CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2010-0008

WASTE DISCHARGE REQUIREMENTS FOR HILMAR CHEESE COMPANY, INC. AND REUSE AREA OWNERS HILMAR CHEESE PROCESSING PLANT MERCED COUNTY

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

1. Hilmar Cheese Company, Inc. (Hilmar Cheese), a California corporation, owns and operates a Cheese Processing Plant (Plant) about one-half mile north of the unincorporated community of Hilmar. The Plant is at the northwest corner of Lander Avenue and August Road, within Section 10 of T6E, R10E, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference. The Assessor Parcel Numbers (APNs) of parcels that comprise the Plant site are: 045-014-054 and 045-014-066. Hilmar Cheese discharges wastewater to two areas known as the Primary and Secondary Lands as shown on Attachment B, which is attached hereto and made part of this Order by reference. The Primary and Secondary Lands are collectively referred to as Reuse Areas. Hilmar Cheese owns some of the Primary Lands and leases the rest from others (Primary Land Owners). All of the Secondary Lands are owned by others (Secondary Land Owners). The Primary and Secondary Land Owners are collectively referred to as Reuse Area Owners. The parcels and Reuse Area Owners for this Order are shown in Attachment C and listed in Attachment D, which are attached hereto and made part of this Order by reference. Hilmar Cheese and the Reuse Area Owners are collectively referred to as Discharger. Hilmar Cheese is the primary discharger responsible for compliance with this Order. Each Reuse Area Owner is responsible for compliance with the requirements of this Order concerning discharge to its respective parcels that are included within the Reuse Area.

2. Hilmar Cheese manufactures various cheese products (white and yellow cheddar, Monterey and pepper jack, Colby and Colby jack, Muenster, some Hispanic cheeses, etc.). The Plant currently receives over 11 million pounds of milk each day from more than 150,000 cows housed in over 260 dairies. It produces over one million pounds of cheese, and over 325,000 pounds of whey protein and lactose powder each day. The Plant operates continuously year round and employs about 700 people.

3. The Plant is composed of a milk-receiving area, three cheese processing plants, a protein plant, a lactose plant, a visitor's center, a delicatessen restaurant, banquet facilities for up to 300 people, and a wastewater treatment facility (WWTF). The Plant's domestic wastewater is discharged to septic tanks and leachfields regulated separately.

4. Waste Discharge Requirements (WDRs) Order 97-206 formerly regulated the discharge of cheese processing wastewater to a 102-acre area near the Plant referred to as the Primary Lands. Order 97-206 authorized Hilmar Cheese to discharge a monthly average daily flow of up to 0.75 million gallons per day (mgd) of wastewater treated to have electrical conductivity (EC) of no greater than 900 micromhos per centimeter (µmhos/cm). In 1998, Hilmar Cheese installed salinity reduction treatment technology and began treating a portion of its Plant's wastewater flow, and initiated a discharge of wastewater treated to reduce EC to levels in compliance with the EC limit to 920 acres of agricultural land west of the Plant referred to as the Secondary Lands. Because the treatment technology did not have sufficient capacity to treat the entire wastewater flow, Hilmar Cheese continued to discharge to the Primary Lands wastewater not treated to fully reduce EC.

5. The Executive Officer of the Central Valley Water Board issued Cleanup and Abatement Order R5-2004-0772 (CAO) to Hilmar Cheese Company; Hilmar Whey Protein; and Kathy and Delton Nyman in December 2004 due to nuisance conditions and impacts to groundwater from Hilmar Cheese's disposal of wastewater to land. The CAO directs Hilmar Cheese to abate nuisance and address impacts to groundwater caused by its discharge in violation of Order 97-206. Work to address the tasks of the CAO is ongoing.

6. On 26 January 2005, the Executive Officer issued Administrative Civil Liability Complaint R5-2005-0501 to Hilmar Cheese in the amount of $4,000,000 for chronic violations of the effluent EC limitation prescribed in Order 97-206. On 16 March 2006, the Central Valley Water Board adopted Order R5-2006-0025, which ratified a Revised Settlement Agreement with Hilmar Cheese. Order R5-2006-0025 settled Administrative Civil Liability Complaint R5-2005-0501; required Hilmar Cheese to submit a Report of Waste Discharge (RWD) by 31 October 2006; and prescribed Interim Operating Limits for discharge flow and effluent EC that would be in effect until the Central Valley Water Board issued revised WDRs for the discharge.

7. The Revised Settlement Agreement included Interim Operating Limits (Order R5-2006-0025) that prescribed discharge requirements until Hilmar Cheese could complete improvements to the WWTF. Hilmar Cheese has been operating within those limits since adoption of the Revised Settlement Agreement in March 2006, which became effective in April of 2006. The Interim Operating Limits allow for the discharge of up to 1.2 mgd of partially-treated wastewater with an EC of up to 3,700 µmhos/cm to the Primary Lands. In 2008, the monthly average flow of partially-treated wastewater to the Primary Lands was about 0.65 mgd, with an average EC of about 3,500 µmhos/cm. In 2009, the discharge of partially-treated wastewater to the Primary Lands was about 0.57 mgd, with an average EC of about 3,300 µmhos/cm.

8. The Discharger submitted a RWD in October 2006, but also indicated that it needed additional time to complete its evaluation of WWTF improvements and effluent disposal options. Central Valley Water Board staff concurred with the Discharger's determination

that additional time was necessary to allow it to submit an RWD of sufficient detail for staff to prepare revised WDRs. The Discharger submitted two additional RWDs in November 2007 and June 2008, followed by an *Addendum to Report of Waste Discharge* (Addendum) dated 13 November 2008 prepared by Kennedy/Jenks Consultants.

9. The Addendum proposed to increase the discharge flow from 1.9 to 2.5 mgd; to fully treat all the Plant's cheese processing wastewater flow by December 2009; and provide reuse water for use as an irrigation supply to owners of about 1,200 acres of agricultural land situated generally west/northwest of the Plant. In July 2009, Hilmar Cheese reported that costs associated with its Ultrafiltration (UF) and Reverse Osmosis (RO) units may not be sustainable and that it was evaluating a new salinity-removal technology, Electrodialysis Reversal (EDR), an electrochemical separation process that removes ions and other charged species from water and other fluids. Hilmar Cheese reported the EDR system may function more effectively than UF/RO treatment and its associated costs in labor, chemicals, maintenance, and equipment would be considerably less. EDR treatment technology has been successfully employed to treat brackish water for use as drinking water, but has not been tested on industrial wastes such as those from a cheese processing plant.

10. Hilmar Cheese has incorporated several treatment and control measures to reduce the salinity of its discharge, including source control and UF/RO treatment. Because Hilmar Cheese will not immediately be able to comply with the effluent limits of this Order, a separate Time Schedule Order is appropriate to address compliance while Hilmar Cheese evaluates an EDR treatment system and installs either EDR or further UF/RO treatment systems.

Existing Wastewater Treatment Facility and Reuse

11. Wastewater is generated from sanitizing equipment and tanks, general facility wash down, assorted sources of equipment blow down, and truck washing. Wastewater is temporarily contained in three collection basins prior to the Plant's WWTF. A collection basin designated the "Cheese Basin" accepts wastewater from the milk receiving area, the three collection basins, and the protein plant (about 60 percent of the discharge). Wastewater from the lactose plant is discharged to the "Lactose Basin" (about 35 percent of the discharge), and a third sump, designated the "Wastewater Basin" accepts truck wash wastewater (about 5 percent of the discharge).

12. The WWTF consists of the collection basins; three 350,000-gallon equalization tanks with one equalization tank designated for wastewater resulting from abnormal operational conditions; two 55,000-gallon physio-chemical Dissolved Air Flotation (DAF) tanks; a heat exchanger; a granular sludge bed anaerobic digester; a 1,000,000-gallon pre-aeration tank; two 1,000,000-gallon sequencing batch reactors (SBRs); a 1,000,000-gallon surge tank; three DAF tanks, two with a capacity of 10,000 gallons and one with a capacity of 11,000 gallons: a UF membrane separation system; a two-stage RO system; and an evaporator.

13. The UF membrane system consists of a Zenon-supplied 1,000-gallon-per-minute (gpm) submerged hollow fiber UF membrane unit and four 330-gpm submerged hollow fiber UF membrane units. Permeate from the UF system is sent to the two-stage RO system for further salinity reduction, while concentrate from the UF system is currently recycled to the DAF system.

14. The RO system consists of three high-pressure primary RO units followed by two high-pressure secondary units. Permeate from the secondary RO units is discharged to the effluent storage ponds (described in greater detail in Finding 15) prior to discharge to the Secondary Lands for crop irrigation. Concentrate from the secondary RO is sent to the deep well injection system regulated by the United States Environmental Protection Agency (USEPA). Excess concentrate that cannot be discharged to the deep well is shipped offsite. In 2008, approximately 40,000 gallons per day of concentrate was sent to the East Bay Municipal Utility District (EBMUD).

15. Hilmar Cheese has a wastewater storage and application system consisting of two lined effluent storage ponds to store UF/RO treated wastewater prior to discharge to the Secondary Lands (Attachment B). The effluent storage ponds have approximately 44 million gallons of storage capacity and were constructed just north of the Plant in September 2000. The two ponds are clay lined (minimum 8-inch thickness).

16. The Primary Lands currently consist of about 95 acres that are directly adjacent the Plant and receive partially-treated wastewater (Attachment B). The APNs of parcels that comprise the Primary Lands are: 045-180-018, 045-140-030, 045-140-041, and 045-140-077.

17. The Secondary Lands consist of several interconnected individual parcels generally to the west of the Plant as shown on Attachment B. The Secondary Lands receive wastewater that has been treated by UF and RO. The acreage of the Secondary Lands was listed as about 735 acres in the 2006 RWD, about 920 acres in the Addendum, and currently consists of about 750 acres. Hilmar Cheese notifies the Central Valley Water Board in writing when new parcels are added to the Secondary Lands and assigns a specific number to discrete parcels (e.g., S-39) for identification.

18. Hilmar Cheese was issued Class I Underground Injection Control Permit No. CA1050001 by the USEPA for the installation of up to four deep injection wells. Currently, two wells have been installed. The first, WD-2, was installed in June 2006 to a depth of 4,100 feet below ground surface (bgs). The second, WD-1P, was completed to a depth of 4,125 feet bgs in January 2009. These deep injection wells are used to dispose of the concentrate from the secondary RO units.

Existing Wastewater Discharge

19. Data from Hilmar Cheese's self-monitoring reports indicates that the wastewater applied to the Primary Lands from April 2006 through 2008 had the following average characteristics.

Primary Lands Effluent Data

Flow (mgd[1])	**BOD**[2] (mg/L[3])	**Total N**[4] (mg/L)	**TDS**[5] (mg/L)	**EC**[6] (µmhos/cm[7])	**Cl**[8] (mg/L)	**Na**[9] (mg/L)
0.73	362	187	2,217	3,532	327	631

1. million gallons per day (mgd)
2. 5-day biochemical oxygen demand (BOD)
3. milligrams per liter (mg/L)
4. Total nitrogen (Total N) equals TKN + Nitrate, as N.
5. Total Dissolved Solids
6. Electrical Conductivity (EC)
7. Micromhos per centimeter (µmhos/cm)
8. Chloride (Cl)
9. Sodium (Na)

In 2009, the wastewater applied to the Primary Lands had the following average characteristics.

2009 Primary Lands Effluent Data

Flow (mgd)	**BOD** (mg/L)	**Total N** (mg/L)	**TDS** (mg/L	**EC** (µmhos/cm)	**Cl** (mg/L)	**Na** (mg/L)
0.57	119	68	2,112	3,334	391	621

20. Data from Hilmar Cheese's self-monitoring reports indicates that the wastewater applied to the Secondary Lands in from April 2006 through 2009 had the following average characteristics.

Secondary Lands Effluent Data

Flow (mgd[1])	**BOD**[2] (mg/L[3])	**Total N**[4] (mg/L)	**TDS**[5] (mg/L)	**EC**[6] (µmhos/cm[7])	**Cl**[8] (mg/L)	**Na**[9] (mg/L)
1.06	42	18	452	817	68	145

1. million gallons per day (mgd)
2. 5-day biochemical oxygen demand (BOD)
3. milligrams per liter (mg/L)
4. Total nitrogen (Total N) equals TKN + Nitrate, as N
5. Total Dissolved Solids
6. Electrical Conductivity (EC)
7. Micromhos per centimeter (µmhos/cm)
8. Chloride (Cl)
9. Sodium (Na)

21. Comparison of the values presented in the previous tables indicates the WWTF is effective in treating the portion of wastewater that is fully-treated. From April 2006 through 2009, the full treatment system removed about 88 percent of 5-day biochemical oxygen demand (BOD), 79 percent of total dissolved solids (TDS), 80 percent of chloride, 78 percent of sodium, and reduced EC by 77 percent.

WWTF Expansion Project

22. In order to treat all of the wastewater using the UF/RO systems or alternate treatment systems to the meet the Effluent Limitations of this Order, various improvements to the WWTF and to the current disposal activities have been completed or are underway.

23. Improvements to the WWTF include: installation of a second DAF system (consisting of three DAF units) to improve the ability to remove minerals and excessive biomass; conversion of the existing 1-million-gallon pre-aeration tank to a third SBR providing additional SBR retention time and improved activated sludge performance; installation of an additional UF system (consisting of four units, each rated at 350 gpm) to provide UF treatment for all of the wastewater. RO concentrate from the 2nd stage RO units will continue to be disposed of in the deep injection well system, permitted by the USEPA. Solids generated by the first and second DAF systems are dewatered and trucked offsite to the East Bay Municipal Utility District.

24. In case of short-term operational issues or equipment failures, Hilmar Cheese will construct a wastewater equalization system to ensure that effluent meets the limits before it is discharged to the two storage ponds and the Reuse Areas.

25. Secondary Lands will receive the discharge of the fully-treated effluent, with a total of approximately 1,200 acres being required to accommodate the total effluent flow authorized by this Order.

26. Hilmar Cheese provides treated wastewater to farmers to irrigate crops grown on the Secondary Lands. Secondary Lands crop irrigation is supplemented with Turlock Irrigation District (TID) canal water. Historically, irrigation has also been supplemented with up to 20 percent of its crop irrigation demand with dairy wastewater.

27. Most existing milk cow dairies in the Central Valley Region are regulated by General WDRs Order R5-2007-0035, *General Order for Existing Milk Cow Dairies* (General Order), which requires dairy waste that is blended with waste generated off-site to be regulated by a separate order. This Order authorizes Plant effluent and dairy wastewater to be applied to Secondary Lands, providing the Discharger accounts for both in its loading calculations and the facility meets the requirements for nutrient management plans, monitoring and reporting, and runoff contained in the General Order. The General Order will continue to regulate dairy operations and discharges of dairy waste to lands identified in Attachments C and D, as well as lands that do not receive Plant effluent. In

the event of any inconsistency between this Order and the General Order, the more stringent requirement shall apply.

28. The proposed treatment improvements will increase the rated treatment capacity of the WWTF to 2.5 mgd. This Order authorizes Hilmar Cheese to increase discharge flow to 2.5 mgd following satisfaction of Provisions F.18 and F.21 which require the Discharger to certify sufficient wastewater treatment, storage, and disposal capacity and submit Nutrient Management Plans for each parcel receiving Plant effluent. Following completion of the WWTF Expansion Project, all waste discharged to Primary Lands and Secondary Lands will be fully treated and meet Effluent Limitations B.1 and B.2.

Water Reuse

29. Order 97-206 incorporated specifications to allow Hilmar Cheese to implement water reuse to flood irrigate crops grown on 138 acres adjacent to the Plant (i.e., the original Primary Lands).

30. The Secondary Lands are generally cropped using a furrow and ridge irrigation system planted with silage corn in the summer and wheat, oats, or winter forage mix in the winter. Each parcel is typically planted and harvested individually to accommodate field drying cycles as well as other field activities. Values of the annual plant available nitrogen demand of alfalfa, wheat, oats, and silage corn are 480,175, 115, and 250 lbs/acre, respectively, according to *Western Fertilizer Handbook*. Studies in the Hilmar area by University of California staff indicate that wheat and oat cropping for dairies require 294-342 lbs/acre and wheat requires 263-329 lbs/acre (Matthews. 2003. *Using Winter Forages for Dairy Nitrogen Management*. California Alfalfa and Forage Symposium). In a separate study of winter forage nitrogen uptake at eight dairy land application sites, the crop removed 202 lbs/acre (Pettygrove et. al. 2003. *Integrating Forage Production with Dairy Manure Management in the San Joaquin Valley. Sustainable Agriculture Research Education Program Grant Final Report*, University of California, Davis, CA). Accordingly, the nitrogen demand of double-cropped parcels or alfalfa ranges from 365 lbs/acre for winter forage/silage corn to over 500 lbs/acre if the cropping methods tested by Matthews for winter crops are used.

Site-Specific Conditions

31. The Hilmar area is characterized by warm, dry summers and cool, wet 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 evapotranspiration in the discharge area are approximately 12 and 53 inches, respectively, according to information published by the California Department of Water Resources (DWR). The maximum annual precipitation for a 100-year rainfall return period is estimated to be 21 inches.

32. Soils in the discharge area are classified as the Delhi sands and the Hilmar loamy sands, according to the United States Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) *Soil Survey of Merced Area, 2007*. The Delhi Series is described by the USDA/NRCS as somewhat excessively drained with negligible to slow runoff and rapid permeability. The Delhi sands are reportedly used to grow grapes, peaches, truck crops, almonds and alfalfa. The USDA/NRCS describes the Hilmar Series as "somewhat poorly and poorly drained with a fluctuating water table that rises to within a foot or so of the surface during the rainy season and during the periods of heavy irrigation either on the soil or on nearby areas" and the surface soil is described as "rapidly permeable and the IIC horizon is slowly permeable." The Hilmar Series is reportedly used to grow alfalfa, grapes, row crops, almonds and irrigated pasture.

33. The Plant and the Secondary Lands are not within a 100-year floodplain according to Federal Emergency Management Agency Map 06047C0175G. Hilmar Cheese has experienced problems with standing wastewater in the Primary Lands due to poor drainage, shallow groundwater, and preferential flow of wastewater to portions of the Primary Lands where wastewater collects in areas of lower elevation. Surface water drains typically to the west/southwest in the Reuse Areas.

34. Hilmar Cheese is not required to obtain coverage under a National Pollutant Discharge Elimination System general industrial storm water permit for WWTF because all storm water runoff is retained onsite and does not discharge to a water of the United States. A storm water retention basin with an approximately 3.3 million gallon capacity is present north of the Plant that, in addition to storm water, collects non-storm water discharges such as landscape irrigation water.

35. The land use in the vicinity of the Plant is primarily agricultural with a mixture of pasture and orchard crops. Additional uses include confined livestock (there are at least six dairies within a one-mile radius of the Plant), residential (the unincorporated community of Hilmar is located about one half mile south of the Plant), and light industrial.

Groundwater Considerations

36. The Plant and Reuse Areas are within the Turlock groundwater subbasin that forms a part of the San Joaquin Valley Groundwater Basin. This Basin is reported to contain three general primary water bearing zones: an uppermost unconfined aquifer (Modesto Formation); a semi-confined aquifer (Turlock Lake Formation); and a confined aquifer that is beneath the Corcoran Clay layer.

37. Jacobson James & Associates, Inc. (Jacobson James) completed an evaluation of these zones in June 2008. Based on this evaluation, the zones are as follows:

Zone	Units	Depth Intervals (feet bgs)
Modesto Formation	A Zone Aquifer	~5 to 125
	A Zone Aquitard	~105 to 125
Turlock Lake Formation	B Zone Aquifer	~125 to 150
	B Zone Aquitard (Corcoran Clay)	~150 to 200
Below Corcoran Clay	C Zone Aquifer	~175 to 200
	C Zone Aquitard	~190 to 210
	D Zone Aquifer	~210 to 250

38. The direction of groundwater flow in the unconfined aquifer is generally to the west/southwest, but the direction is influenced by nearby pumping of wells and the discharge of wastewater and irrigation water. The overall direction of the flow is to the southwest. The depth to first-encountered groundwater is shallow, ranging from about 5 to 15 feet bgs. During wet periods, water can be at the ground surface. Area groundwater depth is controlled in various areas in the discharge vicinity by the operation of agricultural tile drain systems that discharge to TID canals (e.g., Lateral No. 6 north of the Plant). Tile drains under the Primary Lands were sealed off and no longer discharge to the TID canals.

39. Hilmar Cheese has a groundwater monitoring well network consisting of 23 groundwater monitoring wells. Of the 23 wells, 19 were installed to depths of 26 feet bgs or less and monitor groundwater in the Upper A Zone; two (MW-18 and MW-19) were installed to depths of about 60 feet bgs and monitor the Lower A Zone; MW-22 was installed to 125 feet bgs and monitors the B Zone; and MW-23 was installed to 195 feet bgs and monitors the C Zone.

40. Monitoring wells will be monitored as part of the Monitoring and Reporting Program for this Order. Additional groundwater monitoring wells are required as part of the Plant expansion and the CAO both upgradient and downgradient of the Plant and the Reuse Areas. Hilmar Cheese will submit a work plan listing the wells to be included in the groundwater monitoring network, as required by Provision F. 19, for approval by the Executive Officer.

41. Groundwater quality in the Hilmar area is highly variable and, in general, the concentration of mineral constituents increases from east (upgradient) to west (downgradient). It is typical for groundwater quality to decrease along the axis of its flow as it moves downgradient. Water quality appears to have been also degraded by past and current land uses (the Plant and its discharges, dairies, farming, industry, etc.) and irrigation with water of varying quality.

42. As detailed in the CAO, historic discharges from the facility unreasonably degraded groundwater beneath the Primary Lands and adjacent areas. In May and June 2008, Jacobson James collected samples from about 42 domestic wells, seven industrial supply wells, and seven irrigation wells. The greatest impact was observed in the Upper A Zone (unconfined aquifer) in the vicinity of the Primary Lands. The maximum TDS concentration recorded during the May and June 2008 investigations by Jacobson James was 2,700 mg/L (which corresponds to an EC of about 3,800 µmhos/cm) in a monitoring well. TDS concentrations in the semi-confined and confined aquifers were significantly lower, with concentrations ranging from about 260 to 1,000 mg/L.

43. In an effort to establish water quality conditions upgradient (east) of the Plant, Jacobson James collected groundwater samples over several years from 11 direct push technology borings and a monitoring well to provide preliminary data for the evaluation of ambient conditions in the Upper Aquifer (above the Corcoran Clay) upgradient (east) of the Plant. Using this data, the Central Valley Water Board evaluated upgradient groundwater quality for several constituents of concern. Those values are presented in the following table.

Upgradient Groundwater Quality

EC[1] (µmhos/cm[2])	**TDS**[3] (mg/L[4])	**NO_3 as N**[5] (mg/L)	**Cl** [6](mg/L)	**Na** [7](mg/L)
847	570	18	54	76

1. Electrical Conductivity (EC)
2. Micromhos per centimeter (µmhos/cm)
3. Total Dissolved Solids (TDS)
4. Milligrams per liter (mg/L)
5. Nitrate as nitrogen (NO_3 as N)
6. Chloride (Cl)
7. Sodium (Na)

Nitrates are above the primary maximum contaminant level of 10 mg/L for nitrate as nitrogen. Nitrates in groundwater are a regional concern in the Hilmar area and likely influenced by local agricultural land uses such as nearby dairies and farmland including almond orchards. Sodium is above the lowest typical agriculture limit of 69 mg/L and likely influenced by local agricultural land uses such as nearby dairies. The remaining constituents are within water quality objectives for drinking water supplies or agriculture.

44. Historical groundwater data is limited. The oldest data available is from 1989 when monitoring wells MW-1 and MW-2 were installed. EC values in samples collected from MW-1 in 1989 and 1990 ranged from 150 to 700 µmhos/cm, while values in MW-2 ranged from about 280 to 580 µmhos/cm. In 2008, EC values in samples from MW-1 ranged from 2,470 to 4,530 µmhos/cm, while samples from MW-2 ranged from 1,640 to 3,690 µmhos/cm.

Source Water Quality

45. Source water is supplied to the Plant by three groundwater wells (IN-1, IN-2, and IN-7). Wells IN-1 and IN-2 are pumped into a storage tank and designated Water Supply No. 1, (WS-1), while water from well IN-7 is pumped into a second storage tank and designated Water Supply No. 2 (WS-2). Wells IN-1 and IN-2 are within the Plant and IN-7 is northwest of the Plant. Water quality averages for samples collected from April 2006 through 2008 are shown on the following table.

Supply Well Data

Source	TDS[1] (mg/L)[2]	EC[3] (µmhos/cm[4])	NO_3 as N[5] (mg/L)[2]	Cl[6] (mg/L[2])	Na[7] (mg/L[2])
WS-1	555	855	12	79	84
WS-2	887	1429	7	195	159

1. Total Dissolved Solids (TDS)
2. Milligrams per liter (mg/L)
3. Electrical Conductivity (EC)
4. Micromhos per centimeter (µmhos/cm)
5. Nitrate as nitrogen (NO_3 as N)
6. Chloride (Cl)
7. Sodium (Na)

46. Jacobson James prepared an August 2008 *Supply Well Evaluation Technical Report* that reported both IN-1 and IN-2 had been degraded by discharges of waste from the Plant. The report found that IN-7 was degraded in quality, but it was not likely that Hilmar Cheese had caused the impact. IN-7 appears to be downgradient of a dairy. Hilmar Cheese indicates IN-7 is its primary source for water. IN-1 is used as a supplemental supply and IN-2 is non operational.

Basin Plan, Beneficial Uses, and Water Quality Objectives

47. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, 4th Edition, revised February 2007* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Resources Control Board (State Water Board). Pursuant to Section 13263(a) of the California Water Code (CWC), WDRs must implement the Basin Plan.

48. The Plant and the Primary and Secondary Lands lie within the San Joaquin Basin, specifically the Turlock Hydrologic Area (No. 535.5), as depicted on interagency hydrologic maps prepared by DWR in 1986. The Basin Plan designates the beneficial uses of groundwater as municipal and domestic supply, agricultural supply, industrial process and service supply, water contact recreation supply, and wildlife habitat supply.

49. The area around the Plant and Reuse Areas regionally drains towards the San Joaquin River. The Basin Plan designates the following beneficial uses for the San Joaquin River: municipal and domestic supply, agricultural supply, industrial process supply, water contact recreation, non-contact water recreation, warm freshwater habitat, migration of warm and cold water fishes, spawning for warm and cold water fishes, and wildlife habitat.

50. The Basin Plan includes a groundwater water quality objective for chemical constituents that, at a minimum, require waters designated as municipal and municipal supply to meet the State drinking water maximum contaminant levels (MCLs) specified in Title 22, California Code of Regulations (CCR). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

51. 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. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

52. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

53. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigating with water having an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

54. The list of crops in Finding 32 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but is representative. Discharge has degraded the quality of groundwater beneath the Plant to levels that could affect plant growth if used for irrigation of crops such as almonds. However, agricultural operations in the area typically irrigate with TID irrigation water, which has excellent mineral water quality. Cleanup of groundwater impacted by the Plant discharge is being addressed by the CAO, and the effluent concentrations for the discharge permitted by

this Order are consistent with water quality objectives and will not limit use for irrigation on all but the most salt-sensitive crops.

Antidegradation

55. State Water Board Resolution No. 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 the 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 best practicable treatment or control (BPTC) to minimize degradation.

56. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and limited groundwater degradation around the Plant, provided that the terms of the Basin Plan are met. Degradation of groundwater by some of the typical waste constituents released with discharge from a food processing plant 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. Hilmar Cheese aids in the economic prosperity of the region by directly employing over 700 workers, it provides incomes for numerous surrounding dairies, and provides a tax base for local and county governments. The proposed Order requires treatment that constitutes best practicable treatment or control.

57. Historically, Hilmar Cheese's disposal of partially-treated wastewater degraded groundwater in the vicinity of the Primary Lands and affected beneficial uses. The cleanup of this is regulated by the CAO and groundwater investigations are ongoing. An accompanying Time Schedule Order requires Hilmar Cheese to fully treat all of its wastewater to the effluent limits of this Order by no later than July 2011. The CAO addresses development of remedial actions to clean up groundwater from past discharges, which will address future use of the Primary Lands. Discharges to the Primary Lands may cause some limited, temporary degradation. However, the discharge of partially-treated wastewater is limited in aerial extent and duration; is limited in volume by Provision F.1; and the CAO already requires the Discharger to address groundwater pollution under the Primary Lands. This Order thus ensures that existing high quality water will be maintained, and that discharges to Primary Lands will meet BPTC requirements.

58. Constituents of concern that have the potential to degrade groundwater include organic material, nitrogen, and salts (TDS, EC, chloride, and sodium).

59. Regarding organic material (BOD), the estimated average BOD loading rate to the Reuse Areas is less than 1 pound per acre per day, which is well below the USEPA maximum recommended rate of 100 pounds per acre per day (lbs/acre/day) according to USEPA Publication No. 625/3-77-007, *Pollution Abatement in the Fruit and Vegetable Industry,* which is designed to prevent impacts to groundwater under most conditions. Therefore, no degradation due to organic loading is expected to occur.

60. For nitrogen, total nitrogen concentrations in the effluent are equal to or lower than that of upgradient water quality. Additionally, the ponds used to store treated effluent are clay-lined and the effluent is used to irrigate crops that use available nitrogen. Application of the wastewater at agronomic rates of irrigation will allow crop uptake of the majority of the nitrogen in wastewater and reduce the amount reaching groundwater in the Reuse Areas. The amount of nitrogen reaching groundwater through the clay-lined storage ponds will be minimal. Therefore the discharge would not cause degradation of groundwater above background, nor above the MCL for nitrate.

61. Regarding sodium, the lowest typical agricultural limit is 69 mg/L, which is based on protection of sprinkler-irrigated, salt-sensitive crops. Review of Ayers and Westcott, *Water Quality for Agriculture*; Asano, *Wastewater Reclamation and Reuse* and land use maps showing crops grown in the region, indicates crops highly sensitive to salt are currently not grown in the discharge area.

    Ayers and Westcott indicate sodium concentrations up to 70 mg/L have no restrictions for salt-sensitive crops and concentrations from 70 to 210 mg/L have only slight to moderate restrictions. The average sodium concentration in effluent from the Plant since April 2006 has been about 145 mg/L. The discharge could cause degradation of groundwater above ambient, but would not restrict usage for the types of crops grown in the area or as a drinking water source.

62. Regarding chloride, the effluent limit of 85 mg/L is less than the lowest typical agricultural limit of 106 mg/L (from *Water Quality for Agriculture*) and less than the lowest recommended Secondary MCL of 250 mg/L.

63. Regarding salinity in general, average TDS concentrations and EC values in the fully-treated wastewater since April 2006 are less than 450 mg/L and 825 µmhos/cm, respectively, which are less than the ambient conditions upgradient of the Plant and are less than the Recommended Secondary MCLs of 500 mg/L and 900 µmhos/cm. Therefore, the discharge will not exceed the most stringent MCL nor cause or contribute to degradation of groundwater for salinity.

64. Kennedy/Jenks prepared a technical report to estimate the potential degradation to groundwater from the discharge and the amount of land needed for disposal. The

report's model indicated that up to 1,200 acres will be required. The model predicted the concentration of TDS in the vicinity of the proposed Secondary Lands would be approximately 700 mg/L, with or without the discharge. This value (700 mg/L) is the predicted value for ambient water quality in the vicinity of the proposed Secondary Lands. The conclusion of the report was that there would be no degradation from the discharge as it is of comparable quality to existing downgradient water quality. The model considered a combination of precipitation, Turlock Irrigation District water used for irrigation in the area, irrigation with wastewater from local dairies, and discharge of Hilmar Cheese's treated wastewater.

65. This Order establishes groundwater limits that are performance based and 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 requirements for a groundwater assessment for assuring that the highest water quality consistent with the maximum benefit to the people of the State will be achieved. The groundwater limits reflect relevant, applicable and appropriate information and achievable by implementing the BPTC measure currently being implemented and proposed to be implemented by the Discharger. The limits established in this Order may be revised based on additional monitoring data submitted by the Discharger from monitoring wells in the Secondary Lands that will be installed and monitored in accordance with the requirements of this Order.

Treatment and Control Practices

66. The WWTF Expansion Project described in Findings 22 through 28 provides, or will provide, treatment and control of the discharge that incorporates:

    a. Physical and biological treatment for BOD reduction that reduces organic loading to a nominal amount;

    b. UF and RO treatment, with proposed expansion of RO or addition of EDR treatment or other applicable technology, which are the highest levels of salt removal technology available;

    c. Storage of effluent in lined ponds that will limit any constituent of concern from reaching groundwater by percolation;

    d. Application of wastewater (alone or blended with TID Water and dairy wastewater) on crops at rates not exceeding reasonable agronomic demand;

    e. Application of wastewater at rates that will not allow it to stand for more than 48 hours, which is designed to preclude nuisance conditions such as mosquito breeding;

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

    g. Preparation of a Nutrient Management Plan to ensure nutrients are not applied to crops at greater than agronomic rates; and

    h. Appropriate solids disposal practices.

67. These Treatment and Control Practices are reflective of best practicable treatment or control (BPTC) of the discharge.

Water Reuse

68. The Basin Plan encourages the reuse of wastewater and identifies crop irrigation as a reuse option where the opportunity exists to replace an existing use or proposed use of fresh water with recycled water.

Designated Waste and Title 27

69. CWC Section 13173 defines designated waste as either:

    a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 25143 of the Health and Safety Code.

    b. Non-hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or could reasonably be expected to affect beneficial uses of the waters of the State contained in the appropriate water quality control plan.

70. Unless exempt, release of designated waste is subject to full containment pursuant to the requirements of Title 27, CCR, Section 20005 et seq. (hereafter Title 27). Title 27 Section 20090(b) exempts discharges of designated waste to land from Title 27 containment standards and other Title 27 requirements provided the following conditions are met:

    a. The applicable regional water board has issued WDRs, or waived such issuance;

    b. The discharge is in compliance with the applicable basin plan; and

    c. The waste is not hazardous waste and need not be managed according to Title 22, CCR, Division 4.5, Chapter 11, as a hazardous waste.

    The discharge of effluent and the operation of treatment or storage facilities associated with a food processing facility is exempt from Title 27, provided any resulting degradation of groundwater is in accordance with the Basin Plan and the waste need not be managed as a hazardous waste. None of the waste regulated by the proposed Order is hazardous waste nor required to be treated as hazardous waste. With treatment to remove organics and salinity, and application at agronomic rates, the discharge of fully-treated wastewater to land will not cause exceedance of groundwater quality objectives. The discharges authorized by this Order comply with the Antidegradation Policy, as described elsewhere in this Order.

    The Discharger has demonstrated that, although currently lacking the capacity to treat all of its wastewater, it has the technical ability to treat all Plant wastewater to the limits specified in this Order. Once additional equipment is installed to treat all wastewater, the

discharges to Primary Lands will meet all requirements of Title 27, Section 20090(b). The board finds that the discharges to Primary Lands will be exempt from Title 27 once the expanded treatment plant is fully operational. In the meantime, the discharge of the portion of wastewater that is not fully-treated is subject to a Time Schedule Order as required by State Water Board Order WQ-2009-0005 (City of Lodi), and this Order prohibits an increase in flow above 1.9 mgd until the Discharger achieves full compliance and meets requirements for Nutrient Management Plans. No additional interim measures are necessary for purposes of Title 27 compliance.

The discharge to effluent storage ponds will not cause an exceedance of groundwater quality objectives. Only fully-treated effluent is discharged to them and the storage ponds are lined with an engineered compacted clay liner that will preclude leakage in an amount that would cause an exceedance of groundwater quality objectives.

The discharge of wastewater to the Plant's collection basins will not cause an exceedance of groundwater quality objectives as the basins are relatively small, reinforced concrete-lined sumps for pumping wastewater to the WWTF.

The discharges to the Secondary Lands, effluent storage ponds and collection basins are therefore exempt from Title 27, under section 20090(b). In addition, effluent applied to the Reuse Areas is a reuse that is exempt under Title 27, Section 20090(h).

CEQA

71. On 2 January 2009, Merced County, as Lead Agency, circulated a draft Mitigated Negative Declaration for Hilmar Cheese's proposed Plant expansion. Central Valley Water Board staff reviewed and commented on the draft Mitigated Negative Declaration, and on 11 February 2009 the Merced County Planning Commission adopted it. Mitigation measures include a condition that construction of the WWTF is completed and that all wastewater is treated prior to an increase in flows, and a requirement for a Nutrient Management Plan.

72. This Order includes requirements to protect water quality, including:

    a. Effluent Limitations B.1 and B.2 which establish numerical effluent limitations that are reflective of best practicable treatment for this discharge.

    b. Discharge Specification C.2, which stipulates waste constituents cannot be released or discharged in a concentration or mass that causes violation of this Order's groundwater limitations.

    c. Provision F.21, which requires that Hilmar Cheese submit and implement a Nutrient Management Plan by 1 December 2010.

73. The Central Valley Regional Water Board has reviewed the Mitigated Negative Declaration and concurs that all potential water quality and related nuisance impacts have been mitigated to a less-than-significant level.

General Findings

74. Based on the threat to water quality and complexity of the discharge, the facility is determined to be classified as 1-A. Section 2200 of Title 23, CCR, defines these categories to include any of the following:

    a. Category 1 threat to water quality: "Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish."

    b. Category A complexity: "Any discharge of toxic wastes, any small volume discharge containing toxic waste or having numerous discharge points or ground water monitoring, or any Class 1 waste management unit."

75. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

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

77. CWC Section 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 costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

78. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2010-0008 are necessary to assure compliance with these WDRs. Hilmar Cheese operates the facility that discharges the waste subject to this Order.

79. DWR sets standards for the construction and destruction of groundwater wells, as described in the *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 Section 13801, apply to all monitoring wells.

Public Notice

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

81. The Discharger and interested agencies and persons have been notified of the intent to prescribe WDRs for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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

IT IS HEREBY ORDERED that, Waste Discharge Requirements Order No. 97-206 is rescinded and that, pursuant to Sections 13263 and 13267 of the CWC, Hilmar Cheese Company, Inc., Reuse Area Owners, and their respective 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. Discharge Prohibitions

1. Direct discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Bypass of untreated wastes, except as allowed by Provision E.2 of Standard Provisions and Reporting Requirements, is prohibited.

3. Discharge of waste classified as “hazardous”, as defined in Section 2521(a) of Title 23, California Code of Regulations, Section 2510 et seq., is prohibited. Discharge of waste classified as “designated,” as defined in CWC Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

4. Application of wastewater in a manner or location other than that described herein is prohibited.

B. Effluent Limitations

1. The discharge from the WWTF to land (the effluent storage ponds or Reuse Areas) shall not exceed the following monthly averages for the constituents listed:

Constituent/Parameter	Units	Value
Electrical Conductivity	µmhos/cm[1]	1,000
Total Dissolved Solids	mg/L[2]	600
5-day Biochemical Oxygen Demand	mg/L[2]	50
Chloride	mg/L[2]	85
Total Nitrogen	mg/L[2]	20

1. micromhos per centimeter (µmhos/cm)
2. milligrams per liter (mg/L)

2. The discharge from the WWTF to land (the effluent storage ponds or Reuse Areas) shall not exceed the following 12-month rolling average for the constituents listed:

Constituent/Parameter	Units	Value
Electrical Conductivity	µmhos/cm	900
Total Dissolved Solids	mg/L	500

C. Discharge Specifications

1. The monthly average discharge flow shall not exceed 1.9 mgd until the Discharger has satisfied Provisions F.18 and F.21, after which the monthly average flow shall not exceed 2.5 mgd.

2. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.

3. Unless determined by the Executive Officer or the Discharger to be significant sources of pollutants, only the following non-storm waters may be discharged to the storm water retention basin:

   a. potable water line flushing;

   b. landscape irrigation (greenbelts and planters around Plant) drainage;

   c. foundation/footing or other minor dewatering drainage;

   d. potable water; and

   e. air conditioning, refrigeration, or compressor condensate.

4. Objectionable odors shall not be perceivable beyond the limits of the WWTF, storage pond, or Reuse Area properties at an intensity that creates or threatens to create nuisance conditions.

5. Application of wastewater to the Reuse Areas shall be at reasonable agronomic rates to preclude degradation of groundwater, considering the crop, soil, climate, and irrigation management system, consistent with the Nutrient Management Plan required by Provision F.21. The annual hydraulic and nutritive loadings to the Reuse Area, including the nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand.

6. Wastewater shall not be discharged to the Reuse Area in a manner that causes wastewater to stand for greater than 48 hours.

7. Any irrigation runoff shall be confined to the reuse area and shall not enter any surface water drainage course or stormwater drainage system unless the runoff does not pose a public health threat and is authorized by the appropriate regulatory agencies.

8. No physical connection shall exist between wastewater and any domestic water supply or domestic well, or between wastewater piping and any irrigation well that does not have an air gap or reduce pressure principle device.

D. Solids Specifications

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

2. Collected screenings, sludge, and other solids removed from the liquid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) operated in accordance with valid WDRs issued by a regional water quality control board will satisfy this specification. The deep well injection system regulated by the United States Environmental Protection Agency also satisfies this specification.

3. Any proposed change in solids disposal practices shall be reported to the Executive Officer in writing at least 90 days in advance of the change.

E. Groundwater Limitations

Release of waste constituents from any wastewater or storm water collection, treatment, or storage component, or release of waste constituents from discharges to the Reuse Area, shall not cause or contribute to groundwater:

a. Containing concentrations of constituents in excess of those identified below.

   (i) Nitrate as nitrogen of 10 mg/L.

   (ii) TDS of 700 mg/L

   (iii) Total Coliform Organisms of 2.2 MPN/100 mL.

   (iv) For constituents identified in Title 22, the Primary and Secondary MCLs quantified therein, or natural background quality, whichever is greater.

b. Containing taste- or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses.

F. Provisions

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements for Waste Discharge Requirements, dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as Standard Provisions(s).

2. The Discharger shall comply with Monitoring and Reporting Program (MRP) No. R5-2010-0008, which is part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program self-monitoring reports.

3. Hilmar Cheese shall keep at the Plant, and each other Reuse Area Owner shall keep at its business office or residence, a copy of this Order including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

5. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code Sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

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

including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

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

8. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

9. Effluent storage ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

10. No later than **1 October** of each year, Hilmar Cheese will provide documentation that it has the available storage capacity in the effluent storage ponds and Reuse Areas necessary to comply with Provision F.9.

11. All ponds (i.e., effluent storage ponds, storm water ponds) shall be managed to prevent breeding of mosquitoes. In particular,

    a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.

    c. Dead algae, vegetation and other debris shall not accumulate on the water surface.

    d. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but **not during**, the April 1 to June 30 bird nesting season.

12. The Reuse Area parcels shall be graded to prevent ponding along public roads or other public areas and prevent runoff onto adjacent properties.

13. Reuse Area parcels shall be managed to prevent breeding of mosquitoes. In particular:

    a. All applied irrigation water must infiltrate completely within a 48-hour period;

    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation; and

    c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store reused water.

14. As a means of discerning compliance with Discharge Specification C.4, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond (i.e., effluent storage ponds or storm water basins) shall not be less than 1.0 mg/L for three consecutive days. Should the DO be below 1.0 mg/L during a weekly sampling event, the Discharger shall take all reasonable steps to correct the problem and commence daily DO monitoring in all affected ponds until the problem has been resolved. If objectionable odors originating from affected ponds are noticed in developed areas, or if the Discharger receives one or more odor complaints, the Discharger shall report the findings in writing within 5 days of that date and shall submit a specific plan to resolve the low DO results to the Central Valley Water Board within 10 days of that date.

15. The pH of the discharge to effluent storage ponds shall not be less than 6.0 or greater than 9.0 pH units for more than three consecutive 24-hour composite sampling events. In the event that the pH of the discharge is outside of this range for more than three consecutive sampling events, the Discharger shall submit a technical evaluation in its quarterly self-monitoring reports documenting the pH of the discharge to the Reuse Area.

16. Hilmar Cheese shall maintain and operate all storage ponds sufficient to protect the integrity of containment levees and prevent overtopping or overflows. Unless a California civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, Hilmar Cheese shall install and maintain in each pond permanent markers with calibration that indicates the water level at design capacity and enables determination of available operational freeboard.

17. The Discharger shall submit the technical reports and work plans required by this Order for Central Valley Water Board staff consideration and incorporate comments

they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.

18. Upon completion of the proposed WWTF Expansion Project described in Findings 22 through 28 and **at least 60 days prior** to initiating an increase in the monthly average discharge flow to greater than 1.90 mgd, Hilmar Cheese shall submit an engineering certification that it has sufficient treatment, storage, and disposal capacity to comply with the other terms and conditions of this Order. This Provision will be considered satisfied following written acknowledgement from the Executive Officer that this Provision's criteria have been met.

19. **By 15 June 2010,** Hilmar Cheese shall submit a report documenting the installation and sampling of the additional groundwater monitoring wells described in Finding 40. The report shall include a list of wells proposed to be incorporated into the final groundwater monitoring network for Executive Officer approval.

20. **By 15 June 2010,** Hilmar Cheese shall submit a report summarizing salinity minimization measures that have been implemented, and a time schedule for measures that will be implemented, to reduce the salinity in discharge to the extent feasible. Hilmar Cheese shall identify sources of salt in waste generated at the Plant, report measures to minimize salt in the waste, and certify that it has or will implement the approved measures identified to minimize salt in the waste.

21. **By 15 December 2010,** the Discharger shall, for each separately-owned parcel where wastewater is applied for irrigation purposes, develop and implement management practices that control nutrient losses and describe these in a Nutrient Management Plan. The Nutrient Management Plan must be certified, maintained at the Plant, submitted to the Executive Officer upon request, and must ultimately describe wastewater crop irrigation practices that provide for protection of both surface water and groundwater. The Nutrient Management Plan shall account for all nutrient inputs from all sources (i.e., the discharge, manure, chemical fertilizers, etc.) and shall be reviewed and updated as necessary. The Nutrient Management Plan shall be consistent with General WDRs Order R5-2007-0035, *General Order for Existing Milk Cow Dairies*, for all Reuse Area parcels that are regulated by Order R5-2007-0035. Groundwater monitoring will be used to determine if implementation of the Nutrient Management Plan is protective of groundwater quality.

22. Each Reuse Area Owner is responsible for all water quality or nuisance impacts of wastewater discharged at their Reuse Area parcels. Each Reuse Area Owner shall be responsible for compliance with General WDRs Order R5-2007-0035, *General Order for Existing Milk Cow Dairies*, for all Reuse Area parcels that are regulated by Order R5-2007-0035. A failure by Hilmar Cheese to comply with this Order or other legal requirements shall not be a defense to any action by the Central Valley Water Board to enforce any law, regulation, or other requirement against a Reuse Area Owner.

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 29 January 2010.

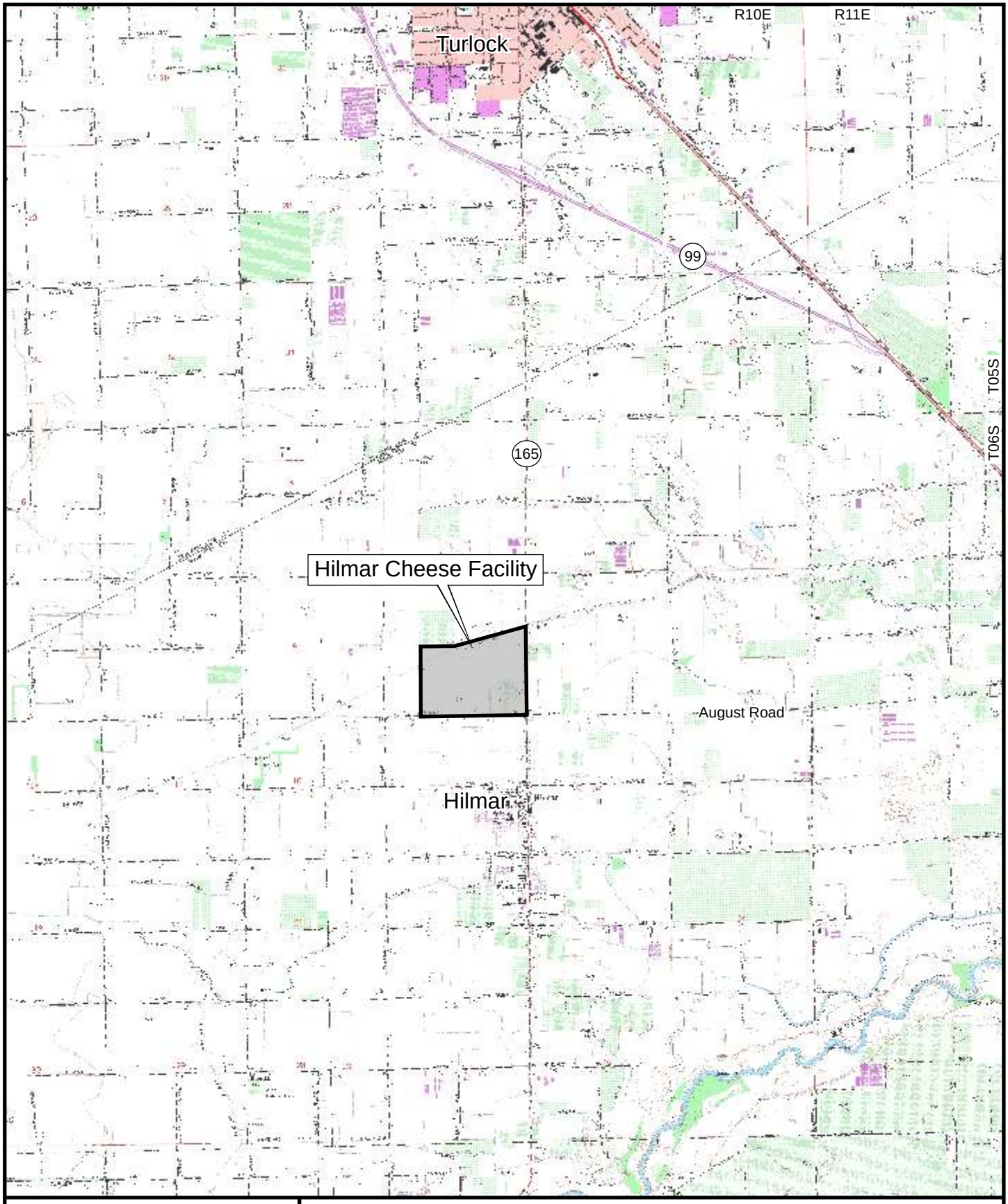
Original signed by:

PAMELA C. CREEDON, Executive Officer

Order Attachments:

Monitoring and Reporting Program
A Vicinity Map
B Site Map and existing Reuse Area
C Reuse Area Parcel Map
D Reuse Area Owner Table
Information Sheet
Standard Provisions (1 March 1991)

JSP/DKP: 01/29/10

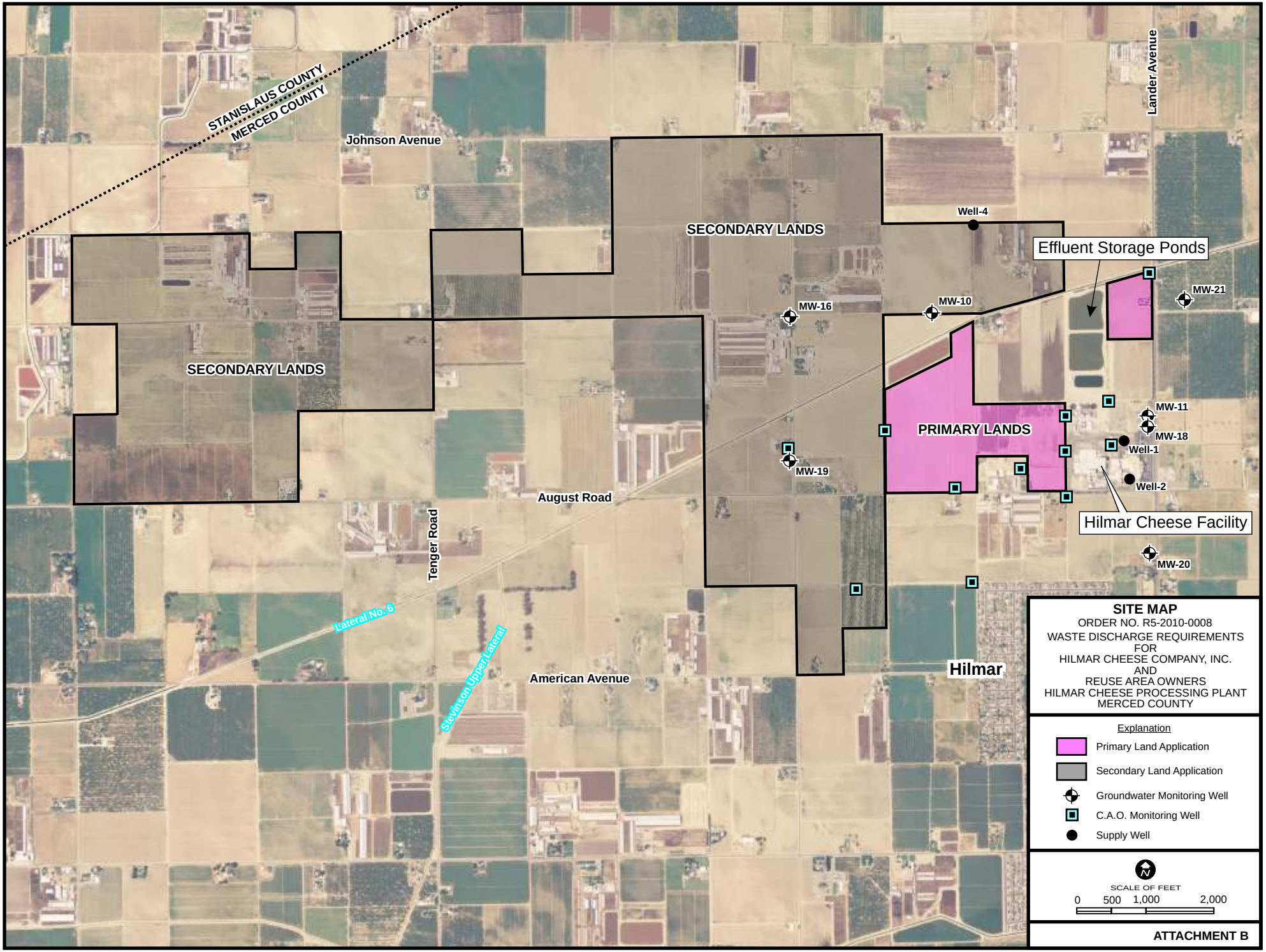


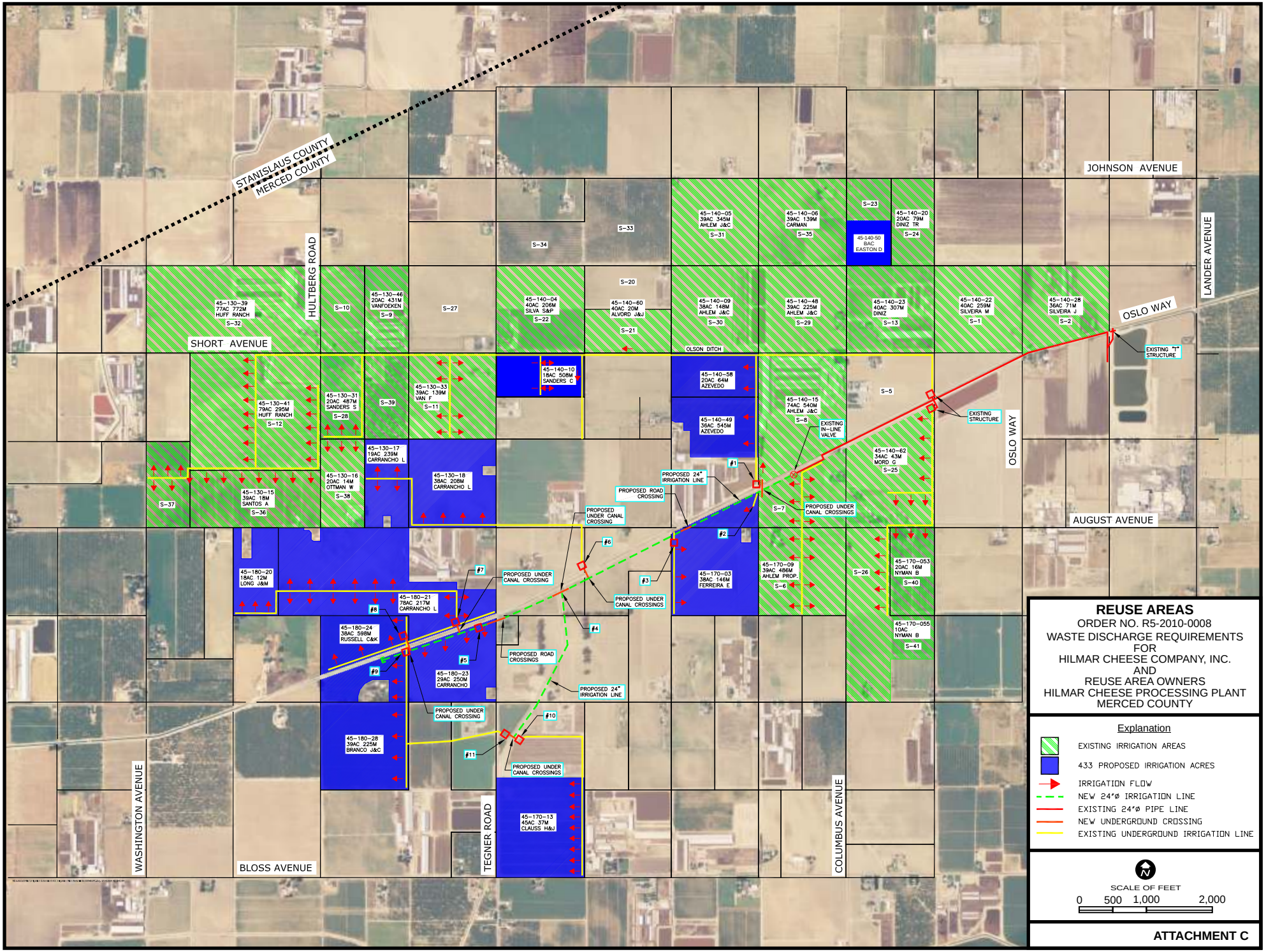
Map Source:
HATCH & TURLOCK 7.5 Minute USGS Quadrangles
Section 10, T06S, R10E, MDB&M

SCALE
0 0.25 0.5 1 Mile

LOCATION MAP
ORDER NO. R5-2010-0008
WASTE DISCHARGE REQUIREMENTS
FOR
HILMAR CHEESE COMPANY, INC.
AND
REUSE AREA OWNERS
HILMAR CHEESE PROCESSING PLANT
MERCED COUNTY

ATTACHMENT A


STANISLAUS COUNTY
MERCED COUNTY
Johnson Avenue
Lander Avenue
SECONDARY LANDS
SECONDARY LANDS
Well-4
Effluent Storage Ponds
MW-21
MW-16
MW-10
PRIMARY LANDS
MW-11
MW-18
Well-1
MW-19
Well-2
August Road
Tenger Road
Hilmar Cheese Facility
MW-20
Lateral No. 6
Stevinson Upper Lateral
American Avenue
Hilmar
SITE MAP
ORDER NO. R5-2010-0008
WASTE DISCHARGE REQUIREMENTS
FOR
HILMAR CHEESE COMPANY, INC.
AND
REUSE AREA OWNERS
HILMAR CHEESE PROCESSING PLANT
MERCED COUNTY
Explanation
Primary Land Application
Secondary Land Application
Groundwater Monitoring Well
C.A.O. Monitoring Well
Supply Well
SCALE OF FEET
0 500 1,000 2,000
ATTACHMENT B


STANISLAUS COUNTY
MERCED COUNTY
JOHNSON AVENUE
LANDER AVENUE
HULTBERG ROAD
SHORT AVENUE
OSLO WAY
OLSON DITCH
OSLO WAY
AUGUST AVENUE
WASHINGTON AVENUE
BLOSS AVENUE
TEGNER ROAD
COLUMBUS AVENUE
45-130-39 77AC 772M HUFF RANCH S-32
45-130-46 20AC 431M VANFOEKEN S-9
S-10
S-27
S-33
S-34
S-20
S-21
45-140-04 40AC 206M SILVA S&P S-22
45-140-60 40AC 20M ALVORD J&J
45-140-05 39AC 345M AHLEM J&C S-31
45-140-09 38AC 148M AHLEM J&C S-30
45-140-06 39AC 139M CARMAN S-35
45-140-48 39AC 225M AHLEM J&C S-29
S-23
45-140-50 BAC EASTON D
45-140-20 20AC 79M DINIZ TR S-24
45-140-23 40AC 307M DINIZ S-13
45-140-22 40AC 259M SILVEIRA M S-1
45-140-28 36AC 71M SILVEIRA J S-2
EXISTING "T" STRUCTURE
45-130-41 79AC 295M HUFF RANCH S-12
45-130-31 20AC 487M SANDERS S S-28
S-39
45-130-33 39AC 139M VAN F S-11
45-140-10 18AC 508M SANDERS C
45-140-58 20AC 64M AZEVEDO
45-140-49 36AC 545M AZEVEDO
45-140-15 74AC 540M AHLEM J&C S-8
EXISTING IN-LINE VALVE
EXISTING STRUCTURE
S-5
45-140-62 34AC 43M MORO G S-25
45-130-17 19AC 239M CARRANCHO L
45-130-18 39AC 208M CARRANCHO L
45-130-16 20AC 14M OTTMAN W S-38
45-130-15 39AC 18M SANTOS A S-36
S-37
#1
PROPOSED 24" IRRIGATION LINE
PROPOSED ROAD CROSSING
PROPOSED UNDER CANAL CROSSINGS
S-7
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
PROPOSED UNDER CANAL CROSSING
PROPOSED UNDER CANAL CROSSINGS
PROPOSED ROAD CROSSINGS
PROPOSED 24" IRRIGATION LINE
PROPOSED UNDER CANAL CROSSING
PROPOSED UNDER CANAL CROSSINGS
45-180-20 18AC 12M LONG J&M
45-180-21 78AC 217M CARRANCHO L
45-180-24 38AC 598M RUSSELL C&K
45-180-23 29AC 250M CARRANCHO
45-180-28 39AC 225M BRANCO J&C
45-170-03 38AC 149M FERREIRA E
45-170-09 39AC 486M AHLEM PROP. S-6
S-26
45-170-053 20AC 16M NYMAN B S-40
45-170-055 10AC NYMAN B S-41
45-170-13 45AC 37M CLAUSS H&J
REUSE AREAS
ORDER NO. R5-2010-0008
WASTE DISCHARGE REQUIREMENTS
FOR
HILMAR CHEESE COMPANY, INC.
AND
REUSE AREA OWNERS
HILMAR CHEESE PROCESSING PLANT
MERCED COUNTY
Explanation
EXISTING IRRIGATION AREAS
433 PROPOSED IRRIGATION ACRES
IRRIGATION FLOW
NEW 24"Ø IRRIGATION LINE
EXISTING 24"Ø PIPE LINE
NEW UNDERGROUND CROSSING
EXISTING UNDERGROUND IRRIGATION LINE
SCALE OF FEET
0 500 1,000 2,000
ATTACHMENT C

ORDER R5-2010-0008

ATTACHMENT D
Hilmar Cheese Company Reuse Areas

Secondary Lands				
Field ID	**Property Owner/Operator**	**Irrigation Acres**	**Property ID**	**Dairy Property[1]**
S1	Jose Silveira	40	045-014-022	Yes
S2	Jose Silveira	25	045-014-028	Yes
S6	Jim Ahlem	36	045-017-009	Yes
S7	Jim Ahlem	20	045-014-075	Yes
S8	Jim Ahlem	14	045-014-075	Yes
S9	Ken Van Foeken	15	045-013-046	Yes
S10	Loretta Koernig	15	045-013-048	No
S11	Ken Van Foeken	35	045-013-033	Yes
S12	Finley Huff	72	045-013-041	Yes
S13	Antonio & Maria Diniz	22	045-014-023	Yes
S21	James Ahlem	20	045-014-067	Yes
S22	Tony Madruga	20	045-014-069	No
S23	Glennette Woods	8	045-014-051	No
S24	Antonio & Maria Diniz	20	045-014-020	Yes
S25	Jim Ahlem	37	045-014-078	Yes
S26	Jim Ahlem	19	045-017-024	Yes
S28	Lloyd Fantiazia	20	045-013-037	Yes
S29	Jim Ahlem	39	045-014-048	Yes
S30	Jim Ahlem	38	045-014-009	Yes
S31	Jim Ahlem	39	045-014-005	Yes
S32	Finley Huff	52	045-013-039	Yes
S36	Mary B. Santos Trust	39	045-013-015	No
S37	Mary B. Santos Trust	27	045-013-029	No
S38	Ray Ottman	20	045-013-016	No
S39	Shawn Sanders	20	045-013-031	No
S40	Delton, Lloyd & Brad Nyman	20	045-170-053	Yes
S41	Delton, Lloyd & Brad Nyman	10	045-170-055	Yes
S42	Ed Gomes	20	045-140-010	No
TBD	Tiberio Azevedo	20	045-140-058	Yes
TBD	Tiberio Azevedo	36	045-140-049	Yes
TBD	Mark Ferreira	45	045-170-003	Yes
TBD	Richard & Sharon Clauss	45	045-170-013	Yes
TBD	Lucille Carrancho	38	045-130-018	Yes
TBD	Lucille Carrancho	78	045-180-021	Yes
TBD	Lucille Carrancho	29	045-180-023	Yes
TBD	Lucille Carrancho	19	045-130-017	Yes
TBD	C.A. & Kirsten Russell	38	045-180-024	Yes
TBD	Joe & Cathy Branco	39	045-180-028	Yes
TBD	Dan Easton	8	045-014-050	No
TBD	Norman Long	18	045-180-020	No
TOTAL		**1175**		

Primary Lands				
Field ID	**Property Owner/Operator**	**Irrigation Acres**	**Property ID**	**Dairy Property[1]**
NA	D. Nyman	23.8	045-140-041	No
NA	D. Nyman	57.8	045-140-030	No
NA	HCC Properties	13.1	045-140-037	No
TOTAL		**94.7**		

1. Does not necessarily indicate that the property contains a dairy, but that the property receives dairy wastewater.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-0008

FOR
HILMAR CHEESE COMPANY, INC.,
AND
REUSE AREA OWNERS
HILMAR CHEESE PROCESSING PLANT
MERCED COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to California Water Code (CWC) Section 13267.

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

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

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

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

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

A glossary of terms used within this MRP is included on page 12 and a list of the constituents required for the monitoring of Priority Pollutants is included in Table 1, which is presented on page 13.

INFLUENT MONITORING

Influent samples shall be collected prior to discharge from the equalization tanks to the dissolved air floatation tanks. Influent monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Monthly	BOD_5	mg/L	24-hour composite

EFFLUENT MONITORING

Effluent samples shall be collected just prior to discharge to the effluent storage ponds or to the Reuse Areas. Effluent monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Continuous	Flow	mgd	Meter
Weekly	pH	pH Units	Grab
Weekly	EC	µmhos/cm	Grab
Weekly	TDS	mg/L	24-hour composite
Weekly	BOD_5	mg/L	24-hour composite
Weekly	Nitrate as N	mg/L	24-hour composite
Weekly	TKN	mg/L	24-hour composite
Weekly	Ammonia as N	mg/L	24-hour composite
Weekly	Total Nitrogen	mg/L	Calculated
Weekly	Chloride	mg/L	24-hour composite
Weekly	Sodium	mg/L	24-hour composite
Quarterly	General Minerals	mg/L	24-hour composite
Quarterly	Iron	mg/L	24-hour composite
Quarterly	Manganese	mg/L	24-hour composite
Monthly	Monthly Average Flow	mgd	Computed
Varies	Priority Pollutants (see Table 1)	Varies[1]	Varies

[1] mg/L or ug/L, as appropriate

POND MONITORING

Effluent storage ponds monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Weekly	DO	mg/L	Grab
Weekly	Freeboard	Feet[1]	Calculated

[1]To nearest tenth of a foot

Permanent markers (e.g., staff gauges) shall be placed in the effluent storage ponds. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. The Discharger shall inspect the condition of the effluent storage ponds once per week and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the effluent storage pond surface and their location; whether burrowing animals or insects are present; and the color of the pond water (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.).

GROUNDWATER MONITORING

The existing groundwater monitoring network currently consists of 23 monitoring wells (MW-1 through MW-23). Upon completion of proposed additional downgradient wells and in accordance with Provision 19 of Order R5-2010-0008, the Discharger shall submit for approval by the Executive Officer, a monitoring well network that will demonstrate ongoing compliance with the Groundwater Limitations of Order R5-2010-0008. Pending approval of the proposed monitoring well network, the existing monitoring well network shall be used to demonstrate compliance. The constituents monitored for and the frequencies listed below pertain only to this MRP.

The wells that comprise the monitoring well network are also subject to Cleanup and Abatement Order R5-2004-0772, which has its own sampling requirements that are to be followed independent of the monitoring requirements presented herein.

Prior to collecting samples, water levels will be measured in all monitoring wells. After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall monitor wells for the following:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	Depth to groundwater	Feet[1]	Measured
Quarterly	Groundwater Elevation	Feet[2]	Calculated
Quarterly	pH	pH Units	Grab
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate as N	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Total Nitrogen (equals TKN + Nitrate as N)	mg/L	Grab
Quarterly	Total Organic Carbon	mg/L	Grab
Quarterly	Arsenic	ug/L	Grab
Quarterly	Iron	ug/L	Grab
Quarterly	Manganese	ug/L	Grab
Quarterly	General Minerals	mg/L	Grab

[1]To nearest hundredth of a foot.
[2]To nearest hundredth of a foot above mean sea level.

SOURCE WATER MONITORING

For each source (WS-1 or WS-2 or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing flow data for the most recent twelve months and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements.

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate as N	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Total Nitrogen (equals TKN + Nitrate as N)	mg/L	Calculated
Annually	General Minerals	mg/L	Grab

REUSE AREA MONITORING

The Discharger shall monitor the effluent and irrigation water applied to each Reuse Area parcel, as well as soil in each Reuse Area parcel, for the constituents and at the frequency as specified below. This information will be used to evaluate the hydraulic, nutrient, and salt loadings to each individual Reuse Area parcel, and must be used to develop and implement the Nutrient Management Plan required by Provision F.22. The Discharger is encouraged to collect and use additional data, as necessary, to refine nutrient management.

Hydraulic and Waste Constituent Loading Monitoring

Reuse Area parcels receiving deliveries of reused water, dairy wastewater, and/or freshwater (i.e., groundwater or canal water) shall be monitored for the following:

1. Crop Information

    a. Crop type (e.g., silage corn, wheat, oats).

    b. Crop planting or harvesting information (e.g., harvested tonnage in tons/acre).

2. Hydraulic Loading

    a. Individual estimated monthly volumes (in million gallons) of reused water, freshwater, and dairy wastewater applied.

    b. Combined estimated monthly volume (in million gallons) of reused water, freshwater, and dairy wastewater applied.

    c. Monthly hydraulic loading rate (in inches) based on the combined estimated volume of reused water, freshwater, and dairy wastewater applied.

    d. Monthly total precipitation (in inches) from either an onsite precipitation gage station or through published sources (cite data source(s).

3. BOD_5 Loading

    a. Quantity of BOD_5 (in lbs) applied based on the total volume of reused water from any source applied to the parcel and the monthly average value for effluent BOD_5

    b. Monthly average daily BOD_5 loading rate (lbs/acre-day) based on the quantity of BOD_5 applied during the month and number of days in the month

4. Nitrogen Loading

    a. Monthly quantity of Total Nitrogen (in lbs) from reused water applied based on the total volume of reused water applied to the parcel and the monthly average value for effluent total nitrogen.

    b. Monthly quantity of Total Nitrogen (in lbs) from dairy wastewater applied based on the total volume of dairy wastewater applied to the parcel and the estimated value for dairy wastewater Total Nitrogen concentration.

    c. Monthly quantity of Total Nitrogen (in lbs) from dairy manure applied based on the total volume of manure applied to the parcel and the estimated value for manure Total Nitrogen concentration.

    d. Monthly quantity of Total Nitrogen (in lbs) from fertilizer applied based on the total volume of fertilizer applied to the parcel and the estimated value for fertilizer Total Nitrogen concentration.

e. Monthly quantity of Total Nitrogen (in lbs) applied from all sources of nitrogen.

f. Monthly Total Nitrogen loading rate (in lbs/acre-month) based on all sources of applied nitrogen.

g. Annual Cumulative Total Nitrogen loading rate (in lbs/acre-year) on a calendar year basis.

5. TDS Loading

a. Monthly quantity of TDS (in lbs) from reused water applied based on the total volume of reused water applied to the parcel and the monthly average value for effluent TDS.

b. Monthly quantity of TDS (in lbs) from dairy wastewater applied based on the total volume of dairy wastewater applied to the parcel and the estimated value for dairy wastewater TDS concentration.

c. Monthly quantity of TDS (in lbs) from dairy manure applied based on the total volume of manure applied to the parcel and the estimated value for manure TDS concentration.

d. Monthly quantity of TDS (in lbs) applied from reused water, dairy wastewater, and manure.

e. Monthly Total TDS loading rate (in lbs/acre-month) based on TDS loadings from reused water, dairy wastewater, and manure.

f. Annual Cumulative TDS loading rate (in lbs/acre-year) on a calendar year basis.

At least daily, the Discharger shall make visual observations regarding offsite discharge, standing water (indicate approximate depth), presence or absence of objectionable odors or vectors, and general compliance with Discharge Prohibitions and Recycling Specifications.

Soil Monitoring

The Discharger shall establish, with Central Valley Water Board staff concurrence, monitoring locations within at least seven representative parcels in the Reuse Area and at least two locations to represent background conditions in areas that are cropped in a manner similar to Reuse Area parcels but do not receive applications of reused water. The samples shall be collected and analyzed for the following constituents.

Frequency	Constituent/Parameter	Units	Soil Profile
Annually	Total Organic Carbon	mg/kg	4 feet[1]
Annually	EC	µmhos/cm	4 feet[1]
Annually	Soil pH	pH Units	4 feet[1]
Annually	Phosphorus	mg/kg	4 feet[1]
Annually	Nitrate as N (equals TKN + Nitrate as N)	mg/kg	4 feet[1]
Annually	TKN	mg/kg	4 feet[1]
Annually	Total Nitrogen	mg/kg	4 feet[1]

[1] Samples to be collected at 6 inches, 2 feet, and 4 feet.

Soil monitoring data shall be analyzed to determine the Plant Available Nitrogen in the upper four feet of the soil profile in monitored parcels and the background location. This information shall be used by the Discharger in its development and implementation of the Nutrient Management Plan required by Provision F.20.

STORM WATER MONITORING

Representative storm water samples shall be collected from the storm water retention basin in accordance with the requirements listed below. Storm water samples need only be collected when the storm water retention basin contains water at the time of sample collection per the specified sampling frequency. The storm water monitoring shall include at least the following:

Frequency	Constituent/Parameter	Units	Sample Type
Quarterly	EC	µmhos/cm	Grab
Quarterly	Nitrate as N	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Total Nitrogen (equals TKN + Nitrate as N)	mg/L	Calculated
Quarterly	Sodium	mg/L	Grab
Quarterly	Chloride	mg/L	Grab
Quarterly	BOD_5	mg/L	Grab
Quarterly	Freeboard	Feet[1]	Calculated

[1] To nearest tenth of a foot

Permanent markers (e.g., staff gauges) shall be placed in the storm water retention basin. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. The Discharger shall inspect the condition of the storm water retention basin once per week and write visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether dead algae, vegetation, scum, or debris are accumulating on the storm water retention basin surface and their location; whether burrowing animals or insects are present; and the color of the pond water (e.g., dark sparkling green, dull green, yellow, gray, tan, brown, etc.).

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report	**1 May**
Second Quarter Monitoring Report	**1 August**
Third Quarter Monitoring Report	**1 November**
Fourth Quarter Monitoring Report	**1 February**.

Results of annual monitoring shall be reported in the next quarterly report after the sampling has occurred.

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

The following information is to be included in all monitoring reports, as well as report transmittal letters:

Hilmar Cheese Company

Cheese Processing Plant.

MRP R5-2010-0008

Contact Information (telephone and e-mail)

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

At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

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

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

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. Monitoring data or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. If the chief plant operator is not in direct line of supervision of the laboratory function for a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

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

A. All Quarterly Monitoring Reports shall include the following:

Wastewater reporting**:**

1. The results of influent, effluent, and effluent storage pond monitoring specified on pages 2 and 3.
2. For each month of the quarter, calculation of the maximum daily and monthly average daily discharge flow to the effluent storage ponds.
3. For each month of the quarter, the volume of RO concentrate generated and the method of disposal.
4. For each month of the quarter, calculation of the average monthly total nitrogen concentration in the discharge to the Reuse Area.
5. A summary of the notations made in the effluent storage pond monitoring log during each quarter. The entire contents of the log do not need to be submitted.

Groundwater reporting:

1. The results of groundwater monitoring specified on pages 3 and 4.
2. For each monitoring well, a table showing constituent concentrations through the current quarter.
3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow under/around the facility and/or effluent disposal area(s). The map shall also depict the locations of monitoring wells, effluent storage ponds, storm water ponds, Reuse Area parcels, and subsurface tile drainage networks and associated pumping stations.

Source water reporting:

1. The results of source water monitoring (except general minerals) specified on page 4.

Reuse Area reporting:

1. For each Quarter, the names and parcel numbers of the Reuse Area that received wastewater including the volume applied and the dates it was applied.
2. The names and parcel numbers of any parcels added or removed from the Reuse Area during the Quarter.

B. Fourth Quarter Monitoring Reports, in addition to above, shall include:

Wastewater treatment facility information:

1. The names and general responsibilities of all persons in charge of wastewater treatment and disposal.
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations.
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).
4. A statement whether the current operation and maintenance manual, sampling plan, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.
5. A statement certifying when wastewater collection sumps were last inspected for containment integrity, including identification of who performed the inspection.
6. A description of the progress of salinity reduction measures to reduce the salinity in discharge to the extent feasible.

Source Water reporting:

1. The results of annual source water monitoring for general minerals.

Reuse Area reporting

1. The results of reuse area monitoring specified on pages 4 through 7.
2. An updated map showing all Reuse Area parcels and indicating which parcels were used for land application of wastewater during the annual reporting period.
3. A summary of an evaluation of the effectiveness of the Nutrient Management Plan in minimizing groundwater degradation for nitrogen constituents.
4. Water balances for the annual reporting period based on a calendar year and presented monthly in spreadsheet form. The water balances shall evaluate the following:

    a. Monthly volume of reused water discharged to the effluent storage ponds

    b. Monthly volume of reused water, dairy wastewater, and fresh water discharged to individual Reuse Area parcels

    c. Area (in acres) of individual Reuse Area parcels receiving discharges each month of reused water, dairy wastewater, and/or freshwater

d. Monthly average ET_o (observed evapotranspiration) - Information sources include California Irrigation Management Information System (CIMIS) http://www.cimis.water.ca.gov/

e. Monthly crop uptake for individual Reuse Area parcels for each type of crop grown (cite references for irrigation efficiencies and crop coefficients).

5. Annual BOD, nitrogen, and TDS loading calculations.

The Discharger shall implement the above monitoring program by 1 April 2010.

Ordered by: *Original signed by:*

PAMELA C. CREEDON, Executive Officer

29 January 2010

(Date)

JSP/DKP: 01/29/10

GLOSSARY

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

Alkalinity	Chloride	Sodium
Bicarbonate	Hardness	Sulfate
Calcium	Magnesium	TDS
Carbonate	Potassium	

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

Table 1. Priority Pollutants

Inorganics[1]	***Organics[2] (cont)***	***Organics[2] (cont)***	***Organics[2] (cont)***
Antimony	1,1-Dichloroethane	Acenaphthylene	Fluoranthene
Arsenic	1,2-Dichloroethane	Anthracene	Hexachlorobenzene
Beryllium	1,1-Dichloroethylene	Benzidine	Hexachlorobutadiene
Cadmium	1,2-Dichloropropane	Benzo(a)Anthracene	Hexachlorocyclopentadiene
Chromium (III)	1,3-Dichloropropylene	Benzo(a)pyrene	Hexachloroethane
Chromium (VI)	Ethylbenzene	Benzo(b)fluoranthene	Indeno(1,2,3-c,d)pyrene
Copper	Methyl Bromide	Benzo(g,h,i)perylene	Isophorone
Lead	Methyl Chloride	Benzo(k)fluoranthene	Naphthalene
Mercury	Methylene Chloride	Bis(2-chloroethoxy) methane	Nitrobenzene
Nickel	1,1,2,2-Tetrachloroethane	Bis(2-chloroethyl) ether	N-Nitrosodimethylamine
Selenium	Tetrachloroethylene (PCE)	Bis(2-chloroisopropyl) ether	N-Nitrosodi-n-Propylamine
Silver	Toluene	Bis(2-Ethylhexyl)phthalate	N-Nitrosodiphenylamine
Thallium	1,2-Trans-Dichloroethylene	4-Bromophenyl phenyl ether	Phenanthrene
Zinc	1,1,1-Trichloroethane	Butylbenzyl Phthalate	Pyrene
Cyanide	1,1,2-Trichloroethane	2-Chloronaphthalene	1,2,4-Trichlorobenzene
Asbestos	Trichloroethylene (TCE)	4-Chlorophenyl Phenyl Ether	
	Vinyl chloride	Chrysene	
Organics[2]	2-Chlorophenol	Dibenzo(a,h)Anthracene	
Acrolein	2,4-Dichlorophenol	1,2-Dichlorobenzene	
Acrylonitrile	2,4-Dimethylphenol	1,3-Dichlorobenzene	
Benzene	2-Methyl-4,6-Dinitrophenol	1,4-Dichlorobenzene	
Bromoform	2,4-Dinitrophenol	3,3'-Dichlorobenzidine	
Carbon tetrachloride	2-Nitrophenol	Diethyl phthalate	
Chlorobenzene	4-Nitrophenol	Dimethyl phthalate	
Chlorodibromomethane	3-Methyl-4-Chlorophenol	Di-n-Butyl Phthalate	
Chloroethane	Pentachlorophenol	2,4-Dinitrotoluene	
2-Chloroethylvinyl Ether	Phenol	2,6-Dinitrotoluene	
Chloroform	2,4,6-Trichlorophenol	Di-n-Octyl Phthalate	
Dichlorobromomethane	Acenaphthene	1,2-Diphenylhydrazine	

1 With the exception of wastewater samples, samples placed in an acid-preserved bottle for metals analysis must first be filtered. If filtering in the field is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24 hours with a request (on the chain of custody form) to immediately filter then preserve the sample.

2 Samples to be analyzed for volatile organic compounds and phthalate esters shall be grab samples, the remainder shall be 24-hour composite samples.

3 The Discharger shall sample for the above listed constituents on an annual basis. Constituents not detected one year can be removed from the analytical suite the following year(s),but the entire list shall be analyzed no less than once every 5 years.

INFORMATION SHEET

ORDER NO. R5-2009-0008
HILMAR CEESE COMPANY, INC., AND
REUSE AREA OWNERS
HILMAR CHEESE PROCESSING PLANT
MERCED COUNTY

Hilmar Cheese Company, Inc. (Hilmar Cheese) is expanding its Wastewater Treatment Facility (WWTF) that serves its cheese processing plant (hereafter Plant) located north of the unincorporated community of Hilmar in Merced County. Hilmar Cheese submitted a *Report of Waste Discharge* (RWD) dated 2 June 2008 followed by an *Addendum to Report of Waste Discharge* (RWD Addendum) dated 13 November 2008. Both reports were prepared by Kennedy/Jenks Consultants on behalf of Hilmar Cheese. The RWD Addendum was submitted in anticipation of updating Waste Discharge Requirements (WDRs).

Background

WDR Order 97-206, adopted in 1997, currently regulates the discharge of cheese processing wastewater to a designated disposal area called the Primary Lands. It authorizes Hilmar Cheese to discharge a monthly average daily flow of up to 0.75 million gallons per day (mgd) and prescribes an effluent limitation for electrical conductivity at 25°C (EC) of no greater than 900 micromhos per centimeter (µmhos/cm) effective 15 March 1999.

Because of its elevated organic and salt content, the discharge to the Primary Lands created conditions of nuisance (flies and odors) and pollution in groundwater underlying the Primary Lands. In December 2004, the Executive Officer of the Central Valley Regional Water Quality Control Board (Central Valley Water Board) issued Cleanup and Abatement Order R5-2004-0772 (CAO), which directs Hilmar Cheese to abate nuisance and address groundwater impacts. On 26 January 2005, the Executive Officer issued Administrative Civil Liability Complaint R5-2005-0501, which assessed $4,000,000 in administrative civil liability for chronic violations of the effluent EC limitation. On 16 March 2006, the Central Valley Water Board adopted Order R5-2006-0025, *Ratifying the 16 March Settlement Agreement between Central Valley Water Quality Control Board and Hilmar Cheese Company, Inc., and Hilmar Whey Protein, Inc., Merced County* (hereafter Revised Settlement Agreement). The Revised Settlement Agreement and CAO required Hilmar Cheese to submit by 31 October 2006 a RWD and exercise good faith and best efforts to work with staff to draft revised waste discharge requirements for Central Valley Water Board consideration. The Revised Settlement Agreement also establishes Interim Operating Limits for the discharge. The CAO continues to regulate groundwater evaluation and cleanup work, and groundwater investigations under the CAO are ongoing.

Existing Wastewater Treatment Facility

The WWTF consists of: three subsurface collection sumps or basins; three 350,000-gallon equalization tanks with one equalization tank designated for wastewater resulting from abnormal operational conditions; two 55,000-gallon Dissolved Air Flotation (DAF) tanks; a heat exchanger; a granular sludge bed anaerobic digester; a 1,000,000-gallon pre-aeration tank; two 1,000,000-gallon sequencing batch reactors (SBRs); a 1,000,000-gallon surge tank; three DAF tanks, two with a capacity of 10,000 gallons and one with a capacity of 11,000

gallons; membrane separation using Ultrafiltration (UF); a two-stage Reverse Osmosis (RO) system; and an evaporator.

Wastewater is generated from sanitizing equipment and tanks, general facility wash down, assorted sources of equipment blow down, and truck washing. Wastewater is temporarily contained in three collection basins prior to the Plant's WWTF. A collection basin designated the "Cheese Basin" accepts wastewater from the milk receiving area, the three cheese plants, and the protein plant (about 60 percent of the discharge). Wastewater from the lactose plant is discharged to the "Lactose Basin" (about 35 percent of the discharge), and a third basin, designated the "Wastewater Basin" accepts truck wash wastewater (about 5 percent of the discharge).

Existing Discharge and Reuse Areas

The Interim Operating Limits of the Revised Settlement Agreement allow for the discharge of up to 1.2 mgd of partially treated wastewater with an EC of up to 3,700 µmhos/cm to the Primary Lands. The Interim Operating Limits also permit the discharge of no less than 0.6 mgd of UF and RO treated wastewater with a maximum EC of 900 µmhos/cm. Hilmar Cheese has been operating within those limits since adoption of the Revised Settlement Agreement in March 2006, which became effective in April of 2006.

While all of the Plant's wastewater is treated by the SBRs, not all of the flow is treated by the UF and RO units. Effluent from the SBRs is referred to as "partially-treated" wastewater while effluent from the RO units is referred to as "fully-treated" wastewater or reuse water. Hilmar Cheese disposes of partially-treated and fully-treated wastewater on nearby farm land that are divided into two reuse areas designated the "Primary Lands" and the "Secondary Lands." Hilmar Cheese owns some of the Primary Lands and leases the rest from other land owners. The Primary Lands comprise about 95 acres directly adjacent to the Plant and receive partially-treated wastewater.

The Secondary Lands receive fully-treated wastewater. Prior to discharge to the Secondary Lands, wastewater is stored in two clay-lined storage ponds with a combined capacity of approximately 44 million gallons. The Secondary Lands consist of several interconnected individual parcels generally to the west of the Plant that are owned mostly by other parties. Crops grown on the Secondary Lands are fodder crops such as sillage corn, wheat, and oats. Hilmar Cheese periodically adds or removes parcels from the Secondary Lands and notifies the Central Valley Water Board staff in writing. The Primary and Secondary Lands are collectively referred to as Reuse Areas. Hilmar Cheese owns some of the Primary Lands and leases the rest from others (Primary Land Owners). All of the Secondary Lands are owned by others (Secondary Land Owners). The Primary and Secondary Land Owners are collectively referred to as Reuse Area Owners. The parcels and Reuse Area Owners for this Order are shown in Attachment C and listed in Attachment D, which are attached hereto and made part of this Order by reference. Hilmar Cheese and the Reuse Area Owners are collectively referred to as Discharger. Hilmar Cheese is the primary discharger responsible for compliance with this Order. Each Reuse Area Owner is responsible for compliance with the

requirements of this Order concerning discharge to its respective parcels that are included within the Reuse Area.

Discharge flows to the Primary Lands decreased as Hilmar Cheese implemented improvements to the WWTF. In 2008, the monthly average flow of partially-treated wastewater to the Primary Lands to about 0.65 mgd, with an average EC of about 3,500 µmhos/cm. In 2009, the discharge of partially-treated wastewater to the Primary Lands was about 0.57 mgd, with an average EC of about 3,300 µmhos/cm.

Discharge of fully-treated wastewater to the Secondary Lands increased steadily through July 2008 to a maximum of about 1.4 mgd. The flows decreased in the second half of 2008, but were still above 1.0 mgd, which is greater than the 0.6 mgd minimum flow requirement prescribed by the Revised Settlement Agreement. Hilmar Cheese has indicated the decrease occurred as it was pushing the operation limits of the WWTF through the summer to assess its treatment potential and help design the proposed expansion.

Data from Hilmar Cheese's self-monitoring reports indicates that the wastewater applied to the Primary Lands from April 2006 through 2008 had the following average characteristics.

Primary Lands Effluent Data

Flow (mgd[1])	**BOD**[2] (mg/L[3])	**Total N**[4] (mg/L)	**TDS**[5] (mg/L)	**EC**[6] (µmhos/cm[7])	**Cl**[8] (mg/L)	**Na**[9] (mg/L)
0.73	362	187	2,217	3,532	327	631

1. million gallons per day (mgd)
2. 5-day biochemical oxygen demand (BOD)
3. milligrams per liter (mg/L)
4. Total nitrogen (Total N) equals TKN + Nitrate, as N.
5. Total Dissolved Solids
6. Electrical Conductivity (EC)
7. Micromhos per centimeter (µmhos/cm)
8. Chloride (Cl)
9. Sodium (Na)

In 2009, the wastewater applied to the Primary Lands had the following average characteristics.

2009 Primary Lands Effluent Data

Flow (mgd)	**BOD** (mg/L)	**Total N** (mg/L)	**TDS** (mg/L	**EC** (µmhos/cm)	**Cl** (mg/L)	**Na** (mg/L)
0.57	119	68	2,112	3,334	391	621

Data from Hilmar Cheese's self-monitoring reports indicates that the wastewater applied to the Secondary Lands in from April 2006 through 2009 had the following average characteristics.

Secondary Lands Effluent Data

Flow (mgd[1])	BOD[2] (mg/L[3])	Total N[4] (mg/L)	TDS[5] (mg/L)	EC[6] (µmhos/cm[7])	Cl[8] (mg/L)	Na[9] (mg/L)
1.06	42	18	452	817	68	145

1. million gallons per day (mgd)
2. 5-day biochemical oxygen demand (BOD)
3. milligrams per liter (mg/L)
4. Total nitrogen (Total N) equals TKN + Nitrate, as N
5. Total Dissolved Solids
6. Electrical Conductivity (EC)
7. Micromhos per centimeter (µmhos/cm)
8. Chloride (Cl)
9. Sodium (Na)

From April 2006 through 2009, the full treatment system removed about 88 percent of BOD, 79 percent of total dissolved solids (TDS), 80 percent of chloride, 78 percent of sodium, and reduced EC by 77 percent.

Hydrogeology/Groundwater Conditions

The Plant is located within the Turlock groundwater subbasin that forms a part of the San Joaquin Valley Groundwater Basin. The region is reported to contain three primary water bearing zones: an uppermost unconfined aquifer (Modesto Formation) from about 0 to 125 feet bgs; a semi-confined aquifer (Turlock Lake Formation) from about 125 to 200 feet bgs; and a confined aquifer that is beneath the Corcoran Clay layer at depths from about 200 to 250 feet bgs.

The direction of groundwater flow in the unconfined aquifer is generally to the west/southwest, but the direction is influenced by the discharge of wastewater and irrigation water, as well as by the operation of nearby pumping of wells, including wells that discharge shallow groundwater from area tile drainage networks to surface canals. The overall direction of the flow is to the southwest. The depth to first-encountered groundwater is shallow ranging from about 5 to 15 feet bgs.

Groundwater quality in the Hilmar area is highly variable and, in general, the concentration of mineral constituents increases from east (upgradient) to the west (downgradient). It is typical for groundwater quality to decrease along the axis of its flow as it moves downgradient. The water quality appears to have been impacted by past and current land uses (the Plant and its discharges, dairies, farming, industry, etc) and irrigation with water of varying quality.

Groundwater investigations have assessed groundwater quality to about 200 feet bgs both upgradient and downgradient of the Plant. As would be expected, the greatest impact is observed in the unconfined aquifer in the vicinity of the Primary Lands. Groundwater containing TDS concentrations greater 1,000 milligrams per liter (mg/L) extends about one

mile from Lander Avenue of the east to nearly Columbus Avenue to the west and is about one-half a mile wide extending from south of August Avenue to a concrete-lined canal called TID Lateral No. 6, which runs generally east-west along the northern edge of the Primary Lands. The maximum TDS concentration recorded was 2,700 mg/L (which corresponds to an EC of about 3,800 µmhos/cm). TDS concentrations in the semi-confined and confined aquifers were significantly lower with concentrations ranging from about 260 to 1,000 mg/L. While some impact has occurred, the existing aquitards have limited the amount of downward movement of the salts.

In an effort to establish water quality conditions upgradient (east) of the Plant, James & Associates, Inc. (Jacobson James) collected groundwater samples over the last several years from 11 direct push technology borings and a monitoring well to provide preliminary data for the evaluation of ambient conditions in the Upper Aquifer (above the Corcoran Clay) upgradient (east) of the Plant. The results were presented in a 23 June 2008 *Determination of Ambient TDS Concentrations for the Upper* Aquifer prepared by Jacobson James. Two of the wells sampled appear to have been influenced by discharge of waste by Hilmar Cheese on its Primary Lands. Removing data from these two wells from the data set, the following values characterize upgradient groundwater quality to a 95% confidence level for several constituents of concern.

Upgradient Groundwater Quality

TDS[1] (mg/L[2])	EC[3] (µmhos/cm[4])	NO_3 as N[5] (mg/L)	Cl[6] (mg/L)	Na[7] (mg/L)
570	847	18	54	76

1. Total Dissolved Solids (TDS)
2. Milligrams per liter (mg/L)
3. Electrical Conductivity (EC)
4. Micromhos per centimeter (µmhos/cm)
5. Nitrate as nitrogen (NO_3 as N)
6. Chloride (Cl)
7. Sodium (Na)

Most of the constituents are within water quality objectives with the exception of nitrate. Elevated nitrate concentrations are a regional concern and are likely due to impacts from local agricultural land uses such as nearby dairies and farmland including almond orchards.

Hilmar Cheese has an existing groundwater monitoring network consisting of 23 groundwater monitoring wells and more wells are planned both upgradient and downgradient of the Plant. Most of these wells are in the vicinity of the Primary Lands and have been impacted by discharge from Hilmar Cheese or nearby properties. Additional wells are planned to monitor new Secondary Lands that will be used for discharge.

Compliance History

Since the Interim Operating limits were issued in 2006, Hilmar Cheese has been generally in compliance with the numerical effluent limits. There were no effluent limits exceeded in

discharge to the Primary Lands, and one exceedance of the 900 µmhos/cm EC limit for the Secondary Lands. Hilmar Cheese typically submits timely and complete self-monitoring reports.

The Revised Settlement Agreement required Hilmar Cheese to submit a RWD by 31 October 2006. Hilmar Cheese submitted a RWD in October 2006, but needed additional time to complete the evaluation of WWTF improvements and groundwater investigations required by the CAO. Hilmar Cheese submitted two additional RWDs in Month 2007 and June 2008 and an RWD addendum in November 2008 (November 2008 Addendum).

The November 2008 Addendum updates the June 2008 RWD, proposes a time schedule to further treat wastewater discharged to nearby farmland, and identifies Hilmar Cheese's objectives as: (1) to implement improvements to the onsite treatment system, (2) identify and obtain additional acreage needed for disposal of fully-treated wastewater (a.k.a WWTF effluent or reuse water); and (3) to develop a long-term wastewater management system. The November 2008 Addendum evaluates irrigation practices to protect groundwater quality and includes a model to evaluate potential downgradient impacts. It indicated improvements to the WWTF would be complete by December 2009, allowing Hilmar Cheese to treat all its wastewater to the levels now in place for discharge to the Secondary Lands (e.g., discharge EC not to exceed 900 µmhos/cm).

No odor or vector complaints were received by Central Valley Water Board staff regarding the discharge of the fully-treated wastewater to the Secondary Lands. However, discharge of the partially-treated wastewater to the Primary Lands caused or threatened nuisance conditions on several occasions in 2008. Complaints were received from several nearby residents, mostly about odors, but some about the generation of flies and the dissatisfaction with water quality in the area. The complaints resulted in four inspections by staff and the issuance of three notices of violation (NOVs) for creating nuisance conditions at the reuse area that could be detected outside Hilmar Cheese's property boundaries.

Upon the completion of the WWTF Expansion Project, all wastewater will be subjected to full treatment and discharged to clay-lined ponds then to Secondary Lands parcels to irrigate fodder crops; the discharge of all wastewaters to the Primary Lands will cease, thereby eliminating conditions that caused or threatened nuisance conditions.

In July 2009, Hilmar Cheese reported that costs associated with the UF and RO units may not be sustainable and that it was evaluating a new salinity-removal technology, Electrodialysis Reversal (EDR), an electrochemical separation process that removes ions and other charged species from water and other fluids. Hilmar Cheese reported the EDR system may function more effectively than UF/RO treatment and its associated costs in labor, maintenance, and equipment would be considerably less. EDR treatment technology has been successfully employed to treat brackish water for use as drinking water, but has not been tested on industrial wastes such as those from a cheese processing plant.

Hilmar Cheese indicated it would need until May 2010 to complete a testing program to evaluate the EDR technology. If testing indicates EDR is effective, Hilmar Cheese proposed a date of July 2011 to have the equipment installed and operating. Should testing indicate EDR is not applicable, the previously proposed UF/RO system would be in place by February 2011.

The average discharge flow rate to the Primary Lands since 2006 has been about 0.73 mgd. In 2008, the average flow was about 0.65 mgd. Even with flows considerably less than the 1.2 mgd limit in the Interim Operating Limits, Central Valley Water Board staff received numerous complaints from nearby residents in 2008 and issued three NOVs because of standing wastewater that had caused or threatened to cause objectionable odors and potential nuisance conditions.

Because Hilmar Cheese will not comply with the effluent limitations of the proposed Order, an accompanying draft Time Schedule Order provides a time schedule for Hilmar Cheese to complete the Expansion Project. The Time Schedule Order includes a flow limitation that requires Hilmar Cheese to limit flows to whatever is necessary to preclude wastewater from standing in the Reuse Area for greater than 48 hours and to preclude the creation of nuisance conditions. The Time Schedule Order also limits EC to 3,600 µmhos/cm.

Basin Plan, Beneficial Uses, and Regulatory Considerations

One of the greatest long-term problems facing California's groundwater is increasing salinity. The Tulare Lake Basin Plan's salt management requirements have been successfully implemented for several decades. Widespread and long-term compliance with these requirements justify them as appropriate best practicable treatment and control measures for salinity applicable to discharges in the Sacramento River and San Joaquin River Basins. The Regional Board encourages proactive management of waste streams by dischargers to control addition of salt through use. More restrictive limitations on salt constituents added through use is appropriate where necessary to assure compliance with a groundwater limitation for any constituent established by the Regional Water Board.

Antidegradation

State Water Resources Control Board Resolution No. 68-16 (hereafter Resolution 68-16) requires the Regional Water Board to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in State and Regional Water Board policies (e.g., quality that exceeds water quality objectives).

The current WDRs considered Resolution 68-16 and found that some degradation by typical waste constituents was in the best interest of the people of the State. The WDRs also included an effluent limitation for EC of 900 umhos/cm to ensure the discharge did not result in water quality less than prescribed in the Basin Plan. Constituents of concern that have the potential to cause degradation include EC, TDS, total nitrogen, sodium, and chloride.

The average EC concentration in effluent discharged to the Secondary Lands in 2007 and 2008 was 818 umhos/cm, which is slightly lower than the EC of ambient groundwater. The TDS concentration in effluent discharged to the Secondary Lands was about 455 mg/L in 2007 and 2008, which is similar to and slightly lower than background groundwater quality. Because Hilmar Cheese is treating wastewater to reduce salinity to levels below ambient water quality, it would appear no degradation will occur. However, increases in concentration due to evaporation and evapotranspiration could contribute to groundwater degradation. Such degradation would be equivalent to what would occur from the use of groundwater for irrigation and would be within existing water quality objectives.

Hilmar Cheese's consultant, Kennedy/Jenks, prepared a technical report to estimate the potential degradation to groundwater from the discharge and the amount of land needed for disposal. The report's model indicated that up to 1,200 acres will be required. The model predicted the concentration of TDS in the vicinity of the proposed Secondary Lands would be approximately 700 mg/L, with or without the discharge. This value (700 mg/L) is the predicted value for ambient water quality in the vicinity of the proposed Secondary Lands. The conclusion of the report was that there would be no degradation from the discharge as it is of comparable quality to existing downgradient water quality. The model considered a combination of precipitation, Turlock Irrigation District water used for irrigation in the area, irrigation with wastewater from local dairies, and discharge of Hilmar Cheese's treated wastewater.

Regionally, nitrogen concentrations in groundwater in the Hilmar area are highly variable and likely influenced by agricultural land uses (e.g., dairies and irrigated agriculture). Historically, total nitrogen in the discharge to the Primary Lands degraded groundwater to the point of affecting beneficial use for drinking water. However, total nitrogen concentrations in the fully-treated effluent discharged to the Secondary Lands is equal to or lower than that of upgradient water quality. The average total nitrogen concentration in the effluent discharged to the Secondary Lands in 2008 was 14 mg/L. Jacobson-James reported the ambient total nitrogen concentrations upgradient of the Plant was about 27 mg/L, greater than the concentration in the treated effluent. Well MW-21 was installed upgradient and offsite to the northeast in April 2008 and total nitrogen has ranged between 34 and 64 mg/L. Almond orchards are present just upgradient of well MW-21 and likely contribute to the higher concentrations observed in well MW-21.

The ponds used to store treated effluent are clay-lined and the effluent is used to irrigate crops that use the available nitrogen. Application of the wastewater at agronomic rates of irrigation will allow crop uptake of the majority of the nitrogen in wastewater and reduce the amount reaching groundwater in the Reuse Areas. The amount of nitrogen reaching groundwater through the clay-lined storage ponds will be minimal. Therefore the discharge would not cause degradation of groundwater above background, nor above the MCL for nitrate.

Sodium concentrations in effluent discharged to the Secondary Lands averaged about 145 mg/L since April 2006. Sodium in groundwater beneath the Secondary Lands and downgradient typically exceeds the ambient concentration and exceeds Agricultural Water Quality Objectives for salt sensitive plants (i.e. 69 mg/L). Sodium concentrations in MW-11 and MW-17 have averaged about 115 mg/L. Sodium concentrations in MW-21, a well upgradient of the Plant, are about 42 mg/L. Compared to the sodium concentrations in either MW-11 or MW-21, the effluent has the potential to degrade groundwater.

Ayers and Westcott (Ayers and Westcott, Water Quality for Agriculture) indicate sodium concentrations up to 70 mg/L have no restrictions for salt-sensitive crops and concentrations from 70 to 210 mg/L have only slight to moderate restrictions for sprinkler irrigation. Crops are typically flood irrigated or drip system irrigated in the Hilmar area. Land use surveys for the Hilmar area by DWR indicate salt sensitive crops irrigated by sprinklers are not grown in the area.

Based on all of the above, the existing effluent sodium concentrations will not limit the use of the groundwater in the Hilmar area. Based on the current and historical crops grown in the area, the types of soils in the area, irrigation practices, and reference material by Westcott and Ayers, the effluent will be within the range that would have only slight moderate restrictions for sprinkler application to salt sensitive crops (typically not grown in the area).

Chloride concentrations in the fully-treated effluent discharged to the Secondary Lands averaged about 62 mg/L in 2007 and 2008. Ambient chloride concentrations in groundwater appear to be about 40 mg/L, so some degradation will occur. However, the Secondary MCL for chloride is 250 mg/L and the lowest typical agricultural limit for chloride is 106 mg/L. Both limits are well above the chloride concentration of the fully-treated effluent, so while some degradation will occur, it will be within applicable water quality objectives.

Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and limited groundwater degradation around the Plant, provided that the terms of the Basin Plan are met. Degradation of groundwater quality by some of the typical waste constituents released with discharge from a food processing wastewater treatment plant after effective source reduction, treatment and control, and considering the best efforts of Hilmar Cheese and magnitude of degradation, is of maximum benefit to the people of the State. Hilmar Cheese contributes to the economic prosperity of the region by directly employing over 700 workers, provides incomes for numerous surrounding dairies, and provides a tax base for local and county governments. The proposed Order requires treatment that constitutes best practicable treatment or control.

Title 27

Title 27, CCR, Section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring

of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Unless exempt, release of designated waste is subject to full containment pursuant to Title 27 requirements. Title 27 Section 20090(b) exempts discharges of designated waste to land from Title 27 containment standards and other Title 27 requirements provided the following conditions are met:

a. The applicable regional water board has issued waste discharge requirements, or waived such issuance;
b. The discharge is in compliance with the applicable basin plan; and
c. The waste is not hazardous waste and need not be managed according to Title 22, CCR, Division 4.5, Chapter 11, as a hazardous waste.

The discharge of effluent and the operation of treatment or storage facilities associated with a food processing facility is exempt from Title 27, provided any resulting degradation of groundwater is in accordance with the Basin Plan and the waste need not be managed as a hazardous waste. None of the waste regulated by the proposed Order is hazardous waste nor required to be treated as hazardous waste. With treatment to remove organics and salinity, lined storage ponds, and application at agronomic rates, the discharge authorized by the proposed WDRs will not cause exceedance of groundwater quality objectives and complies with the Antidegradation Policy and is therefore exempt from Title 27. In addition, effluent applied to Secondary Lands is a reuse that is exempt under Title 27, Section 20090(h).

CEQA
On 2 January 2009, Merced County, as Lead Agency, circulated a draft Mitigated Negative Declaration for the proposed expansion of the Plant. Central Valley Water Board staff reviewed and commented on the draft Mitigated Negative Declaration. On 11 February 2009, the Merced County Planning Commission adopted the Mitigated Negative declaration. Mitigation measures include a condition that restricts discharge flows to current levels until Hilmar Cheese completes the WWTF Expansion Project, treats all cheese processing wastewater flows for salinity reduction, and prepares and implements a Nutrient Management Plan.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would maintain the flow limit at 1.9 mgd, until the expansion activities are complete and Hilmar Cheese is compliant with the effluent limits.

The proposed Order would require that the discharge from the WWTF to the effluent storage ponds not exceed the following monthly averages for the constituents listed:

Constituent/Parameter	Units	Value
Electrical Conductivity	µmhos/cm[1]	1,000
Total Dissolved Solids	mg/L[2]	600
5-day Biochemical Oxygen Demand	mg/L[2]	50
Chloride	mg/L[2]	85
Total Nitrogen	mg/L[2]	20

1. micromhos per centimeter (µmhos/cm)
2. milligrams per liter (mg/L)

The proposed Order would require that the discharge from the WWTF to the effluent storage ponds not exceed the following 12-month rolling average for the constituents listed:

Constituent/ Parameter	Units	Value
Electrical Conductivity	µmhos/cm	900
Total Dissolved Solids	mg/L	500

The discharge requirements regarding dissolved oxygen, pH, and freeboard are consistent with Regional Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed WDRs would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or background water quality, whichever is greater. The groundwater limits reflect current information and what is expected to be achievable by implementing BPTC. The limits may be revisited once additional wells in the Secondary Lands are installed and more information on groundwater quality is available.

General WDRs Order R5-2007-0035, *General Order for Existing Milk Cow Dairies* (General Order) requires dairy waste that is blended with waste generated off-site be regulated by a separate order. The proposed Order authorizes Plant effluent and dairy wastewater to be applied to Secondary Lands, providing the Discharger accounts for both in its loading calculations and the facility meets the requirements for nutrient management plans, monitoring and reporting, and runoff contained in the General Order.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State. In recent years there has been an increased emphasis on obtaining all necessary

information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes effluent, groundwater, pond, soil, and water supply monitoring. The monitoring is necessary to evaluate the extent of the potential degradation from the discharge.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.

JSP/DKP: 01/29/10