Board in writing within 30 days of notification.
23. Settling basins and retention ponds at the facility shall be managed and maintained to prevent breeding of mosquitoes and other vectors. In particular;
 - a. Small coves and irregularities shall not be allowed around the perimeter of the water surface;
 - b. Weeds shall be minimized through control of water depth, harvesting, or other appropriate method;
 - c. Dead algae, vegetation, and debris shall not accumulate on the water surface; and,
 - d. Management shall be in accordance with the requirements of the Mosquito Abatement District.
24. All precipitation and surface drainage from outside of the facility (i.e., "run on") shall be diverted away from any manured areas unless such drainage is fully contained (Title 27 §22562(b)).
25. All roofs, buildings, and non-manured areas located in the production area at the facility shall be constructed or otherwise designed so that clean rainwater, including roof drainage, is diverted away from manured areas, including corrals and waste containment facilities, unless such drainage is fully contained in the wastewater retention system (Title 27 §22562(b)).

26. The milk parlor, animal confinement area (including corrals), manure and feed storage areas, and the digester equipment area shall be designed and maintained to convey all water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water and the infiltration of water into the underlying soils. The Discharger shall, at a minimum of once per year, backfill any slope loss with compacted, non-manured material to maintain pre-existing slopes.
27. Unlined ditches, swales, and/or earthen-berm channels may not be used for storage of wastewater, dry waste, or tailwater and may only be used for conveyance of wastewater from the retention lagoon to the cropland, irrigation return water management, or temporary control of accidental spills.
28. The Discharger shall comply with all of the terms of this Order including the Standard Provisions and Reporting Requirements for milk cow dairies dated 25 January 2008, attached to and made part of this Order.
29. The Discharger shall maintain a copy of this Order and its attachments at the site to be available at all times to site-operating personnel. The Discharger, landowner and key operating personnel shall be familiar with the content of this Order.
30. The Regional Water Board will review this Order periodically and may revise requirements when necessary. If upon completion of the BPTC Technical Evaluation Report, 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, this Order may be reopened for consideration of additional or revision of appropriate numerical effluent or groundwater limitations for the problem constituents.

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 _____.

PAMELA C. CREEDON, Executive Officer

Order Attachments:

- Monitoring and Reporting Program
- A. Location Map
- B. Production Area Map
- C. Facility Map
- D. Dairy Digester System Process Flow Diagram
- Information Sheet
- Standard Provisions

KWE;6 February 2008