

**STAFF REPORT**

**CONSIDERATION OF**

**WASTE DISCHARGE REQUIREMENTS GENERAL ORDER**

**FOR**

**EXISTING MILK COW DAIRIES**

**BACKGROUND**

**Regulatory history**

The proposed tentative Waste Discharge Requirements General Order for Existing Milk Cow Dairies that is the subject of this public hearing is a General Order applicable to all existing milk cow dairies. The General Order has been developed based on fairly recent changes to federal and state laws or regulations that have changed the way that dairies must be regulated in the Central Valley Region and on numerous previous efforts to respond to these changes.

The General Order is not a National Pollutant Discharge Elimination System (NPDES) Permit, and does not authorize discharge of pollutants to surface water that are subject to NPDES permit requirements of the Clean Water Act. However, the General Order is intended to be compatible with the United States Environmental Protection Agency's regulations for concentrated animal feeding operations (CAFOs).

Most dairies in the Region historically operated under a waiver of waste discharge requirements (Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) Resolution 82-036). That waiver expired on 1 January 2003 pursuant to California Water Code (CWC) Section 13269. On 15 December 2002, the United States Environmental Protection Agency (USEPA) signed the new Concentrated Animal Feeding Operations (CAFOs) Rule, which required all large dairies and other types of large CAFOs to apply for a National Pollutant Discharge Elimination System (NPDES) permit and to develop and implement a Nutrient Management Plan for land application areas.

On 6 December 2002, the Central Valley Water Board adopted Resolution No. R5-2002-0205, which required that waste discharges from confined animal facilities be regulated in the future by waivers, individual or general waste discharge requirements, or an individual or general NPDES permit. This resolution also adopted "Conditions for Waiver of Waste Discharge Requirements for Discharges from Confined Animal Facilities." The waiver conditions required that large facilities apply for coverage under the waiver by late March 2003 and that smaller facilities apply for coverage by early June 2003.

On 23 January 2003, staff released an initial administrative draft NPDES General Permit for all types of CAFOs in the Region to implement the new federal

regulations. Staff received extensive comments on the initial draft and reported these to the Board. On 12 February 2003, USEPA published the new CAFO Rule in the Federal Register. The new CAFO regulations became effective on 14 April 2003.

On 13 March 2003, the Central Valley Water Board adopted Resolution No. R5-2003-0033, which rescinded the Conditional Waiver (Resolution No. R5-2002-0205) adopted on 6 December 2002 because the other options for dischargers (general NPDES permit or general waste discharge requirements) were not available for dischargers to choose from before the waiver application deadlines. In Resolution No. R5-2003-0033, the Central Valley Water Board directed staff to bring back for consideration NPDES permit(s), waste discharge requirements, and/or waivers as appropriate.

On 28 September 2004, staff released a second administrative draft NPDES General Permit for comment. This draft NPDES General Permit was only for existing milk cow dairies and was based on comments received on the January 2003 draft NPDES General Permit, the new federal regulations, and the State laws and regulations relevant to confined animal facilities.

On 3 December 2004, staff conducted a public workshop at the regularly scheduled Central Valley Water Board meeting to summarize the September 2004 draft NPDES General Permit and the over 250 pages of written comments received, and to allow interested persons the opportunity to present oral comments. The four major issues were groundwater monitoring, professional certifications, technical standards for nutrient management, and recognition of the California Dairy Quality Assurance Program (CDQAP).

On 28 February 2005, the United States Court of Appeals for the Second Circuit released a decision on an appeal to the new USEPA CAFO regulations by farm groups and environmental groups. Of greatest significance for the draft NPDES General Permit, the Court's decision vacated the requirement for all CAFOs to apply for an NPDES permit. The Court determined that unless there is a "discharge of any pollutant," a CAFO has no obligation to apply for an NPDES permit. The Court also vacated the provisions of the CAFO regulations that allow permitting authorities to issue permits: (1) without reviewing the terms of the nutrient management plans; (2) that do not include the terms of nutrient management plans; and (3) that do not provide for adequate public participation.

At the 29 April 2005 Central Valley Water Board meeting, staff provided the Central Valley Water Board with an update on the status of the draft NPDES General Permit. Staff explained that with the 28 February 2005 Second Circuit Court ruling it was uncertain how many of the large dairies would apply for the NPDES General Permit, since under the ruling they would only be required to

apply if they had an actual discharge of pollutants. In addition, the USEPA would not be able to provide guidance on how to proceed with NPDES permits until after the judicial process was complete. Staff informed the Central Valley Water Board of its intent to continue moving forward with its efforts to regulate dairies by using its authority under Porter-Cologne Water Quality Control Act, rather than relying on the federal regulations. The first step in this refocused effort would be drafting general WDRs for all existing milk cow dairies. The Central Valley Water Board expressed their general support of this approach.

On 8 August 2005, staff requested all existing milk cow dairies in the Region to submit a Report of Waste Discharge (ROWDs) by 17 October 2005. All dairies in the Region have submitted ROWDs in response to that and subsequent requests.

On 29 March 2006, staff released a working draft Waste Discharge Requirements General Order for Existing Milk Cow Dairies to interested parties for comment.

On 22 November 2006, staff released a tentative Waste Discharge Requirements General Order for Existing Milk Cow Dairies for public comment.

On 7 December 2006, staff conducted a public workshop at the Central Valley Water Board's regularly scheduled meeting in Rancho Cordova to summarize the November 2006 tentative Waste Discharge Requirements General Order and to allow interested persons the opportunity to present oral comments.

On 13 December 2006, staff held a second public workshop in Fresno to summarize the November 2006 tentative Waste Discharge Requirements General Order and to allow interested persons the opportunity to present oral comments.

On 23 March 2007, staff released the tentative Waste Discharge Requirements General Order for Existing Milk Cow Dairies (General Order) for public comment that is the subject of this public hearing. The General Order is based on State laws and regulations relevant to confined animal facilities, consideration of the federal CAFO regulations, comments received on the January 2003 and September 2004 draft NPDES General Permits, comments received on the March 2006 working draft Waste Discharge Requirements General Order and the November 2006 tentative Waste Discharge Requirements General Order, and numerous meetings with representatives of the dairy industry, environmental groups, University of California, California Dairy Quality Assurance Program, and local agencies.

### **Dairies Affected by this Order**

The General Order is applicable to all\* existing milk cow dairies that were operating as of 17 October 2005 and that submitted a Report of Waste Discharge in response to the Central Valley Water Board's 8 August 2005 request for such Report. Some of these dairies may need to obtain a federal NPDES permit. At this time, federal regulations specifying which confined animal feeding operations must obtain such permits have been proposed but have not been finalized. Dairies that need an NPDES permit will be issued a general or individual NPDES permit that will replace this General Order.

Existing dairy operations include herd sizes that may vary in order to ensure a constant milk production volume. Maintaining constant milk production requires a dairy operator to manage the herd, continually producing calves, raising support stock to replace cows that die or fail to produce, and selling some of the mature cows and support stock. Professionals at the University of California Davis estimate the normal variation in California dairy herd sizes ranges from about 10 to 15 percent.

For the purposes of this Order, existing herd size is defined as the maximum number of mature dairy cows reported in the Report of Waste Discharge submitted in response to the 8 August 2005 requirement of the Central Valley Water Board to submit such Report, plus or minus 15 percent of that reported number to account for the normal variation in herd sizes.

### **DAIRIES IN THE CENTRAL VALLEY REGION**

There are approximately 1,600 milk cow dairy operations within the Central Valley Region (Region) that will be affected by this General Order. Figures 1 and 2 show the distribution of different size categories of dairies in the Region.

Forty-two (42) existing milk cow dairies in the Region are currently regulated under General WDRs for Milk Cow Dairies, Order No. 96-270. Forty-four (44) additional existing milk cow dairies in the Region are currently regulated under individual WDRs. Staff anticipates that all of these existing facilities will be placed under the General Order through adoption of a resolution rescinding the old orders and requiring compliance with the General Order.

On 17 April 1997, the State Water Resources Control Board (State Water Board) adopted the General Industrial Storm Water Permit, Order No. 97-03-DWQ, NPDES No. CAS000001. Order No. 97-03-DWQ implements the final federal regulations (Title 40 Code of Federal Regulations Parts 122, 123, and 124) for

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\* Except where they have expanded or manage waste not covered by the General Order, or seek an NPDES permit.

Figure 1. Central Valley Dairies by Size Category

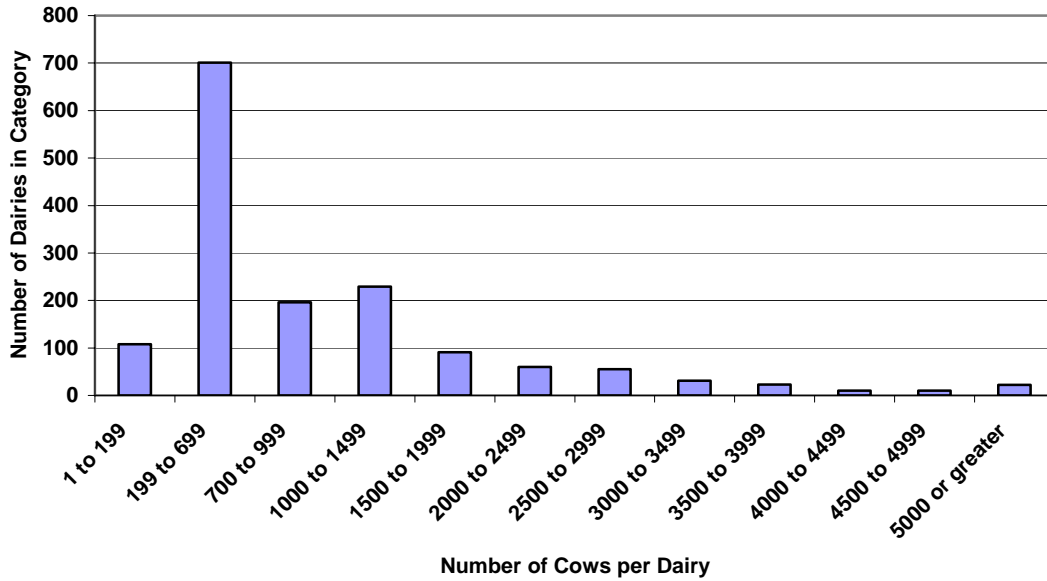
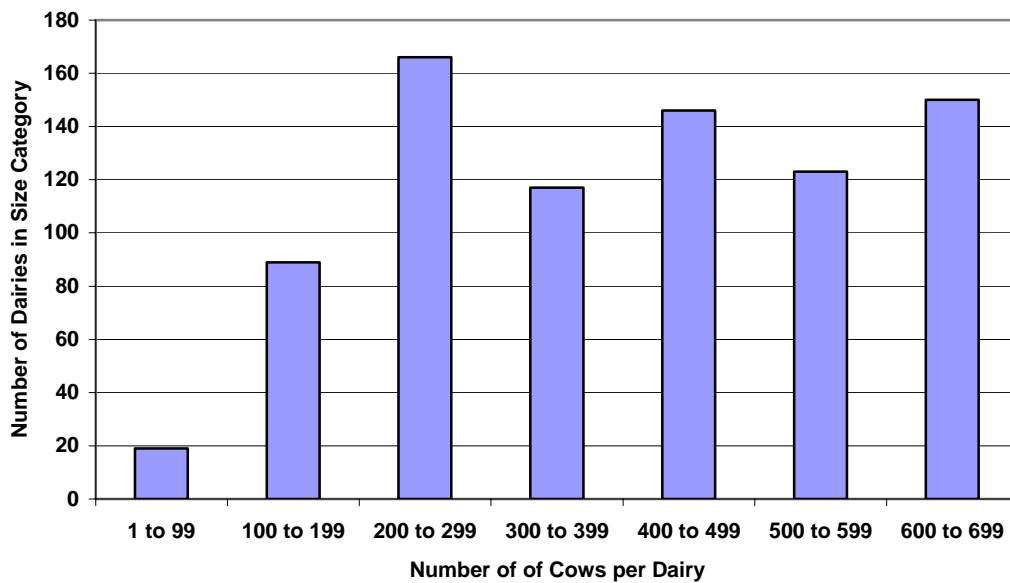


Figure 2. Size Breakdown for Dairies with Fewer than 700 Cows



storm water runoff published on 16 November 1990, by US EPA in compliance with Section 402(p) of the federal Clean Water Act. Approximately 250 dairy facilities in the Region are currently subject to Order No. 97-03-DWQ. All of these dairies will also be placed under this General Order.

## **DAIRY WASTES**

### **Waste Characterization**

For the purposes of the General Order, dairy waste includes, but is not limited to, manure, leachate, process wastewater and any water, precipitation or rainfall runoff that came into contact with raw materials, products, or byproducts such as manure, compost piles, feed, silage, milk, or bedding.

Manure from dairies contains high concentrations of salts (total dissolved solids, including constituents such as sodium and chloride) derived primarily from the feed and water sources used in the dairy production activities. Some dairies also use water softening devices for milk barn cleaning and other activities and the concentrated brines or reject water is usually sent to the retention pond, thus increasing the salt concentrations further.

Manure from dairies also contains nutrients (including nitrogen, ammonia, phosphorus and potassium compounds) that can be used in crop production.

Dairy operators typically use chemicals such as cleaning products to disinfect their milking equipment, footbaths to maintain the health of their herd, and pesticides in both the production area and land application area. Some portion of some of these chemicals may be commingled with process wastewater before it is stored in the retention pond.

### **Waste Management**

Waste generated at dairies is stored dry in piles or in liquid form in waste retention ponds. The wastes are then applied to cropland (land application area) or transported off-site for utilization on cropland as a nutrient source.

### **Waste Volume**

A recent review of dairy manure by a University of California Committee of Experts (UCCE) indicates that dairy cows in the Central Valley Region excrete approximately one (1) pound (lb) of nitrogen per head per day and approximately 1.29 lbs of inorganic salts (including only  $\text{Na}^+$ ,  $\text{K}^+$ , and  $\text{Cl}^-$ ) per head per day.

Based on American Society of Agricultural and Biological Engineers (ASABE) Standard D384.2 equations, an average 1,375 pound lactating milk cow produces approximately 19.5 pounds of dry manure per day (University of California Committee of Experts, 2005). Thus, a dairy with 1,000 milk cows produces approximately 180 tons of nitrogen, 235 tons of inorganic salts ( $\text{Na}^+$ ,

K<sup>+</sup>, and Cl<sup>-</sup>), and 3,600 tons of dry manure generated each year that must be managed to prevent impacts to water quality.

## **WATER QUALITY IMPACTS DUE TO DISCHARGES FROM DAIRIES**

### **Potential Water Quality Impacts**

Discharges of dairy waste have the potential to pollute surface water and groundwater with nitrogen compounds, salts, and pathogens.

Oxidation of the nitrogen compounds (i.e., ammonia and organic nitrogen compounds) in dairy waste to nitrites and nitrates has the potential to degrade the quality of surface water and groundwater. Excessive nitrates in drinking water can cause methemoglobinemia, commonly known as blue baby syndrome. Excessive nitrates in irrigation water can have an adverse impact on crops such as sugar beets, grapes, apricots, citrus, and avocados that are sensitive to nitrate.

Excessive salts in irrigation water can adversely impact crops that are sensitive to salt concentrations. Excessive salts in drinking water can result in taste problems.

Ammonia in dairy waste is highly toxic to aquatic life and can suppress dissolved oxygen concentrations. In addition, nitrogen and phosphorus compounds in the waste can cause excessive algal growth in surface waters, resulting in lower oxygen levels and which in turn causes fish and other organisms to die. The presence of pathogens in the waste can create a public health threat through human contact with affected waters.

### **Discharge Points**

Surface water or groundwater can be polluted by the discharge of dairy waste from land application areas, retention ponds, corrals, feed storage areas, or manure storage areas.

When dairy wastes are applied to land application areas, runoff of waste, tailwater, irrigation water, or storm water from the land application areas to surface water has the potential to adversely impact surface water. Over application of dairy waste on land application areas has the potential to impact both surface water and groundwater.

The retention of dairy wastes in ponds can result in adverse impacts to groundwater as a result of seepage through the bottom and/or sidewalls of the pond that are inadequately designed, constructed, or maintained. Retention of dairy waste in ponds can also result in adverse impacts to surface water due to overflow from ponds that do not provide adequate wastewater storage capacity.

Improper grading of corrals can result in ponding of wastewater in the corrals, which can result in infiltration of the wastewater into the subsurface and then potentially to groundwater. Improper drainage of runoff from corrals can result in discharges of wastewater to surface water or groundwater.

Leachate from feed and manure storage areas can discharge to surface water or groundwater if not properly collected and diverted.

Due to the relatively large size of the land application areas compared to the other discharge points, the largest pollutant loading to surface water and groundwater from dairy waste is typically from the land application area. The General Order recognizes this with the requirement for all Dischargers submit a Nutrient Management Plan to prevent adverse impacts to surface water and groundwater quality due to waste applications to cropland. Due to site variability, the Nutrient Management Plan is required to be field specific to ensure that optimum nutrient utilization takes place.

The General Order also requires each Discharger to submit a Waste Management Plan that will ensure that retention ponds, corrals, feed storage areas, and manure storage areas are designed, constructed, operated, and maintained to prevent adverse impacts to surface water and groundwater quality.

### **Documented Impacts**

#### *Surface Water*

The Central Valley Water Board has documented many discharges of waste from existing milk cow dairies to surface water. Since 2004, approximately 70 Dischargers have received Notices of Violation from the Central Valley Water Board for such discharges.

#### *Groundwater*

Monitoring over the last decade has shown extensive groundwater degradation or pollution at a number of dairy sites throughout the Region and in other areas of the state.

Studies in the late 1960s through the mid 1970s in the Chino Basin of Southern California showed that dairies were contributing to the degradation of the groundwater in the basin. Recent results show this is continuing and the Santa Ana Water Board has been limiting land application of waste in the basin for almost a decade now.

In 1993, the Central Valley Water Board staff along with the dairy industry conducted groundwater monitoring at five dairies that were known to have good waste management and land application practices. These dairies were located in a high-risk groundwater area (shallow water table and porous soils). Elevated



levels of salts and nitrates were found under all five sites even though the storage, handling and land application of solid and liquid waste materials was being done in accordance with the minimum standards set forth in Title 27 of the California Code of Regulations.

The University of California Cooperative Extension has undertaken further studies at the original five sites monitored by the Regional Board to see if the source of the pollution can be isolated. Their studies show that all sources (corrals, retention ponds, and land application areas) are a potential source but the greatest threat comes from the land application areas and the practices used there.

Groundwater samples collected from 425 water supply wells (domestic and agricultural – stock watering and irrigation) on 88 dairies in Tulare County between August 2000 and June 2006 showed that approximately 39% of the wells sampled had nitrate concentrations greater than the maximum contaminant level for drinking water. At least one nitrate polluted well was found at approximately 63% of these dairies.

## **APPLICABLE STATE AND FEDERAL REGULATIONS**

### **State Regulations**

#### Title 27, California Code of Regulations

Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1 of Title 27 of the California Code of Regulations (Title 27) prescribes minimum standards for discharges of animal waste at confined animal facilities to protect both surface water and groundwater. For surface water protection, Title 27 includes requirements for adequate design of containment facilities for both storm water and process wastewater and for adequate flood protection.

For groundwater protection, the minimum standards in Title 27 requires existing milk cow dairies to: minimize percolation of wastewater to groundwater in disposal fields; apply manure and wastewater to disposal fields at reasonable agronomic rates; minimize infiltration of water into underlying soils in manured areas; and locate retention ponds in, or line retention ponds with, soils of at least 10% clay and no more than 10% gravel.

The Central Valley Water Board has received documentation of impacts to groundwater quality that indicates the Title 27 minimum standards may not be sufficient to adequately protect groundwater quality at all confined animal facilities in the Region. Adverse impacts to groundwater due to discharges from existing milk cow dairies have been detected in areas where groundwater is as deep as 120 feet below ground surface and in areas underlain by fine-grained sediments. As noted below under Summary of General Order Requirements, the General Order includes groundwater monitoring requirements.

### Water Quality Control Plans

The Central Valley Water Board has adopted Water Quality Control Plans (Basin Plans) for the Sacramento River and San Joaquin River Basins (4<sup>th</sup> ed.) and for the Tulare Lake Basin (2<sup>nd</sup> ed.). These two Basin Plans designate the beneficial uses of groundwater and surface waters of the Region, specify water quality objectives to protect those uses, and include implementation programs for achieving water quality objectives. The Basin Plans also include plans and policies of the State Water Board incorporated by reference. The General Order specifies requirements necessary to comply with the Basin Plans, including requirements to meet the water quality objectives and protect beneficial uses specified in the Basin Plans, and other applicable plans and policies.

### California Environmental Quality Act (CEQA)

The Central Valley Water Board adopted a Negative Declaration in accordance with CEQA in 1982 with the adoption of Central Valley Water Board Resolution 82-036, which waived waste discharge requirements for confined animal facilities where the Discharger complies with Central Valley Water Board guidelines. That waiver program expired on 1 January 2003.

The Central Valley Water Board's preliminary review of the General Order determined that the adoption of the General Order is exempt from the requirements of CEQA based on three categorical exemptions allowed in Title 14 California Code of Regulations (CCR). These categorical exemptions are discussed below.

- CEQA Guidelines Exemption 1 for Existing Facilities (Title 14 CCR Section 15301) that applies to “...*the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency’s determination...*”
- CEQA Guidelines Exemption 2 for Replacement of Existing Structures (Title 14 CCR Section 15302) that applies to the “...*replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced...*”
- CEQA Guidelines Exemption 4 for Minor Alterations (Title 14 CCR Section 15304) that applies to “*minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes...*”

The adoption of the General Order is categorically exempt from CEQA because:

- Consistent with the “existing facility” exemption in Title 14 CCR Section 15301, eligibility under the General Order is limited to milk cow dairies that were existing facilities as of 17 October 2005. The General Order does not authorize expansion of use beyond that existing as of 17 October 2005. Restoration of, or improvements to dairy waste management systems to ensure proper function in compliance with the General Order will involve minor alterations of existing private facilities.
- Consistent with the categorical exemption of Title 14 CCR Section 15302, the General Order will require covered dairies to replace or reconstruct waste management systems to ensure proper function in compliance with the General Order.
- Consistent with the categorical exemption of Title 14 CCR Section 15304, the General Order will require covered dairies to make improvements to their waste management systems that will result in minor alterations to land, water, and/or vegetation.

Compliance with the General Order will reduce or avoid impacts to surface water and groundwater from existing milk cow dairies. The majority of the approximately 1,600 existing milk cow dairies potentially covered under the General Order operated under a waiver program that was in effect from 1982 to December 2002. Approximately 86 of these existing facilities are currently operating under either an individual WDR Order or a 1996 General WDR Order. The majority of existing milk cow dairies will be covered under the General Order, which imposes significantly more stringent requirements compared to the previous WDRs or the waiver of WDRs.

The General Order will reduce impacts to surface water and groundwater at existing milk cow dairies by requiring Dischargers to demonstrate compliance with State Water Board Resolution 68-16 (*Statement of Policy with Respect to Maintaining High Quality Waters in California*), Title 27 CCR for confined animal facilities, and the Basin Plans. The General Order reduces impacts to surface water by prohibiting discharges of: (1) waste and/or storm water to surface water from the production area, (2) wastewater to surface waters from cropland, and (3) storm water to surface water from the land application area where manure or process wastewater has been applied, unless the land application has been managed consistent with a certified Nutrient Management Plan. The General Order also prohibits discharges that cause or contribute to exceedances of any water quality standards.

The General Order reduces impacts to groundwater by requiring Dischargers to: (1) develop and implement Nutrient Management Plans that will control nutrient losses from land application areas; (2) provide an engineering evaluation of existing ponds and propose and implement approved remedial measures when groundwater monitoring demonstrates that existing ponds have adversely impacted groundwater quality; (3) design and construct new ponds and reconstructed existing ponds to comply with the groundwater limitations of the General Order; (4) document that no cross connections exist that would allow the backflow of wastewater into a water supply well or irrigation well; and (5) submit an Operation and Maintenance Plan to ensure that (a) procedures have been established for solids removal from retention ponds to prevent pond liner damage and (b) corrals and/or pens, animal housing areas, and manure and feed storage areas are maintained to collect and divert process wastewater and runoff to the retention pond and minimize infiltration of wastewater and leachate from these areas to the underlying soils. The General Order also reduces impacts to groundwater by requiring that discharges of waste from existing milk cow dairies shall not cause groundwater to be further degraded, to exceed water quality objectives, unreasonably affect beneficial uses of the groundwater, or cause a condition of pollution or nuisance.

The General Order requires monitoring of discharges, surface water, groundwater, storm water, and tailwater to determine compliance with the General Order.

#### **State Water Board Resolution 68-16**

State Water Board Resolution 68-16 requires that any discharge of waste to waters must be regulated to achieve the highest water quality consistent with the maximum benefit of the people of the state. Further, it states that high quality water must be maintained unless it is demonstrated that any change in water quality will, among other things, not unreasonably affect present and anticipated beneficial uses or violate the Basin Plans. Further, it states that any activity that discharges waste must be required to meet waste discharge requirements which will result in the best practicable treatment or control (BPTC) of the discharge necessary to assure that (a) pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

With respect to surface water, Resolution 68-16 must be implemented consistent with the federal "antidegradation" policy (Title 40 Code of Federal Regulations Section 131.12). The General Order is consistent with these policies because it: (1) prohibits the direct or indirect discharge of waste and/or storm water from the production area to surface waters; (2) prohibits the discharge of waste to surface waters that causes or contributes to exceedances of water quality objective in the Basin Plans or any applicable state or federal water quality criteria, or a violation

of any applicable state or federal policies or regulations; (3) prohibits the collection, treatment, storage, discharge or disposal of waste that results in contamination or pollution of surface water or groundwater or a condition of nuisance; and (4) contains groundwater limitations that, at a minimum, prohibit further degradation and adverse impacts to beneficial uses of groundwater or violations of water quality objectives specified in the Basin Plans.

To be consistent with State Water Resources Control Board Resolution 68-16, Dischargers must employ best practicable treatment or control measures to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

Best practicable treatment or control measures are particularly important for retention ponds and land application areas at dairies. An October 2003 report (Task 2 Report) by Brown, Vence, and Associates concluded that the "...current Title 27 requirements are insufficient to prevent groundwater contamination from confined animal facilities, particularly in vulnerable geologic environments." The Task 2 Report identified the Title 27 pond design requirements as not providing assurance of groundwater protection.

Consistent with State Water Resources Control Board Resolution 68-16, the General Order requires that new retention ponds or reconstructed existing ponds be designed and constructed to comply with the groundwater limitations in the General Order. The General Order provides a two-tiered approach that will allow the Discharger two options to retention pond design. Tier 1 includes a retention pond designed to consist of a double liner constructed with 60-mil high density polyethylene or material of equivalent durability with a leachate collection and removal system (constructed in accordance with Section 20340 of Title 27) between the two liners. This is the most conservative pond design that will assure groundwater protection under any condition and ponds designed to this standard are currently being approved by the Central Valley Water Board to contain landfill leachate. This design will be considered to be consistent with Resolution 68-16.

Tier 2 includes a retention pond designed in accordance with California Natural Resource Conservation Service (NRCS) Conservation Practice Standard 313 or equivalent and which the Discharger must demonstrate through submittal of technical reports that the alternative design is protective of groundwater quality. The demonstration will assure that any proposed pond design will be consistent with State Water Board Resolution 68-16.

Also consistent with State Water Resources Control Board Resolution 68-16, the General Order requires that all waste from the Discharger's dairy that is applied

to land application areas under the Discharger's control: (1) be managed according to a certified Nutrient Management Plan that is consistent with the technical standards specified in Attachment C, and (2) not cause groundwater to exceed the groundwater limitations of the General Order. Since the technical standards for nutrient management are consistent with the United States Environmental Protection Agency's best practicable control technology, they represent best practicable treatment or control for the purposes of State Water Resources Control Board Resolution 68-16.

### **Title 40 Code of Federal Regulations**

Title 40 Code of Federal Regulations Section 122.21 (a)(1), as promulgated on 12 February 2003, requires that "All concentrated animal feeding operations have a duty to seek coverage under an NPDES permit..." The federal regulations allow an exception to this requirement. The exception applies if the permitting authority determines that a large concentrated animal feeding operation has no potential to discharge.

On 28 February 2005, the 2<sup>nd</sup> Circuit Court of Appeals, in a decision on an appeal to the federal regulations (*Waterkeeper Alliance, Inc. et al v. U.S. Environmental Protection Agency*, \_\_F.3d\_\_, Case No. 03-4470), vacated the requirement for all CAFOs to either apply for an NPDES permit (whether or not they had an actual discharge) or demonstrate they have no potential to discharge. US EPA is currently revising the federal regulations to incorporate the 2<sup>nd</sup> Circuit Court's decision.

### **RECEIVING WATER LIMITATIONS**

The appropriate receiving water limitations for a particular dairy covered under this General Order depend on the beneficial uses of the water as designated in the Basin Plan(s) and the water quality objectives necessary to protect all beneficial uses of the water.

The numeric water quality objectives and numeric limits that are relevant and appropriate to implement narrative water quality objectives applicable to the primary waste constituents of concern in discharges of waste at dairy facilities that could affect groundwater and surface water are as follows: For groundwater, the most stringent limitations to implement narrative and numeric water quality objectives are for total coliform 2.2/100 milliliter (ml), for ammonia-nitrogen 1.5 mg/L, for boron 0.7 mg/L, for chloride 106 mg/L, for nitrate-nitrogen 5 mg/L, for EC 700  $\mu$ mhos/cm, and for TDS 450 mg/L. For surface water, the most stringent limitations to implement narrative and numeric water quality objectives and criteria are for total coliform 2.2/100 ml, for chloride 106 mg/L, for nitrate-nitrogen 5 mg/L, for EC 700  $\mu$ mhos/cm, and for TDS 450 mg/L. For surface water, the appropriate limitation for ammonia is 0.02 mg/L un-ionized ammonia or a concentration of total ammonia determined by the pH and fish species,

whichever is less. Less stringent limitations may apply to different areas but can only be determined through a site-specific assessment. Individual dischargers may propose the application of less stringent limitations for consideration in monitoring and reporting programs or through revision of the General Order.

## **SUMMARY OF THE GENERAL ORDER REQUIREMENTS**

### **General Requirements**

The General Order includes prohibitions, specifications, and provisions for the production and land application areas that are consistent with the state regulations. The General Order prohibits: (1) direct or indirect discharge of waste and/or storm water from the production area to surface water; (2) discharge of wastewater to surface waters from cropland; (3) discharge of waste to surface waters that causes pollution or nuisance, or that causes or contributes to an exceedance of any water quality objective in the Basin Plans or any applicable state or federal water quality criteria; and any discharge of storm water to surface water from the land application areas being used for nutrient utilization unless that discharge is from land that has been managed consistent with a certified Nutrient Management Plan. The General Order includes groundwater limitations, which specify "Discharge of waste at existing milk cow dairies shall not cause the underlying groundwater to be further degraded, to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance."

### **Specific Requirements**

All dairies covered under the General Order will be required to:

1. Comply with all of the requirements of the General Order;
2. Submit an Existing Conditions Report, which includes a Preliminary Dairy Facility Assessment to evaluate the dairy's whole farm nitrogen balance and wastewater storage capacity;
3. Submit Annual Monitoring Reports to demonstrate compliance with the General Order;
4. Submit a Waste Management Plan for the production area which demonstrates the dairy's design, construction, operation, and maintenance are adequate for flood protection and waste containment;
5. Submit certification to the Executive Officer that a Nutrient Management Plan for all land application areas has been developed and implemented;
6. Submit a Salinity Report that identifies sources of salt in waste generated at the dairy, evaluates measures to minimize salt in the waste, and certifies

they will implement approved measures identified to reduce salt in the waste.

7. Submit proposed interim facility modifications as necessary to balance nitrogen and/or to improve storage capacity if the Preliminary Dairy Facility Assessment indicates that the whole farm nitrogen balance is greater than 1.65 and/or the existing pond storage capacity is less than the pond storage capacity required;
8. Submit documentation of interim facility modifications completion for storage capacity and to balance nitrogen.
9. Submit a design report and a construction report for any new pond or a reconstructed existing pond;
10. Submit a closure plan at least 90 days before desiring to terminate coverage under the General Order.
11. Conduct the monitoring required in the Monitoring and Reporting Program which includes:
  - a. Visual inspections of the production and land application areas to identify conditions that could result in discharges to surface water and/or from property under the Discharger's control.
  - b. Monitoring nutrients in manure and process wastewater that are applied to land application areas, nutrients available in irrigation water and soil, and nutrients removed by crop harvest in order to ensure that applications of waste to land application areas are at agronomic rates;
  - c. Monitoring discharges of manure, process wastewater, storm water, and tailwater from the production and land application areas to ensure that water quality objectives are not violated;
  - d. Monitoring each domestic and agricultural supply well and subsurface (tile) drainage system to characterize existing groundwater quality; and
  - e. Installing and monitoring groundwater monitoring wells when ordered by the Executive Officer in order to determine existing groundwater quality and to monitor trends in groundwater quality in response to the Discharger's change in management practices .



12. Keep and maintain on-site for five years the results of monitoring and other records as specified in the Monitoring and Reporting Program for the production and land application areas;
13. Report noncompliance events and steps taken to prevent recurrence;
14. Have a written agreement with each third party that receives manure and/or process wastewater for its own use from the Discharger. The written agreement must include an agreement by the third party to use the manure and/or process wastewater at agronomic rates appropriate for the crops grown, incorporate the manure and/or process wastewater into the soil before irrigation unless a tailwater return system is used, and prevent tailwater runoff from the fields that receive the solid manure and/or process wastewater;
15. Complete a Manure/Process Wastewater Tracking Manifest for each transfer of manure and/or process wastewater off-site of the dairy; and
16. Develop and implement a Nutrient Management Plan to control nutrient losses from all land application areas in order to provide protection of surface water and groundwater.

### **Phased Approach**

The General Order imposes significant new and more stringent requirements compared to previous waste discharge requirements or waivers of waste discharge requirements that have applied in the past to these existing dairies. Many Dischargers will need to make significant improvements in their facilities to meet these requirements. Improvements needed may include recycling flush water, grading, establishing setbacks, installing flow meters, exporting manure, leasing or purchasing land, etc. The Discharger may be able to make some of these improvements relatively quickly while some improvements may require more time to implement.

The General Order allows Dischargers time to phase in elements of the required Waste Management Plan and Nutrient Management Plan in order to adequately design and construct major infrastructure changes needed to comply with all the requirements of this Order. The General Order also requires Dischargers to make continual facility improvements while completing implementation of the Waste Management Plan and Nutrient Management Plan.

Staff has worked with partners in the California Dairy Quality Assurance Program (CDQAP) to establish a schedule that will allow Discharger's time to make necessary changes. CDQAP is committed to provide training sessions over the next several years in order to assist Dischargers in understanding and

completing the requirements of the General Order. The CDQAP's assistance was key to the 100% success rate that was achieved in obtaining compliance with the August 2005 Central Valley Water Board's request for all Dischargers to submit a Report of Waste Discharge. CDQAP's assistance to Dischargers in understanding and completing the requirements of the General order will likely be just as important in the success of this new regulatory program for dairies.

The General Order includes the following schedule:

By 31 December 2007, the Discharger is required to provide an estimate of the facility's existing storage capacity and whole farm nitrogen balance in the Existing Conditions Report.

By 1 July 2009, the Discharger is required to have made interim facility modifications if the storage capacity is inadequate or the facility's whole farm nitrogen balance (ratio of (total nitrogen in storage + total nitrogen exported + nitrogen imported + irrigation nitrogen + 15 pounds per acre atmospheric nitrogen)/(total nitrogen removed by crops)) is greater than 1.65 as determined in the Existing Conditions Report

By 1 July 2009, the Discharger is also required to complete the Nutrient Management Plan (including a Retrofitting Plan with a schedule as needed to improve the facility's nitrogen balance) and submit elements of the Waste Management Plan that evaluate the adequacy of the facility's storage capacity, flood protection, and production area design and construction.

By 1 July 2011, the Discharger is required to certify completion of facility retrofitting for the Nutrient Management Plan and for completion of modifications to meet the Waste Management Plan requirements for storage capacity, flood protection, and production area design and construction.

By 1 July 2012, the Discharger is required to certify complete implementation of the Nutrient Management Plan.

#### *Groundwater Monitoring*

Most of the existing milk cow dairies covered under the General Order have been operating for many years and it is expected that groundwater quality may already be impacted at many of these dairies due to the past operations.

The General Order requires Dischargers to monitor groundwater to ensure that groundwater protection is being achieved. Groundwater monitoring at existing dairies is necessary to: determine background groundwater quality; determine existing groundwater conditions near retention ponds, corrals, and land

application areas; and determine the effect of the improved management practices required in the General Order on groundwater quality.

The General Order requires each Discharger to initiate sampling of each domestic and agricultural well present at the dairy and discharges from any subsurface (tile) drains within six months of adoption of the General Order. The Executive Officer will issue monitoring and reporting program orders in phases requiring 100 to 200 dairies per year to install monitoring wells based on an evaluation of the threat to water quality at each site.

The first phase of dairies ordered to install groundwater monitoring wells will be those dairies where nitrate-nitrogen is detected at 10 mg/l or more in any one domestic well, agricultural well, or subsurface (tile) drainage system in the vicinity of the dairy. This will determine existing groundwater conditions first in areas with suspected groundwater impacts. If necessary, the Executive Officer will further prioritize these groundwater monitoring requirements based on factors such as: proximity to a municipal or domestic supply well, artificial recharge area, or Department of Pesticide Regulation Groundwater Protection Area; nitrate concentrations in neighboring domestic wells; number of crops grown per year; whether or not the NMP is completed by 1 July 2009; and any other pertinent site-specific conditions.

#### **COSTS AND BENEFITS OF COMPLIANCE WITH THE GENERAL ORDER**

The dairy industry is concerned that the costs to comply with the General Order are not justified by the benefits to be obtained by what they consider to be excessive monitoring and reporting requirements and has requested that the Central Valley Water Board consider the costs and benefits of compliance.

The cost to comply with the General Order is especially important to dairy owners and operators since their income is dependent upon the price of milk, which does not accurately reflect the cost of milk production. The milk cost is established based on milk pricing formulas for which the California Department of Food and Agriculture (CDFA) sets manufacturing cost allowances to assure that the processors (cheese, yogurt, etc.) get affordable milk prices. These cost allowances are set through a public process, where CDFA staff and interested parties express their opinions and needs to a board who then make a final decision. CDFA can influence the manufacturing cost allowances but that on its own does not raise the price that milk producers receive. The driving force of all milk class formulas is the Chicago Mercantile Exchange prices for the different classes of milk, which is a national market driven by national supply and demand. Thus, when California's cost of producing milk goes up for any reason, the milk price will remain the same if the national market has not been affected.

The milk price in California has typically been lower than the national milk prices because California did not include the price of whey in the milk price formula, which is included in the Federal Milk Marketing Orders. California's latest revision to the milk price formula takes the price of whey into consideration. As a result, California milk prices have risen from \$13.75 to \$15.10 per hundredweight since December 2006. This shows that the gap between California milk prices and Federal milk prices (\$16.00 per hundredweight) is closing.

The benefits to be obtained by compliance with the General Order include environmental benefits that are difficult to quantify. The California Water Code does not include a requirement for the regional water boards to perform a formal cost-benefit analysis, but does require regional water boards to evaluate the burden, including the costs of required technical or monitoring program reports relative to the need for the reports and benefits to be obtained from the reports, and to identify the evidence that supports requiring that person to provide the reports.

The discussions below consider the costs of compliance and, in a general sense, the environmental benefits to be obtained from compliance with the General Order. Additional benefits to be obtained are also discussed.

### **Cost of Compliance with the General Order**

The costs to comply with the General Order will include costs for monitoring, reporting, and facility modifications necessary to comply with the General Order. The costs for these and the evidence to support the requirement for technical and monitoring program reporting, and the need for the reports are discussed below.

#### Cost of Reports

The cost of the reports required in the General Order includes the cost for monitoring and monitoring reports, and for the Existing Conditions Report, Waste Management Plan, and Nutrient Management Plan. The table below summarizes estimated upfront (one time) costs and annual reporting and monitoring costs for a dairy which is assumed to have 1,000 mature cows, 400 acres of land application area, one irrigation well, one irrigation canal, one domestic well, one barn well, four monitoring wells, no tailwater discharges, and no unauthorized discharges to surface water. Labor costs are assumed to be \$75 per hour for work conducted by the Discharger, \$30 per hour for an employee of the Discharger, \$80 per hour for a technician, and \$125 per hour for an engineer or a certified crop advisor. The costs for work conducted by the required professionals are indicated in the table.

As the table shows, the total estimated upfront costs are \$41,631 of which \$33,160 is for work required to be conducted by professionals (including an

estimated \$25,380 for installation of four monitoring wells). The total annual costs are \$33,240 of which only \$8,180 is for work by professionals. Merced County expects to have software available to all Dischargers for preparing the reports listed in the table. This is expected to minimize the costs to the Discharger.

Requirement <sup>1</sup>	Upfront Costs (Cost is for a Professional)	Annual Costs (Cost is for a Professional)
<b>Existing Conditions Report</b>		
<i>Attachment A</i>	\$1,025	---
<i>Preliminary Dairy Facility Assessment</i>	\$1,065	---
<b>Total:</b>	<b>\$2,090</b>	<b>\$0</b>
<b>Waste Management Plan</b>		
<i>Facility Description (includes Land Application Area information)</i>	\$1,621	---
<i>Engineering Report for Storage Capacity*</i>	(\$3,370)	---
<i>Engineering Report for Flood Protection<sup>2</sup></i>	(\$1,685)	---
<i>Assess Animal Confinement Area</i>	\$1,090	---
<i>Operation and Maintenance Plan</i>	\$715	---
<i>Backflow Prevention Documentation*</i>	(\$2,285)	---
<i>Retrofitting Status</i>	\$150	---
<i>Certification of Modifications Made<sup>3</sup></i>	(\$440)	---
<b>Total:</b>	<b>\$11,356</b>	<b>\$0</b>
<b>Nutrient Management Plan</b>		
<i>Sampling and Analysis Plan</i>	Included in MRP	Included in MRP
<i>Nutrient Budget*</i>	---	(\$3,000)
<i>Setbacks, Buffers</i>	\$705	---
<i>Field Risk Assessment*</i>	---	(\$280)
<i>Record-Keeping</i>	Included in MRP	Included in MRP
<i>Nutrient Management Plan Review*</i>	\$100	(\$500)
<b>Total:</b>	<b>\$805</b>	<b>\$3,780</b>
<b>Monitoring And Reporting</b>		
<i>Inspections</i>	---	\$7,395
<i>Manure Monitoring</i>	---	\$686
<i>Process Wastewater Monitoring</i>	\$2,000	\$492
<i>Irrigation Water Monitoring</i>	---	\$1,452
<i>Soil Monitoring</i>	---	\$160
<i>Plant Tissue Monitoring</i>	---	\$740
<i>Discharge and Surface Water Monitoring</i>	---	---
<i>Tailwater Monitoring</i>	---	---

\* Certification by a professional is required.

<sup>1</sup> All requirements below can be completed by the Discharger or his employee except for the items noted by an “\*.”

<sup>2</sup> An engineering report is not necessary if the Discharger can provide a published flood zone map that shows that the facility is outside of the relevant flood zone.

<sup>3</sup> This certification is not necessary if no modifications are required.

Requirement <sup>1</sup>	Upfront Costs (Cost is for a Professional)	Annual Costs (Cost is for a Professional)
<i>Storm Water Monitoring (Land Application Area only)</i>	---	\$930
<i>Groundwater Monitoring (Supply Wells)</i>	---	\$440
<i>Groundwater Monitoring (4 monitoring wells)*</i>	(\$25,380)	\$1,680
<i>Record-Keeping Requirements</i>	---	\$6,125
<i>Annual Reporting General</i>	---	\$2,660
<i>Groundwater*</i>	---	(\$4,400)
<i>Storm Water</i>	---	\$2,300
<b>Total:</b>	<b>\$27,380</b>	<b>\$29,460</b>
<b>Grand Total Annual Cost:</b>	<b>\$41,631</b>	<b>\$33,240</b>
<b>Total Cost for Professional:</b>	<b>(\$33,160)</b>	<b>(\$8,180)</b>

Evidence to Support Reporting Requirements

As discussed above, there have been many documented impacts to both surface water and groundwater from dairies in the Central Valley Region. In part, these impacts are due to inadequate regulation of dairies in the past. Implementation of the requirements in the General Order is needed to prevent further water quality impacts at existing dairies that need to improve their waste management practices and will prevent potential impacts at other dairies.

Need for Monitoring and Reporting

As existing facilities, the dairies covered under the General Order must be in compliance with the Porter-Cologne Water Quality Control Act, the State Water Resources Control Board Resolution No. 68-16, Title 27 CCR for confined animals, the Basin Plans and other applicable plans and policies of the State Water Board and the Central Valley Water Board.

The Central Valley Water Board has not previously required most of the existing milk cow dairies to demonstrate that they are in compliance with these laws, regulations, and policies since most of these dairies were covered under the waiver of waste discharge requirements that was effective between 1982 and the end of 2002, which did not require such a demonstration.

The existing conditions (in terms of facility design, construction, operation, maintenance, waste management, and water quality) with respect to the requirements of the General Order at most of the existing milk cow dairies are not known to either the Discharger or the Central Valley Water Board. Therefore it is appropriate that each Discharger demonstrate through facility assessments and monitoring what the conditions are at their facility with respect to the requirements of the General Order and propose facility modifications to achieve

compliance with the General Order if necessary. Monitoring is also necessary to demonstrate if facility modifications are effective in protecting water quality.

Without these assessments and monitoring, it would be impossible to determine if a facility is in compliance with the General Order, or if any improvements made were effective in achieving compliance. It would also make the General Order unenforceable if the status of compliance could not be demonstrated.

#### Costs for Necessary Facility Modifications

The costs of facility modifications necessary to achieve compliance with the General Order will vary significantly for each Discharger. Such costs that may be necessary could include costs to recycle flush water, construct a new retention pond, or improve drainage or to install a solids separator, wastewater distribution system, flow meters, pumps, backflow prevention devices, or tailwater return systems. This staff report does not provide estimated costs for these modifications.

#### **Environmental Benefits of Compliance with the General Order**

The history of impacts to both surface water and groundwater from dairies in the Region indicates the need for improvements at many dairies. It is reasonable to expect that significant environmental improvements will be achieved through compliance with the General Order. Environmental improvements expected to be achieved by completion of a Waste Management Plan, implementation of a Nutrient Management Plan, and monitoring and reporting are discussed below.

#### Benefits of the Waste Management Plan and Nutrient Management Plan

Completion of the Waste Management Plan will require each Discharger to evaluate the design, construction, operation, and maintenance of their facility for compliance with the General Order. An environmental benefit will be achieved because Dischargers will then be required to make improvements if necessary to ensure that their facility's waste storage capacity, flood protection, operation, and maintenance are adequate to prevent adverse impacts to groundwater and surface water.

Development and implementation of the Nutrient Management Plan will require each Discharger to evaluate the nutrients available for each crop at their facility relative to each crop's nutrient requirements. An environmental benefit will be achieved because the Discharger will also be required to demonstrate in the Nutrient Management Plan that the planned rates of nutrient applications for each crop do not exceed the crop's requirements for total nitrogen. This will limit each Discharger's waste applications to land application areas to proper rates, timing, and methods, which will minimize nutrient losses due to surface runoff or leaching past the root zone.

Potential pollutant discharge sources at dairies, the cause of discharges from these sources, and how the Waste Management Plan and Nutrient Management Plan will prevent water pollution from these sources are summarized in the table below.

Pollutant Source	Cause of Impact	How General Order Reports Will Prevent Potential Impacts
Pond	<u>Surface Water:</u> Overflow due to insufficient storage capacity or inadequate pond maintenance.	<u>Surface Water:</u> Waste Management Plan requires Engineering Report to demonstrate adequate storage capacity and an Operation and Maintenance Plan that includes pond maintenance requirements.
	<u>Groundwater:</u> Liner inadequately designed, constructed, and/or maintained.	<u>Groundwater:</u> General Order requires an engineering evaluation with proposed remedial measures when groundwater monitoring demonstrates pond has adversely impacted groundwater.  General Order requires Discharger to submit engineering design for new or reconstructed ponds, which must meet stricter performance standard than in the past.  Waste Management Plan requires proper pond operation and maintenance.
Corrals	<u>Surface Water:</u> Runoff from corral.	<u>Surface Water:</u> Waste Management Plan requires: Assessment report on design and construction of corrals to ensure collection and diversion of all process wastewater to the pond.  Operation and Maintenance Plan to ensure corrals are maintained to collect and divert wastewater to the pond.
	<u>Groundwater:</u> Infiltration of rainfall ponded in low spots of corral.	<u>Groundwater:</u> Waste Management Plan requires an Operation and Maintenance Plan that will prevent ponding of water in the corrals and infiltration of water into soils.



Pollutant Source	Cause of Impact	How General Order Reports Will Prevent Potential Impacts
Feed and Manure Storage Areas	<u>Surface Water:</u> Feed and/or manure storage areas not covered and leachate runs off to surface water.	<u>Surface Water:</u> Waste Management Plan requires: <ol style="list-style-type: none"> <li>1. Assessment report on design and construction of manure and feed storage areas to ensure collection and diversion of runoff and leachate from these areas to the pond.</li> <li>2. Operation and Maintenance Plan to ensure feed and manure storage areas are maintained so that runoff and leachate from these areas are collected and diverted to the pond.</li> </ol>
	<u>Groundwater:</u> Feed and/or manure storage areas not covered or lined beneath and leachate infiltrates into groundwater.	<u>Groundwater:</u> Waste Management Plan requires an Operation and Maintenance Plan to ensure feed and manure storage areas are maintained to ensure minimization of infiltration of water into the underlying soils.
Land Application Areas	<u>Surface Water:</u> Over-application of wastewater and no tailwater recovery system may result in runoff to surface water.	<u>Surface Water:</u> Nutrient Management Plan requires: <ol style="list-style-type: none"> <li>1. Waste application rates and timing restricted to crop nutrient needs.</li> <li>2. Waste application methods that are uniform and include erosion control measures.</li> <li>3. Field risk assessment to evaluate effectiveness of management practices to control discharge of waste constituents from land application areas.</li> </ol>
	<u>Groundwater:</u> Over-application of wastewater.	<u>Groundwater:</u> Nutrient Management Plan requires: <ol style="list-style-type: none"> <li>1. Waste application rates and timing restricted to crop nutrient needs.</li> <li>2. Waste application methods that are uniform.</li> </ol>

Benefits of the Existing Conditions Report

The Existing Conditions Report will provide an estimate of the existing waste storage capacity and whole farm balance of nitrogen for each existing dairy. This baseline is necessary to estimate each facility's ability to provide adequate storage of wastewater and to apply nutrients to land application areas at agronomic rates. An environmental benefit will be achieved if the Existing Conditions Report indicates that facility improvements are needed because the General Order requires the Discharger to then make continual facility improvements while completing implementation of the Waste Management Plan and/or Nutrient Management Plan, which are allowed under the General Order to be completed in four and five years, respectively.

### Benefits of the Monitoring and Reporting Program

The Monitoring and Reporting Program includes requirements for monitoring, record-keeping, and reporting. The environmental benefits of these requirements are discussed below.

#### *Monitoring*

The required monitoring includes visual inspections of the production and land application areas, nutrient monitoring, surface runoff monitoring, and groundwater monitoring.

Periodic visual inspections will allow the Discharger to identify actual or potential problems that are or may adversely impact water quality and to take appropriate action in a timely manner to stop or prevent such impacts. Without these inspections, problems may not be identified in a timely manner and could result in continued discharges to surface water or groundwater.

Monitoring of surface runoff and groundwater will provide evidence when impacts to surface water or groundwater have occurred and indicate the need for facility improvements to prevent continued impacts. It will also provide evidence of the impacts to water quality due to facility improvements. Without such monitoring it would not be possible to determine if the Discharger was in compliance with the surface water and groundwater limitations of the General Order or determine the impacts to water quality from facility improvements.

Monitoring of nutrients available to crops from soil, irrigation water, applied process wastewater and manure and nutrients harvested from crops will assist the Discharger in developing a Nutrient Management Plan that will minimize leaching of nutrients and salts to groundwater and transport of these constituents to surface water. Without such monitoring it would be impossible for the Discharger to apply his waste to crops at an agronomic rate that will maximize his yield while minimizing nutrient losses.

#### *Record-Keeping*

The record-keeping requirements will ensure that the Discharger maintains a history of his monitoring activities at the dairy, which will be important in evaluating trends in water quality and the source of impacts to water quality and documenting compliance with General Order.

#### *Reporting*

The reporting requirements of the Monitoring and Reporting Program (Priority Reporting of Significant Events and Annual Reporting including Groundwater and Storm Water Reporting) will provide documentation to the Central Valley Water Board regarding the status of the Discharger's compliance with the General Order. Evidence of noncompliance provided in any of these reports will require

the Discharger to identify the cause of the noncompliance and take necessary actions to cease the noncompliance.

### **Additional Benefits of Compliance with the General Order**

Dischargers who complete the Existing Conditions Report, Waste Management Plan, and Nutrient Management Plan; conduct the required monitoring and reporting; and make necessary facility improvements should be able to comply with the surface water and groundwater limitations of the General Order. Such Dischargers will avoid additional costs associated with noncompliance with the these limitations.

Dischargers who are not in compliance with the surface water and groundwater limitations of the General Order are subject to enforcement actions by the Central Valley Water Board, the Northern Dairy Task Force, and other local, state, and federal agencies. They may also be subject to citizen lawsuits under the Clean Water Act. Such noncompliance could incur additional costs to the Discharger in the form of fines, settlement agreements, and/or required remedial actions.

### **FUNDING SOURCES**

There are several federal, state, and local programs that can provide financial assistance to dairymen conducting projects that address environmental concerns. These include the Environmental Quality Incentives Program (EQIP), California County EQIP, Clean Water Act State Revolving Fund, and the Dairy Water Quality Improvement Grant Program. Each of these is discussed below.

#### **Environmental Quality Incentives Program**

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that promotes agricultural production and environmental quality. Through EQIP, farmers and ranchers may receive financial and technical assistance to install structural conservation measures and implement conservation practices. EQIP is administered by the United States Department of Agriculture's Natural Resource Conservation Service (NRCS), which is funded by the federal Farm Bill of 2002. Financial and technical assistance is available to help install or implement structural and management practices on eligible agricultural land. The program and distribution of funds is done at the state level. Producers engaged in livestock or crop production on eligible land may apply for the program. Eligible land includes cropland, rangeland, pasture, private non-industrial forestland, and other farm or ranch lands. Rankings for allocating money to applicants are based on environmental scores obtained by evaluating the project in the context of local, state, and federal priorities.

#### **California County EQIP Program**

The California County EQIP provides funds to counties allowing local concerns to be addressed. Counties are able to establish their own priorities and ranking

criteria, select practices for cost sharing, and focus on improving target elements in their community. Fresno, Madera, Kings, Kern, Tulare, Glenn, Merced, Sacramento, San Joaquin, and Stanislaus Counties have identified confined animal facilities as a concern in their EQIP program description. For the most part, groundwater and surface water are concerns that will be ranked to allocate money. Some of these counties are allocating a percentage of EQIP funds to specifically address water quality protection at confined animal facilities.

#### **Clean Water Act State Revolving Fund**

This is a low-interest program funded by federal grants and State bond funds, which provides loans for projects that address point and non-point sources of water pollution. The funds can be used for the construction of facilities or implementation of measures necessary to address water quality problems and to prevent pollution of the waters of the State. Public and private entities are eligible for implementation of source control programs.

#### **Dairy Water Quality Improvement Grant Program**

The Dairy Water Quality Improvement Grant Program provides \$5 million from Proposition 50 to fund regional and on-farm dairy projects to address water quality impacts from dairies. Merced County was granted \$1,200,000 for completion of individual Waste and Nutrient Management Plans for all 315 dairies in Merced County. All projects funded under the Dairy Water Quality Improvement Grant Program must be completed by March 2009.

### **RESOURCES FOR COMPLIANCE ASSISTANCE**

#### **University Of California Cooperative Extension**

The University of California Cooperative Extension has specialists in animal waste management, nutrient management and dairy science. These specialists are located at the Davis campus of the University and throughout the counties in the Central Valley. Like all agencies, Cooperative Extension has been hit very hard with the recent budget cuts but they continue to provide an effective education, outreach and field research program. The university and county specialists are well trained, well respected by the dairy industry and provide a valuable link between research and field application.

#### **Natural Resource Conservation Service (NRCS)**

The Natural Resource Conservation Service (NRCS) is a federal agency providing technical assistance to farmers and dairy operators on improved management practices. The NRCS also administers the Environmental Quality Incentives Program (EQIP), which is a voluntary conservation program that promotes agricultural production and environmental quality. Through EQIP, dairy farmers may receive financial and technical assistance to install structural conservation measures and implement conservation practices (see the

discussion above on EQIP Funding). The NRCS offices are located throughout the Central Valley.

In addition, the NRCS is developing a Comprehensive Nutrient Management Plan (CNMP) for animal feeding operations in California in cooperation with University and other state and federal agency participation. The CNMP will, among other things, provide guidance on how to combine management activities and conservation practices into a system that, when implemented, could minimize the adverse impacts of animal feeding operations on water quality.

### **Environmental Stewardship Programs or Local Ordinances**

The California Dairy Quality Assurance Program (CDQAP) is a partnership among federal and state agencies, academia, and the dairy industry and is a voluntary cooperative government and industry education and facility evaluation program. The objective of the CDQAP is to assist California dairy producers in meeting all federal, state, local, and regional regulations relating to manure and nutrient management. The program core components include continuing education workshops for producers, creation of Environmental Stewardship Farm Management Plans, and third party on-site evaluations. As of October 2006, 198 of the approximately 1,600 dairies in the Region have completed on-site certification through the CDQAP. Numerous others have completed the educational component of the program and are in the process of working toward certification.

Some local agencies have ordinances that require confined animal facilities to comply with all applicable local, state, regional, and federal regulations. The CDQAP and local ordinances can greatly assist the Central Valley Water Board in its compliance efforts. In the original CDQAP Partnership Agreement, certification was recognized as “carry no regulatory significance,” other than to inform agencies of the producer’s efforts toward compliance. CDQAP certification also was “not a determination that a facility is in compliance with environmental laws and regulations,” but has weighed heavily in our considerations “when scheduling routine inspection.”

Since its inception in 1996, the CDQAP has been an effective tool in the Central Valley Water Board’s compliance efforts. The dairy producers today have a far greater understanding of the needs for environmental compliance. The State Water Board has also recognized participation in a quality assurance program or the efforts of a local ordinance when establishing annual fees for confined animal facilities. Facilities under one of these recognized programs receive a 50 percent fee reduction.

Environmental stewardship or local ordinance programs can assist dairy operators in meeting the requirements of the General Order and offer

Dischargers an opportunity to demonstrate that they have the capability to be in compliance with the General Order but they will not assure that a Discharger is in compliance with the General Order.

Certification under CDQAP or a local ordinance program cannot be a substitute for the California Business and Professions Code requirement for certification by appropriately licensed professionals. When certifying the design and construction of a facility, the licensed professional assumes the responsibility for that design and construction. At the present time, the CDQAP does not assume such responsibility for dairies, nor did any of the signatories to the agreement consider this as part of their commitment to the program. In addition, none of the local ordinance programs considers this requirement. If the CDQAP or a local ordinance program provided professionals licensed for reviewing that individual dairy facilities were designed, constructed, operated, and maintained to provide adequate waste containment and flood protection as specified in the draft General Order, then CDQAP or local ordinance certification could be used to meet the requirements for a WMP.

#### **WHAT OTHER REGIONS ARE DOING**

The North Coast Water Board (Region 1) has less than two hundred relatively small dairies in its region. North Coast Water Board Resolution No. R1-2002-0080 (Policy for Waiving Waste Discharge Requirements for Specific Types of Waste Discharge) establishes a conditional categorical waiver for confined animal wastes if the Discharger complies with California Code of Regulations, Title 27, Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1 and specifies that "Confined animal waste operations requiring NPDES permits under federal Clean Water Act regulations must obtain such permits and are not eligible for waivers under this policy."

The San Francisco Bay Water Board (Region 2) has approximately 75 relatively small dairies. The San Francisco Bay Water Board adopted Order No. R2-2003-0093 (General Waste Discharge Requirements for Confined Animal Facilities) for confined animal facilities, including dairies, that were not in full compliance with State Standards and Resolution No. R2-2003-0094 (Renewal of Waiver of Waste Discharge Requirements for Confined Animal Facilities) for confined animal facilities, including dairies, that have proper waste control facilities and management practices in conformance with the Statewide Minimum Standard and that comply with the additional conditions of the waiver.

The Central Coast Water Board (Region 3) has five or six dairies in its region. Three of these dairies are under waste discharge requirements and the remaining dairies are not currently being regulated.

The Los Angeles Water Board (Region 4) has very few dairies. The few large facilities which meet the CAFO definition are regulated under WDR/NPDES permit.

The Lahonton Water Board (Region 6) has 13 dairies of which only five are covered under individual waste discharge requirements. The remaining dairies are not currently being regulated.

The Colorado River Water Board (Region 7) and Santa Ana Water Board (Region 8) have both designated certain types of facilities (including dairies with more than 20 cows) within their regions as CAFOs and have adopted NPDES general permits for these facilities. Region 7 has less than five dairies and Region 8 has approximately 240 dairies.

The San Diego Water Board (Region 9) regulates eight dairies in its region by NPDES permits or waste discharge requirements.

#### **COMMENTS ON THE NOVEMBER 2006 DRAFT GENERAL ORDER AND RESPONSE**

The discussion below summarizes some of the comments received on the November 2006 tentative General Order and the changes made to the General Order in response to those comments. Comments on the 23 March 2007 tentative General Order were not due until 23 April 2007 and have thus not been included in this Staff Report.

#### **Costs to Implement the Draft General Order are Excessive and Requirements Need to be Practical, Efficient, and Cost-Effective**

The dairy industry provided an estimate of the initial costs to comply with the requirements in the 22 November 2006 tentative General Order, which they believed would likely exceed \$89,000 and the annual costs would be approximately \$58,000. These costs do not include infrastructure change costs. In particular, the dairy industry believed the monitoring requirements were overly burdensome and costly.

Central Valley Water Board staff met several times with representatives from the dairy industry regarding the cost and ways to reduce the cost. The dairy industry revised their estimate of compliance with the 22 November 2006 tentative General Order to \$64,000 upfront costs and \$45,250 based on acknowledgement that many dairies would be able to utilize the assistance that will be provided by the California Dairy Quality Assurance Program for many of the requirements, rather than having to hire a consultant. The dairy industry also provided suggestions for additional ways to reduce costs, many of which have been incorporated into the General Order. With the dairy industry's suggested

changes, the dairy industry estimated that the upfront costs would be \$45,250 and the annual cost \$33,550.

With the revisions to the General Order, the estimated upfront costs to comply with the General Order would now be approximately \$41,631 and the annual costs approximately \$33,240 (see the discussion above under Cost of Compliance with the General Order).

### **The General Order is Overly Complex**

The dairy industry commented that the November 2006 tentative General Order was overly complex and would be difficult for Dischargers to understand and implement. The dairy industry referred to some suggestions and recommended that the Central Valley Water Board prepare a more thorough analysis of the order as outlined below. However, it was not clear precisely what those suggestions or recommendations were.

The General Order has been revised to hopefully provide more clarity. A Table of Contents has been added to identify all of the contents of the General Order and where to find them. Some of the findings in the General Order were moved to the Information Sheet and the Monitoring and Reporting Program was revised to provide more clarity (see discussion below on Monitoring and Reporting Requirements).

### **Monitoring and Reporting Requirements**

The November 2006 tentative General Order included extensive monitoring requirements for: discharges to surface water (including tailwater, storm water, and unauthorized discharges); nutrients in waste, irrigation water, plant tissue, and soil; and groundwater.

Dairy industry groups commented that the MRP is far too long and complex, many of the requirements appear unlikely to result in useful data or concrete environmental improvements, and it was unclear if the monitoring data collected would actually be useful to regulators.

Based on the comments received, the General Order has been revised to include reduced monitoring frequency and reduced number of constituents to monitor for many of the parameters (e.g., reduced monitoring frequency for supply wells from quarterly to annually, reduced required soil monitoring to just phosphorus once every five years with more frequent soil monitoring recommended, etc.) The General Order also allows more field measurements rather requiring laboratory analyses for most constituents (field measurements allowed for EC, dissolved oxygen, total ammonia-nitrogen, and unionized ammonia-nitrogen). Also, some requirements have been eliminated in the General Order, such as monitoring and reporting crop water use.



The Monitoring and Reporting Program has been revised to clarify the monitoring requirements by grouping the monitoring, sampling, and analysis requirements for each parameter (nutrients, surface runoff, storm water, groundwater) into one section and providing a table for each parameter to be monitored. The reporting requirements have been simplified by grouping the annual reporting requirements for groundwater and storm water into the Annual Report so that only one annual report is due.

#### Groundwater Monitoring

The November 2006 tentative General Order required each Discharger to immediately begin sampling each supply well present in the production and land application areas quarterly for ammonium-nitrogen, nitrate-nitrogen, and total dissolved solids with a reduction in monitoring frequency possible after one year of quarterly data are provided to the Executive Officer. Dischargers would have also been required to install monitoring wells when required by the Executive Officer and sample the monitoring wells quarterly for one year and then semi-annually. Monitoring well installations were to be phased in based on the threat to water quality at each site at a rate of 100 to 200 dairies per year. The Executive Officer would consider factors indicated in Table 2 of the Monitoring and Reporting Program to prioritize which dairies should install monitoring wells first.

The environmental groups commented that since the November 2006 tentative General Order did not contain a time schedule, progress reports, or interim requirements for completing the monitoring well program, it failed to adequately protect groundwater resources. The environmental groups also commented that the General Order should require at least enforceable groundwater quality standards based on monitoring wells on each facility and recommended all Dischargers be required to install monitoring wells within a short period of time.

The dairy industry groups recommended less frequent monitoring of supply wells and monitoring wells. They also commented that the most important factors in determining the need for groundwater monitoring are whether the dairy operator has implemented a nutrient management plan and whole-farm nutrient balance.

The General Order was not revised to include required installation of monitoring wells at each dairy in a short period of time. It would be impractical for staff and for the dairy industry to accomplish that in a short time period due to staff resource limitations and limitations on the availability of professionals needed to install monitoring wells at 1,600 dairies. The Central Valley Water Board believes it is reasonable to phase in the requirement for groundwater monitoring wells based on the factors listed in the Monitoring and Reporting Program.

The General Order was revised with reduced monitoring requirements for supply wells and monitoring wells. The General Order requires: annual (rather than quarterly) monitoring of supply wells with the first samples to be collected by 31 December 2007; supply wells and subsurface (tile) drainage systems be analyzed for electrical conductivity and nitrate-nitrogen (rather than ammonium-nitrogen, nitrate-nitrogen, and total dissolved solids), and subsurface (tile) drainage systems also required to be analyzed for total phosphorus. The General Order requires semi-annual (rather than quarterly) monitoring of monitoring wells for electrical conductivity, pH, nitrate, and ammonia (rather than electrical conductivity, pH, nitrate-nitrogen, ammonium-nitrogen, total kjeldahl nitrogen, phosphorus, potassium, total dissolved solids, and general minerals) and monitoring once every two years for general minerals.

The General Order was not revised to place as much emphasis as requested by the dairy industry on prioritization of monitoring well installation requirements based on implementation of a nutrient management plan or a whole-farm nutrient balance. First of all, implementation of the Nutrient Management Plan is not due until two years after adoption of the General Order. It is not appropriate to delay monitoring well installations for two years. Secondly, it is not appropriate to place such an emphasis on the initial estimate of the whole-farm nutrient balance since the initial estimate will only be a very rough estimate. Finally, such an approach would minimize the importance of known groundwater impacts, known groundwater vulnerability, and proximity to an artificial recharge area, domestic well, or municipal supply well.

### **Pond Design**

The November 2006 tentative General Order required that new or reconstructed retention ponds be designed and constructed to comply with General Specification B.1 and the groundwater limitations in the General Order, have a seepage rate no greater than  $1 \times 10^{-6}$  cm/sec with no credit for manure sealing, and result in best practicable treatment or control of the discharge necessary to prevent a condition of pollution or nuisance. The November 2006 tentative General Order also required that Dischargers reconstruct existing retention ponds in compliance with this requirement when groundwater monitoring demonstrates that the existing retention pond has impacted groundwater quality.

Environmental groups commented that the November 2006 tentative General Order's requirement for retention ponds violates State Water Board Resolution 68-16 since it does not implement any requirements for existing ponds, the seepage rate of  $1 \times 10^{-6}$  cm/sec for new and reconstructed ponds is not protective, other jurisdictions have adopted more stringent criteria, and the General Order requirement is not the best practicable control technology.

Dairy industry groups commented that the General Order's requirement for retention pond should be deleted or adopted pursuant to the Administrative Procedures Act since it replaces the Title 27 CCR requirement and would be underground regulations.

The General Order has been revised to include a tiered approach to retention pond design to provide options to the Discharger. Tier 1 is a pond design consisting of a double liner constructed with 60-mil high density polyethylene or material of equivalent durability with a leachate collection and removal system between two liners that will be considered to be consistent with State Water Board Resolution 68-16. Alternatively, the Discharger may choose the Tier 2 pond design which is a pond designed in accordance with the Natural Resources Conservation Service Conservation Practice Standard 313 or equivalent and which the Discharger demonstrates with technical reports that the alternative design is protective of groundwater quality.

The revision for the pond design addresses the environmental group comment by requiring either the most stringent pond design which is consistent with State Water Board Resolution 68-16 or an alternative which the Discharger must demonstrate is protective of groundwater quality. The revision also addresses the dairy industry group comment by allowing the Discharger alternatives.

### **California Environmental Quality Act (CEQA)**

The environmental groups commented that the General Order is subject to environmental review under the CEQA and that use of the three CEQA exemptions (for existing facilities, replacement of existing structures, and minor alterations) for the General Order are not appropriate.

The Central Valley Water Board disagrees with the view that the General Order is subject to environmental review or that the three CEQA exemptions are not appropriate. As stated in the findings of the General Order, the General Order imposes significant new and more stringent requirements compared to previous waste discharge requirements or waivers of waste discharge requirements that have applied in the past to these existing facilities. This Order requires compliance with State Water Resources Control Board Resolution 68-16, Title 27 CCR for confined animal facilities, and the Basin Plans. As a result, existing milk cow dairies will reduce their impacts to surface water and groundwater upon compliance with this Order. This Order does not authorize expansions of facilities. Such facilities must demonstrate compliance with CEQA and obtain separate waste discharge requirements.

The General Order also requires monitoring of surface water and groundwater to demonstrate reduced impacts to surface water and groundwater upon compliance with this Order.

### **NPDES permit**

The environmental groups commented that the Central Valley Water Board should issue an NPDES permit rather than waste discharge requirements.

As noted above, federal regulations specifying which confined animal feeding operations must obtain NPDES permits have been proposed but not yet finalized. Dairies that need an NPDES permit will be issued a general or individual NPDES permit that will replace this General Order.

### **Phased Approach**

The November 2006 tentative General Order included a phased approach for submittal of the Existing Conditions Report, Waste Management Plan, Nutrient Management Plan, and Salinity Report.

The environmental groups commented that the phased provisions of the General Order are invalid because the Central Valley Water Board no longer has the authorization of use compliance schedules, the compliance schedules are far longer than the statutory limit, the General Order is not an NPDES permit, and the General Order applies to many facilities built after 2000.

The dairy industry recommended changing the deadline for the Existing Conditions Report from four to six months after adoption of the General Order.

The General Order has been revised to change the deadline for submittal of the Existing Conditions Report to at least six months after adoption of the General Order. The General Order has not been revised to require immediate completion of the Existing Conditions Report, Waste Management Plan, Nutrient Management Plan, or Salinity Report. Section 13263(c) of the California Water Code allows waste discharge requirements to contain a time schedule and does not specify a time limit for the time schedule.

### **Third Parties Receiving Dairy Waste**

The 22 November 2006 tentative General Order required the Discharger to include all property under third party control that receives the Discharger's process wastewater in his Nutrient Management Plan and to simply identify each field under control of a third party where only solid manure from the Discharger is applied. The Discharger was required to have a formal agreement with third parties that receive either solid manure and/or process wastewater from the Discharger.

The environmental groups recommended that third parties that receive solid manure from dairy facilities be required to submit a nutrient management plan showing the nitrogen and salt balance for all land to which the solid manure is applied.

The dairy industry commented that: (1) it is inappropriate to use the General Order to regulate land application of process wastewater by a third party and that only land application areas under the Discharger's control should be included in the General Order; (2) a third party should be regulated separately if needed, although such additional regulation of process wastewater would likely be a strong disincentive to third party use of a Discharger's process wastewater; (3) the Discharger should only be required to document the amount of nutrients transferred offsite; and (4) additional requirements, if necessary, could be determined in future iterations of the General Order.

The General Order has been revised to remove the requirement for the Discharger to include in the Nutrient Management Plan all land under control of a third party where process wastewater is applied. The General Order now requires each Discharger to have a written agreement with each third party that receives solid manure or process wastewater from the Discharger for his own use. The written agreements must identify the third party, the Assessor's Parcel Number where the waste will be applied, and the types of crops to be grown and include an agreement by the third party to use the dairy waste at an agronomic rate appropriate for the crops grown, incorporate the waste into the soil before irrigation unless a tailwater return system is being used, and prevent tailwater runoff from the fields receiving the solid manure and/or process wastewater. The written agreements are to remain effective until the third party is covered under waste discharge requirements or a waiver of waste discharge requirements adopted by the Central Valley Water Board and that are specific to the application of the Discharger's solid manure and/or process wastewater to land under the third party's control. It is staff's intent to develop waste discharge requirements or a waiver of waste discharge requirements for these third parties in the future.

### **MAJOR ISSUES EXPECTED**

Staff expects that even though the General Order includes revisions to address comments on the cost to comply with the General Order, groundwater monitoring, the third parties receiving dairy waste, that there will still be comments on these issues.

Staff also expects that the issues on CEQA and NPDES permitting requirements will still be an issue, since the General Order was not revised to address these issues.

### **SUMMARY AND RECOMMENDATIONS**

The General Order incorporates responses to comments received on the November 2006 tentative General Order and earlier drafts of the General Order. However, there have been no significant revisions to this General Order after it was released for public comment on 23 March 2007 since comments were not

due until 23 April 2007. Depending upon the comments received by 23 April 2007, it may be appropriate to make significant revisions to the General Order in which case it would be necessary to re-notice the General Order and delay consideration of the General Order until the next Central Valley Water Board meeting.

At the public hearing, staff will discuss the comments that are received by 23 April 2007 and the need to make revisions to the General Order based on those comments. If staff does not believe significant revisions are necessary, staff will recommend that the Central Valley Water Board adopt the General Order.

April 2007