

INFORMATION SHEET

ORDER R5 _____
MORNING STAR PACKING COMPANY, L.P. AND MR. FRED GOBEL
THE MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

Background

The Morning Star Tomato Packing Plant, which began operating in 1995, is a tomato processing facility located just south of the City of Williams. The facility operates from approximately June to mid-October. Wastewater is generated from processing tomatoes into aseptic tomato paste and bulk packaging. Wastewater is discharged into an unlined Settling Pond for later disposal to approximately 695 acres of land application areas (LAAs) through surface irrigation (border check method). Approximately 95 acres of the LAAs (Field MS1) is owned by Fred Gobel and leased to Morning Star Packing Company, L.P. Water softener reject, condensate from the evaporation process, and boiler blowdown is discharged into an unlined Cooling Pond for later reuse in the tomato processing operations or irrigation of the LAAs. The LAAs are divided into pasture lands for cattle grazing or cropped with sudan grass hay, alfalfa, and/or corn. Solids that have settled at the bottom of the Settling Pond are removed at the end of the processing season and applied to the LAAs as a soil amendment or used to build up farm roads around the facility. Residual solid wastes generated at the processing facility are transported off-site for use as animal feed or as a soil amendment. Fred Gobel and Morning Star Packing Company, L.P. ("Dischargers") are responsible for compliance with the WDRs.

The facility is regulated by WDRs Order 95-160 which prescribes a maximum discharge from the Settling Pond not to exceed 4.3 mgd and a maximum discharge to the Cooling Pond not to exceed 58 mgd.

Cease and Desist Order (CDO) R5-2005-0003 was adopted due to discharges of wastewater to surface water, non-compliance with the dissolved oxygen requirement, evidence of groundwater degradation, and over-application of nitrogen and salts to the LAAs. The CDO required compliance with new requirements including:

- No discharge of wastewater and tailwater or storm water containing waste to surface water drainage courses;
- Irrigation application at agronomic rates for the crop grown;
- Nitrogen application, regardless of source, at agronomic rates for the crops grown;
- BOD loading rates; and
- Maintaining the irrigation and drainage ditches free of weeds and aquatic plants;

In addition, the CDO required a number of technical reports to demonstrate completion of improvements which the Discharger has submitted. With the exception of nitrogen and BOD overloading, the Discharger has complied with the CDO.

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Site-Specific Conditions

The facility is supplied with water from two wells, Plant Well 1 and 2, located on the property. The facility and the LAAs are relatively flat with a mild downward slope toward the north-east. Drainage within the area is towards the Glenn-Colusa Irrigation District Canal drainage ditch, which is tributary to the Colusa Basin Drain. Surrounding land uses are primary agricultural.

Groundwater Considerations

Groundwater within the area is relatively shallow, approximately 5 to 15 feet below ground surface, and generally flows towards the north to north-east. Groundwater gradient and background groundwater quality are likely influenced by infiltration of high quality water from the Glen Colusa Irrigation District Canal (GCID), located adjacent to the southern site boundary. Percolation from this canal most likely produces localized improvements in groundwater quality. The unlined Cooling Pond recharges the shallow groundwater immediately upgradient of the LAAs with relatively low salinity water year-round.

Nine groundwater monitoring wells monitor the shallow groundwater at the site. Groundwater monitoring near the Settling Pond was established just prior to operation of the facility in 1995 and include wells MW1, MW2, MW3 (installed in 1995) and MW4 (installed in 2004). Monitoring wells near the LAAs were installed in 2004 several years after the discharge began (wells MW5, MW6, MW7, MW8, and MW9).

Groundwater quality in MW1 and MW4 exhibit high spatial variability, possibly due to influences from the nearby GCID canal. In general, groundwater quality in wells MW1 through MW4 has been relatively constant over time for salinity constituents and nitrate nitrogen since just before the discharge began, with a few exceptions.

- Chloride concentrations in MW2 have increased in the last two years, indicating groundwater degradation caused by the discharge. However, concentrations do not exceed the lowest agricultural water quality goal for chloride.
- Use of the Settling Pond has apparently not caused degradation from iron and manganese. However, the laboratory reporting limit for manganese is 0.1 mg/L, which is two times the water quality limit of 0.05 mg/L.
- Nitrate nitrogen concentrations in MW3 have historically exceeded the primary MCL since before discharge operations began. This apparent pollution appears to be highly localized.

In general, groundwater quality near the LAAs, indicates salinity constituents and nitrate nitrogen concentrations increase as groundwater moves northward away from the GCID canal. Concentrations within each well have been relatively constant over time with a few exceptions.

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- TDS, chloride, and nitrate nitrogen concentrations in background well MW5 have increased in the last two years. Nitrate concentrations have exceeded the primary MCL since 2010. Temporally variable background concentrations are believed to be due to natural variations and/or other upgradient land uses that are not controlled by the Discharger.
- TDS concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Increased concentrations were observed in wells MW8 and MW9 between 2010 and 2012. Annual average TDS concentrations exceed the lowest agricultural water quality goal of 450 mg/L; however they do not exceed the upper secondary MCL of 1,000 mg/L.
- Chloride concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Between 2010 and 2012, higher than normal chloride concentrations were observed in these wells. Similar chloride increases were observed in background well MW5 during the same period.
- Iron and manganese concentrations exceeding the secondary MCL were sporadic in most of the compliance monitoring wells. In the case of manganese, concentrations in wells MW7 and MW8 exceeded the secondary MCL multiple times in 2012. Multiple exceedances were observed in MW8 since its installation in 2004. The laboratory reporting limit for manganese is 0.1 mg/L, which is two times the water quality limit.
- Nitrate nitrogen concentrations in wells MW6, MW7, and MW8 have been relatively steady since 2010 and remain below the primary MCL. In contrast, nitrate nitrogen concentrations in MW9 indicate apparent pollution not evidenced in any other well within or downgradient of the LAAs. Concentration levels in MW9 that exceed the primary MCL were sporadic prior to 2010. However, since 2010, concentrations have consistently exceeded the primary MCL.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Local drainage is to the Colusa Basin Drain. The Basin Plan designates the beneficial uses of Colusa Basin Drain as agricultural supply; water contact recreation; warm freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply.

Antidegradation Analysis

State Water Resources Control Board Resolution 68-16 prohibits degradation of groundwater unless it has shown that:

- The degradation is consistent with the maximum benefit to the people of the state.

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- The degradation will not unreasonably affect present and anticipated future beneficial uses.
- The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
- The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

The Discharger has been monitoring groundwater quality near the Settling Pond since just prior to operation of the facility in 1995, but monitoring of groundwater at the LAAs did not begin until 2004, nine years later. Determination of compliance with Resolution 68-16 for this facility must be based on existing groundwater quality at the time that the discharge began.

Degradation of groundwater by some of the typical waste constituents associated with discharge from food processing facilities, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The economic prosperity of the community by direct employment of fulltime and seasonal personnel and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing limited groundwater degradation that may occur pursuant to this Order.

The following treatment and control measures are implemented at the facility:

- Salinity source control in the processing plant.
- Wastewater screening to reduce BOD.
- Low salinity condensate water used in lieu of well water as make-up water in the flume system.
- BOD loading rate control.
- Use of higher quality water for supplemental irrigation, which dilutes salinity.
- Approximately 695 acres of LAAs are available.
- Tailwater return system captures all irrigation runoff for reapplication as irrigation water.

The Discharger currently employs treatment and control practices that are typical of those utilized in the food processing industry, but these practices may not be sufficient to rectify impacts to groundwater. If that is the case, the Discharger will be required to evaluate practicable alternatives that could be more effective at limiting the amount of degradation caused by the discharge. In particular, the Discharger will need to carefully evaluate whether the following practices should be altered:

- Wastewater is currently applied to the LAAs by surface irrigation using extremely long irrigation checks, and this can result in higher application rates and longer infiltration periods at the top end of the field in comparison to the bottom end of the field;

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- The Settling Pond does not have sufficient storage capacity to allow the Discharger to cease irrigation during rain or control daily flows to the LAA fields, other than varying the number of checks being irrigated at one time;
- Pasture grasses are a low-nitrogen crop and grazing cattle recycle some of the nitrogen removed by grazing in the form of cattle waste left in the LAAs.

The suite of treatment or control methodologies required by this Order, including those that require the implementation of additional control practices for iron, manganese, and nitrate, is expected to remedy groundwater pollution issues at the Facility over time. If groundwater concentrations worsen, or if concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by 30 December 2018, the Discharger must take appropriate action(s) to bring the discharge into compliance with applicable provisions of the Basin Plan on a time schedule that is as short as practicable. This Order therefore imposes requirements upon the Discharger that will result in the best practicable treatment or control of the waste constituents associated with this discharge. The Board therefore finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

To assure protection of the beneficial uses of groundwater, this Order establishes flow limitations, effluent and mass loading limitations, groundwater limitations, discharge specifications, land application area requirements, solids disposal specifications, and groundwater monitoring requirements.

Flow Limitations

Effectively immediately, the maximum daily industrial process wastewater ¹ flow to the land application areas shall not exceed the following limits:

Flow Measurement	Flow Limit ¹
Average Daily Flow ²	4.3 million gallons per day
Total Annual Flow ³	422 million gallon per year

¹ Industrial process wastewater flow shall include any discharges from the Settling Pond, Cooling Pond, and wastewater generated from the plant sanitation and cleaning activities.

² As determined by the total flow during the calendar month divided by the number of days in that month.

³ As determined by the total flow during the calendar year.

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Effluent and Mass Loading Limitations

Prior to application to the land application areas, wastewater collected from Flow Metering Station 1, which is representative of Settling Pond water and any plant sanitation and clean-up water, shall not exceed the following effluent limit:

Constituent	Units	Daily Maximum	Annual Average
Average FDS Concentration ¹	mg/L	--	900

¹ Flow-weighted annual average.

Wastewater applied to each LAA field shall not exceed the following mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
Total Nitrogen Mass Loading ¹	lb/ac/year	--	Crop Demand
BOD Mass Loading ¹	lb/ac/day	100 ²	--

¹ Based on all sources, including residual solids, commercial fertilizers and cattle manure, as well as water from the Settling Pond and plant sanitation and cleaning activities.

² This limit applies as an irrigation cycle average. For the purpose of this Order, "irrigation cycle" is defined as the time period between the start of an irrigation event for a single field and the start of the next irrigation event for the same field.

Provisions

By **1 March 2014**, the Discharger shall submit a *BOD and Nitrogen Application and Irrigation Management Report*.

By **1 July 2014**, the Discharge shall submit a *Groundwater Limitations Compliance Assessment Plan*.

By **31 July 2014**, the Discharger shall submit a *Storm Water Runoff Evaluation and Management Plan*.

By **30 May 2015**, the Discharger shall submit an *Irrigation Management Implementation Report*.

If the Discharger requests an increase in the number of cattle and/or use of any other LAA as additional pasture land for grazing, a *Livestock Management Plan* shall be submitted at least **150 days prior to and proposed change** for approval by the Executive Officer.

If the Discharger requests to apply residual solid waste (including cull tomatoes, vines, and tomato pomace generated at the tomato processing facility) to the LAAs, the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer **at least 90 days prior to the planned application of residual solid waste to the LAAs**.

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If the Discharger requests to apply Settling Pond solids to areas other than the LAAs, the Discharger shall submit a Settling Pond Solids Management Plan to the Board's Executive Officer **at least 90 days prior to the planned application of Settling Pond solids to areas other than the LAAs.**

If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations not in compliance with the Groundwater Limitations of this Order, **within 120 days of receiving notice that the Facility is out of compliance** the Discharger shall submit an *Action Workplan*.

If concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by **30 December 2018**, the *Action Workplan* shall be submitted by **30 June 2019**.

Monitoring Requirements

The Monitoring and Reporting Program is designed to verify compliance with the flow and effluent limitations and operational requirements of the WDRs. The Order requires monitoring of the ponds, wastewater flows to the land application areas, wastewater quality, land application area, groundwater, and residual solids. Groundwater limitations are necessary to protect the municipal and domestic use of groundwater. If results of the monitoring reveal a previously undetected threat to water quality or indicate a change in waste character such that the threat to water quality is significantly increased, the Central Valley Water Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.