

**STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION**

**STAFF REPORT FOR REGULAR MEETING OF MARCH 24, 2006**

Prepared on March 1, 2006

**ITEM NUMBER: 7**

**SUBJECT: Re-Issuance of Waste Discharge Requirements for Furtado Dairy,  
Gilroy, Santa Clara County – Order No. R3-2006-0016**

**KEY INFORMATION**

Location: 7955 Ferguson Road, Gilroy, Santa Clara County  
Type of Discharge: Dairy wash water and storm water  
Permitted Flow: 34,000 gallons per day (gpd)  
Average Flow: 15,000 gpd wash water (based on water supply usage) with 59,000 gallons per day of recycled wastewater for flushing paddocks  
Type of Treatment: Solids removal followed by anaerobic stabilization ponds  
Disposal Method:  
    Wastewater: Irrigation to on-site fields, evaporation, and percolation  
    Solid Wastes: Offsite disposal as fertilizer or composting amendment  
Existing Orders: Waste Discharge Requirements Order No. 86-01 and Cleanup or Abatement Order R3-2005-0109  
This Action: Adoption of revised Waste Discharge Requirements

**SUMMARY**

Manuel Furtado (hereafter "Discharger") owns and operates Furtado Dairy, formerly William Furtado Dairy (hereafter "Facility"), located at 7955 Ferguson Road, Gilroy. The William Furtado Trust owns the property.

The existing waste discharge requirements order is nearly 20 years old and is in need of revision to establish more specific and stringent requirements for the management of dairy wastes in a manner that is protective of water quality. The Facility wastewater collection, treatment and disposal system has not been well operated and maintained using best management practices consistent with other dairy operations throughout the state. Evidence for this conclusion includes observations made by Central Coast Water Board staff during Facility inspections, information provided by the Discharger in recent report of waste discharge

application submittals, and the unauthorized discharge of dairy wastewater to an adjacent creek.

Proposed Order No. R3-2006-0016 (proposed Order) significantly updates the waste discharge requirements for the Facility, making them consistent with state and federal requirements for animal feeding operations.

The following discussion briefly outlines the Facility history, location, and waste management practices. This is followed by a more detailed discussion of compliance history and an outline of the significant changes to the Waste Discharge Requirements. Findings of the proposed Order address the various aspects of the Facility and applicable regulations for dairies in more detail.

## DISCUSSION

### Facility Operational History

On March 14, 1986, the Central Coast Water Quality Control Board (Central Coast Water Board) issued Waste Discharge Requirements Order No. 86-01 to William Furtado to regulate discharges from the Facility. Prior to this, the Facility was regulated by Waste Discharge Requirements Order No. 81-03. Records indicate the dairy was not operational from August 31, 1986, to at least December 16, 1992, as a result of the owner participating in the 1985 omnibus farm bill voluntary milk production termination program. William Furtado operated the Facility in partnership with his nephew, Manuel Furtado, under the name of Furtado Dairy Farm Partners for an unknown time period. The partnership was dissolved on October 1, 2004, and Manuel Furtado purchased the remaining 50% interest in the dairy assets owned by William Furtado. Although Manuel Furtado is currently the sole owner and manager of the dairy Facility, the Facility property is currently owned by the William Furtado Trust and is leased to Manuel Furtado for operation of the Facility.

The Facility historically maintained over 1,000 dairy cows on the property, but currently only maintains approximately 470 dairy cows and 200 cattle (bulls and calves). The Facility produces approximately 2,300 gallons of milk per day.

### Facility Location

The Facility is located approximately two miles northeast of the City of Gilroy, in Santa Clara County. The Facility is situated on approximately 93.5 acres, which includes corrals, paddocks, holding pens, wash pen, milking parlor, animal shelters, manure storage and drying area, wastewater holding ponds, irrigated fields and several private residences.

The Facility is primarily surrounded by agricultural land with some intermixed rural residences. The Facility irrigation disposal areas are contiguous with rural residences and agricultural areas utilized for the production of food row crops.

The Facility is located in the South Santa Clara Valley Hydrologic Area of the Pajaro River

Hydrologic Unit in an area commonly noted as the Llagas Creek basin.

A seasonal drainage, Alamas Creek, is adjacent to the Facility's southwest boundary. Alamas Creek flows in a southeasterly direction until it discharges into Llagas Creek, approximately 4 miles downstream. Llagas Creek is tributary to the Pajaro River near Bloomfield Road. Downstream portions Alamas Creek have also been historically noted as Jones or Johnson creek on various maps.

### Facility Waste Management

Facility wastewater is conveyed to six anaerobic stabilization ponds plumbed as two sets of three ponds in series with the last two ponds (3A and 3B) connected via a surface channel. Wastewater is generated via wash down of cows prior to milking, equipment, the milking parlor, and paddocks, and Facility storm water runoff. Approximately 15,000 gpd of fresh water from an on-site supply well is used for washing operations. Approximately 59,000 gpd of recycled wastewater from the final treatment ponds is used to flush the paddocks. The Discharger installed a concrete wastewater-manure storage basin and manure solids separator prior to the wastewater ponds in October 2005 to remove manure and other entrained solids from the wastewater stream.

Two pumping systems in pond 3B either pump wastewater to approximately 40 acres of irrigated land for disposal or pump wastewater back to the paddocks to flush out the lanes. The nutrient management plan, submitted by the Discharger's consultant along with the October 2005 revised ROWD, indicates that wastewater will be applied to 40 acres of irrigated alfalfa fields at agronomic rates on a routine basis. An approximately 6.3-acre, bermed pasture (wastewater pond overflow area) is located south of the treatment ponds. The bermed pasture is used to contain and dispose of excess wastewater generated during large storm events.

Wastewater characteristics and the hydraulic capacity of the wastewater management system are discussed in detail in the findings of the proposed Order.

Facility solid wastes consist of manure from the paddocks, milking barn, corrals, and holding pens, and treatment pond solids (entrained manure and sludge). The collected manure also contains

varying fractions of straw bedding, soils, and feed materials. The amount of manure and other solids flushed from the paddocks and milking barn, formerly discharged to the wastewater treatment ponds, is unknown. Approximately 750 to 1,000 tons of dry manure, collected from the corrals and pens, is reportedly hauled from the site each year by various hauling contractors.

#### **Compliance History**

The former Discharger (William Furtado) and current Discharger (Manuel Furtado) have a very poor compliance history.

The Central Coast Water Board issued two cleanup or abatement orders in 1982 and 1983 for chronic wastewater overflows. Continued violations resulted in the Executive Officer referring the case to the State Attorney General in October of 1983. The Discharger subsequently constructed a levee along Alamas Creek to prevent surface water runoff and wastewater overflows from entering the creek. Limited information is available in Central Coast Water Board files regarding these violations and early enforcement actions.

The existing Monitoring and Reporting Program No. 86-01 requires effluent, receiving water (groundwater), and facility monitoring with semiannual reporting. However, despite frequent verbal reminders by staff during site inspections, three failure to submit letters issued by the Central Coast Water Board on August 20, 2002, February 18, 2003, and September 24, 2003, and two notices of violation issued by the Central Coast Water Board on September 3, 1998, and July 19, 2000,<sup>1</sup> for failure to submit monitoring reports, only one semiannual monitoring report was received between the time Order No. 86-01 was adopted in 1986 and October 2004. The Discharger has submitted semiannual monitoring reports as required since October 2004.

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<sup>1</sup> The Central Coast Water Board issued a notice of violation to the Discharger (addressed to Manuel Furtado) on July 19, 2000, for failure to submit semiannual monitoring reports and for allowing cattle within the adjacent creek channel. The July 19 notice of violation also required the submittal of a technical report within 60 days of the date of the letter for the installation of groundwater monitoring wells and a Report of Waste Discharge by September 11, 2000.

Monitoring and Reporting Program No. 86-01 also required the installation of one up-gradient groundwater monitoring well and one downgradient monitoring well by June 1, 1986. As previously mentioned, the facility was not operational from August 1986 to December 1992. However, the wells should have been installed after the dairy resumed operations in 1992. The July 19, 2000<sup>1</sup> notice of violation also required the submittal of a technical report within 60 days of the date of the letter for the installation of groundwater monitoring wells. The September 2000 self-monitoring report submitted by the Discharger contained analytical results for two wells identified as well #1 and well #2. The submitted report lacked sufficient documentation to indicate whether the monitoring wells were appropriately placed or constructed. The Discharger did not provide any supporting well documentation to support the submitted data in response to a verbal request by staff and the Discharger did not submit a monitoring well installation technical report as required in the July 19, 2000 notice of violation. Subsequently, Central Coast Water Board staff assumed that the requested monitoring wells were not installed and that the submitted data were for the Facility's two on-site water supply wells.

During a June 2000 site inspection, Central Coast Water Board staff observed that cows had access to the creek channel adjacent to the dairy Facility, and that there were animal footprints in the creek. Discharge Specification B.7 of Order No. 86-01 prohibits animals from entering surface waters. The July 19, 2000<sup>1</sup> notice of violation issued by the Central Coast Water Board also addressed this violation. During a February 2001 site inspection, Central Coast Water Board staff observed that cattle were still entering the creek channel. Other problems noted by staff during the February 2001 inspection included a large pile of empty 'onion puree' containers near the creek, and a deceased cow decomposing along an access road. On February 5, 2001, Central Coast Water Board staff issued a notice of violation letter addressing these issues. After receiving the February 5, 2001 notice of violation, the Discharger reported the cows no longer had access to the creek. Follow up inspections conducted by staff confirmed there was

no longer animal access to the creek, and that the containers and deceased cow had been removed.

In response to the July 19, 2000<sup>1</sup> notice of violation letter requesting a complete Report of Waste Discharge (ROWD) by September 11, 2000, the Discharger submitted an incomplete ROWD of insufficient technical quality on October 12, 2000. On November 6, 2000, Central Coast Water Board staff notified the Discharger that the ROWD was incomplete and asked for additional information. The Discharger did not respond. Central Coast Water Board staff subsequently requested a complete ROWD in letters dated February 5, 2001, April 16, 2002, and February 20, 2003.

On February 6, 2003, Central Coast Water Board staff inspected the Facility and discussed with the Discharger his failure to submit a complete ROWD as required in previous written correspondence. The Discharger said he had problems finding a consultant to prepare a complete ROWD. Central Coast Water Board staff suggested using an electronic phone book; however, the Discharger said he did not have internet access. Central Coast Water Board staff offered to mail him a list of consultants.

On February 20, 2003, the Executive Officer sent a notice of violation addressed to the Discharger via certified mail. Manuel Furtado signed the receipt on March 6, 2003. Enclosed was a list of consultants in or near Gilroy obtained from an electronic phone book. The notice of violation required the Discharger to submit a complete ROWD by April 19, 2003. On multiple occasions in April 2003, a consultant contacted Central Coast Water Board staff to ask questions regarding the February 20, 2003 notice of violation. The consultant indicated he had been hired by the Discharger to comply with our requirements, including submittal of a complete ROWD. On September 23, 2003, Central Coast Water Board staff left a telephone message with Manuel Furtado regarding the ROWD, however Mr. Furtado did not return staff's phone call. On October 7, 2003, Central Coast Water Board staff spoke with the Discharger's consultant. The consultant said he had not been able to contact the Discharger to obtain information needed to prepare a complete ROWD and other required reports. The consultant reportedly returned the Discharger's deposit.

The Executive Officer issued Administrative Civil Liability Complaint No. R3-2004-0019 to the Discharger on January 12, 2004, for failure to submit a complete ROWD. The Discharger signed the waiver of hearing form and remitted the \$5,000 penalty payment just prior to the scheduled hearing on March 19, 2004. The Central Coast Water Board responded with an April 1, 2004 letter requesting the submittal of time schedules for the submittal of an ROWD and installation of the groundwater monitoring wells. The Discharger's consultant submitted time schedules on May 3, 2004, for the required work. The Discharger's consultant submitted a ROWD on October 4, 2004, for update of the Facility waste discharge requirements. After the Discharger's consultant submitted additional information on December 31, 2004, Central Coast Water Board staff determined the ROWD was complete. The Discharger also submitted a technical report (work plan) for the installation groundwater monitoring wells on May 14, 2004, and installed three groundwater monitoring wells at the Facility on August 10 & 11, 2004. The Discharger has sampled the monitoring wells three times in accordance with the current Monitoring and Reporting Program requirements.

The Santa Clara Valley Water District and Santa Clara County District Attorney's office reported an unauthorized discharge of dairy wastewater to Alamas Creek on May 12, 2005. On May 12, 2005, Water District personnel and a DA's office investigator observed dairy wastewater being pumped, via a portable pump, from the manure storage area to an overgrown marshy area just north of the manure storage area. According to the Water District's and DA's office reports, the discharge area was saturated and wastewater was observed flowing into an agricultural drainage ditch tributary to Alamas Creek. Water District and DA's office personnel observed dairy wastewater flowing in a reach of Alamas Creek extending from the Facility to downstream of Bloomfield Road. The wastewater flowed approximately 4.5 miles downstream from the Facility. Alamas Creek was not observed to be flowing at the time of the discharge event. The Water District estimated approximately 240,000 gallons of dairy wastewater was present in the creek channel at the time the discharge was stopped on May 12, 2005.

The unauthorized discharge and follow up compliance inspections by Central Coast Water Board staff indicated that information provided in the ROWD was incorrect regarding the Discharger's wastewater disposal practices. Information provided in the ROWDs and observations made by Central Coast Water Board staff during the May 17, 2005 Facility inspection indicate that the Discharger was not operating and maintaining the Facility wastewater collection, treatment and disposal system using best management practices.

Specifically, Central Coast Water Board staff observed the Facility and associated wastewater conveyance, treatment and storage areas to be in a general state of disrepair and neglect. Central Coast Water Board staff observed the following during the May 17, 2005 inspection:

- Wastewater pond levees were completely overgrown with weeds in some areas and were inaccessible;
- Significant portions of the primary and secondary wastewater ponds in each series were completely inundated with solids indicating that it had been some time since any accumulated solids had been removed from the ponds;
- Wastewater drainage channels to the ponds were not clearly defined beyond the paddock washdown collection channel and wastewater channels away from the ponds were observed in two separate locations, one of which was actively flowing to the manure storage area during the May 17, 2005 inspection; and
- A significant volume of wastewater was present in the manure storage area.

Although the discharge area appeared to be within an acceptable irrigation area, as specified in Order No. 86-01, the method of wastewater application was not in accordance with Discharge Specifications B.8, 10, 17, and 20 of Order No. 86-01. More specifically, the wastewater was discharged as a point source to an area not actively in production of crops for the purposes of uptake of the discharged water and nutrients, and likely resulted in the percolation and runoff of significant volumes of wastewater. Bypass of the wastewater ponds constituted a violation of Discharge Prohibition B.6 of Order No. 86-01. The significant volume of dairy process wastewater in the manure storage area was likely resulting in the

infiltration and percolation of waste constituents to groundwater and constituted a violation of Discharge Specification B.11.

Central Coast Water Board staff observations during the May 17, 2005 inspection and statements from adjacent property owners and lessees of adjacent property also indicate the Discharger had not utilized designated land for the irrigation disposal of dairy wastewater at reasonable rates per Order No. 86-01 for several years. Central Coast Water Board staff observed portions of the designated irrigation disposal areas planted with food row crops and statements made by adjacent land owners/lessees, documented in the DA's office investigation reports, indicate that the Discharger had been leasing this land to others for the production of food crops. Consequently, the Discharger had been stockpiling dairy wastewater onsite and discharging it to localized areas in a manner that likely resulted in the percolation and runoff of significant amounts of dairy process wastewater. These activities were in violation of Discharge Specifications B.8, 10, 17, and 20.

The significant volume of wastewater in the manure storage area, solids accumulation in the wastewater treatment and storage ponds, and the elimination of available irrigation areas indicate the Discharger was in violation of Discharge Prohibition B.2 for failing to maintain holding ponds and irrigation areas.

Consequently, the Central Coast Water Board Executive Officer issued Cleanup or Abatement Order No. R3-2005-0109 (CAO) on June 29, 2005. The CAO required the Discharger to complete the following activities:

- Limit the production of dairy process wastewater by a fractional amount equivalent to the ratio of land not available for the land application of wastewater to that of the total amount of the land area reportedly available per the Discharger's October 2004 ROWD.
- Install metering devices to accurately measure dairy process wastewater flows to the wastewater ponds and the application of wastewater to the irrigation areas.
- Remove accumulated dairy process wastewater from the manure storage area.

- Control the flow of dairy process wastewater such that all wastewater is directed to the wastewater ponds.
- Repair and maintain the dairy process wastewater irrigation pumping system.
- Remove entrained solids from the dairy process wastewater stream prior to the wastewater ponds.
- Remove and dispose of solids accumulated in the wastewater ponds and remove vegetation from the pond levees and berms.
- Repair the levees and berms of the lagoon overflow area.
- Submit a nutrient management plan
- Submit a revised ROWD.
- Submit a written report describing facility modifications necessary to comply with the Final CAFO Rule and developed nutrient management plan.
- Submit a groundwater monitoring report for the investigation and sampling of domestic and agricultural wells in the vicinity of the Facility.

The Discharger's consultant submitted a revised ROWD on October 31, 2005 that included a nutrient management plan and description of completed and proposed Facility modifications. Follow up inspections by Central Coast Water Board staff on July 26, 2005, and November 11, 2005, indicated that the Discharger has complied with all of the requirements of the Cleanup or Abatement Order with the exception of the removal of accumulated solids from all of the wastewater ponds. The Discharger was unable to remove solids from all of the wastewater ponds because of the significant amount of accumulated wastewater and a lack of sufficient time to draw down the ponds and dry the solids prior to removal. Accumulated solids were removed from one of the primary ponds and a solids separator was recently installed to reduce solids loading to the wastewater ponds. Central Coast Water Board staff issued a follow-up notice of violation to the Discharger on November 18, 2005, for failure to remove solids from the treatment ponds. The notice of violation allows the Discharger to remove accumulated solids from the three A series ponds (1A, 2A, and 3A) provided the three B series ponds are cleaned prior to the fall of 2006.

The CAO required the Discharger to sample a number of off-site domestic and agricultural wells

near the facility. The wells were sampled for nitrate, sodium, chloride, total dissolved solids, and coliform (total and fecal). Of the eight wells sampled, seven contained nitrate at concentrations in excess of the California Department of Health Services Maximum Contaminant Level of 10 mg/L (as nitrogen). Nitrate concentrations of up to 42 mg/L (as nitrogen) were measured in the wells. Elevated levels of sodium, chloride, and total dissolved solids were generally associated with the high nitrate concentrations. Shallow on-site monitoring wells also contained high concentrations of nitrate and salts. The presence of total coliform was only detected in one well sample and was likely resultant of contamination at the hose bib from which the sample was collected. Although it is reasonable to assume the dairy operation has contributed to the observed groundwater impacts, it would be virtually impossible to assess the relative degree of impact from the Facility given the historical agricultural practices of the area around the Facility. Historical groundwater data for the area indicate that high nitrate concentrations are ubiquitous.

The Santa Clara County DA's Office is currently pursuing a criminal case against the Discharger for the discharge of dairy wastewater to Alamias Creek. The Water Board staff is still considering additional enforcement to recover staff costs related to the release.

### PROPOSED ORDER

The proposed Order substantially overhauls and updates the existing order and associated monitoring and reporting program. The proposed Order divides the Specifications down into various subsections that focus on specific dairy management practices required to prevent the offsite runoff of dairy wastes and the percolation of dairy wastes to groundwater. The Specifications are broken down into the following subsections:

- Facility Size
- Wastewater Flow and Flood Protection
- Wash Down and Runoff Control
- Wastewater Pond Design and Management
- Manure/Sludge Management and Disposal
- Wastewater Disposal
- General Specifications
- Groundwater Objectives

Additional requirements of the proposed Order are contained within the Prohibitions and Provisions sections of the Order.

Significant changes to the proposed Order include:

- **Facility Size** – Specification C.1 limits the number of animals the Facility can maintain based on the size definitions of Confined Animal Feeding Operations (CAFO) found in Title 40 CFR Section 122.23.
- **Wastewater Flow** – Specification C.2 restricts wastewater flows to the lesser of either the amount of wastewater produced by managing the maximum allowable number of animals plus runoff, or the agronomic capacity of the available irrigation areas as determined by a site specific nutrient management plan.
- **Nutrient Management Plan** – Provision D.6 requires the Discharger to prepare, implement, and regularly update a nutrient management plan to manage the irrigation disposal areas and the application of wastewater at agronomic rates. The Discharger submitted a nutrient management plan as part of the October 2005 revised ROWD.
- **Wastewater Pond Design and Management** – Various Prohibitions in this subsection require the removal of solids from the wastewater stream to the maximum extent practicable prior to the wastewater ponds. This section also requires that sludge and other solids be removed from the ponds on a regular basis to maintain at least 75% of the pond design volumes.
- **Manure/Sludge Management and Disposal** – Prohibition B.11 prohibits the land application of manure or other solids generated at the Facility unless specifically addressed in the site-specific nutrient management plan and approved by the Executive Officer. The Discharger's existing nutrient management plan does not account for the land application of manure or other dairy solid wastes.
- **Manure/Sludge Management and Disposal** – Various Prohibitions in this subsection limit the on-site storage of manure and sludge storage to 120 days, require the removal of all accumulated manure and sludge from the Facility by October 1<sup>st</sup> of each year, and

require documentation of the off-site disposal of manure and sludge.

The proposed Monitoring and Reporting Program requirements are broken down into the following sections:

- Facility Monitoring
- Pond Monitoring
- Effluent Monitoring
- Manure/Sludge Monitoring
- Irrigation Area Soil Monitoring
- Groundwater Monitoring
- Water Supply Monitoring
- Dairy Animal Monitoring
- Reporting
- Record Keeping Requirements
- Provisions

Significant changes to the proposed Monitoring and Reporting Program include:

- The addition of **Facility Monitoring** for the weekly visual monitoring and record keeping of all site drainage structures, manure collection and storage areas, wastewater treatment ponds, and irrigation areas.
- The addition of **Pond Monitoring** for the weekly gauging of wastewater pond freeboard and the annual gauging of the sludge depths and total depths of each pond for comparison to the design depths.
- The addition of annual **Manure and Sludge Monitoring** to analyze its chemical characteristics.
- The addition of annual **Irrigation Area Soil Monitoring** to evaluate chemistry changes in the soil that may impact crop productivity and movement of salts and nutrients to groundwater.
- The calculation of nitrogen, phosphorus, and potassium loading in lbs/acre to each irrigation area for comparison with the design crop uptake requirements identified in the nutrient management plan.
- The addition of annual **Water Supply Monitoring** to evaluate water supply quality and supplement the groundwater monitoring requirements.

- Analyses for biochemical oxygen demand (BOD), chemical oxygen demand (COD), general minerals<sup>2</sup>, nitrate, nitrite, ammonia, and phosphorus have been added to the **Effluent Monitoring** requirements. The existing Monitoring and Reporting Program only requires effluent monitoring analyses for total dissolved solids, sodium, chloride, total nitrogen, and pH.
- The proposed **Effluent Monitoring** also includes daily flow monitoring for both wastewater pond influent flows and discharge flows.
- Analyses for general minerals<sup>2</sup>, nitrate, nitrite, ammonia, and phosphorus have been added to the **Groundwater Monitoring** requirements. The existing Monitoring and Reporting Program only requires groundwater-monitoring analyses for nitrate, total dissolved solids, sodium, chloride, and pH.

## ENVIRONMENTAL SUMMARY

These waste discharge requirements are for an existing facility and are exempt from provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et. seq.) in accordance with California Code of Regulations, Title 14, Chapter 3, Section 15301.

## COMMENTS & RESPONSES

On January 6, 2006, the Central Coast Water Board notified the Discharger and interested parties of its intent to issue Waste Discharge Requirements for the dairy waste discharge and provided them with a copy of the proposed Order and an opportunity to submit written views and comments.

Water Board staff received written comments from Fall Creek Engineering, Inc., on the Discharger's behalf, and from the Santa Clara Valley Water District. Comments are addressed in this section, including excerpted or paraphrased portions of the actual comments, staff responses to comments, and any subsequent staff recommendations.

<sup>2</sup> General minerals include bicarbonate, boron, calcium, carbonate, chloride, magnesium, potassium, sodium, and sulfate.

**Fall Creek Engineering, Inc. (FCE)/Furtado Dairy;** Written comments were received February 3, 2006, via letter (letter attached):

Comment: "Specification 14 requires that the wastewater ponds shall be lined or underlain by soils that contain at least 10 percent clay and not more than 10-percent gravel, or by artificial materials or equivalent impermeability." FCE understands that the intent of this specification is to minimize the leakage of wastewater to the underlying shallow groundwater. However, given the age and size of the existing ponds, to determine the characteristics and/or to line the ponds will be a very expensive undertaking. In addition, as observed during the routine groundwater monitoring, the "leakage" of pond water that contains a high content of soluble carbon is creating a reduced groundwater condition and facilitating the denitrification of nitrate under the facility. Therefore, the "leakage" of the pond water may be beneficial to groundwater quality in the vicinity of the dairy."

FCE requests that this specification be revised to state that *in the event the ponds are determined to impact a beneficial use of shallow groundwater, the ponds shall be lined or underlain by soils that contain at least 10 percent clay and not more than 10-percent gravel, or by artificial materials of equivalent impermeability.*"

Staff Response: Specification No. 14 was taken from Chapter 5 (Plans and Policies), Section III (Management Principles), Subsection V.F (Animal Confinement Operations) of the Basin Plan. This language was derived from wastewater management requirements codified in Title 27, California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 7, Subchapter 2, Article 1, Section 22562, for confined animal facilities. Consequently, this is a standard specification for all confined animal facilities and the language is not negotiable. In addition, this requirement is within the existing permit as Discharge Prohibition No. 16.

A limited amount of leakage through the pond bottom is generally understood and acceptable given the nature of earthen ponds. However, it should be noted that leakage through the sidewalls of above grade ponds is unacceptable and can lead to pond failure. It is generally accepted that the



permeability of earthen wastewater ponds will decrease over time with the deposition of fines and the buildup of slime layers that bind the soil interface inside the ponds, and the swelling of soils beneath the ponds due to cation exchange reactions occurring within the clay mineralogy. In addition, we agree that the high levels of organic carbon in the wastewater may be mitigating nutrient loading to the groundwater basin by inducing denitrification beneath the ponds. However, significant leakage from the ponds is unacceptable and is not an alternative mode of disposal or treatment because it can't be controlled. Nutrient loading to the groundwater basin should be mitigated through the implementation of a nutrient management plan for the land application of wastes at agronomic rates as is standard practice for confined animal facilities. Furthermore, high concentrations of dissolved minerals and salts present in the dairy wastewater such as potassium, sodium, sulfate, phosphate, calcium, chloride and magnesium are more likely to exceed the assimilative capacity of the soils beneath the ponds and impact groundwater. The widespread application of dairy wastewater for irrigation purposes per the nutrient management plan will utilize the assimilative capacity of a larger area and reduce potential groundwater impacts.

We cautiously assume that the wastewater ponds were constructed in accordance with the original prohibition. If no historical verification of this can be provided by the Discharger, an analysis of soils representative of the pond embankments may suffice in verifying the required minimum and maximum clay and gravel requirements, respectively. In addition, if native soils were utilized for the construction of the ponds a single or composite soil sample would suffice assuming native surface soils in the area are relatively uniform.

It should be noted that the protection of the beneficial uses of groundwater and surface water is intrinsic to this and all other specifications contained within the proposed Order. No changes made.

Comment: "FCE request that the Crop/Irrigation Land and Soil Monitoring program be modified. The program requires the Discharger to inspect any cropland on which wastewater is applied. Please describe what the Discharger is intended to

inspect in the cropland. The program also requires that representative soils be collected of soil from crop and irrigation disposal areas at least annually. How many samples shall be collected in each area?"

Staff Response: To clarify the first part of FCE's comment, staff moved the language in question to the Facility Monitoring section of the Monitoring and Reporting Program as item number four. Staff also added, "to verify compliance with this Order," to the sentence in question. Staff left out any references to specific inspection items as the proposed Order contains numerous compliance specifications (see Specifications Nos. 33 through 42) pertaining to wastewater disposal. Staff also changed the Monitoring and Reporting Program section heading "Crop/Irrigation Land and Soil Monitoring" to "Irrigation Area Soil Monitoring" for clarity.

To clarify the second part of FCE's comment staff added the following footnote to the table in the Irrigation Area Soil Area Monitoring section of the Monitoring and Reporting Program:

"At least three soil samples shall be collected from each discrete irrigation area used for wastewater application. In addition, three soil samples are required for each area within discrete irrigation areas with notable variations in soil color or texture, slope or drainage characteristics, or subject to varying wastewater application rates or crops."

**Santa Clara Valley Water District;** Written comments were received January 26, 2006, via letter (letter attached):

Comment: "Considering the groundwater gradient is moving in the southwesterly direction and the lack of monitoring points at the western section of the property. The District suggests the addition of a groundwater monitoring well at the southwestern edge of the property to monitor the shallow groundwater for any possible off-site movement of constituents from the northern irrigation disposal area."

Staff Response: Staff agrees that additional monitoring wells may be warranted to evaluate site-specific impacts. However, it will be

extremely difficult to differentiate groundwater impacts resulting from the dairy operation's application of wastewater in the northern irrigation disposal area from that of the surrounding and contiguous agricultural areas. This is especially the case along the dairy's western property boundary because a heavily used agricultural field lies immediately to the west and southwest of the northern irrigation area. In addition, the facility's western property boundary is demarcated by Alamias Creek, which is essentially an agricultural drainage ditch for upstream agricultural land. A requirement for additional monitoring has not been added to the proposed Order. However, we retain the right to request additional monitoring wells as future data indicates is appropriate.

Comment: "We suggest groundwater monitoring be conducted on a quarterly basis instead of a semi-annual basis to more accurately track any changes in constituent concentrations (the frequency may decrease after the first couple of years, see Item 4)."

Staff Response: Semiannual, dry season and wet season, groundwater monitoring will likely be sufficient to document any trends in groundwater quality over time. Although more frequent groundwater monitoring was considered, it was deemed onerous in light of the historical agricultural land use practices in the basin and unnecessary given the breadth of other requirements in the proposed Order intended to prevent additional impacts to groundwater quality. Available groundwater monitoring data for the facility and surrounding area indicate widespread nutrient and salt impacts. These impacts are likely attributable to both the Facility and the historical agricultural practices. Implementation of the nutrient management plan by the Discharger will mitigate additional impacts to groundwater and decrease the need for additional groundwater monitoring. No changes made.

Comment: "In the Order (Under Provisions, Item No. 6, page 18) reference is made to the implementation of a Nutrient Management Plan (NMP) and the need for the Discharger to comply with the NMP as specified in Appendix C. However, the requirements for the NMP in Appendix C do not specifically give target measures by which the Discharger can show compliance with the Order; instead reference to

comply with the Order is made. This circular referencing does not provide a good measure of the NMP, or set NMP target guidelines."

Staff Response: Provision No. 6 also states that "the Discharger shall implement the Nutrient Management Plan (NMP) submitted by the Discharger as part of the October 2005 revised Report of Waste Discharge," and goes on to say, "The NMP shall be updated as necessary on an annual basis." The NMP is intended to be a working document, and as per the language in Provision No. 6, Attachment C of the proposed Order establishes the minimum information required in the NMP. In addition, the proposed Monitoring and Reporting Program contains specific requirements intended to verify implementation of the NMP and compliance with the Order. No changes made.

Comment: "For the groundwater monitoring programs, we suggest including language regarding trends and possible additional monitoring. That is, should concentrations (i.e. Nitrate) remain steady or decrease with time, then a revised schedule for monitoring may be in order, or if concentrations increase the Board may require additional monitoring wells be installed off-site down-gradient and cross-gradient to the property to capture any migrating constituents."

Staff Response: Provision No. 2 of the proposed Order and Provision No. 3 of the proposed Monitoring and Reporting Program authorize the Executive Officer to revise the monitoring and reporting program any time during the permit term as necessary. No changes made.

## RECOMMENDATION

Adopt Order No. R3-2006-0016 as proposed.

## ATTACHMENTS

1. Draft Waste Discharge Requirements Order No. R3-2006-0016
2. Draft Monitoring & Reporting Program Order No. R3-2006-0016
3. Waste Discharge Requirements Order No. 86-01 and Monitoring and Reporting Program No. 86-01

4. Fall Creek Engineering, Inc. letter, February 3, 2006
5. Santa Clara County Water District letter, January 26, 2006

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