

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2010-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
CAMPBELL SOUP SUPPLY COMPANY, LLC
CAMPBELL SOUP SUPPLY COMPANY DIXON FACILITY
SOLANO COUNTY

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

1. Campbell Soup Supply Company, LLC (hereafter referred to as Discharger) submitted a Report of Waste Discharge (RWD) dated 9 May 2008 to obtain revised Waste Discharge Requirements (WDRs) for the discharge of tomato and vegetable processing wastewater at the facility at 8380 Pedrick Road, Dixon, CA, 95620. Supplemental information was received on 9 December 2008 and an Amended RWD was received 5 June 2009.
2. The Discharger's Dixon facility is in Section 6, 7, and 8, T7N, R2E MDB&M. This facility is shown on Attachment A, which is attached hereto and made part of this Order by reference. The Dixon facility is about 2 miles northeast from the City of Dixon and surrounded by agricultural land on all sides. The processing plant is identified as Solano County Assessor's Parcel Number (APN) 111-005-01, which is owned by the Discharger.
3. The Discharger has owned and operated the tomato processing facility, including land application of process wastewater to about 555 acres, since it was opened in 1975.
4. Order No. 95-101, adopted by the Central Valley Water Board on 28 April 1995, prescribes requirements for the discharge of tomato processing wastewater to irrigate crop and pasture land owned by Mr. Henry Stone, Mr. Stanley Bauer, and Mr. Albert Silva.
5. The Discharger has purchased the land that comprises all of the land application areas. The useable land application area designated for wastewater disposal is 606.9 acres of the total 633.5 acres, and includes the following APN: 111-005-005, 111-010-004, 111-010-011, 111-010-012 and 111-010-013.
6. The Discharger has applied for revised WDRs to increase the land discharge area and include an additional vegetable processing line that will extend the processing season. The Discharger has not requested and the revised WDRs do not allow an increase in the permitted annual discharge flow rate. The additional land application area is named NW Bauer, and is the northern 72.8 acres of the Bauer field as shown in Attachment B, which is attached hereto and made part of this Order by reference.

Domestic Water Supply and Domestic Wastewater Disposal

7. Water for employees is supplied by a domestic well. The RWD provides the following table that summarizes the well and domestic use water supply characteristics:

Parameter	Units	Domestic Well ¹
Diameter	inches	8
Well Depth	feet bgs ²	385
Screen Interval	feet bgs ²	355 - 380
Depth to Water	feet bgs ²	77 ³
pH	Std units	7.91
EC	µmhos/cm	740
BOD	mg/L	1.5
NO ₃	mg/L	26
NO ₃ -N	mg/L	5.9
TKN	mg/L	0.1
Total N	mg/L	6.0
TDS	mg/L	420
FDS	mg/L	330
TSS	mg/L	2.5
CaCO ₃	mg/L	365
Total P	mg/L	0.063
SO ₄	mg/L	37
Cl	mg/L	12
B	mg/L	0.6
Ca	mg/L	42
Mg	mg/L	52
K	mg/L	1.7
Na	mg/L	36
Mn	mg/L	5

¹ Average of samples collected October 2 and October 9, 2007, except where noted.

² Feet below ground surface.

³ Single sample collected September 6, 2007.

8. Five restrooms serve 15 to 20 full-time employees and 200 seasonal employees. Domestic wastewater is presently discharged to unlined wastewater ponds for disposal by percolation and evaporation. The system was designed for 300 employees at 3,000 gallons per day for usage during peak season operations. The pond system is located on the eastern edge of the process plant and consists of a primary pond for disposal and two ponds for backup, which the Discharger states are rarely used. Monitoring data for the domestic wastewater stream has not been collected.

9. In 2009, the Discharger began working with Solano County Department of Resource Management Environmental Health Division to install and permit a septic tank and subsurface leachfield in place of the wastewater disposal ponds. The Discharger currently is in the design and planning process and will continue to seek a county permit for domestic wastewater disposal.
10. This Order includes regulations and monitoring requirements for the disposal of domestic wastewater until the Discharger provides evidence that the proper permit(s) have been obtained from Solano County. If a county permit is not obtained, this Order requires the Discharger to complete the design and installation of the septic tank and subsurface leachfield, cease discharging to the domestic wastewater ponds, and submit a Domestic Wastewater Pond Closure Workplan describing how the ponds will be decommissioned. If the Discharger obtains a domestic wastewater disposal permit from the Solano County Environmental Health Department, the Discharger is required to submit a Completion Report for Executive Officer approval. Once approved, the domestic wastewater disposal specifications within this Order will sunset.

Facility Processing Source Water

11. Two deep agricultural wells, named North and South Agriculture Wells, supply source water for the processing lines. The original South Agriculture Well built in 1984 was reconditioned in 2006. The North Agriculture Well is intermittently screened from about 340 feet below ground surface (bgs) to about 892 feet bgs. The South Agriculture Well is intermittently screened from about 430 feet bgs to about 1450 feet bgs. The wells are depicted as North Ag Well and South Ag Well in Attachment B.
12. The North and South Agriculture Wells operate 24 hours a day during the processing season and are turned off during the off-season. Well water is chlorinated at the well head.
13. The following table summarizes the well water supply and well construction characteristics:

Parameter	Units	North Ag Well ¹	South Ag Well ¹
Diameter	inches	16	20
Well Depth	feet bgs ²	907	1470
Depth to Water	feet bgs ²	75.5 ³	81.3 ³
Screen Interval	feet bgs ²	340 - 892	430 - 1450
pH	Std units	8.04	7.26
EC	µmhos/cm	588 ⁴	500 ⁶
BOD	mg/L	1.5	1.5
NO ₃ -N	mg/L	2.4 ⁵	1.1 ⁷
TKN	mg/L	0.1	0.1
Total N	mg/L	1.5	2.1
TDS	mg/L	285	290
FDS	mg/L	235	230
TSS	mg/L	2.5	2.0

Parameter	Units	North Ag Well ¹	South Ag Well ¹
CaCO ₃	mg/L	220	205
Total P	mg/L	0.055	0.053
SO ₄	mg/L	30	28
Cl	mg/L	14	14
B	mg/L	0.58	0.57
Ca	mg/L	24	21
Mg	mg/L	26	23
K	mg/L	2.1	2.1
Na	mg/L	48	57
Mn	mg/L	5	5
Total coliforms	MPN/100 mL	0	0
E. coli	MPN/100 mL	0	0

¹ Average of samples collected October 2 and October 9, 2007 unless otherwise noted.

² Feet below ground surface.

³ Average of samples collected September 6 and November 13, 2007.

⁴ Average of annual samples collected 1998 to 2006 and three samples in 2007.

⁵ Average of annual samples collected 1998 to 2006 and five samples in 2007.

⁶ Average of annual samples collected 2000 to 2006 and three samples in 2007 (includes original South Ag Well and reconditioned well data).

⁷ Average of annual samples collected 2000 to 2006 and five samples in 2007 (includes original South Ag Well and reconditioned well data).

14. Well water is used onsite for washing tomatoes, equipment, the processing areas, and will be used to wash fresh fruits and vegetables that are processed as part of the new vegetable line.

Existing Processing Facility and Wastewater Discharge

15. The Discharger seasonally processes tomatoes. The finished tomato products (tomato paste and diced tomatoes) are shipped in bulk to other Campbell Soup processing facilities for use as ingredients in its final products for market.
16. Tomato season typically starts in July and ends by mid-October. During the processing season, the paste and dice lines operate 24 hours a day, 7 days a week as the Discharger processes up to 5,500 tons of raw tomatoes a day. Approximately 10 to 15 percent is used for dice production and 85 to 90 percent is used in the paste line.
17. During an average season, the dice line operates 85 days a year, processing 750 tons per day of raw tomato to generate about 17,500 tons of finished product each season. The paste line operates 90 days a year, processing 4,250 tons per day of raw tomato to generate about 50,000 tons of finished product. The paste line typically starts earlier and ends later in the year.
18. As tomatoes are brought into the processing facility they are delivered to either the tomato paste or tomato dice flumes. The tomato paste and tomato dice lines have separate flume

systems that convey tomatoes into the processing facility. Tomatoes that pass through the paste flume are washed and the overflow water is screened and transferred to Pond A (Settling Pond). Tomato dice flume overflow water is discharged through the lift sump, along with any cleaning and wash wastewater. Thus, all wastewater is directed to either Pond A or the lift sump where wastewater is commingled prior to being discharged to the land application area.

19. The Settling Pond allows for solids settling and is unlined. The capacity of the Settling Pond is about 1.6 million gallons and is roughly 280 feet in diameter and 4 feet deep. The Settling Pond has three aerators for odor control and uses a detention time of 4 days to remove heavy grit, sand, and loose organics. The Settling Pond is periodically dredged to minimize the build up of organic matter and the occurrence of odorous conditions. About 300 gallons per minute of paste flume water overflow flows from the settling pond to the lift station where it is commingled with process wastewater prior to being land applied.
20. The Settling Pond is currently used for flume water settling. Pond B and Pond C are used for emergency or incidental storage of wastewater. They are not necessary in daily operations of the facility but generally are used during each processing season. Pond B provides emergency storage for Settling Pond overflow. Pond C provides emergency storage for Pond B overflow and emergency pressure relief storage for the main wastewater line leading to the land application area from the lift station. Once emergency conditions have subsided, wastewater from Pond B and Pond C is discharged to the lift sump for land application.

Pond B and Pond C contain weed overgrowth and animal burrows and will require rehabilitation prior to being used for incidental or emergency storage. Therefore, this Order requires the Discharger to discuss all ponds located at the facility in their Operation and Management Plan and detail their scheduled regular maintenance. This Order also requires that the Discharger submit a Pond B and Pond C Rehabilitation Workplan prior to being placed into service during the 2011 processing season.

21. The processing system including both flumes is cleaned at the beginning and end of each season and periodically during processing. At the beginning of each season, hot water is passed through the entire system. A chemical sanitization of the processing equipment occurs at the end of the season. During operations, the processing lines have individual cleaning schedules. The hot break tanks are cleaned every other week and the cold break equipment is cleaned every 60 days. Caustic is used on the evaporators about every 30 days or as needed. The dice equipment is cleaned for 4 hours every 4 days.

The supply water is softened using a regenerated ion exchange matrix prior to being used for boiler feed make-up. The primary source of boiler feed make-up is supplied by evaporator condensate. Softened water is used when evaporators are not in operation and evaporator condensate is not available. Softened water also supplies water for pump seals. Ion exchange flush water is currently commingled in the lift sump and discharged to the land application area. This Order requires that ion exchange saline wastewater no longer be discharged to the land application area and that the Discharger must complete a Salinity Reduction Workplan to investigate best practicable treatment and control (BPTC) of saline waste. Alternatives may include replacing the water softener with technology that

does not create saline waste or segregating saline waste and disposing it at an off-site facility permitted to accept saline waste.

The RWD contains the following table for annual usage of chemicals in excess of 20 gallons per year. The Discharger states that chemical usage is distributed equally throughout the season.

Product Name	Quantity (gal/year)	Usage	Active Ingredient	
			Compound	%
ChemTreat BL-4350	1,300-1,500	Boilers	1-Hydroxyethylidene-1,1-diphosphoric acid,	1-5%
			tetrapotassium salt	5-10%
			Sodium polyacrylate	5-10%
			Polyacrylate, copolymer	
ChemTreat BL-122	1,300-1,500	Boilers	Sodium bisulfite	15-40%
ChemTreat BL-1541	600-700	Boilers	Cyclohexylamine	7-13%
			1,2-diethylaminoethanol	7-13%
Series 708 Caustic Sludge Conditioner	400	Boilers	Sodium hydroxide	
ChemTreat CL-16	330	Boilers, Water Softeners	Citric acid	15%
			Hydroxyethylidene-1, diphosphoric acid	4.2%
Sodium chloride	140 ton/yr	Water Softeners	Sodium chloride (dry)	
Bromide L-102	1,800-2,100	Cleaning	Sodium bromide	40%
Cleaner M.S.R. Acid	700	Cleaning	Phosphoric acid	
Tsunami 200	700	Cleaning	Acetic acid	42%
			Hydrogen peroxide	4%
			Peroxyacetic acid	9%
			Organic acids mixture	5-20%
Caustic Soda	3,300 gal/yr (liquid)	Cleaning	Sodium hydroxide	50%
	4 ton/yr (powder)			
Chlor 12 ½	4,300-4,600	Cleaning, Well Chlorination	Sodium hydroxide Sodium hypochlorite	
Chlorine	1,000	Well Chlorination	Chlorine	
Chlorinated Foamer #3	150	Anti-foaming agent	Potassium hydroxide Sodium hypochlorite	

22. A process wastewater flow diagram is shown as Attachment C, which is attached hereto and made part of this Order by reference. Dice flume overflow water and tomato paste and dice line cleaning and wash water (hereby collectively referred to as plant effluent) is collected by floor drains and directed to a central waste disposal sump. The plant effluent is screened and pumped from the central sump to a lift sump.

Tomato paste flume water and paste line evaporator condensate are not collected by the floor drains and is each separately conveyed to the lift sump. Paste line evaporator condensate flows directly to the lift sump, while tomato paste flume overflow water is discharged to the Settling Pond. Settling Pond overflow can also be conveyed to the lift sump.

The commingled water from the lift sump (hereby, referred to as process wastewater) is pumped to the land application area for surface irrigation. The RWD provides the following table of water quality:

Constituent	Units	Paste Flume ¹	Settling Pond Overflow ¹	Plant Effluent ¹	Process Wastewater ¹
BOD	mg/L	245	32	275	635 ²
EC	µmhos/cm	665	1000	1500	902 ²
pH	std units	6.58	8.42	6.31	6.06 ²
NO ₂ -N + NO ₃ -N	mg/L	0.11	0.15	0.09	0.51 ³
TKN	mg/L	17	27	16	21 ³
Total N	mg/L	17	27	16	25 ²
COD	mg/L	--	--	--	516 ³
TOC	mg/L	--	--	--	201 ³
TDS	mg/L	430	590	1485	754 ⁴
FDS	mg/L	240	410	1145	586 ⁴
TSS	mg/L	1950	68	925	1150
CaCO ₃	mg/L	245	495	180	195
Total P	mg/L	3.3	3.8	4.3	3.0
SO ₄	mg/L	35.5	14	34	28
B	mg/L	0.60	0.73	0.58	0.5
Ca	mg/L	34	39	47	31
Cl	mg/L	28	37	334	257
Mg	mg/L	36	40	41	30
K	mg/L	35	73	38	27
Na	mg/L	54	63	409	167

Constituent	Units	Paste Flume ¹	Settling Pond Overflow ¹	Plant Effluent ¹	Process Wastewater ¹
Mn	mg/L	0.73	0.88	0.40	0.38

¹ Average of samples collected October 2 and 9, 2007 unless otherwise noted.

² Average of monthly samples during processing collected 1998 through 2008: between 37 and 39 samples.

³ Average of monthly samples collected Aug and Sep 2005; and Aug, Sep, and Oct 2006

⁴ Average of monthly samples collected Aug and Sep 2005; Aug, Sep, and Oct 2006; and Oct 2 and 9, 2007.

The settling pond provides stabilization of collected flume water. However, its overflow is a small fraction of the process wastewater and thus has a negligible effect on effluent quality discharged to the land application fields. The large proportion of FDS to TDS in the process wastewater indicates that dissolved solids are predominately inorganic. Sampling results collected on October 9, 2007 for paste flume and process wastewater were in addition to sampling requirements of the Monitoring and Reporting Program Order No. 95-101. The Discharger states that sampling results on October 9, 2007 for TDS, FDS, sodium, and chloride were unusually high because sampling may have occurred during a cleaning cycle at the end of the season and were not diluted by processing wastewater.

23. Previously, the process wastewater was sampled using a grab method. Because this method subjects monitoring results to bias during system cleaning and chemical sanitization events, this Order requires the Discharger to utilize composite sample collection.

Facility Changes

24. The Discharger added a fresh fruit and vegetable (i.e. produce such as carrots, celery, beets, parsley, lettuce, watercress, and spinach) processing line in addition to the tomato paste and diced tomato processing lines. The fresh fruit and vegetable processing line is designated as the "V7 line" and processes produce, other than tomatoes. Products from the V7 line will be shipped to other Campbell Soup Facilities as bulk ingredients for use in products such as V8 or V-Fusion.
25. The construction of the V7 line was completed in June 2009. Construction included installation of a vegetable flume and modifying the process wastewater piping network to include the V7 line. The vegetable process wash and rinse water will be collected with the existing plant effluent by floor drains and directed to the central waste disposal sump, as shown in Attachment C. Flume overflow water from the V7 line is directed to the Settling Pond.
26. The V7 line will use the source water from the North and South Agriculture Wells for vegetable processing. To measure total flow from the supply wells, a flow meter has been installed downstream of the well water supply line merger.

27. The Discharger states that the V7 line is not expected to significantly change the process wastewater quality applied to land because the same cleaning/washing chemicals and concentrations will be used.
28. The Discharger may begin the operating season in March and end the operating season in November processing produce during its harvest season. Peak flows typically occur in August during the height of tomato processing. Based on the water balance, wastewater flows will increase as the processing season progresses and then begin to taper off after tomato processing.

Pretreatment and Source Control

29. Plant effluent is screened to remove wet and dry tomato solids prior to commingling with wastewater in the lift sump. Similarly, tomato paste flume water is screened to remove tomato solids prior to being sent to the Settling Pond. The Settling Pond also provides grit removal before commingling with wastewater in the lift sump.
30. Collected wet and dry tomato solids from the screens are trucked off site for disposal to land application or reuse as cattle feed. The paste line produces an average of 585 tons screened solids during the cold break season and about 2,380 tons screened solids during the hot break season. The paste line produces an average of 1,400 tons screened solids. The V7 line is expected to produce about 2,835 tons screened solids
31. Solids are excavated every few years from the Settling Pond at the end of the processing season when the Settling Pond has dried. The solids, roughly two to three thousand cubic yards, are land applied to approximately half an acre of land directly north of the Settling Pond, which totals about two acres.
32. A brine recovery system was installed with the water softener system in 2007. The brine recovery system works by capturing the last 10 percent of the regeneration flush stream and returning it to the regeneration supply. The remaining 90 percent is discharged to the lift sump for land application. The Discharger estimates that sodium chloride usage has been reduced by 1,332 pounds per day based on average operating conditions. However, despite the estimated reduction, 140 tons of sodium chloride associated with water softening is land applied per year. Therefore, this Order requires the Discharger to investigate methods for salinity minimization in a Salinity Reduction Plan.
33. Historical process wastewater monitoring data show spikes in EC levels that exceed 900 $\mu\text{mhos/cm}$. Based on information provided by the Discharger, these spikes may be the result of discharging after scheduled cleaning. Improved discharge management of highly saline cleaning wastewater is expected to mitigate peak EC levels below 1,000 $\mu\text{mhos/cm}$. Improvements will require the Discharger to investigate established best management practices and implement methods for the facility to achieve salinity reduction. This Order requires the Discharger to submit a Salinity Reduction Workplan to identify and implement site specific best practicable treatment and control.

Land Application

34. The process wastewater flow is expected to range between 1.0 million gallons per day (MGD) during V7 line operation and 5.0 MGD during the peak of tomato processing typically in August. Staff agrees with the Discharger's January 2010 water balance showing that the land application area provides adequate capacity (when the percolation reduction factor is omitted for wet season months without a discharge) to handle an annual flow of 490 MG during a 100 year storm event.
35. The Discharger purchased the 72.8 acre northern portion of Bauer field (NW Bauer) in 2002 and plans to include the acreage in their land application program in 2009. The Discharger states that NW Bauer is ready and prepared to accept process wastewater.
36. Six land application areas are available for wastewater application. The usable land application acreage will total 606.9 acres. The total acreage for each land application is summarized in the table below. The six land application areas are subdivided into management units for irrigation rotation. The managed units range in size from 16.8 acres to 72.8 acres. The land application areas and their associated management units are depicted in Attachment B. During each irrigation cycle, water is applied onto one management unit before rotation to another unit within the same field. Due to its large size, two management units within the Runge field are typically irrigated at the same time.

Land App. Area	APN	Total Acres	Usable Acres	Managed Units ¹
NW Bauer	111-005-005	163.7	72.8	1
SW Bauer	111-005-005		83.0	4
N Silva	111-010-004	156.4	79.6	4
S Silva	111-010-004		71.8	1
Corral	111-010-011	156.4	145.1	5
Runge	111-010-012 & 111-010-013	157.0	154.6	8
Total		633.5	606.9	23

¹ See Attachment B

37. A 16 inch transmission line conveys water from the lift sump to the land application fields east of the facility. The transmission pipeline branches into 12 inch pipes conveying process wastewater to the head of individual fields, which are border strip irrigated.
38. Supplemental irrigation is typically required from March through July to meet crop demands prior to the availability of processing water. Supplemental irrigation water is supplied from three deep agriculture wells (SW-1, SW-2 and SW-3 depicted in Attachment B). SW1 supplies water to the Bauer fields, SW2 to the Siva and Corral fields, and SW3 to the Runge field. Supplemental water irrigation is conveyed through the same transmission pipeline as the processing water and applied to the fields in the same manner (border strip irrigation). While possible, process and supplemental irrigation water are not blended

because the process wastewater volume is sufficient to meet crop demands in the summer. The RWD provides the following table for water quality of SW1, which was sampled on 17 April 2008 and anticipated to be similar to water quality of SW-2 and SW-3:

Parameter	Units	SW-1
EC	µmhos/cm	500
pH	Std units	7.8
NO ₃ -N	mg/L	1.4
TKN	mg/L	0.1
Total N	mg/L	1.5
BOD	mg/L	1.5
TDS	mg/L	300
FDS	mg/L	240
TSS	mg/L	2.5
CaCO ₃	mg/L	210
Total P	mg/L	0.057
SO ₄	mg/L	30
Cl	mg/L	14
As	mg/L	0.0041
B	mg/L	0.62
Fe	mg/L	0.05
Ca	mg/L	22
Mg	mg/L	24
K	mg/L	2.6
Na	mg/L	57
Mn	mg/L	0.005

39. Based on the normal-year water balance the annual salinity load to the land application area is 5,974 lb/acre total dissolved solids (TDS) and 4,660 lb/acre fixed dissolved solids (FDS) contributed by both supplemental irrigation water and process wastewater. If supplemental irrigation water was used to accommodate the entire water demand of the land application area, the base annual salinity load would be 3,141 lb/acre TDS and 2,513 lb/acre FDS.

The process wastewater FDS concentration (586 mg/L) falls within Risk Category 2 of the Mineral Salinity Concentration Risk Categories in the California League of Food Processors (CLFP) Manual. Risk Category 2 consists of process water with a FDS concentration (586 mg/L) that is less than the sum of the local irrigation TDS concentration (300 mg/L) plus 320 mg/L and no more than 640 mg/L.

40. Food process wastewater typically contains elevated concentrations of TDS resulting from the fruit and vegetable products or from materials used for production. Typically forty to seventy percent of the TDS is organic and broken down in the soil. In contrast, the FDS are inorganic and can accumulate in the soil. Excess salt loading can lead to FDS

accumulation reducing plant yields and salinity leaching to the underlying groundwater. Growing harvest crops provide a means to remove some soil bound recalcitrant FDS by crop uptake.

Harvest crops are expected to remove a portion of the FDS from the soil, particularly the calcium, magnesium, potassium, phosphorus, nitrate, and ammonia. Beneficial ions such as calcium, magnesium, and potassium improve the physical properties of the soil and are essential for plant growth. Removing these three beneficial ions through crop uptake would reduce the annual salt load by 725 lb/acre, resulting in a total TDS and FDS loading rate of 5,249 lb/acre and 3,935 lb/acre, respectively.

41. Nitrogen is introduced to the land application area from three sources: process wastewater, cattle excrement, and fertilizer. Fertilizer is applied to meet the crop nitrogen demand not met by process wastewater application or cattle. Cattle are maintained on the land application area at a density of about one cow per acre and have an estimated manure application rate of 48 pounds per acre per year. It is estimated that there is about fifty percent reduction in the process wastewater nitrogen concentration from flood irrigation practices. Based on the provided nitrogen balance the crops will obtain approximately fifty percent of their required nitrogen from the process wastewater and cattle grazing. Fertilizer currently accounts for twenty percent of the nitrogen demand but may fluctuate to ensure a healthy pasture.
42. SW Bauer, N Silva, Corral and Runge fields are dedicated to pasture and cattle grazing. Pasture grasses include ryegrass, fescue, orchard grass and trefoil. Cattle grazing typically occur from April through October and follow the irrigation rotation. Pasture fields are periodically aerated to alleviate compaction and improve water permeability.
43. The S Silva field is planted with winter wheat and milo, which are cut into hay for commercial sale. The NW Bauer field may be double cropped to grow ryegrass and sudangrass or may be planted with pasture grass. In the future, the Discharger may switch to other crops for higher water utilization and crop yield.
44. Tailwater from process wastewater and supplemental irrigation water application is contained within the land application area by tailwater ditches. The Discharger constructed a 5 acre, 25 acre-foot tailwater pond in 2008, which is used in emergencies to temporarily store collected tailwater if the land application area becomes saturated. The collected water is reapplied when soil conditions permit. The Discharger contracts out the operations of field irrigation and maintenance, but the Discharger remains ultimately responsible for compliance with this Order.
45. Tailwater ditches adjacent to the roadside are owned by the Discharger, who conducts maintenance on the ditches. The tailwater ditches have the capability to convey collected water, whether tailwater or stormwater, off the Discharger's property. The Discharger has granted an easement to Solano County to allow surface drainage of stormwater through its property via the tailwater ditches. The Discharger has installed irrigation gates to retain tailwater and stormwater on site during the processing season. This Order prohibits land applied wastewater to flow offsite. This Order requires the Discharger to create a Land Application Area Management Plan that describes the property boundaries, irrigation

protocols, tailwater collection system, and tailwater collection protocols. The plan must demonstrate control of the land applied wastewater such that it does not pool or course off of the Dischargers property. The Order requires the plan be submitted for approval by the Executive Officer.

46. The RWD states that during operation, stormwater runoff from the land application area is captured and returned with the process water via the tailwater collection system. During the off season, typically starting in October or November, the Discharger plans to allow stormwater to flow off site until the start of the next processing season. Prior to allowing any off site flow, including stormwater, this Order requires that the Discharger wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first. Any captured stormwater must be evenly reapplied to the land application area for infiltration.

Site-Specific Conditions

47. The Dixon facility is at an elevation approximately at 10 feet mean sea level (MSL), and the area is relatively flat with drainage west to east. Surface water in the area drains into adjacent road side drainage ditches and agricultural irrigation ditches. The closest body of surface water is Putah Creek, which is 3 miles north and runs east to west.
48. The average annual precipitation in the vicinity is approximately 19.5 inches per year. The 100-year total annual precipitation is approximately 34.5 inches per year. The mean evapotranspiration rate is approximately 54.1 inches per year.
49. Approximately 1.1 acres along the eastern edge of the land application area is within the 100-year flood plain based on FEMA flood zone boundaries dated 4 May 2009. The Discharger also states that a perimeter levee protects the fields from inundation.
50. Based on the Solano County Soil Survey (1977), the soils underlying the facility and land application area are classified within the Yolo-Brentwood and Capay-Clear Lake soil associations. The underlying soils consist primarily of Capay clay and Brentwood clay loam, and Capay and Yolo silty clay loams to a lesser extent.
51. The RWD states that the soils are well suited for land application and have a high available water capacity and an effective rooting depth of more than 60 inches. They are characterized as having a slow runoff and slight hazard for erosion. Tomatoes, alfalfa, grain sorghum and pasture are typically grown in other regional areas with these soil types.
52. Published infiltration rates for the soils range from 0.06 to 0.20 in/hr (0.12 to 0.40 feet per day).
53. Surrounding land uses are agricultural with a few nearby rural residences as shown in Attachment B.

Groundwater Considerations

54. The RWD states that, the typical depth to groundwater underlying the facility is 14 feet bgs and 19 to 26 feet bgs of the land application area.
55. Groundwater has been monitored by three monitoring wells since 1998 and process wastewater has been land applied since 1975. Based on the historical trend of depth to groundwater, groundwater flows from west to east.
56. Electrical conductivity, pH, and nitrate have been measured quarterly from March 1998 to December 2007. The following table provides the range and average values for these constituents along with additional constituents sampled in 2005 and/or 2007. Monitoring well MW-3 is upgradient of the land application area and provides an indication of background groundwater quality. However, MW-3 is located adjacent to Pond C lying to the north and a surface water drainage ditch to the south. Because the groundwater quality monitored by MW-3 may be impacted by the surface water bodies, this Order requires the Discharger to evaluate whether MW-3's representation of background groundwater quality is compromised and, if so, identify an alternate background monitoring location.

Constituent	Units	Range of Analytical Results ¹		
		MW-1	MW-2	MW-3 ²
Diameter	inches	1.5	1.5	1.5
Depth to Water ³	feet	26.2 (8-39)	19.3 (8.5-27.7)	13.8 (3.8-20.0)
EC ³	µmhos/cm	1177 (630-1350)	1059 (830-1270)	896 (710-1020)
pH ³	Std units	7.52 (7.23-7.85)	7.52 (7.21-8.03)	7.43 (7.14-7.84)
NO ₃ (as N) ³	mg/L	7.4 (6.4-9.3)	9.2 (7.3-12.4)	8.6 (6.4-11.3)
TKN ⁴	mg/L	0.1	0.1	0.1
BOD ⁴	mg/L	1.5	1.5	1.5
TDS ⁵	mg/L	723 (640-770)	625 (450-790)	527 (510-550)
FDS ⁵	mg/L	503 (450-540)	442 (330-510)	365 (340-390)
TSS ⁴	mg/L	14 (13-15)	2.5	24 (17-30)
Total alkalinity ⁶	mg/L	507 (490-520)	497 (460-530)	403 (400-410)
Bicarbonate as CaCO ₃ ⁵	mg/L	522 (490-560)	496 (460-530)	406 (400-420)
Carbonate as CaCO ₃ ⁶	mg/L	2.5	2.5	2.5
Hydroxide as CaCO ₃ ⁶	mg/L	2.5	2.5	2.5
Fe ⁶	mg/L	105 (50-190)	168 (50-520)	247 (50-460)
Mn ⁵	mg/L	5.8 (5-10)	5.8 (5-10)	413 (5-1700)
Total P ⁴	mg/L	0.082 (0.081-0.082)	0.100	0.13 (0.10-0.15)
SO ₄ ⁴	mg/L	77 (76-78)	60 (59-61)	47 (46-48)
B ⁴	mg/L	0.71 (0.68-0.73)	1.03 (0.96-1.10)	0.54 (0.52-0.55)
Ca ⁵	mg/L	72 (52-79)	57 (50-77)	48 (47-50)
Mg ⁵	mg/L	100 (87-110)	90 (79-110)	83 (79-86)

Constituent	Units	Range of Analytical Results ¹		
		MW-1	MW-2	MW-3 ²
K ⁷	mg/L	1.5 (1.4-1.7)	1.2 (1.1-1.3)	1.2
Na ⁸	mg/L	44 (42-48)	62 (57-69)	31 (29-34)
Cl ⁹	mg/L	66 (56-74)	41 (30-52)	23 (17-31)
Residual Cl ₂ ¹⁰	mg/L	0.05	0.05	0.29

¹ Average value with min and max range in parenthesis. A range did not exist for single value entries.

² Upgradient background well.

³ Quarterly monitoring data from 1998 through 2008.

⁴ Single samples collected on October 2 and 9, 2007.

⁵ Single samples collected in June, July, September, and October 2005 and October 2 and 9, 2007.

⁶ Single samples collected in June, September, and October 2005.

⁷ Single samples collected in June 2005 and October 2 and 9, 2007.

⁸ Single samples collected in June and July 2005 and October 2 and 9, 2007.

⁹ Single samples collected in July and September 2005 and October 2 and 9, 2007.

¹⁰ Single samples collected in September 2005.

The downgradient groundwater monitoring data indicate the groundwater quality beneath the land application area exceeds water quality objectives and background water quality for electrical conductivity (EC) and total dissolved solids (TDS). The groundwater quality in downgradient monitoring wells is also greater than upgradient water quality for fixed dissolved solids (FDS), total alkalinity, sulfate, calcium, magnesium, sodium, and chloride.

57. The nitrate as nitrogen (NO₃-N) concentration in the background monitoring well MW-3 has ranged from 6.4 to 11.3 mg/L NO₃-N from March 1998 to December 2007. The background water quality exceeded the applicable US EPA Primary MCL of 10 mg/L NO₃-N in January, June and July 2002 and December 2006. Since December 2006, background water quality has averaged 9.1 mg/L NO₃-N. This Order requires the Discharger to complete a Nutrient Management Plan to ensure adequate nutrient loading and prevent downgradient nitrate concentrations from exceeding background groundwater quality.
58. This Order utilizes electrical conductivity (EC) as the basis to evaluate the extent of salinity groundwater degradation and to set a limit on salinity loading to the land application area. Historical monitoring provides an abundance of EC data but lacks wastewater specific data for TDS and FDS monitoring. It is recognized that EC may not accurately indicate the extent of mobile, recalcitrant solids posing a threat to groundwater. Therefore, this Order establishes the requirement to monitor TDS and FDS for future site specific evaluations of salinity reduction and threat to groundwater quality.
59. The EC concentrations in monitoring wells downgradient of the land application area have consistently exceeded the EC concentration in the upgradient monitoring well MW-3. The downgradient monitoring wells MW-1 and MW-2 have had an average EC concentration from March 1998 to March 2008 of 1177 µmhos/cm and 1059 µmhos/cm, respectively. Upgradient monitoring well MW-3 has had an average EC concentration of 896 µmhos/cm. This Order requires the discharger to complete a Salinity Reduction Workplan to reduce the salinity load to groundwater. Additionally, an updated Antidegradation Analysis is required to substantiate the Discharger's assertions that the land application of wastewater does not

pose a threat to groundwater quality. Long term groundwater monitoring is needed to verify whether implemented salinity reduction methods have reduced the salinity impact to groundwater.

60. This Order requires additional monitoring to evaluate potential groundwater impacts. The monitoring requirements of this Order are also established to determine whether groundwater quality meets the antidegradation requirements set in State Water Resources Control Board Resolution No. 68-16 and the exemption requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

Other Considerations for Food Processing Waste

61. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, 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 root zone. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and the cation exchange capacity of the soil may immobilize some salinity species.
62. Irrigation with high strength wastewater results in high BOD loading on the day of application. If the rate of oxygen transfer into the soil is not adequate, anaerobic conditions may result and lead to nuisance conditions. Loading of BOD should be carefully managed and in no case cause nuisance conditions. The maximum BOD loading rate that can be applied to land without creating nuisance conditions can vary significantly depending on the operation of the land application system. *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*), cites BOD loading rates in the range of 36 to 600 lbs/acre/day but indicates the loading rates can be even higher under certain conditions.
63. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may cause groundwater degradation if the buffering capacity of the soil is exceeded. If the soil pH decreases below 5 and the soil remains in a reducing state for prolonged periods, naturally occurring metals (including iron and manganese) may dissolve and degrade underlying groundwater. In practice, prolonged reducing conditions may not occur because: a) the annual cycle of lowered pH during loading with either process water or fertilizer is followed by pH recovery during cropping and organic matter cycling and; b) the dose and rest cycling for process water application either in spreading basins or using irrigation creates alternate anoxic and aerobic conditions. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. The pH of process wastewater has an average of 6.1. The soils and underlying groundwater are expected to adequately buffer the discharge.

Basin Plan, Beneficial Uses, and Water Quality Objectives

64. 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. These requirements implement the Basin Plan.
65. Surface water drainage from the site eventually flows into the Cache Slough. The Basin Plan designates the beneficial uses of the Cache Slough as municipal and domestic supply (MUN); agricultural supply (AGR); industry process (PROC); industry power (POW); water contact recreation (REC-1); noncontact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); spawning, reproduction and/or early development of cold freshwater aquatic organisms (SPWN); and wildlife habitat (WILD).
66. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).
67. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.
68. The Basin Plan's narrative water quality objective for chemical constituents, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
69. In summary, the narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.
70. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order No. WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District.
71. Groundwater limitations are the naturally occurring background water quality or the applicable Water Quality Objective, whichever is greater. This Order requires the discharger to identify priority pollutants most likely to be present and provide data so that the Central Valley Water Board can establish final groundwater limits for the identified pollutants.
72. Naturally occurring background concentrations have not been studied and concentrations present prior to human activities have not been determined. The determination of naturally

occurring background groundwater quality shall be made using the methods approved by the Executive Officer as submitted in the Background Groundwater Quality Workplan. Until naturally occurring background groundwater quality has been determined for the constituents of concern and identified priority pollutants, this Order establishes the following priority pollutants and their associated groundwater quality limits.

- a. The EC Agricultural Water Quality Goal of 700 $\mu\text{mhos/cm}$ is the applicable groundwater quality limit to minimize salinity stress on salt sensitive crops. Harvest crops with a low salinity tolerance grown in Solano County include almonds, apricots, edible dry beans and strawberries. Because the historical MW-3 background groundwater EC concentration exceeds the Agricultural Water Quality Goal, MW-3 monitoring data has been used to establish the interim groundwater quality limit. This Order establishes an interim EC groundwater limit that is effective immediately and provides a time schedule to determine and implement the appropriate groundwater EC concentration through review and approval by the by the Executive Officer.
 - b. The US EPA Primary MCL of 10 mg/L $\text{NO}_3\text{-N}$ is the applicable water quality limit to protect human health for municipal consumption of groundwater. This Order establishes an interim $\text{NO}_3\text{-N}$ groundwater limit that is effective immediately and provides a time schedule to determine the naturally occurring background concentration and implement the appropriate groundwater limit through review and approval by the by the Executive Officer.
73. 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 best practicable treatment and control; preclude conditions that threaten pollution, degradation, or nuisance; and protect groundwater quality will be sufficient reason to enforce this Order, modify it, or revoke it and prohibit further discharge.

Antidegradation Analysis

74. State Water Resources Control Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:
- a. The degradation is consistent with the maximum benefit to the people of the State;
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives; and
 - d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.
75. The facility has been in operation since 1975 and limited groundwater degradation caused by prior activities at the facility may require corrective action. However, economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and

groundwater degradation provided terms of the Basin Plan are met. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and water quality objectives, management practices, source control measures, waste constituent treatability). This Order sets a limit on the monthly average wastewater flow and the yearly total wastewater flow in contrast to the daily maximum limit (5.0 million gallons per day) allowed in Order 95-101. Based on 154 days of yearly operation, the yearly limit reduces the potential yearly hydraulic load from 720 million gallons (MG) to 490 MG. Additionally, this Order sets effluent limits on EC, BOD, and total nitrogen compared to no limits set in Order 95-101. This Order therefore does not allow any increased degradation of groundwater.

76. The Discharger included an amended *Antidegradation Analysis* in the June 2009 RWD. The *Antidegradation Analysis* discusses salinity, nitrogen, and organic matter as constituents of concern that may have the potential to degrade groundwater. The *Antidegradation Analysis* makes the following assertions, which are summarized below:
- a. The travel time for process wastewater to reach the first groundwater after land application was determined to be approximately 4.3 years. Therefore, there will be a lag time before changes in process wastewater quality can affect groundwater quality. Assuming that salinity in the land applied process wastewater is not retained by soil, the lag time will be determined by the infiltration rate of the process wastewater. The lag time of 4.3 years was calculated by applying site specific data to a vadose zone model developed at the Laboratory for Energy Related Health Research (LERHR) South Campus Disposal Site, which was located approximately 4 miles from the Discharger and based on similar soils (Yolo clay loam).
 - b. The process wastewater discharged to land has an average BOD concentration of 594 mg/L (monthly average from 1998 through 2007 processing seasons). Under maximum designed loading conditions (5 MGD) and a maximum BOD concentration of 930 mg/L, the instantaneous BOD loading rate would be 139 lb/acre/day and the cycle average would be 38 lb/acre/day. This cycle average BOD loading rate is below the lowest risk category limit in the California League of Food Processors (CFLP) Manual and within the Organic Loading Rate Risk Category 1. Therefore, no impact to groundwater is anticipated.
 - c. Based on comparing the process wastewater discharged to land and the supplemental irrigation water, the food process wastewater falls within Risk Category 2 of the Mineral Salinity Concentration Risk Categories in the CFLP Manual. This indicates that the Dischargers irrigation operations are similar to local agriculture and that best practical treatment and control (BPTC) measures need to be implemented to reduce the risk of impacting groundwater. As part of BPTC, the Discharger has installed the brine recovery system discussed above and additional efforts are underway to reduce the salt needed to regenerate the ion exchange resins.
 - d. An analysis of variance (ANOVA) comparing the historical groundwater EC concentration in the background groundwater monitoring well MW-3 to the upgradient monitoring wells MW-1 and MW-2 suggests that EC concentrations are significantly different between the wells. By graphing the EC concentration over time and

performing a linear regression for each well, the slightly negative slope of the linear regression line suggests that the EC concentration in all wells is declining over time.

- e. Approximately, two-thirds of the nitrogen crop demand is met by process wastewater application, supplemental fertilizer, and livestock excrement. The process wastewater contributes less than fifty percent of the agronomic crop requirement, which brings the Discharger's wastewater reuse operations within Nitrogen Loading Rate Risk Category 1, the lowest category of the CFLP Manual. Additionally, a large portion of the nitrogen is lost through the irrigation process and another significant amount is taken up by the crops. Therefore, there is minimal risk to the underlying groundwater.
- f. Graphing groundwater nitrate data from monitoring wells MW-1, MW-2, and MW-3 versus time indicates nitrate concentrations in both downgradient wells are lower than the background well. A linear regression of the data indicates that the background concentration has been increasing over time. The increase is not due to the Discharger's operations but likely due to farming practices upgradient of the facility. A downward regression trend in the upgradient well MW-2 suggests that the current operations may be potentially improving groundwater quality, perhaps by the crops utilizing available nitrate.

77. In addition to the amended *Antidegradation Analysis* and further information in the RWD, the following observations can be made:

- a. Based on a monthly average effluent flow rate of 5.0 MGD, a maximum BOD concentration of 930 mg/L, application to seven management units averaging about 23 acres each, and an 18 day irrigation cycle that includes 5 days of application and 13 days of drying, the instantaneous loading rate would be 213 lb/acre/day and the cycle average loading rate would be 60 lb/acre/day. The US EPA Pollution Abatement cites that BOD loading rates upward of 600 lbs/acre/day can be applied to land without creating nuisance conditions depending on the site specific criteria. The daily and cycle average BOD loading limits, as established in this Order, account for site specific criteria that will prevent nuisance conditions.
- b. Based on historical groundwater data, the EC concentration in monitoring wells downgradient from the land application area have consistently been greater than the EC concentrations observed in the background monitoring well, which may indicate degradation. However, the same data indicates that this profile has existed since monitoring data was first collected in March 1998 and potentially before. This Order requires the Discharger to determine natural background groundwater quality. Based on best professional judgment, 1,000 $\mu\text{mhos/cm}$ of EC is the highest concentration that can be allowed without risking further degradation of groundwater. Because, it is not uncommon for the process waste water to exceed 1,000 $\mu\text{mhos/cm}$ of EC, this Order establishes a time schedule to comply with the 1,000 $\mu\text{mhos/cm}$ limit.
- c. Nutrients, such as nitrate, are introduced into the land application area by means of process wastewater disposal, livestock grazing, and fertilizer make-up. Based on the RWD's nitrogen balance, these three sources account for about two-thirds of the nitrogen crop demand. The potential for unreasonable degradation depends not only

on properly managing loading rates, but the crop nutrient uptake and the ability of the vadose zone below the land application area to provide an environment conducive to nitrification and denitrification to prevent nitrate from reaching the water table.

Groundwater monitoring results in downgradient well MW-2 show groundwater has been impacted by nitrate from 1998 to 2006. However, starting in 2006 nitrate levels have subsided below background and as long as application rates are managed properly, minimal risk of future groundwater degradation is expected. Therefore, this Order requires the Discharger to submit annual nitrogen balances to ensure that the nitrogen assimilation capacity of the land application is not exceeded.

- d. The Discharger has estimated that the average total nitrogen concentration for tomato and vegetable processing wastewater is 24 mg/L. Based on the total annual wastewater flow for tomato processing (420 MG) and vegetable processing (70 MG), the total application area of 606.9 acres, and accounting for additional nitrogen loading from supplemental irrigation water, applied fertilizer, and cattle, approximately 168 lbs/acre of total nitrogen will be applied per year. The crop uptake of the land application areas is estimated to be 227 lbs/acre/year. Therefore, the annual nitrogen loading rate limit of 250 lbs/acre, as established in this Order, will protect groundwater quality.

Other Regulatory Considerations

78. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities for the manufacturing facility area, and requiring submittal of a Notice of Intent by all affected industrial dischargers. This Order requires the Discharger to apply for coverage or submit a *Notice of Non-Applicability of Coverage under the NPDES General Permit for Discharges of Stormwater*.

The stormwater arising from the land application areas during the off season is to be regulated in accordance with the local Coalition (Dixon/Solano Resource Conservation District Water Quality Coalition), which was joined by the Discharger in 2003 and is covered by Resolution No. R5-2005-0137 Conditional Waivers of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley.

79. Section 13267(b) of the California Water Code (CWC) 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. In requiring those reports, the regional board shall provide the person with a*

written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”

80. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2010-xxxx are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.
81. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2-B as defined below:
 - a. Category 2 threat to water quality, defined as, “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”
 - b. Category B complexity, defined as, “Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units.”
82. 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.
83. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with Title 14 CCR, Section 15301.
84. 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 CCR Section 20380. While the WWTF is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.
85. The discharge meets two of three of the criteria for an exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27). In addition, a time schedule is included in this Order to require the Discharger to implement salinity reduction that will allow compliance with the third criterion.
 - a. The Regional Water Board has issued waste discharge requirements,
 - b. The groundwater data indicate that the permitted discharge under Order 95-101 seems to indicate violations with the Basin Plan. However monitoring well, MW-3 which is used to establish upgradient background groundwater quality is located adjacent to a surface water drainage ditch to the south. Therefore, these WDRs are

being issued to require the Discharger to complete the necessary studies to evidence their assertions of not degrading groundwater and to bring the discharge into compliance with the Basin Plan by requiring the Discharger to comply with effluent limits, groundwater limits, management practices, and established time schedules. This Order contains a time schedule for the Discharger to minimize the salinity of process water discharged to the land application area. In addition, this Order requires the Discharger to further investigate groundwater quality and determine background groundwater quality. Following submittal and review of this information, the applicability of Title 27 for the facility will be determined and, if needed, this Order will be reopened and further revisions to the Order will be made to protect groundwater quality.

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

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

Public Notice

- 87. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, as well as the Central Valley Water Board's administrative record, were considered in establishing the following conditions of discharge.
- 88. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.
- 89. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, Order No. 95-101 is rescinded and Campbell Soup Supply Company, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, 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. Discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside of control of the Discharger is prohibited.
- 2. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated', as defined in Section 13173 of the CWC, is prohibited.

3. The discharge of wastewater in a manner other than as described in the Findings is prohibited.
4. The discharge of toxic substances into the Discharger's process wastewater ponds or to the land application area such that biological mechanisms are disturbed is prohibited.
5. The discharge of process wastewater offsite or other than to the approved land application areas identified in Finding No. 36 is prohibited.
6. After **15 May 2011**, the discharge of any spent regeneration flush water from regeneration of the ion exchange matrix to the wastewater pond or the land application area is prohibited.
7. The discharge of domestic wastewater to the process wastewater ponds, land application area or any surface waters is prohibited.
8. Storage of solids on areas without means to prevent leachate generation and infiltration into the ground is prohibited.
9. Application of vegetable and tomato solids to the land application areas is prohibited.

B. Process Wastewater Discharge Specifications

1. The average monthly flow of wastewater to the land application area shall not exceed 5.0 million gallons per day and the total annual flow to the land application area shall not exceed 490 million gallons.
2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.
3. The discharge shall not cause the degradation of any groundwater.
4. No wastewater 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.
5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
6. Sufficient dissolved oxygen must be maintained in the upper zone (one foot) of any pond in order to prevent objectionable odors.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. Public contact with wastewater shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
9. All ponds shall be managed to prevent the breeding of mosquitoes. In particular:
 - a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, and/or use of herbicides.
 - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

10. All ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
11. The freeboard in each pond shall not be less than two feet, as measured vertically from the water surface to the lowest point of overflow.
12. The land application system shall have sufficient capacity to accommodate wastewater flow and seasonal precipitation. 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.

C. Domestic Wastewater Discharge Specifications

1. The average daily dry weather flow shall not exceed 3,000 gallons per day.
2. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Section 13050 of the California Water Code (CWC).
4. The Discharger shall operate all systems and equipment to optimize the quality of the treated effluent.
5. Public contact with wastewater shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
6. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the wastewater treatment, storage or P/E ponds at an intensity that creates or threatens to create nuisance conditions.
7. As a means of discerning compliance with Discharge Specification B.6, the dissolved oxygen content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.
8. All P/E ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
 - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

9. All treatment and storage facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
10. The WWTF 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.
11. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment levees and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain in each pond permanent staff gauges with calibration marks that indicate the water level at design capacity and enable determination of available operational freeboard.
12. On or about **15 April** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications B.10 and B.11.

D. Process Wastewater Effluent Limitations

Wastewater shall not be applied to the land application area in quantities or with constituent concentrations that exceed the following effluent limits or in other concentrations that cause noncompliance with any Discharge Specification or as determined in accordance with Provision G.1.h to ensure compliance with the Groundwater Limitations.

Constituent	Units	Compliance Date	Daily	18-day Average	Monthly Average	Annual Average
EC ¹	µmhos/cm	Immediately	2000	--	1350	1250
EC ¹	µmhos/cm	12 November 2010	1500	--	1000	900
BOD	lbs/ac/day	Immediately	300	100	--	--
Total Nitrogen	lbs/ac/year	Immediately	--	--	--	250

¹ The Discharger is required to collect effluent FDS data and may request to replace the EC effluent limit with a FDS limit once two years of FDS effluent and groundwater data have been collected.

E. Land Application Area Requirements

1. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications and Effluent Limitations.

2. Crops shall be grown on the land application area. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, and crops shall be harvested and removed from the land at least on an annual basis.
3. Discharge of treated wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the land application area.
4. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the potential impact to groundwater quality by percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
5. The land application area wastewater distribution system shall be designed and maintained to prevent human consumption of wastewater.
6. The land application areas shall be managed to prevent breeding of mosquitoes. More specifically:
 - a. All applied irrigation water must infiltrate completely within 48 hours after application ceases.
 - b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.
 - c. Low pressure pipelines, unpressurized pipelines, and ditches that are accessible to mosquitoes shall not be used to store wastewater.
7. The application of wastewater to the LAA shall comply with the following setback requirements:

Setback Definition ¹	Minimum Irrigation Setback (feet)
Edge of land application area ² to public property boundary (e.g. street)	5 ³
Edge of land application area ² to other agriculture property	0
Edge of land application area ² to property with an occupied residence	50
Edge of land application area ² to an irrigation well	25 ³
Edge of land application area ² to domestic well	100 ³

¹ Additional setbacks may be needed to comply with other requirements of this Order.

² As defined by the wetted area produced during irrigation

³ Unless otherwise approved by the Executive Officer.

8. Discharges to land application areas shall be managed to minimize both erosion and runoff from the irrigated area.

9. Irrigation flood gates shall remain closed and berms shall be maintained around the perimeter of the land application areas to prevent the runoff of treated wastewater or stormwater during the processing season.
10. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile and shall not cause significant mobilization of soil constituents such as iron and manganese.
11. Application of treated wastewater to the land application areas via flood irrigation shall only occur on furrows graded or irrigation checks configured so as to achieve uniform distribution, minimize ponding, and provide for tailwater control. Furrow runs and irrigation checks shall not be longer and slopes shall not be greater than what permits reasonably uniform infiltration and maximum practical irrigation efficiency.
12. The Discharger may not discharge process wastewater to the land application areas when soils are saturated. Wastewater distribution to the land application area shall be optimized to allow saturated fields, either from the last wastewater application or a previous precipitation event, to dry before the next wastewater application.
13. After all processing wastewater has been land applied and prior to allowing stormwater to flow offsite, the Discharger shall wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first. Any captured stormwater must be evenly reapplied to the land application area for infiltration. If necessary, the flush water can be stored in the tailwater pond until conditions, as defined in this Order, permit land application.

F. Process Wastewater Solids Disposal Requirements

1. Collected screenings and other solids removed from tomato and vegetable processing wastewater shall be disposed of offsite in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR or in a manner approved by the Executive Officer.
2. Tomato and vegetable sludge and other solids shall be removed from sumps, screens, wastewater ponds, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Tomato and vegetable solids drying operations, if any, shall be designed and operated to prevent leachate generation.
3. Sludge shall be removed from the Settling Pond as needed to ensure optimal operation and adequate hydraulic capacity. Settling Pond sludge applied to on-site land areas must be disced and indiscernible from the native soil.

G. Domestic Wastewater Solids Disposal Requirements

1. Use and disposal of biosolids shall comply with the self-implementing Federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. EPA, not the Regional Water Board. If during the life of this Order, the state accepts primacy for implementation of 40 CFR 503, the Regional Water Board may also initiate enforcement where appropriate.

2. Storage and disposal of domestic wastewater sludge (septage) shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards.
3. Sludge and other solids shall be removed from screens, sumps, ponds, and septic tanks as needed to ensure optimal operation and adequate hydraulic capacity. A duly authorized carrier shall haul sludge, septage, and domestic wastewater.
4. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

H. Groundwater Limitations

Effective immediately as an interim groundwater limitation, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than existing background groundwater quality. Background groundwater quality shall be determined using the methods provided in Title 27 Section 20415 (e)(10). Background values must be updated annually as described in the MRP.

Effective **30 November 2018**, the final groundwater limits will be the groundwater quality objectives or the background groundwater quality (as determined by required studies approved by the Executive Officer), whichever is greater. If background values are not determined, the groundwater water quality objectives listed below will be the final groundwater limitations. If necessary to meet groundwater limits, the Discharger shall upgrade its wastewater treatment before the effective date. The groundwater quality objectives are presented below:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Dissolved Solids	mg/L	450 ¹
Total Nitrogen	mg/L	10
Nitrate (as N)	mg/L	10
Ammonia (as NH ₄)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

¹ A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

I. Provisions

All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.2.

- a. By **30 June 2010**, the Discharger shall apply for coverage or submit a Notice of Non-Applicability for *Order No. 97-03-DWQ, Discharges of Storm Water Associated with Industrial Activities* or provide a reevaluation of the Notice of Non-Applicability previously issued.
- b. A composite sampler is required to provide unbiased monitoring results resulting from system cleaning and chemical sanitization events. Composite samples require collection at regular intervals and proportional to the existing flow to form a combined sample representative of wastewater character over the sampling period. By **30 June 2010**, the Discharger shall submit evidence that a composite sampler has been installed to collect process wastewater prior to land application. The submitted material needs to provide the specifications of the sampler, implemented sampling frequency and volume.
- c. By **1 April 2011**, the Discharger shall submit and implement a finalized *Operation and Maintenance Plan (O&M Plan)* that addresses operation of the wastewater treatment and disposal facility. At a minimum, the *O&M Plan* needs to describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in this Order, (c) the locations of the land application areas, and procedures to prevent excessive BOD, nitrogen, or dissolved solids loading of land application areas, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) maintenance schedule and practices for the land application areas, (g) maintenance schedule and practices for all ponds, (h) the locations of solid waste disposal areas, methods of disposal, the daily practices associated with the disposal and drying of solid waste, and the means of compliance with Prohibition A.9, (i) means to secure the land application areas and control wastewater or stormwater from discharging offsite (i.e., installation of fencing or notification signs, installation of berms to prevent runoff, configuration of checks to control application rates), (j) the current Land Application Area Management Plan including an up-to-date map clearly depicting tailwater ditches and property boundaries and nearby surface water drainage ditches, (k) planning for response to a potential natural disaster, (l) institutional controls such as Best Management Practices (BMPs), (m) Standard Operating Procedures (SOPs), (n) specific procedures to ensure that contaminated stormwater remains onsite, (o) employee orientation and training. A copy of the *O&M Plan* shall be kept at the facility for reference by operating personnel and personnel in charge of land application management, who shall be familiar with its contents. The *O&M Plan* shall be kept up to date with current practices and any changes shall be submitted to the Central Valley Regional Water Board.

- d. Ponds B and C require rehabilitation prior to being used for intermittent or emergency wastewater or stormwater storage.
 - i. By **30 September 2010**, the Discharger shall submit a *Pond Operation Plan* that describes the planned use, operation, and maintenance of all ponds on site associated with stormwater process wastewater. If the *Pond Operation Plan* identifies that Pond B and/or C are needed for future operations then the *Pond Operation Plan* must provide a workplan for their rehabilitation. Rehabilitation shall include at a minimum clearing ponds of vegetation, repairing berm damage, ensuring wastewater transfer piping functionality and installing staff gauges. If ponds are planned to be taken out of service the *Pond Operation Plan* needs to provide pond closure recommendations and a schedule to submit a decommissioning workplan.
 - ii. By **29 March 2011**, the Discharger shall have completed all planned work described in the *Pond Operation Plan* and submit a *Pond Operation Report* that describes the work performed and the pond operation and maintenance protocol, which needs to be incorporated into the *O & M Manual*,
- e. By **30 November 2010**, the Discharger shall submit a *Land Application Area Management Plan*. The plan must:
 - i. Comply with the requirements of this Order and be approved by the Executive Officer,
 - ii. Describe protocols for the land application of irrigation water and process wastewater, and the protocol for tailwater management, and shows compliance with Prohibition A.5,
 - iii. Describe protocols for cattle grazing management,
 - iv. Describe protocols for land application area maintenance including, aeration, grading, and tailwater ditch maintenance,
 - v. Provide a land application map that indicates the boundaries of the land application area, fences, tailwater ditches, nearby surface water drainage ditches, public property boundaries (e.g. roads), and shows compliance with Prohibition A.1 and Requirement D.8. The map needs to be provided in hard copy (at least 22 inches by 34 inches) and as an electronic PDF file on CD, and
 - vi. Provide evidence of land application area ownership, such as a copy of the grant deed, for each land application area. The report needs to show whether Campbell Soup Supply Co. or other subsidiary company owns the land.
- f. By **1 April 2011**, The Discharger shall have converted its domestic wastewater treatment disposal practice from pond disposal to leachfield disposal with septic treatment. The Discharger plans to obtain a domestic wastewater disposal permit from the Solano County Environmental Health Department. The Discharger shall provide status updates to the Central Valley Regional Board within the monthly monitoring reports.

- i. By **30 August 2010**, the Discharger shall submit a project schedule outlining the work necessary to install a septic tank and convert pond disposal of domestic wastewater to leachfield disposal. The submitted schedule will be made part of this Order by reference. The Discharger must also provide evidence that the Solano County Environmental Health Department will review the leachfield disposal system and permit the disposal of domestic wastewater.
- ii. The Discharger must comply with Provisions I.f.ii.1 and I.f.ii.2 described below if the Discharger does not obtain a County domestic wastewater discharge permit.
 1. By **15 October 2010**, the Discharger shall submit and immediately implement a *Domestic Wastewater Treatment Conversion Workplan* to accomplish the work necessary to convert pond disposal of domestic wastewater to leachfield disposal, and to properly close the domestic wastewater ponds. The *Workplan* must:
 - a. Describes the specifications of the newly designed septic tank and subsurface domestic wastewater disposal system. The specifications need to include typical flow rates accounting for seasonal variation, the size of the septic tank, description of the subsurface disposal system, and a map indicating the location of the septic tank, subsurface disposal area, and piping.
 - b. Provide an expected completion date that the septic tank and subsurface disposal system will be operational and online.
 - c. Provide a Wastewater Pond Closure Workplan that describes how the ponds will be decommissioned, sludge removed, and the criteria that will be used to determine if additional investigation is warranted. The workplan shall provide a timeline for expected completion.
 2. By **1 April 2011**, the Discharger shall have converted its domestic wastewater treatment to leachfield disposal and closed the ponds. The Discharger shall submit a *Domestic Wastewater Treatment Conversion and Pond Closure Report* that describes the work performed.
- iii. The Discharger shall comply with Provision I.f.iii.1 below if the Discharger obtains a County domestic wastewater discharge permit.
 1. By **1 April 2011**, the Discharger shall have converted its domestic wastewater treatment to leachfield disposal and closed the ponds. The Discharger shall submit a *Completion Report* that describes the work performed and provide evidence of the issued Solano County permit. After Executive Officer approval of the *Completion Report*, requirements set forth in the Domestic Wastewater Discharge Specifications C.1 through 12 and Domestic Wastewater Solids Disposal Specifications G.1 through 4 will no longer be applicable.

- g. By **28 February 2013**, the Discharger shall have completed and be implementing all facility upgrades necessary to improve best practical treatment and control. Necessary upgrades shall be investigated and identified as part of the workplans described below:
- i. By **31 March 2011**, the Discharger shall submit a *Salinity Reduction Workplan* that proposes to investigate best practicable treatment and control of salinity. The workplan shall consider implementing achievable management practices, reducing salinity overloading to crops, and preventing groundwater degradation. The workplan shall at a minimum propose improvements in the usage and disposal of chemicals involved in clean-in-place operations. Such improvements must consider replacing the ion exchange water softener with technology that does not create saline wastewater or segregating the ion exchange saline wastewater and disposing it at an off-site facility permitted to accept saline waste. The workplan also needs to describe how the facility will comply with Discharge Prohibition A.6.
 - ii. By **30 April 2012**, the Discharger shall submit a *Salinity Reduction Report* that provides the results of the recommendations contained in the *Salinity Reduction Workplan*. The report shall include the results of the investigation methods established to compare the selected best practicable treatment and control of salinity. The report shall provide a narrative rationale for the methods that have been implemented to reduce salinity loading. The report shall also provide a salinity mass balance that shows the facilities salinity loading to the land application area before and after the chosen methods have been implemented. Tabular and graphical representations of the process wastewater before and after salinity reduction improvements shall be used for supportive evidence.
 - iii. By **31 December 2010**, the Discharger shall submit a *Nutrient Management Workplan*. The workplan shall describe a study designed to determine the amount of FDS and nitrogen that crops grown in the land application area will take up, and will be removed during harvest. The objective of the study is to identify and utilize site specific data to determine the pounds per acre of process wastewater that may be applied to the land application area that will not cause these constituents in underlying groundwater to increase over background groundwater quality and identify the appropriate protocol for the application of any supplemental fertilizer. The study shall be completed over at least two process seasons.
 - iv. By **31 December 2012**, the Discharger shall submit a *Nutrient Management Report* that provides the results of the *Nutrient Management Workplan* analysis. The results shall include a recommended loading rate for FDS and nitrogen for the land application area. The loading rate shall be developed to prevent degradation to groundwater and shall limit "storage" of waste constituents in the soil for long-term sustainability.
- h. By **31 January 2017**, the Discharger shall have established a groundwater monitoring well network and determined background groundwater quality. The

following workplans provide progressive compliance dates to achieve this requirement.

- i. By **30 September 2010**, the Discharger shall submit a *Background Groundwater Quality and Monitoring Well Network Assessment Workplan* that includes the Discharger's proposal for determining naturally occurring background groundwater quality and evaluates and proposes changes to the current monitoring well network. Additional well installation, if necessary, shall meet the requirements of Section 1 of Attachment D, which is attached hereto and made part of this Order by reference, and describe the criteria that will be utilized to determine whether a monitoring well can be considered to provide reliable groundwater quality data. The plan needs to provide for the evaluation of monitoring well MW-3 and nearby surface water features that may impact data reliability, and propose appropriate location for establishing upgradient water quality. The criteria also need to consider aquifer continuity between monitoring wells. If new monitoring wells are necessary, the workplan needs to include conclusions, recommendations, and a rationale for the location of each additional monitoring well. The rationale needs to consider both the potential impacts from wastewater and tailwater ponds and the requirements of the *Background Groundwater Quality Report* and updated *Antidegradation Analysis* described below and if necessary, include a *Monitoring Well Installation Workplan*. The determination of naturally occurring background groundwater quality shall be made using the methods proposed by the Discharger and approved by the Executive Officer.
- ii. Within **180 Days** of approval by the Executive Officer of the Central Valley Water Board of the methodology to determine background groundwater quality and the Dischargers conclusions and recommendations contained in the *Assessment Workplan*, if necessary, the Discharger shall submit a *Monitoring Well Installation Report* that satisfies the requirements of Section 2 of Attachment D.
- iii. By **30 April 2015**, the Discharger shall submit a *Background Groundwater Quality Report* that provides an updated *Antidegradation Analysis*. The report shall present a summary of all monitoring data (including data obtained prior to adoption of this Order). The determination of background groundwater quality based on data from at least 12 consecutive groundwater monitoring events. For each monitoring constituent listed in Groundwater Limitations F.2 the report shall compare the measured concentration in each downgradient monitoring well with the concentration found in the upgradient monitoring well and background water quality. The report shall identify constituents of concern, propose a natural groundwater concentration for the identified constituents, and evaluate the effectiveness of facility improvements made as result of the *Salinity Reduction Workplan* and *Nutrient Management Workplan*. Background concentrations will be used to determine the need to reopen the order and revise annual average effluent limits described in Effluent Limitation C.1. If on **31 May 2015**, the determination indicates, on a constituent by constituent basis, that:

1. Background groundwater concentrations are greater than the annual average effluent limits specified in Effluent Limitation C.1, the Discharger may petition the Central Valley Water Board for consideration of establishing higher annual average effluent limits or take no action.
 2. Background groundwater concentrations are lower than the annual average effluent limit specified in Effluent Limitation C.1, the Discharger shall submit a Facility Improvement Workplan by **31 January 2016** that will describe the improvements or operational changes it will implement at the facility and a schedule to allow the discharge to comply with Groundwater Limitation F.1. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for implementing best practicable treatment and control for each constituent of concern. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.
2. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.
 3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2010-xxxx, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
 4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
 5. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
 6. Upon the reduction, loss, or failure of the domestic sewer system resulting in a domestic sewer overflow, the Discharger shall take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:
 - a. Interception and rerouting of sewage flows around the sewage line failure.
 - b. Vacuum truck recovery of domestic sewer overflow and wash down water.

- c. Use of portable aerators where complete recovery of the domestic sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters.
 - d. Cleanup of sewage-related debris at the overflow site.
7. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
8. The Discharger shall submit to the Central Valley Water 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 being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule.
9. In the event of any change in control or ownership of the facility or wastewater land application areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.
10. The Discharger must 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 Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
11. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
12. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Central Valley Water Quality Control Board, Central Valley Region, on _____.

PAMELA C. CREEDON, Executive Officer