

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0136

WASTE DISCHARGE REQUIREMENTS
FOR
CAMPBELL SOUP SUPPLY COMPANY, LLC
SEED RESEARCH AND DEVELOPMENT FACILITY
YOLO COUNTY

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

1. Campbell Soup Supply Company, LLC (hereafter known as Discharger) submitted a Report of Waste Discharge (RWD) dated 3 June 2003 for discharge of food processing waste to land. Additional information necessary to complete the RWD was submitted on 7 July 2003.
2. The Campbell Soup Supply Company, LLC seed research and development facility is in Section 19, T8N, R3E, MDB&M, as shown on Attachment A, which is attached hereto and made part of the Order by reference. The facility is on Assessor's Parcel No. 033-260-01-1 at 28605 County Road 104 in Davis.

Existing Facility and Discharge

3. The Discharger's seed research and development facility is used to grow tomatoes and perform experimentation in tomato plant properties and seed genetics. The facility has been in operation since the 1950s and has historically discharged tomato processing waste to land without waste discharge requirements.
4. The Discharger grows tomatoes from various seeds on small test plots. Approximately 20 tomatoes are harvested from each test plot and processed to create tomato pulp for testing purposes.
5. Tomatoes are processed five days per week during the tomato harvest season (approximately 15 July through 15 October each year). Research is conducted year round, but tomato processing wastewater is only generated during the harvest season. The length of the tomato-processing season varies depending on weather and plant breeding projects that are being conducted. The Discharger may, at a later date, extend the processing season to include the months of April through July to accommodate analysis of prepared food products such as tomato paste.
6. The harvested tomatoes are washed, chopped, ground, and steam heated. The processed tomatoes are canned for testing, which typically takes place within several days of canning.
7. Prior to 2002, screened process wastewater flowed through a concrete-lined ditch to a simple percolation/evaporation basin. The Discharger has since constructed improvements to provide controlled application over a larger discharge area.
8. The process wastewater currently flows into a 112-gallon concrete sump and is then pumped at approximately 20 gallons per minute (gpm) through a parabolic screen.

9. The screened process wastewater is conveyed through a pipe to an at-grade, open-top concrete storage tank. The tank is rectangular with a sloped bottom to minimize solids accumulation. It has a total capacity of 5,292 gallons, while the capacity to the invert of the tank inlet pipe is approximately 4,060 gallons.
10. Wastewater is pumped from the storage tank via a subsurface pipeline at approximately 20 gpm to one of seven percolation checks that range in size from 0.16 to 0.28 acres (7,000 to 12,000 square feet), as shown on Attachments B and C, which are attached hereto and made part of the Order by reference. Typically, emptying the wastewater storage tank would take 3.5 hours at that rate. The Discharger has also designated a two-acre expansion area for additional checks to optimize management of the system and/or accommodate a longer discharge season. This area is also shown on Attachment C.
11. Discharges to the checks are automatically controlled by a liquid level switch system in the storage tank. A high-level alarm is used to minimize the potential for overfilling the storage tank, and any overflows arising from power or pump failure will discharge to the original percolation basin.
12. Flows from the storage tank to the checks are measured by a magnetic meter with a flow totalizer that the Discharger installed in 2002 to allow determination of daily process wastewater flows to the disposal checks. Daily flows as measured during the 2002 processing season ranged from 1,400 to 7,300 gallons, and the average daily flow was 4,000 gallons. However, according to the RWD, the meter and/or associated check valves were not functioning properly at all times during the monitoring period. Therefore, these data may not be accurate.
13. Based on the design flow of 5,000 gallons per day and an irrigation check area of 0.2 acres (8,700 square feet), proposed water application rates will be about one inch per one-day application. With seven checks in service, a resting period of 8 to 9 days between applications should be typical.
14. All processing equipment is pilot scale size and is manually washed with water at the end of each daily shift. No chemicals are used in the process, and the process wastewater consists of wash water, tomato juice, and tomato pulp. Soap solution is used to clean the processing equipment once at the beginning and end of the processing season.
15. The Discharger obtained and analyzed samples of process wastewater on six occasions in late September and early October 2002. The analytical results for the process wastewater are summarized below.

Constituent/Parameter	Range of Analytical Results September-October 2002
pH	2.3 to 7
Total dissolved solids (mg/L)	620 to 1,500
Volatile dissolved solids (mg/L)	200 to 1,000
Fixed dissolved solids (mg/L)	410 to 500
Alkalinity (mg/L as CaCO ₃)	80 to 430

Constituent/Parameter	Range of Analytical Results September-October 2002
Hardness (mg/L as CaCO ₃)	400 to 480
Biochemical oxygen demand (mg/L)	84 to 690
Chloride (mg/L)	40 to 590
Magnesium (mg/L)	74 to 82
Sodium (mg/L)	66 to 70
Potassium (mg/L)	8 to 44
Sulfate (mg/L)	50 to 130
Total Kjeldahl nitrogen (mg/L)	7 to 31
Nitrate nitrogen (mg/L)	<1 to 3.3

16. The water supply for the facility is an on-site well. Approximately 6.8 million gallons of water was used at the facility in a recent twelve-month period for processing, boiler feed, sanitation, landscape irrigation, field and greenhouse irrigation, and employee restrooms. There is also an irrigation well on-site. Recent analytical results for the domestic and process water supply are summarized below.

Constituent/Parameter	Range of Analytical Results 1996 – 1998
pH	7.6 to 8.2
Total dissolved solids (mg/L)	540 to 700
Alkalinity (mg/L as CaCO ₃)	400 to 510
Hardness (mg/L as CaCO ₃)	420 to 540
Chloride (mg/L)	39 to 53
Sodium (mg/L)	<1 to 93
Nitrate nitrogen (mg/L)	7.2 to 9.5

17. Based on monitoring conducted in 2002, the Discharger estimated loading rates for nitrogen and BOD to each disposal check as summarized below.

Cycle Total (lb/ac)	BOD Loading Rate		Total Kjeldahl Nitrogen Loading Rate	
	Cycle Daily Average (lb/ac/day)	Daily Maximum (lb/ac/day)	Daily Average (lb/ac/day)	Annual Total (lb/ac/year)
30 to 840	<10 to 56	30 to 441	0.1 to 1.2	41

Based on the estimated daily loading information presented in the RWD, the higher BOD loading rates presented above were unusual, and the Discharger can achieve more consistent loading rates of approximately of 200 lb/ac/day as a daily maximum and 100 lb/ac/day as a cycle average with

active management of the land disposal system. Such rates would minimize the potential for nuisance odors, vector problems, and groundwater degradation. Therefore, it is appropriate to require that the Discharger implement an active management system to ensure systematic even wastewater loading rates and optimize resting times for each disposal check.

18. The Discharger's water balance indicates there will be adequate land disposal and storage capacity to accommodate the proposed flow rates of 5,000 gpd on average during the tomato processing season without excessive leaching. However, this analysis is based on the assumption that flows will be distributed evenly over each check during application.
19. Portions of tomato handling and processing occur outdoors on a concrete slab adjacent to the indoor pilot laboratory. Storm water that falls onto the 1,800-square foot slab flows to the wastewater sump upstream of the parabolic screen.
20. Solids from the screens are stored in tubs for periodic transport to the research crop fields where they are applied to land. Approximately 280 dry pounds of screenings are generated each day. Each year a single 15-acre area is designated for solids application, and the sites are rotated through the 200-acre research crop field area.
21. Two septic systems serve the facility, which are regulated by the Yolo County Environmental Health Department. The southern septic system (near the pilot laboratory building) consists of a 2,000-gallon septic tank and three 100-foot leach lines. This system was modified in 1987. The northern septic system, which was rehabilitated in 2002 consists of a 3,000-gallon septic tank, a 1,000-gallon surge tank, and two leach fields with six 84-foot leach lines each.
22. A boiler generates steam for cooking the tomato pulp. The boiler feed water is softened by an ion exchange system built into the boiler. The water softening system utilizes approximately 35 gallons of brine solution every 18 months.
23. Both the boiler blowdown and water softener regeneration brine are discharged to the southern septic system. Such systems were not designed to treat inorganic wastes and discharge of brines to leach fields may cause premature failure and/or groundwater degradation. Therefore it is appropriate to require that the Discharger either segregate these waste streams and provide another means of disposal, or complete focused technical studies to characterize the flow and quality of these waste streams and their potential affects on leachfield function and groundwater quality. If the latter approach is selected, additional groundwater monitoring wells may be needed to monitor groundwater beneath the leachfield.
24. Various solid and liquid waste generated at the facility, including hazardous waste and septage, are disposed of off-site at appropriately permitted facilities.

Site-Specific Conditions

25. The site is at an elevation of approximately 35 feet above mean sea level (MSL) in the Putah Plain, which is characterized by alluvial soils deposited by flooding along on the historical Putah Creek channel.

26. Surface soils at the land application sites are primarily Reiff fine sandy loam with a clay content of 12 to 18 percent. The soil has a relatively high permeability and available water capacity of 8.5 to 10 inches in the upper 5 feet.
27. No site-specific investigation was completed to determine subsurface soil types, but the RWD states that lenses of gravel, silt loam, and sand may be present.
28. The disposal checks are graded relatively flat. Given the intermittent flows from the concrete holding tank and the existing wastewater distribution system, it is unclear whether the wastewater will be evenly distributed over each disposal check.
29. The average annual precipitation in the vicinity of the facility is 17.3 inches, and the 100-year total annual precipitation is 23.4 inches.
30. The reference evapotranspiration rate (ET_0) for the Davis area is approximately 57 inches. The predicted actual evaporation rate used in the water balance (32.1 inches) was estimated based on ET_0 for three days following irrigation or precipitation (when ample moisture is present at the ground surface), and 30 percent of ET_0 for all other times (for bare, dry surface soil).

Groundwater Considerations

31. The Discharger has not completed a site-specific subsurface investigation to assess the occurrence and chemical quality of groundwater beneath the facility site. However, based on recent groundwater monitoring data for two nearby facilities, shallow groundwater may be present at 10 to 30 feet below the ground surface.
32. The Laboratory for Energy-Related Health Research/South Campus Disposal Site at the University of California, Davis is approximately three miles upstream of the Discharger's facility on the north bank of Putah Creek. Based on the background groundwater quality for that site, the following data may give an indication of regional background groundwater quality relevant to the Discharger's facility.

Constituent/Parameter	Estimated Regional Background Concentration		
	Minimum	Maximum	Mean
Total dissolved solids (mg/L)	66	860	585
Alkalinity (mg/L as CaCO ₃)	160	770	501
Chloride (mg/L)	6.2	44	24
Magnesium (mg/L)	76	154	113
Sodium (mg/L)	30	51	37
Potassium (mg/L)	0.4	0.9	0.8
Sulfate (mg/L)	26	39	32
Nitrate nitrogen (mg/L)	4.6	27	14

Reference: Brown and Caldwell, Draft 2002 Comprehensive Annual Water Monitoring Report, LEHR/SCDS
 Environmental Restoration

Special Considerations for Food Processing Waste

33. Excessive application of food processing wastewater to land application areas can create objectionable odors and degradation of underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the effective treatment zone, the depth of which was not defined by the RWD. Therefore, it is appropriate to require that the Discharger perform groundwater monitoring and submit a groundwater impacts assessment report.
34. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27 of the California Code of Regulations, Division 2, Subdivision 1, beginning with Section 20005 (hereafter Title 27). Although the Discharger's facility is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the groundwater protection requirements specified in this Order.
35. According to *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency (US EPA Publication No. 625/3-77-0007) (hereafter *Pollution Abatement*), in applying food-processing wastewater to land for biological treatment, the loading of BOD₅ should be limited in accordance with site-specific physical and operational characteristics to prevent nuisance odors. In the case of infiltration-based systems with one day of application followed by an adequate resting period, loading rates in excess of 100 lb/ac/day as a cycle average may not cause nuisance odors. However, the effects of higher loading rates on odor generation and groundwater quality have not been demonstrated for the Discharger's facility.
36. Acidic soil conditions can be detrimental to land treatment system function, and may also cause groundwater degradation. If the buffering capacity of the soil is exceeded and soil pH decreases below 5, naturally occurring metals (including iron and manganese) may dissolve and degrade underlying groundwater. Reducing conditions caused by oxidation of organic matter in the wastewater can also liberate iron and manganese from soil, independent of soil or wastewater pH. The information presented in the RWD is not sufficient to show whether the proposed land application program will result in low soil pH and associated groundwater quality degradation. The Discharger proposes to complete a site-specific study to determine whether pH control measures are needed to prevent such degradation.

Basin Plan, Beneficial Uses, and Regulatory Considerations

37. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
38. Surface water drainage is to the South Fork of Putah Creek. The beneficial uses of Putah Creek are municipal and domestic supply; agricultural supply; water contact recreation; non-contact

water recreation; warm freshwater habitat; cold freshwater habitat; warm freshwater spawning, reproduction, and/or early development; and wildlife habitat.

39. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
40. State Board Resolution No. 68-16 prohibits degradation of groundwater quality unless it has been shown that:
 - a. The degradation is consistent with the maximum benefit to the people of the State
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The degradation does not cause exceedance of one or more water quality objectives; and
 - d. The discharger employs best practicable treatment and control to minimize degradation.

The Board has considered antidegradation pursuant to State Board Resolution No. 68-16, and finds that the Discharger has not provided the required demonstration to be allowed to cause groundwater degradation, and therefore none is authorized by this Order.

41. If the groundwater impacts assessment establishes that groundwater has been degraded, the Discharger must evaluate technology and source control measures to improve the quality of the waste or reduce loading rates to preclude the discharge being a continuing source of degradation. If the Discharger is unable to modify its waste stream or disposal methods such that groundwater quality will not be impacted, then the Discharger shall either submit technical documentation that its treatment and control and resulting degradation are consistent with State Board Resolution No. 68-16 or a plan for full containment pursuant to Title 27.
42. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and issuance of this Order does not create a vested right to continue the discharge. Failure to provide the level of management required to assure best practicable treatment and control, preclude conditions that threaten degradation or nuisance, and protect groundwater quality will be sufficient reason to enforce this Order, modify it, or revoke it and prohibit further discharge. This Order prescribes limits for BOD loading, nutrient loading, water application rates, and pH, but it remains the responsibility of the Discharger to assure that its waste loading practices do not degrade groundwater or create a condition of pollution or nuisance. Acceptable loading rates established in this Order are subject to change if performance is not as represented.
43. Federal regulations for storm water discharges promulgated by the U.S. Environmental Protection Agency (40 CFR Parts 122, 123, and 124) require specific categories of facilities which discharge storm water to obtain NPDES permits. The facility's primary Standard Industrial Classification (SIC) Code is 8731, and the RWD states that all outdoor handling and process areas drain to the wastewater disposal system. Therefore, it is appropriate to require that the Discharger submit a Notice of Non-Applicability, apply for a No Exposure Certification, or obtain coverage for its processing facility under the State Board's Water Quality Order No. 97-03-DWQ to comply with those regulations.

44. Section 13267(b) of California Water Code provides that: “In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.”

The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. R5-2003-0136 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

45. Because the facility has been in operation since the 1950s and operations have not changed substantially since that time, it is a Class I exempt activity pursuant to Section 15301 of the California Environmental Quality Act (CEQA) Guidelines and is therefore exempt from CEQA pursuant to Section 21080(b)(9) of the Public Resources Code. The action to adopt waste discharge requirements for the facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with Title 14 CCR, Section 15301.
46. Because of the uncertainty in average daily discharge rates, it is appropriate for this Order to allow for construction of additional disposal checks to accommodate minor changes in daily flows and facility operations. However, it is not appropriate for this Order to permit waste discharges associated with significant facility expansions or modifications that require revision of the facility’s Use Permit or other permits that trigger the CEQA process. Therefore, no such discharges are authorized.
47. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to CWC Section 13801, apply to all monitoring wells.
48. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (hereafter Title 27). The exemption pursuant to Section 20090(b), is based on the following:
- a. The Regional Board is issuing waste discharge requirements,
 - b. The discharge complies with the Basin Plan, and
 - c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

Public Notice

49. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
50. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
51. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, Campbell Soup Company and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions:

1. Land application of wastewater to areas other than those described in Finding No. 10 is prohibited.
2. Land application of wastewater to any check not having a fully functional runoff control system is prohibited.
3. Discharge of unscreened wastewater to the disposal checks is prohibited.
4. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
5. Discharge of waste classified as hazardous, as defined in Sections 2521(a) of Title 23, CCR, Division 3, Chapter 15, Section 2510, et seq., (hereafter Chapter 15), or 'designated', as defined in Section 13173 of the California Water Code, is prohibited.

B. Discharge Specifications:

1. The average daily discharge to the disposal checks during each tomato-processing season shall not exceed 5,000 gpd unless expressly approved in writing by the Executive Officer. To obtain such approval, the Discharger shall submit an acceptable technical report prepared pursuant to Provision G.2. The average daily flow shall be proportional to the net disposal check area available (i.e., 4,000 gallons per day per acre), and in no case shall the average daily discharge rate exceed 13,000 gpd.

2. The maximum BOD₅ loading to each disposal check shall not exceed any of the following:

- a. 100 lb/acre/day as a cycle average;
- b. 200 lb/ac/day as a daily maximum; and
- c. The daily and cycle average loading rates that are consistent with the operational schedule described in Finding 13.
- d. The daily and cycle average loading rate that ensures compliance with all Discharge Specifications and the Groundwater Limitations.

Loading calculations shall be performed as specified in the attached Monitoring and Reporting Program No. R5-2003-0136, which is a part of this Order.

3. Objectionable odors originating at the processing facility and all land application areas shall not be perceivable beyond the respective property limits.
4. The processing facility, wastewater storage tank, and irrigation checks shall be managed to prevent breeding of mosquitoes and other vectors. Specifically:
 - a. All wastewater applied to land must infiltrate completely within 48 hours.
 - b. Low-pressure pipelines, unpressurized pipelines, and ditches that are accessible to mosquitoes shall not be used to store wastewater.
5. All treatment, storage, and disposal facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
6. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
7. The facility shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter months. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.
8. On or about **30 October** of each year, the wastewater storage tank shall be emptied and cleaned to remove residual solids.
9. The Discharger shall implement Best Practicable Treatment and Control (BPTC) technology to minimize the salinity of the discharge sufficient to comply with the Groundwater Limitations of this Order.
10. Neither the treatment nor the discharge shall cause a condition of pollution or nuisance as defined by the California Water Code, Section 13050.

C. Land Application Area Specifications

1. Hydraulic loading of wastewater shall be at rates designed to minimize percolation below the evaporative zone, except as needed to promote surface soil chemistry that is consistent with sustainable use as a soil treatment system.
2. There shall be no standing water in any portion of the disposal checks more than 24 hours after application of wastewater ceases.
3. The wastewater discharge system shall be designed and managed to ensure even application of wastewater over each disposal check.
4. At a minimum, there shall be an 8-day drying/resting period between wastewater applications.
5. Wastewater application rates for the irrigation areas shall comply with the following:
 - a. Mass loading rates for all wastewater constituents shall neither exceed the assimilative capacity of the soil nor cause groundwater degradation; and
 - b. Degradable organic (BOD) mass loading rates shall not create a nuisance and shall not degrade groundwater quality.
8. The discharge shall not cause the buffering capacity of the soil profile to be exceeded.
9. The Discharger shall provide the following setbacks for all wastewater and solids disposal areas:

Setback Definition	Surface Irrigation Setback (feet)
Edge of irrigated area ¹ to public property (e.g., street)	10
Edge of irrigated area to other agricultural property	0
Edge of irrigated area to occupied residence	50

¹ As defined by the wetted area produced during irrigation.

10. Application of process wastewater shall only occur where checks are graded to provide uniform water distribution, minimize ponding, and provide complete tailwater control.
11. Check runs shall be no longer, and slopes shall be no greater, than that which permits uniform infiltration and maximum practical irrigation efficiency.
12. Irrigation or impoundment of wastewater shall not occur within 50 feet of any domestic well unless it is demonstrated to the satisfaction of the Executive Officer that a shorter distance is justified.

D. Effluent Limitations

Effective immediately, the Discharger shall take all reasonable steps to minimize the discharge of low pH wastewater to the disposal areas.

Effective 1 November 2004, discharge of effluent to the disposal checks outside of the following range is prohibited unless expressly approved in writing by the Executive Officer:

<u>Parameter</u>	<u>Daily Minimum and Maximum Limits</u>
pH	6.5-8.4 Standard Units

To obtain such approval, the Discharger shall submit an acceptable technical report prepared pursuant to Provision G.3.

E. Solids Disposal Requirements:

1. Collected screenings, sludge, and other solids generated at the processing facility shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.
2. The Discharger's current method of disposal for tomato processing residual solids is acceptable to the Executive Officer provided that the management plan described in the RWD continues to be implemented. Any proposed change in solids use or disposal practice shall be reported to the Executive Officer at least 90 days in advance of the change.

F. Groundwater Limitations:

The discharge shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than natural background water quality.

G. Provisions:

1. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.5:
 - a. **By 15 October 2003**, the Discharger shall submit to the Regional Board either a Notice of Non-Applicability, an application for a No Exposure Certification, or a Notice of Intent to comply with State Board Water Quality Order No. 97-03-DWQ for discharges of storm water from the facility.
 - b. **By 30 October 2003**, the Discharger shall submit a *Land Application Area Operation and Maintenance (O&M) Plan* for review and approval. The *O&M Plan* shall be prepared in accordance with Attachment D: "*Land Application Area Operation and Maintenance Plan Guidance*" and shall discuss all aspects of managing the discharge operation to comply with

the terms and conditions of this order and how to make field adjustments as necessary to preclude nuisance conditions. A copy of the *O&M Plan* shall be kept at the facility for reference by operating personnel and they shall be familiar with its contents.

- c. **By 30 November 2003**, the Discharger shall submit a Disposal Plan for High-Salinity Waste Streams. The plan shall either specify an alternate means of disposal for boiler blowdown and ion exchange regeneration brine or present a site-specific analysis demonstrating that continued discharge to the leachfield is protective of water quality. The site-specific analysis shall include at least the following:
 - i. Detailed chemical characterization of each waste stream;
 - ii. Determination of flow rates and discharge schedules;
 - iii. Chemical characterization of overall septic tank effluent quality during high salinity discharge events;
 - iv. As-built description of the leachfield and underlying soils;
 - v. Soil chemical and physical properties relevant to the current hydraulic conductivity and ion exchange capacity of soils underlying the leachfield;
 - vi. An analysis, based on the above, of the potential for groundwater degradation to result from continued discharge; and
 - vii. Proposed locations for new groundwater monitoring wells to monitor the leachfield (which shall be incorporated into the Groundwater Monitoring Workplan described below).
- d. **By 30 December 2003**, the Discharger shall submit a *Groundwater Monitoring Workplan* prepared in accordance with, and including the items listed in, the first section of Attachment E: "*Monitoring Well Workplan and Monitoring Well Installation Report Guidance*." The workplan shall describe a groundwater monitoring network of at least three wells specifically designed to ensure that background water quality (upgradient and out of the influence of waste management activity at the site) is adequately characterized and any potential water quality impacts from the discharge are detected. If the Discharger elects to continue discharging boiler blowdown and ion exchange regeneration brine to the southern septic system, then the well network shall include at least two additional wells designed to detect any groundwater degradation resulting from that source. The groundwater monitoring system shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the site.
- e. **By 30 May 2004**, the Discharger shall submit a *Monitoring Well Installation Report* prepared in accordance with, and including the items listed in, the second section of Attachment E: "*Monitoring Well Workplan and Monitoring Well Installation Report Guidance*." The report shall describe the installation and development of the monitoring wells and explain any deviation from the approved workplan.
- f. **By 30 January 2006**, the Discharger shall submit a *Background Groundwater Quality Study and Groundwater Impacts Assessment Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and

comparison of background groundwater quality to that in wells used to monitor the facility. The report shall include at least the following:

- i. A narrative discussion of the hydrogeology of the processing facility and land application areas, including subsurface stratigraphy, soil infiltration characteristics, depth to groundwater, groundwater gradient, and seasonal gradient variations over the previous five years.
- ii. Groundwater elevation contour maps for each monitoring event to date.
- iii. Historical summary data tables for all monitored constituents.
- iv. Concentration vs. time graphs for each constituent listed in the MRP. Each graph shall represent the results for a single constituent, and multiple wells may be plotted on a single graph.
- v. Definition of site-specific background concentration for each of the constituents listed in the MRP.
- vi. A narrative analysis of spatial and temporal trends for each of the constituents listed in the MRP with respect to established background concentrations.
- vii. An evaluation of monitoring data from background monitoring wells in an appropriate data analysis method as described in Title 27, Section 20415(e)(7-9).

If any established background concentrations have been exceeded, a specific plan for source control and a corrective action program and time schedule to assure compliance with the Discharge Specifications and Groundwater Limitations of this Order.

2. If the Discharger wishes to apply for approval of an increase in the average daily flow specified in Discharge Prohibition A.1, then the Discharger shall submit a technical report showing that sufficient land disposal capacity is available. The report shall present a water balance showing that the increased flow can be accommodated without changes in the typical application depth and cycle time. In no case shall the average daily flow during the discharge period exceed 13,000 gpd.
3. If the Discharger wishes to apply for approval of a change in the pH effluent limitation, then the Discharger shall submit a technical report that demonstrates, based on site-specific information, that the change will not adversely affect the treatment capabilities of the land application system or degrade groundwater quality.
4. If the Discharger wishes to utilize any portion of the designated land disposal expansion area, then the Discharger shall submit a technical report that documents the location and construction details of the new check(s). The report shall include as-built drawings depicting the details of all wastewater conveyance and runoff control systems, and shall specify the usable surface area of the new check(s)
5. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geological sciences, shall be prepared by, or under the direction of, persons registered to practice in

California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with section 415 and 3065 of Title 16, CCR, all technical reports, must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

6. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0136, which is a part of this Order, and any revisions thereto as ordered by the Executive Officer.
7. The Discharger shall comply with the “Standard Provisions and Reporting Requirements for Waste Discharge Requirements”, dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as “Standard Provision(s).”
8. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving the land application areas that is used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Regional Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
9. The Discharger shall submit to the Regional Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.
10. The Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
11. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, then the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to this office.
12. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
13. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel at each land application property shall be familiar with its contents.
14. The Regional Board will review this Order periodically and may revise requirements when necessary.

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2003-0136
CAMPBELL SOUP SUPPLY COMPANY, LLC
SEED RESEARCH AND DEVELOPMENT FACILITY
YOLO COUNTY

-16-

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 September 2003.

original signed by

THOMAS R. PINKOS, Executive Officer

AMENDED

ALO:9/5/03

ATTACHMENT E

MONITORING WELL WORKPLAN AND MONITORING WELL INSTALLATION REPORT GUIDANCE CAMPBELL SOUP SUPPLY COMPANY, LLC SEED RESEARCH AND DEVELOPMENT FACILITY YOLO COUNTY

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing at least the information listed below. Following installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be prepared under the direct supervision of, and signed by, a geologist registered by the State of California.

Monitoring Well Installation Workplan

A. General Information:

- Proposed monitoring well locations and rationale for location selection
- Equipment decontamination procedures
- Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details: describe proposed drilling and logging methods

C. Monitoring Well Design:

- Casing diameter
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of well construction
- Type of well cap
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. Well Development:

- Method of development to be used
- Method of determining when development is complete
- Method of development water disposal

E. Surveying Plan: discuss how each well will be surveyed to a common reference point.

F. Well Sampling:

- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Sample collection and preservation method
- QA/QC procedures

G. Water Level Measurement:

The elevation reference point at each monitoring well shall be within 0.01 foot.
Ground surface elevation at each monitoring well shall be within 0.1 foot.
The method and time of water level measurement shall be specified.

H. Proposed time schedule for well installation and development.

Monitoring Well Installation Report

A. Well Construction:

Number and depth of wells drilled
Date(s) wells drilled
Description of drilling and construction
Approximate locations relative to facility site(s)
A well construction diagram for each well must be included in the report, and should contain the following details:

Total depth drilled
Depth of open hole (same as total depth drilled if no caving occurs)
Footage of hole collapsed
Length of slotted casing installed
Depth of bottom of casing
Depth to top of sand pack
Thickness of sand pack
Depth to top of bentonite seal
Thickness of bentonite seal
Thickness of concrete grout
Boring diameter
Casing diameter
Casing material
Size of perforations
Number of bags of sand
Well elevation at top of casing
Depth to ground water
Date of water level measurement
Monitoring well number
Date drilled
Location

B. Well Development:

Date(s) of development of each well
Method of development
Volume of water purged from well

ATTACHMENT E
MONITORING WELL WORKPLAN AND
MONITORING WELL INSTALLATION REPORT GUIDANCE
CAMPBELL SOUP SUPPLY COMPANY, LLC
SEED RESEARCH AND DEVELOPMENT FACILITY
YOLO COUNTY

How well development completion was determined
Method of effluent disposal
Field notes from well development should be included in report.

- C. Well Survey Data: provide reference elevations for each well and surveyor's notes
- D. Water Sampling:
 - Date(s) of sampling
 - How well was purged
 - How many well volumes purged
 - Levels of temperature, EC, and pH at stabilization
 - Sample collection, handling, and preservation methods
 - Sample identification
 - Analytical methods used
 - Laboratory analytical data sheets
 - Water level elevation(s)
 - Groundwater contour map
- E. Explanation of any deviation from the approved workplan.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0136

FOR
CAMPBELL SOUP SUPPLY COMPANY, LLC
SEED RESEARCH AND DEVELOPMENT FACILITY
YOLO COUNTY

The Discharger shall comply with this Monitoring and Reporting Program (MRP), issued pursuant to Water Code Section 13267, which describes requirements for monitoring industrial process wastewater and groundwater. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

WASTEWATER STORAGE TANK MONITORING

The wastewater storage tank shall be monitored as follows:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow ¹	gpd, inches	Calculation	Daily	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly

¹ Report as total daily flow to each disposal check.

EFFLUENT MONITORING

Effluent samples shall be collected just prior to discharge to the disposal checks (grab samples collected from a common pipeline or sump pit after the screening system will be considered representative). At a minimum, the Discharger shall monitor the effluent wastewater as follows:

Constituent/Parameter	Units	Sample Type	Sampling Frequency	Reporting Frequency
pH	pH units	Grab	Weekly	Monthly
Total Dissolved Solids	mg/L	Grab	Weekly	Monthly
Settleable Solids	ml/L	Grab	Weekly	Monthly
BOD ₅ ¹	mg/L	Grab	Weekly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Weekly	Monthly
Nitrate Nitrogen	mg/L	Grab	Weekly	Monthly
Other Salinity Species ²	mg/L	Grab	Monthly	Monthly

¹ 5-day, 20°C Biochemical Oxygen Demand.

² Includes chloride, iron, magnesium, manganese, sodium, potassium, and sulfate. Samples for iron and manganese shall be filtered with a 0.45-micron filter prior to sample preservation.

LAND APPLICATION AREA MONITORING

A. Daily Pre-Application Inspections

The Discharger shall inspect the disposal checks at least once daily prior to irrigating, and observations from those inspections shall be documented for inclusion in the monthly monitoring reports. The following items shall be documented for each disposal check to be irrigated on that day:

1. Evidence of erosion;
2. Berm condition;
3. Soil saturation;
4. Ponding and/or potential for uneven wastewater distribution;
5. Potential runoff to off-site areas;
6. Potential and actual discharge to surface water;
7. Accumulation of organic solids;
8. Soil clogging;
9. Odors that have the potential to be objectionable at or beyond the property boundary; and
10. Insects.

B. Routine Monitoring

The Discharger shall perform the following routine monitoring and loading calculations, and shall present the data in the Monthly and Annual Monitoring Reports.

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Precipitation	0.1 in.	Rain Gauge	Daily	Monthly, Annually
Checks receiving wastewater	--	Observation	Daily	Monthly, Annually
Hydraulic loading rate	in.	Calculated ¹	Daily	Monthly, Annually
BOD ₅ loading rate	lb/ac.	Calculated ^{1, 2}	Daily	Monthly, Annually
Wastewater nitrogen loading rate	lb/ac.	Calculated ^{1, 3}	Daily	Monthly, Annually

¹ Rate shall be calculated for each disposal check.

² BOD₅ shall be calculated using the daily applied volume of wastewater, actual application area, and the average of the three most recent BOD₅ results for the wastewater).

³ Total nitrogen loading rates shall be calculated using the applied volume of wastewater, actual application area, and the average of the three most recent results of effluent total nitrogen.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. Once installed, all new wells shall be added to the MRP and shall be sampled and analyzed according to the schedule below.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged at least three well volumes until temperature, pH and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Sampling and Reporting Frequency</u>
Depth to Groundwater	feet	Measurement	Quarterly
Groundwater Elevation ¹	feet	Calculated	Quarterly
Gradient Magnitude	feet/feet	Calculated	Quarterly
Gradient Direction	degrees	Calculated	Quarterly
PH	pH Units	Grab	Quarterly

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Sampling and Reporting Frequency</u>
Total Dissolved Solids	mg/L	Grab	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly
Nitrate Nitrogen	mg/L	Grab	Quarterly
Other Salinity Species ²	mg/L	Grab	Quarterly

¹ Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

² Includes chloride, iron, magnesium, manganese, sodium, potassium, and sulfate. Samples for iron and manganese shall be filtered with a 0.45-micron filter prior to sample preservation.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g. influent, effluent, soil, groundwater), sampling location, and the reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the direct supervision of a California-registered geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e., the January report is due by 1 March). Monthly reports shall be submitted regardless of whether process wastewater is generated. However, monitoring of the wastewater storage tank, effluent, and land application areas is only required for months when there has been a discharge to land. At a minimum, the reports shall include:

1. Results of storage tank, effluent, and land application area monitoring. Data shall be presented in tabular format.
2. Daily pre-application inspection reports.
3. A comparison of monitoring data to the discharge specifications and applicable limitations and an explanation of any violation of those requirements.
4. When requested by staff, copies of laboratory analytical report(s).

5. Calibration log(s) verifying calibration of any field monitoring instruments (e.g., DO, pH, and EC meters) used to obtain data.
6. Daily discharge volumes and acres irrigated shall be tabulated, and the report shall include a discussion of the discharge volumes and irrigation practices used (method of application, application period/duration, drying times, etc.) for each check or group of checks utilized during the month. Hydraulic loading rates (inches/acre/month) shall be calculated.
7. Maximum daily BOD₅ loading rates (lbs/acre/day) shall be calculated for each disposal check using the total volume applied on the day of application, estimated application area, and a running average of the three most recent results of BOD₅ for the wastewater, which also shall be reported along with supporting calculations. Average BOD₅ loading rates shall be calculated using the total volume applied on the day of application, the total application period (i.e.: day of application and drying time), estimated application area on the day of application, and a running average of the three most recent results of BOD₅ for the applicable source water.
8. Total nitrogen loading rates (lbs/acre/month) shall be calculated for each irrigation check on monthly basis using the daily applied volume of wastewater, estimated daily application area, and the most recent results of total nitrogen, which shall also be reported along with supporting calculations.
9. Cumulative nitrogen loading rates for each irrigation check for the calendar year to date shall be calculated as a running total of monthly loadings to date from wastewater, supplemental fertilizers, and livestock.

B. Quarterly Groundwater Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Report shall include the following:

1. Results of groundwater monitoring.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged.
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any.

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements.
6. Summary data tables of historical and current water table elevations and analytical results.
7. A scaled map showing relevant structures and features of the facility, the disposal check boundaries, the locations of monitoring wells, and groundwater elevation contours referenced to mean sea level datum.
8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be submitted to the Regional Board by **1 February** of each year. The Annual Report shall present a summary of all monitoring data obtained during the previous calendar year, and shall include the following. The Annual Report may also include the contents of the 4th Quarterly Monitoring Report.

1. If requested by staff, tabular and graphical summaries of all data collected during the year with data arranged to confirm compliance with the WDRs.
2. Tabular and graphical summaries of historical monthly total loading rates for water (hydraulic loading in gallons and inches), BOD, total nitrogen, and total dissolved solids.
3. A mass balance relative to constituents of concern and hydraulic loading along with supporting data and calculations.
4. An evaluation of the performance of the pretreatment system and land application sites.
5. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control and groundwater protection, including consideration of application management practices (i.e.: waste constituent and hydraulic loadings, application cycles, and drying times) and groundwater monitoring data.
6. An evaluation of the groundwater quality at the facility.
7. A narrative description of tomato solids disposal practices.
8. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

9. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

The Discharger shall implement the above monitoring program as of the date of this Order.

original signed by

THOMAS R. PINKOS, Executive Officer

5 September 2003
(date)

AMENDED

ALO:9/24/2003

INFORMATION SHEET

ORDER NO. R5-2003-0136
CAMPBELL SOUP SUPPLY COMPANY, LLC
SEED RESEARCH AND DEVELOPMENT FACILITY
YOLO COUNTY

The Campbell Soup Company operates a seed research and development facility in Davis, Yolo County. The facility, which has been in operation since the 1950s, is used to grow tomatoes and perform experimentation in tomato plant properties and seed genetics. Small batches of tomatoes are processed during the tomato harvest season (approximately 15 July through 15 October each year). Research is conducted year round, but tomato processing wastewater is only generated during the harvest season. The tomatoes are washed, chopped, ground, and steam heated. The processed tomatoes are canned for testing, which typically takes place within several days of processing. The Discharger may begin testing of processed food products, such as tomato paste. Such testing programs may expand the discharge season to include April through mid-July.

The process wastewater flows into a concrete sump and is then pumped through a parabolic screen. The screened process wastewater is conveyed through a pipe to an at-grade, open-top concrete storage tank. Wastewater is pumped from the storage tank via a subsurface pipeline to one of seven percolation checks that range in size from 0.16 to 0.28 acres. Discharges to the checks are automatically controlled and flows to the disposal checks are metered. Daily flows during the 2002 processing season ranged from 1,400 to 7,300 gallons, and the average daily flow was 4,000 gallons. However, according to the RWD, the meter and/or associated check valves were not functioning properly at all times during the monitoring period. Therefore, these data may not be accurate. The Discharger has designated a two-acre expansion area in which additional checks may be constructed to accommodate higher flows.

All processing equipment is manually washed with water at the end of each daily shift. No chemicals are used in the process, and the process wastewater consists of wash water, tomato juice, and tomato pulp. Soap solution is used to clean the processing equipment once at the beginning and end of the processing season.

A boiler generates steam for cooking the tomato pulp. The boiler feed water is softened by an ion exchange system built into the boiler. Both the boiler blowdown and water softener regeneration brine are discharged to one of two onsite septic systems designed for disposal of domestic wastewater.

Solids from the screens are stored in tubs for periodic transport to the research crop fields where they are applied to land. Approximately 280 dry pounds of screenings are generated each day. Each year a single 15-acre area is designated for solids application, and the sites are rotated through the 200-acre research crop field area. Various solid and liquid waste generated at the facility, including hazardous waste and septage, are disposed of off-site at appropriately permitted facilities.

The Discharger has not completed a site-specific subsurface investigation to assess the occurrence and chemical quality of groundwater beneath the facility site. However, based on recent groundwater monitoring data for two nearby facilities, shallow groundwater may be present at 10 to 30 feet below the ground surface.

Staff's derivation of certain Discharge Specifications and Limitations contained in this Order is discussed below.

Discharge Specification B.2

Loading limits for BOD are needed because excessive loading can deplete soil oxygen and cause anaerobic conditions. Anaerobic degradation of organic matter can cause severe nuisance odors and promote incomplete biodegradation, thereby allowing dissolved organic material to percolate through the unsaturated zone into groundwater. Anaerobic decomposition of organic wastes also creates organic acids that can decrease soil pH. A low pH environment can cause excessive leaching of metals in the soil into underlying groundwater.

This Discharge Specification prescribes a maximum BOD loading of 200 lb/ac on any one day, and 100 lb/ac/day as a cycle average. The cycle average loading limit is based on the lowest reasonable rate achievable given the character of the waste, design flows, the available disposal area, and optimal operations. Because of the check grading, the type of irrigation system, and the character of the wastewater, the BOD loading rate will be as high as 200 lb/ac/day with a cycle time of 8 to 9 days, which is achievable given the information provided in the RWD. Compliance with this requirement should provide adequate time for oxidation and infiltration between irrigation events to prevent odors. However, in recognition that certain weather conditions can exacerbate the potential for odors, Discharge Specification B.2 also requires that the BOD loading rate used will ensure that the discharge does not cause objectionable odors or degrade water quality.

Discharge Specification B.9

This Discharge Specification requires that the Discharger implement Best Practicable Treatment and Control (BPTC) to minimize the salinity of the wastewater. This specification is necessary to ensure that salt constituents can be assimilated by the soil column without causing groundwater degradation.

Land Application Area Specification C.8 and Effluent Limitations

The Effluent Limitation requires that the pH of the discharge remain between 6.5 and 8.4 to prevent groundwater degradation. This limitation alone cannot ensure that soil pH conditions will be optimal for land treatment and preventing leaching of metals, so Land Application Area Specification C.8 requires that the discharge not exceed the soil pH buffering capacity. The Discharger may wish to demonstrate that site-specific conditions will allow discharges with a pH below 6.5 without causing nuisance conditions or groundwater degradation. Therefore, this Order allows the Executive Officer to approve a lower minimum pH upon approval of an acceptable technical report developed based on site-specific data.

Because the Discharger is currently using a new land disposal area and does not have a pH control system, it is appropriate to impose the standard effluent limitations for pH but to delay the effective date to allow a reasonable period of completion of the study. The proposed Order makes the effluent limitation effective on **1 November 2004** and requires that the Discharger take all reasonable steps to prevent low-pH discharges during the interim.

Other Technical Reports Required by the Provisions

The Discharger is required to submit a detailed Land Application Area Operation and Maintenance Plan to ensure that wastewater is evenly applied to minimize potential groundwater degradation and that all persons responsible for irrigation and monitoring are aware of appropriate system management procedures and their responsibilities.

Determination of background groundwater quality and a groundwater impacts assessment are required because, although the facility has operated for over fifty years, there has been no subsurface investigation to assess the site-specific soil and groundwater conditions necessary to determine whether the wastewater management system is adequately protective of water quality. Based on the outcome of the study, the Discharger may be required to implement source control, additional treatment, or other BPTC measures.

Because of concerns about potential groundwater degradation associated with discharge of boiler blowdown and ion exchange regeneration brine, the Discharger is required to submit a Disposal Plan for High-Salinity Waste Streams. The plan must either specify an alternate means of disposal for boiler blowdown and ion exchange regeneration brine or present a site-specific analysis demonstrating that continued discharge to the leachfield is protective of water quality.

Because of the uncertainty in measurement of current flow conditions, this Order allows the Discharger to apply for the Executive Officer's approval of an increase in the average daily flow specified in Discharge Prohibition A.1. To apply, the Discharger must submit a technical report showing that sufficient land disposal capacity is available without changes in the typical application depth and cycle time. In no case will the Executive Officer approve average daily flows in excess of 13,000 gpd during the discharge period.

If the Discharger wishes to utilize any portion of the designated land disposal expansion area, then the Discharger must submit a technical report that documents the location and construction details of the new check(s) for the Executive Officer's approval.

AMENDED

ALO:9/5/03