CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2018-0006

WASTE DISCHARGE REQUIREMENTS

FOR

OLAM WEST COAST, INC. AND T & P FARMS
OLAM WEST COAST WILLIAMS FACILITY
COLUSA COUNTY

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

1. On 19 December 2016, Olam West Coast, Inc. submitted a Report of Waste Discharge (RWD) to obtain revised Waste Discharge Requirements (WDRs) for the discharge of tomato processing wastewater at the Olam West Coast Williams processing plant site and land application areas and for the operation of a composting site. A RWD Addendum was submitted on 10 April 2017.

2. Olam West Coast, Inc. (Olam) dba Olam Spices and Vegetable Ingredients owns and operates the Williams processing plant site that generates the waste. The land application areas (LAAs) are owned by T & P Farms and leased to Olam. Olam (hereafter known as Discharger) is responsible for compliance with these WDRs.

3. The Olam processing plant site is at 6229 Myers Road in Williams (Section 32, T15N, R2W and Sections 1 and 4, T14N, R2W, MDB&M) as shown on Attachment A, which is attached hereto and made part of this Order by reference. The Facility consists of the processing plant site (which includes the storage pond), the LAAs, and the composting area, which occupy Assessor's Parcel Numbers (APN) 017-090-062, 018-080-038, 018-090-04, 018-090-008, and 018-090-009.

4. WDRs Order R5-2006-0047, adopted by the Central Valley Water Board on 5 May 2006, prescribes requirements for the discharge of tomato processing wastewater to the storage pond and LAAs known as Ranch 71 and Ranch 72. Order R5-2006-0047 allows a monthly average wastewater flow of up to 4.0 million gallons per day (mgd) during the months of July through October and a monthly average wastewater flow up to 0.2 mgd during the months of November through June. In the December 2016 RWD and April 2017 RWD amendment, the Discharger requested a fixed dissolved solid (FDS) and plant available nitrogen (PAN) effluent limit in lieu of their current total dissolved solids (TDS) and total nitrogen effluent limit; requested expanding the fresh pack season to include June; and requested an increase to the flow rate during the off-season months from 0.2 to 0.4 mgd. Therefore, Order R5-2006-0047 will be rescinded and replaced with this Order.

Existing Tomato Facility and Discharge

5. The processing plant processes tomatoes and tomato products intermittently during the year. Mechanically harvested tomatoes are trucked into the processing plant, washed, and macerated for tomato processing. A process flow diagram is shown on Attachment B, which is attached hereto and made part of the Order by reference.

6. Process wastewater is generated from the paste and retail lines. The paste line operates seasonally and processes fresh tomatoes into tomato paste. The retail line operates intermittently year-round during both seasonal fresh pack (approximately June through October) and off season (November through May) and produces retail packaged tomato products including canned diced tomatoes, whole tomatoes, and tomato juice products. The processing plant also cans chilies and makes food products such as salsas and sauces during the off-season.

7. The paste line has been operating since 1982. Bulk unloading of fresh tomatoes from trucks is washed by high volume low pressure water pipes (or wands) prior to entering the flume system (conveyance system). The flume water is screened to remove coarse solids and recycled back into the flume system, with condensate recovery making up approximately 50 percent of the flow. Approximately 45 percent of the process wastewater is generated from the flume water and evaporation process. The remaining 55 percent of the total process wastewater flow is generated from the hot breaks, finishers, aseptic processing and filling operations, clean-in-place (CIP) system, and small volumes of boiler blow down.

8. The retail line began operating in 2001. Although the retail line can generate process wastewater year round, the length of operation depends on market demand.

    a. During the off season, the retail line does not involve the processing of raw fruits, vegetables, or other field crops. Process wastewater generated is primarily wash water resulting from cleaning the product storage, blending, and packaging equipment.

    b. During the fresh pack season, the retail line produces both fresh and re-manufactured products. Bulk unloading of fresh tomatoes from trucks occurs with high volume low pressure pipes (or wands) prior to entering the flume system. Approximately 85 percent of the process wastewater consists of flume water. The flume water is screened and recycled back into the flume system with condensate recovery making up approximately 50 percent of the flow. The remaining 15 percent of the total process wastewater flow is generated from the remaining steam peeling, tomato preparation, can filling/closing, and can cooling processes. Minor volumes of boiler blow down is produced and commingled with the process wastewater.

9. Process wastewater from the paste line and the retail line are commingled and discharged to a concrete sump. Location of the wastewater sump is shown on

Attachment C, which is attached hereto and made part of this Order by reference. Wastewater is screened then pumped to the LAAs by a force main approximately 3.6 miles long to a conveyance ditch at each LAA. The conveyance ditch is an unlined channel where the wastewater force main and supplemental irrigation water discharges into.

10. The current LAAs consist of two properties, Ranch 71 and Ranch 72. Their location is shown on Attachment C.

    a. Ranch 71 is approximately 643 acres and divided into four management units or fields (71-1 NW, 71-2 NE, 71-3 SW, and 71-4 SE).

    b. Ranch 72 is approximately 229 acres and divided into two management units or fields (72-5 N and 72-6 S).

    c. Discharges of process wastewater at Ranch 71 and 72 began in July 2006. The Discharger continues to apply wastewater at Ranch 71. Ranch 72 has not received wastewater since the 2007 season.

11. From the conveyance ditch, process wastewater flows into a smaller unlined headwater canal for land application by ridge and furrow or conveyed through pipe for land application by sprinklers. Currently, fields 71-1 NW, 71-2 NE, and 71-4 SE are irrigated with center pivot sprinklers. Irrigation details at Ranch 71 are shown on Attachment D, which is attached hereto and made part of this Order by reference. Because wastewater has not been applied to Ranch 72 for several seasons, irrigation details are not available. Irrigation is controlled to minimize production of irrigation runoff (tailwater). If produced, tailwater is collected in perimeter ditches and reused in the irrigation system. Planting and harvesting of each field is staggered to allow continual irrigation during drying and harvesting activities. Typical crops grown and harvested include rye grass, sudan grass, sorghum-sudan grass, and corn. Based on the California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water*, typical annual nitrogen crop uptake rates range from 155 to 260 pounds of nitrogen per acre (lb/ac).

12. Prior to 2006, process wastewater was discharged to former LAAs known as the Myers (656-acre farmland) and Reynolds Property (145-acre farmland). From 1982 until October 2005, the Myers Property received process wastewater from the paste line during the fresh pack season. Between 2002 and 2005, the Reynolds Property received process wastewater from the retail line during the fresh pack season.

13. During emergencies and during the wet season months, process wastewater is diverted to a wastewater storage pond and its location is shown on Attachment C. At 2-feet of freeboard, the pond has a 2.7 million gallon (mgal) storage capacity. The pond is lined with a 12-inch liner constructed with imported clay mixed with native material. The liner was engineered using permeability testing to establish the ratio of native on-site materials blended with imported clay. A 50/50 mixture was used during construction to ensure the permeability of the liner was minimized. Four to six inch

lifts were placed and compaction testing was conducted to ensure greater than 95 percent compaction. Pond construction information was previously reported in an *Amended Report of Waste Discharge* dated 30 August 2001.

14. Two on-site production wells, SW-1 and SW-2, provide water for potable use and tomato processing. SW-1 is perforated from 330 to 410 feet below ground surface (bgs). SW-2 is perforated from 330 to 440 feet bgs. Both wells are disinfected via chlorination prior to use for drinking water. Their locations are shown on Attachment C.

15. Well S-6, located at Ranch 71, provides supplemental irrigation water. Supplemental irrigation water at Ranch 71 was last used in June 2014. Characterization of the supply water quality, as provided in the RWD, is shown in the table below. Average values were calculated using data collected between July 2006 and December 2015.

Average Supply Well Water Quality, mg/L unless specified			
Constituent	**SW-1**[1, 3]	**SW-2**[1, 3]	**S-6**[2, 3]
Total Dissolved Solids (TDS)	429	422	575
Fixed Dissolved Solids (FDS)	385	379	527
Nitrate as Nitrogen	4.69	5.96	5.57
Total Kjeldahl Nitrogen	0.29	0.26	0.05
Total Nitrogen	5.14	6.30	5.57
Boron	0.30	0.29	0.28
Chloride	48	46	45
Sodium, dissolved	60	54	56
Iron, dissolved	0.05	0.05	0.05
Manganese	0.07	0.04	0.02
Sulfate	66	57	57

[1] Results shown as average of samples collected between July 2006 and December 2015. Number of samples varies by constituent.
[2] Results shown for sample last collected in June 2014.
[3] Non-detect values (below laboratory method detection limit) are reported as one-half the detection limit for purposes of averaging.

16. The processing plant typically operates 24-hours daily, 7-days a week during the fresh pack season and intermittently year-round during the off season. Monthly process wastewater flows measured between 2012 and 2016 are shown below. Supplemental irrigation water was used in 2014.

	Flow, mgal					
	Process Wastewater					Supplemental Irrigation
Month	2012	2013	2014	2015[1]	2016	2014
January	0.64	0.67	1.52	1.80	0.58	0
February	0.56	0.59	0.99	2.06	2.27	0
March	0.48	0.57	1.32	0.03	13.3	0
April	1.39	0.61	2.90	0.01	1.90	0
May	0.64	1.16	1.64	2.20	10.4	0.50
June	1.35	7.49	0.49	10.4	9.10	1.20
July	26.6	39.1	39.3	33.5	35.2	0
August	56.5	60.5	58.9	58.4	15.4	0
September	61.0	59.4	61.1	61.1	13.8	0
October	35.0	49.2	36.7	39.7	44.5	0
November	6.02	2.28	3.94	3.94	15.5	0
December	0.38	1.04	3.94	3.94	3.81	0
Annual Total:	191	222	213	217	166	1.70
Fresh Pack Total:	179	208	196	193	109	---
Off-season Total:	11.5	14.4	16.7	24.4	56.9	---

[1] Due to an unoperational flow meter, the monthly flow record from October through December 2015 is the monthly totals and average from the same months in 2014.

17. A 20 February 2007 *Preliminary Salinity Source Reduction Completion Report* (*2007 Salinity Report*) submitted by the Discharger describes a quantitative evaluation of salinity reduction measures implemented during the 2006 process season. The evaluation was based on 2005 and 2006 effluent data and implementation of the following salinity source reduction measures:

    a. Increase return of low salinity boiler condensate to the boiler.
    b. Regenerate the water softener system with potassium chloride.
    c. Unspecified improvements to the paste line to reduce loss of solids.
    d. Installation of new elevators and unloading flumes to reduce product loses.
    e. New clean water reuse systems to recycle pump seal and cooling tower water in the flume systems.

    The *2007 Salinity Report* concluded that operational changes, modifications, and installation of new processing equipment decreased the relative salt contributions to wastewater from the water softeners and sanitizing chemicals. In addition, the Discharger will audit the brine mixing, the chemical usage for the clean in place systems, and the product dumping practices for additional source reduction

opportunities. The report also identified that the source water and tomatoes are the two largest contributors of salt present in the wastewater, both of which can be variable and unpredictable.

18. Additional salinity control measures and reduction efforts were implemented in 2015 and 2016 that included the following:

    a. A plant-wide recycling program to capture and control a greater portion of the tomato waste spillage, resulting in fewer tomatoes entering the wastewater collection system.
    b. Modifications to existing equipment to help capture and reduce spillage, resulting in fewer wastes entering the wastewater collection system.
    c. Installation of new equipment, resulting in fewer gallons of fresh water being used during the peeling operations or to supply the cool water demand.
    d. Installation of a new ozone system that provides more ozonated water for tomato sanitation, thereby decreasing the chemical demand and impact on wastewater quality.
    e. Between 2014 and 2016, the use of sodium hypochlorite was decreased by at least 50 percent.
    f. In 2015 and 2016, energy-saving projects were completed that return more condensate back to the process from the evaporators and from the retail plant production heaters.

19. The RWD included a characterization of the process wastewater based on the average data collected between February 2008 and December 2015 as shown in the table below. Wastewater samples that the Discharger deemed unrepresentative of typical effluent conditions either due to sampling error or a result of fluctuations in the processing operations were not included in the calculated average. Wastewater samples are collected from the effluent line after screening, prior to discharge to the LAAs or discharge to the wastewater storage pond when flows are diverted for winter storage. Wastewater is typically high in nitrogen and salinity. Most of the nitrogen in the wastewater is present as TKN, which can readily mineralize and convert to nitrate in the LAAs.

Average Process Wastewater Quality, mg/L unless specified		
Constituents	**Fresh Pack**[1, 3]	**Off Season**[2, 3]
BOD_5	1,103	1,033
TDS	1,628	1,760
FDS	917	1,124
Boron	0.4	0.5
Chloride	189	403
Sodium, dissolved	153	327

Average Process Wastewater Quality, mg/L unless specified		
Constituents	**Fresh Pack**[1, 3]	**Off Season**[2, 3]
Sulfate	76	86
Iron, dissolved	11.0	9.4
Manganese	0.7	0.2
Nitrate as Nitrogen	2.9	4.4
Total Kjeldahl Nitrogen	93.1	87.4
Ammonia as Nitrogen	21.0	23.0
Total Nitrogen	96.0	92.8

[1] Fresh Pack results include average calculated from samples collected between July and October, with the exception of uncharacteristically high values recorded on 7/25/2013 and 4/1/2015.
[2] Off Season results include averages calculated from samples collected between November and June, with the exception of uncharacteristically high values recorded on 12/14/2012, 2/27/2013, 3/19/2013, and 4/12/2013.
[3] Non-detect values (below laboratory method detection limit) are reported as one-half the detection limit for purpose of averaging.

20. The RWD states that as the result of water conservation efforts performed during the drought years, FDS concentrations have increased to approximately 1,070 mg/L. In 2015 and 2016, additional salinity control measures and reduction efforts were implemented and FDS concentrations have decreased. Because of the seasonal operation of this processing plant, the average wastewater FDS and TDS concentration is best characterized as a flow-weighted annual average. Flow-weighted concentrations, calculated using concentration and flow data submitted in the Annual Reports, are presented below. FDS and TDS concentrations in the supply well are shown for comparison purposes.

	Wastewater Quality		**Supply Well 1**		**Supply Well 2**	
Year	**Flow-Weighted FDS, mg/L**	**Flow-Weighted TDS, mg/L**	**FDS, mg/L**	**TDS, mg/L**	**FDS, mg/L**	**TDS, mg/L**
2012	1,142	1,993	378	411	402	425
2013	1,489	2,168	355	375	371	388
2014	1,026	1,902	--	--	360	360
2015	774	1,830	--	--	--	--
2016	753	1,426	--	--	--	--

"—" denotes no data available.

21. Hydraulic loading at the LAAs as reported in the Annual Reports is shown below. In 2012 and 2013, data shows that Field 71-3 SW received the largest amount of wastewater than any other field. No wastewater was applied to Ranch 72.

LAA Field	Area, acres	Hydraulic Loading, inch				
		2012	2013	2014	2015	2016
71-1 NW	159	11.03	7.69	14.46 [1]	14.44	12.02
71-2 NE	153	3.78	7.45	12.44 [1]	13.10	4.54
71-3 SW	119	28.73	42.34	11.48 [1]	16.10	21.25
71-4 SE	144	8.82	5.5	16.90 [1]	12.3	6.74

[1] Supplemental irrigation water was applied.

22. Annual nitrogen loading as reported in the Annual Reports is shown below. Typical annual nitrogen uptake rates for corn and sorghum-sudan grass, which are grown on Ranch 71, range from 155 to 260 pounds of nitrogen per acre (lb/ac). Data shows that actual nitrogen loading at Ranch 71 has exceeded over 260 lb/ac, particularly at Field 71-3 SW during year 2012 and 2013. A portion of Field 71-3 SW is used for a composting operation. Because finished compost is removed from the site, the Discharger assumed nitrogen loading from the composting operations to be negligible. The nitrogen loading rate values shown below is based only on process wastewater applied. Wastewater was not applied to Ranch 72.

LAA Field	Area, acres	Nitrogen Loading, lb/ac				
		2012	2013	2014	2015	2016
71-1 NW	159	457	351	308	277	132
71-2 NE	153	144	370	243	271	61
71-3 SW	119	1,107	2,222	258	300	198
71-4 SE	144	297	221	325	259	92

23. The 2006 WDRs prescribe a 100 lb/ac/day BOD loading limit as an irrigation cycle length average. An irrigation cycle length is defined as the number of days from the first day wastewater was applied to the last day of the drying time. Monthly irrigation cycle average BOD loadings as reported in the Annual Reports is shown below as a range of values during the months of wastewater application at each field each year. BOD loading was based on wastewater only. BOD in supplemental water was assumed negligible. Wastewater was not applied to Ranch 72.

LAA Fields	Areas, acres	Cycle Average BOD Loading, lb/ac				
		2012	2013	2014	2015	2016
71-1 NW	159	0.1 - 33	20 - 57	8 - 86	0.3 - 99	16 - 42
71-2 NE	153	4 - 18	15 - 55	65 - 142	0.2 - 94	2 - 20

LAA Fields	Areas, acres	Cycle Average BOD Loading, lb/ac				
		2012	2013	2014	2015	2016
71-3 SW	119	2 - 92	1 - 99	3 - 141	32 - 80	11 - 87
71-4 SE	144	5 - 47	22 - 41	67- 101	20 - 99	15 - 67

24. Process wastewater and storm water runoff are collected and distributed by the same system of drains and pipes at the processing plant site. When the processing plant is not operating, all rainfall runoff generated from the paved and roofed areas drain into a series of sumps, which eventually drain into the wastewater sump. During 2006 and previous years, isolation valves at the wastewater sump allowed collected storm water runoff to be discharged by gravity to the storm water estuary. The storm water estuary with an estimated storage capacity of 1.2 mgal was located at the southeastern corner of the processing plant site. At the end of 2006, the storm water estuary was drained and converted to a parking area. Currently, storm water runoff and process wastewater drains to the wastewater sump, where it is then pumped directly to the LAAs or pumped to the wastewater storage pond (typically during the off-season and/or during a rainfall event).

25. Domestic waste produced at the processing plant is handled in a separate collection and disposal system (on-site septic tank and leach field system) permitted through the Colusa County Health Department.

Existing Composting Operation

26. Prior to 2012, all residual solid wastes or wet wastes generated from the processing plant were land applied to a 50-acre area on a rotational basis at Field 71-3 SW. The solids were spread in a layer not to exceed two inches and disked into the soil within 24 hours. The 50-acre area would not receive process wastewater and would not be cropped until the following year, when wastewater would be used for irrigation and another 50-acre area would be used for solids application. The Discharger no longer land applies residual solids to Field 71-3 SW and currently sends all residual solid wastes or wet wastes to their on-site composting operation. In the event that the compost operation ceases, the Discharger may resume solids application to the land application area sites as shown on Attachment C upon submittal and approval of a *Solids Use and Disposal Practice Plan*.

27. In a 25 July 2012 letter, the Discharger stated all residual solid wastes or wet wastes will be incorporated into compost windrows located at Ranch 71. Since 2012, the Discharger has operated a composting operation, capable of handling up to 40,000 cubic yards of compost annually, on a 25-acre portion of Field 71-3 SW. The composting operation is not allowed under the 2006 WDRs. Because revision of the 2006 WDRs was anticipated, the composting operation and discharge of tomato processing wastewater was planned to be regulated under one permit.

28. The composting operation is permitted through the California Department of Resources Recycling and Recovery (CalRecycle) with enforcement by the Colusa County Department of Environmental Health. CalRecycle has developed regulations governing compostable material handling facilities including facility siting, design standards, operating standards, environmental health standards, such as sampling and pathogen reduction requirements for the compost products derived from compostable materials prior to being sold or given away, recordkeeping, monitoring, reporting, and site restoration. CalRecycle's authority does not include regulating discharges that may affect water quality.

29. Based on information included in the RWD and RWD Addendum, the composting operations' work surface was constructed using on-site, moisture-conditioned soils compacted with a sheep foot roller and flat roller compaction equipment. The compacted soil is estimated to be six to twelve inches deep. Construction completion reports that document the design or construction of the composting operation work surface or containment structures were not included in the RWD. The underlying groundwater is estimated to be 4 to 6 feet bgs. Depth to water measured from the closest groundwater monitoring well (MW-29) has historically been 15 to 20 feet bgs.

30. The RWD states that the composting area is surrounded by berms and slightly graded to allow runoff to drain to the far northeast corner of the site. Any runoff is pumped through perimeter ditches and applied to Field 71-2 NE. A sample of the runoff was not available for analysis at the time the RWD and RWD Addendum were submitted.

31. Wet wastes are delivered by truck trailers to a staging area at Ranch 71. Solids (tomato pomace) from the processing plant, along with crops harvested from the LAAs and other nearby farms, including almond, rice, and mushroom byproducts are incorporated into compost windrows using a front end loader. Rice hulls (or husk) and other similar bulking agents are used to form the compost windrows.

32. The completed windrows stand approximately 7.5 feet in height and are comprised of three layers of almond husk, rice husk, and tomato pomace. No additional additives or amendments are added to the compost mixture. The total water content of each compost windrow should maintain 60 percent water by volume ratio in order to achieve necessary heat production and healthy aerobic decomposition and pathogen and reduction capability. Windrows are turned mechanically on a periodic basis and watered from groundwater supply wells to maintain an internal temperature of 131 degrees Fahrenheit. Once composting is complete, the finished product is sold to external growers for use as a soil amendment.

33. In November 2014, the Discharger was issued a Notice of Violation (NOV), in part, for the following violations of Order R5-2006-0047:

    a. Discharge Specification B.2: During the months of November through June, the monthly average wastewater flow shall not exceed 0.20 mgd.

b. Land Application Area Specification D.1: Hydraulic loading of wastewater and supplemental fresh water to the LAAs shall be at rates designed to minimize percolation of waste constituents below the evaporative and root zones, except as needed to promote surface soil chemistry that is consistent with sustainable agricultural land uses.

c. Effluent Limitations C.2: The discharge of wastewater combined with supplemental irrigation water to the LAAs shall not exceed 700 mg/L total dissolved solids as a flow-weighted yearly average.

d. Effluent Limitations C.3: The discharge of wastewater combined with supplemental irrigation water to the LAAs shall not exceed 50 mg/L total nitrogen as a flow-weighted yearly average.

e. Composting operations at Ranch 71 LAAs is not allowed under the WDRs.

f. Submittal of incomplete monitoring reports for January 2013, April 2014, May 2014, June 2014, and July 2014.

34. The Discharger responded to the NOV in a letter dated 12 December 2014. The following was discussed, proposed, and/or implemented:

a. Exceedance of the flow limit was an anomaly due to an early crop that resulted in an early startup (late June) of the paste line, which operates from July through October.

b. Crop water demand in June exceeded the amount of process wastewater applied, resulting in no hydraulic overloading of the LAAs.

c. The Discharger states that FDS and TDS in groundwater are similar in concentrations and states that FDS be used as the measure of salinity in process water, based on the recommendation of the California League of Food Processors *Manual of Good Practice for Land Application.*

d. Since adoption of the 2006 WDRs, the flow-weighted annual average concentration for total nitrogen has exceeded 50 mg/L. The existing WDRs states that 83 percent of the total nitrogen can be assumed to become PAN. The Discharger states that a typical method of limiting nitrogen is to establish a total nitrogen rate in pound per acre year (lb/ac-year) based on the expected crop uptake of the PAN. The Discharger proposes to conduct a nitrogen mineralization study using site-specific conditions to determine whether the PAN is actually generated.

e. The Discharger is in contact the Regional Board regarding regulatory coverage for the composting operations. An application was submitted to the Colusa County Planning Department for a determination on CEQA applicability.

f. The Discharger reviewed responsibilities and made assignments internally for both sample and data collection to ensure on-time monitoring report submittals.

g. Past and planned source control measures with respect to TDS were described (see Finding 17 and 18).

Planned Changes in the Facility and Discharge

35. The existing composting operations will be regulated under this Order in lieu of the State Water Resources Control Board General Waste Discharge Requirements for Composting Operations, Order WQ 2015-0121-DWQ.

36. Order R5-2006-0047 permits a monthly average flow of 4.0 mgd between the months of July and October (fresh pack season). In recent years, the fresh pack season has started production in June due to warmer weather and early harvesting by local farmers. The Discharger requests that the fresh pack season be expanded to include the month of June, but the numerical flow limit be maintained.

37. The retail line operates year-round, with process wastewater flows fluctuating through the year. Currently, the retail line operates between 100 and 130 days during the off season and up to 100 days during the fresh pack season. The Discharger requests that the flow limits during the off season be limited to the months of November through May and increase the flow limit during the off season due to increased production of peppers and tomatillos and remanufacturing operations. A summary of the proposed flow limits is provided below.

Flow Measurement	Existing Flow Limit (November - June)	Proposed Flow limit (November - May)
Average Daily	0.2 mgd	0.4 mgd
Total Cumulative	20 mgal	40 mgal

38. A revised water balance was included in the April 2017 RWD Addendum to demonstrate adequate storage and disposal capacity during a 100-year return period and average precipitation. The proposed flow limits were based on reasonable estimates of wastewater flows per month from the retail line and paste line; a storage pond with a 2.7 mgal capacity; and a total of 575 acres for wastewater application, where 500 acres is cropped with sudan grass and 75 acres is cropped for corn.

39. Although the Discharger's water balance demonstrated adequate storage and disposal capacity, it is not clear whether the additional waste constituent loadings to Ranch 72 have the potential to degrade groundwater. The Discharger may need to maximize the use of all available LAAs, including Ranch 71, to minimize waste constituent loading rates and preclude unreasonable groundwater degradation.

40. The Discharger proposes a 1,100 mg/L FDS concentration as a flow-weighted average in lieu of the existing flow-weighted annual average TDS concentration of 700 mg/L. As stated in the RWD, FDS concentrations in the process wastewater have increased to 1,070 mg/L due to the result of water conservation efforts during the drought years. However, more recent data in 2015 and 2016 show FDS

concentrations of 774 and 753 mg/L, respectively. Additional salinity source control measures and reduction efforts were implemented during those years.

41. Based on a Nitrogen Mineralization Study, the Discharger proposes a 220 lb/acre-yr loading rate for PAN in lieu of the existing flow-weighted yearly average total nitrogen concentration of 50 mg/L.

    a. The RWD included a Nitrogen Mineralization Study, which was conducted in April 2015. The study evaluated the nitrogen loading associated with the use of process wastewater for irrigation. The study was used to quantify the decomposition of the carbon source and the nitrogen transformations during the decomposition process; and to determine a realistic PAN loading to crop uptake.

    b. Study methods and predictive modeling developed by Dr. John T. Gilmour, PhD. was used to complete the evaluation. The study was completed in two phases. The first phase involves the incubation of a control soil and a soil amended with the organic carbon source. The second phase involves predictive modeling using the incubation phase results and local climate data. The rate of decomposition and the quantity of nitrogen mineralized, or immobilized, is predicted over several growing seasons. Process wastewater collected from the processing plant and topsoil collected from a location adjacent and west of the LAAs was used to conduct the evaluation.

    c. Tomato process wastewater is a source of carbon when applied to the LAAs. The carbon is decomposed by microbes in the soil, which utilize the carbon as an energy source. The relationship of carbon to nitrogen (C:N) has a major influence on the rate of decomposition and the mineralization of organic nitrogen. Vegetation requires mineralized nitrogen; it cannot utilize organic nitrogen.

    d. Computer simulations predicted an average of 73 percent of the total nitrogen in the process wastewater is PAN. In addition, another 8 percent is loss to denitrification from flood irrigation.

    e. The study concluded that a nitrogen loading rate for PAN of 220 lb/acre-year was protective of groundwater quality based on a flow-weighed nitrogen concentration of 88 mg/L, a PAN of 73 percent, and approximately 550 acres of cropped irrigated land.

Site-Specific Conditions

42. The surrounding area near the site slopes gently eastward towards the Colusa Basin Drain, with ground surface elevations range from approximately 95 to 45 feet above mean sea level.

43. With the exception of a few areas along Cortina Creek, the Olam processing plant and Ranch 72 are not located within the 100-year flood zone based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (2003). Cortina Creek is flanked on both sides by large berms which provide protection from

inundation. Portions of Ranch 71 are within the 100-year flood zone. Cortina Creek was re-aligned to flow outside Ranch 71 along the northwestern and northern perimeter.

a. Preliminary survey data submitted in a January 2006 RWD Addendum showed that crest of the berms at Ranch 71 ranged from 44.16 feet to 58.63 feet above mean sea level (msl). Based on this data, the 2006 WDRs required improvements to raise the flood protection berm height to 47 feet above msl.

b. An initial survey revealed that approximately 1.5 miles of berms surrounding the eastern and southeastern boundaries would require fill to meet the 47 foot requirement.

c. A *Flood Protection Improvements Completion Report* was submitted to the Central Valley Water Board on 17 September 2007. Improvements were made between Stations 40 + 00 to 110+00 to reduce the risk of the land application areas being inundated by flood waters. Fill material was placed to raise perimeter roads along the southeastern corner of the property and the perimeter berm along the northeastern corner of the property. Areas received between 1.0 to 4.5 feet of fill material. Although significant improvements were made than was originally expected, sections of the berms are still below the 47 foot requirement.

44. Subsurface soils in the area are classified by the Natural Resource Conservation Service (formerly known as the Soil Conservation Service) as predominantly Westfan gravelly loam, Westfan loam, Capay clay loam, Mallard clay loam, and Willows silty clays. The Capay soils are very deep and moderately well drained. The Westfan soils are very deep and well drained. The Mallard soil is very deep and somewhat poorly drained. All of these loams are formed in alluvium derived from mixed sources.

45. Surrounding land uses are predominately agricultural lands and a few residences are nearby. State Highway 99 and I-5 run along the western boundary of the site. The Reclamation District Main Canal 2047 and the Sycamore Slough are the main surface waters to the east of Ranch 71. A large biomass facility, which recycles rice waste to produce renewable electric power, is located directly north of the processing plant.

46. The annual average precipitation in the Williams area is approximately 17 inches and the 100-year total annual precipitation is approximately 28 inches. Based on data published by the California Irrigation management Information System (CIMIS, 2015) for Colusa, California, Station 32, the reference evapotranspiration rate is approximately 53 inches per year.

Groundwater Conditions

47. The local gradient typically flows from the west to the east. Depth to groundwater underlying the storage pond ranges from approximately 6.6 to 22 feet bgs. Depth to groundwater underlying Ranch 71 and 72 range from 1.0 to 16.4 feet bgs and 3.5 to 30.9 feet bgs, respectively.

48. The groundwater monitoring well network consists of multiple wells and lysimeters located at the storage pond, the former LAAs (Reynolds and Myers properties), and the current LAAs (Ranch 71 and 72). Wells currently monitored are summarized in the table below. Well and lysimeter locations are shown on Attachment C.

Monitoring Well Network at the Storage Pond		
Well Name	**Well Installation Date**	**Well Position**[3]
LF-1	1995	upgradient
MW-8	2001	downgradient
Monitoring Well Network at Ranch 72		
Well Name	**Well Installation Date**	**Well Position**[3]
MW-21/21A	July 2005/July 2014	upgradient
MW-22	July 2005	downgradient
MW-23	July 2005	downgradient
MW-28	March 2007	downgradient
MW-32	June 2014	upgradient
Monitoring Well Network at the Ranch 71		
Well Name	**Well Installation Date**	**Well Position**[3]
MW-24	July 2005	upgradient
MW-25/25A[1]	July 2005/November 2009	upgradient
MW-26	July 2005	downgradient
MW-27/27A[2]	July 2005/June 2013	downgradient
MW-29	March 2007	downgradient
MW-30/30A[1]	March 2007/November 2009	downgradient
MW-31/31A[2]	March 2007/June 2013	downgradient

[1] Wells MW-25A and MW-30A were installed to replace former wells MW-25 and MW-30, which were presumed destroyed or buried.
[2] Well MW-27A and MW-31A were installed to replace former wells MW-27 and MW-31, which were damaged.
[3] Location with respect to groundwater gradient direction.

49. Due to shallow groundwater and evidence of groundwater degradation at the former LAAs, the 2006 WDRs required continued monitoring of the wells surrounding the former LAAs, which included LF-2, LF-3, MW-4, MW-5, MW-6, MW-7, MW-9, MW-10,

MW-11, MW-12, MW-16, MW-17, MW-18, and MW-20. Water Board staff approved the Discharger's request to abandon these wells based on groundwater concentration trends and minimal groundwater impacts observed at the former LAAs between 2005 and 2012.

50. In a *Groundwater Characterization Report* (2006 *Groundwater Report*) dated 4 August 2006, the Discharger determined up-gradient or pre-discharge groundwater quality at the storage pond, Ranch 71, and Ranch 72. Shallow groundwater quality varies at the three discharge locations. Where appropriate, the Discharger used statistical methods to determine up-gradient or pre-discharge groundwater quality as an upper, one-sided, 95 percent tolerance interval with 99 percent coverage. The report presented the following:

    a. **Storage Pond.** The Discharger determined that MW-9, up-gradient of the storage pond, was unaffected by process water. Up-gradient groundwater quality was determined using data from well MW-9 and later measurements in down-gradient well MW-8 have been compared to those values. An inter-well approach was appropriate due to the low degree of spatial variability and relatively consistent concentrations over time. MW-9 was abandoned in May 2014. LF-1, which is west of the MW-9 and up-gradient of storage pond, was not considered in the *2006 Groundwater Report*; however groundwater quality is similar to that of MW-9.

    b. **Ranch 71.** Pre-discharge groundwater quality for MW-26 and MW-27 was determined and later measurements from each well have been compared to those values. The *2006 Groundwater Report* concluded that a large degree of spatial variability exists in groundwater at Ranch 71 and constituent concentrations appear to be relatively consistent with time. An intra-well approach was appropriate due to the high degree of spatial variability in the area. Since submittal of the *2006 Groundwater Report,* two down-gradient wells (MW-30 and MW-31) and one well (MW-29) located at the center of the property were installed to further characterize the spatial variability occurring at Ranch 71.

    c. **Ranch 72.** Pre-discharge groundwater quality was determined using four wells (MW-12, MW-21, MW-22, and MW-23) into a single data set. At the time the report was drafted, water quality at those wells appeared to be unaffected by process wastewater applications. The Discharger concluded in the *2006 Groundwater Report* that groundwater quality underlying Ranch 72 exhibits a low degree of spatial variability and relatively consistent concentrations over time. An inter-well approach was appropriate and pre-discharge groundwater quality were calculated and compared with later measurements from downgradient wells MW-22 and MW-23. Ranch 72 is adjacent to the Meyers Property, and therefore these wells are directly downgradient of the Myers Property. Since submittal of the *2006 Groundwater Report,* an up-gradient well (MW-32) and downgradient well (MW-28) were installed to aid in characterizing groundwater at Ranch 72.

51. Groundwater quality underlying the storage pond is presented in the table below. Up-gradient well LF-1 and down-gradient well MW-8 monitor groundwater at the storage pond. Compliance with the groundwater limitations were based on comparing the current groundwater quality down-gradient of the storage pond to up-gradient quality at MW-9. Current groundwater quality is the average of available data from 2012 through 2015 as reported in the Annual Reports.

Groundwater Quality at the Storage Pond, mg/L unless specified otherwise				
			Current Average	
Constituent	**Concentration Protective of Beneficial Uses**	**Up-gradient MW-9[6]**	**Up-gradient LF-1[7]**	**Down-gradient MW-8[8]**
TDS	450[1] - 1,000[4]	931	612	519
FDS	--	998	556	440
Nitrate Nitrogen[5]	10[2]	44	25	10
Iron[5], dissolved	0.30[3]	0.26	0.28	0.95
Manganese[5], dissolved	0.05[3]	3.9	0.08	0.62
Sodium	69[1]	102	87	59

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Non-detect values set equal to one-half the reporting limit to determine average concentration.
6 *Groundwater Characterization Report*, 4 August 2006, Appendix F. Based on MW-9 data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
7 Average LF-1 values based on data collected from 2012 through 2014. Number of samples varies by constituent. Non-detect values reported as one-half the reporting limit for purposes of averaging.
8 Average MW-8 values based on data collected from 2012 through 2015, with the exception of uncharacteristically high values recorded on 4/29/2015 for iron and manganese. Number of samples varies by constituent. Non-detect values reported as one-half the reporting limit for purposes of averaging.

52. Based on the data above, up-gradient groundwater quality (MW-9) exceeds concentrations protective of beneficial uses, because concentrations exceed the primary Maximum Contaminate Level (MCL) for nitrate nitrogen and exceed the secondary MCL for manganese. However, based on current groundwater quality at MW-8, the discharge has not caused degradation with respect to nitrate and manganese.

53. For sodium, up-gradient concentration at MW-9 exceeds the agricultural water quality goal, but the discharge has not caused degradation based on current groundwater quality.

54. In general, the data shows current groundwater quality at MW-8 does not exceed up-gradient groundwater quality (MW-9), with the exception of iron. Groundwater is monitored quarterly for iron. From 2012 through 2015, for the most part iron concentrations at MW-8 were non-detect or below the reporting limit for iron. Out of 14 samples, two detections were above the recommended secondary MCL of 0.3 mg/L. Based on the available data and infrequent use of the pond, the discharge has not caused groundwater degradation with respect to iron.

55. Groundwater quality at Ranch 71 is presented below. Wells MW-24 through MW-27 and MW-29 through MW-31 monitor groundwater at Ranch 71. MW-24 and MW-25 are up-gradient wells. MW-26, MW-27, MW-29, MW-30, and MW-31 are down-gradient wells. As reported in the *2006 Groundwater Report,* pre-discharge groundwater quality for MW-26 and MW-27 is included in the table below. Current groundwater quality is the average of available data from 2012 through 2015 as reported in the Discharger's Annual Report.

Groundwater Quality at Ranch 71, mg/L unless specified										
Constituent	**Concentration Protective of Beneficial Uses**	**Pre-Discharge[6]**		**Current Average[7]**						
		MW-26	**MW-27**	**MW-24**	**MW-25**	**MW-26**	**MW-27**	**MW-29**	**MW-30**	**MW-31**
TDS	450[1] - 1,000[4]	1,049	2,674	589	678	1,129	1,803	1,864	768	1,555
FDS	--	954	2,260	490	562	992	1,623	1,700	657	1,347
Nitrate Nitrogen	10[2]	0.40	0.40	1.8	3.7[5]	1.7[5]	1.9[5]	2.8	0.5[5]	2.1[5]
Iron, dissolved	0.30[3]	0.05	0.08	0.07[5]	0.22[5]	0.23[5]	0.34[5]	0.13[5]	0.06[5]	0.43[5]
Manganese, dissolved	0.05[3]	1.1	1.0	0.07[5]	0.08	0.09[5]	0.35[5]	0.06[5]	0.11[5]	0.74[5]
Boron	0.7[1]	2.3	1.1	0.6	0.7	1.6[5]	1.0[5]	0.7	1.3	0.8
Chloride	106[1] - 500[4]	70	863	34	46	140	322	242	41	232
Sodium	69[1]	404	709	83	136	286	409	630	198	279
Sulfate	250[3] - 500[4]	167	930	61	63	183	522	566	109	277

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Non-detect values set equal to one-half the reporting limit to determine average concentration.
6 *Groundwater Characterization Report*, 4 August 2006, Appendix F. Based on available data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
7 Based on available data collected from 2012 through 2015. Number of samples varies by constituent. Non-detect values reported as one-half the reporting limit for purposes of averaging.

56. Based on the data above, pre-discharge quality at MW-26 exceeds concentrations protective of beneficial uses for TDS and manganese. Current groundwater quality at MW-26 exceeds pre-discharge quality for TDS, nitrate, iron, chloride, and sulfate.

    a. Based on a time versus TDS concentration plot for MW-26, concentrations began increasing in 2010 but have stabilized in 2011. From 2012 through 2015, TDS concentrations ranged from 943 to 1,238 mg/L. Because current TDS

concentrations at MW-26 have exceeded the pre-discharge quality, the discharge has caused degradation.

b. Although the current average nitrate concentration at MW-26 exceeds pre-discharge quality; generally, nitrate concentrations are below the primary MCL of 10 mg/L and more recent data (2014 and 2015) show non-detect or below the reporting limit. Based on current groundwater quality, the discharge has the potential to cause groundwater degradation with respect to nitrate. A summary of the nitrate detections at MW-26 is shown in the table below.

Nitrate Nitrogen Results at MW-26					
# of Sample Events 2012 - 2015	**# of Non-Detect Results < 0.1 mg/L**	**# of Results < 10 mg/L**	**# of Results > 10 mg/L**	**Concentration Min / Max (mg/L)**	**Average of Results**
10	3	10	0	0.1 [1] / 8.6	1.7

[1] Non-detect, less than reporting limit.

c. The current average iron concentration at MW-26 is below recommended the secondary MCL of 0.3 mg/L. From 2012 through 2015, ten samples were analyzed. The iron exceedances occurred in June and December 2014. Based on current data, the discharge has the potential to degrade groundwater with respect to iron.

d. Current manganese concentrations at MW-26 do not exceed pre-discharge quality and therefore has not caused degradation.

e. A time versus chloride concentration plot for MW-26, show concentrations increasing after wastewater application began, but have stabilized in 2012. From 2012 through 2015, chloride concentrations at MW-26 ranged from 102 to 189 mg/L. Although the current average chloride concentration exceeds the pre-discharge quality of 70 mg/L, it does not exceed the upper secondary MCL of 500 mg/L. Based on current groundwater data, the discharge has degraded groundwater with respect to chloride.

f. From 2012 through 2015, sulfate concentrations at MW-26 ranged from 152 to 218 mg/L and for the most part have exceeded the pre-discharge quality. However, current sulfate concentrations are below 500 mg/L, the upper secondary MCL for sulfate. Based on current data, the discharge has caused degradation with respect to sulfate.

g. For boron and sodium, pre-discharge concentrations at MW-26 exceed the agricultural water quality goal, but the discharge has not caused degradation based on current groundwater quality.

57. Based on the data above, pre-discharge quality at MW-27 exceeds concentrations protective of beneficial uses for TDS, manganese, chloride and sulfate. However, the discharge has not caused degradation based on current groundwater quality.

58. Current groundwater quality at MW-27 exceeds pre-discharge quality for nitrate and iron.

    a. Based on current groundwater quality, the discharge has caused groundwater degradation with respect to nitrate. However, current nitrate concentrations do not exceed the primary MCL of 10 mg/L and more recent data show non-detect or below the reporting limit. A summary of the nitrate detections at MW-27 is shown below.

Nitrate Nitrogen Results at MW-27					
# of Sample Events 2012 - 2015	**# of Non-Detect Results < 0.1 mg/L**	**# of Results < 10 mg/L**	**# of Results > 10 mg/L**	**Concentration Min / Max (mg/L)**	**Average of Results**
12	7	11	1	0.1 [1] / 16.8	1.9

[1] Non-detect, less than reporting limit.

    b. Based on current groundwater quality at MW-27, the discharge has caused degradation with respect to iron. From 2012 through 2015, four of the twelve samples analyzed for iron exceeded the secondary MCL. However, more recent groundwater data show concentrations below the secondary MCL.

59. Wells MW-29, MW-30, and MW-31 were installed after wastewater applications to Ranch 71 began. Because pre-discharge quality is unknown and due to the spatial variability of the area, groundwater quality at these wells will be compared to concentrations that would be protective of beneficial uses.

    a. MW-29 is located in the center of Ranch 71 near the composting operations. From 2012 through 2015, TDS concentrations ranged from 1,660 to 2,017 mg/L, which exceeds the upper secondary MCL.

    b. MW-30 is located in the northeast corner of Field 71-2 NE and just north of MW-26. From 2012 through 2015, TDS concentrations ranged from 580 to 1,014 mg/L; and for the most part do not exceed the upper secondary MCL.

    c. MW-31 is located down-gradient of Field 71-4 SE and just north of MW-27. From 2012 through 2015, TDS concentrations ranged from 732 to 1,920 mg/L; and for the most part have exceeded the upper secondary MCL.

    d. Nitrate concentrations at MW-29, MW-30, and MW-31 do not exceed 10 mg/L, the primary MCL for nitrate. A summary of the nitrate detections at these wells is shown below.

Nitrate Nitrogen Characteristics at Ranch 71						
Well Name	**# of Sample Events 2012 - 2015**	**# of Non-Detect Results < 0.1 mg/L**	**# of Results < 10 mg/L**	**# of Results > 10 mg/L**	**Concentration Min / Max (mg/L)**	**Average of Results**
MW-29	16	0	16	0	0.2 / 9.6	2.8
MW-30	16	7	16	0	0.1 [1] / 1.6	0.5
MW-31	13	5	12	1	0.1 [1] / 21	2.1

[1] Non-detect, less than reporting limit.

e. With respect to iron, concentrations in MW-31 exceed the recommended secondary MCL.

f. Manganese concentrations at MW-29, MW-30, and MW-31 exceed the recommended secondary MCL.

g. Chloride concentrations at MW-29, MW-30, and MW-31 do not exceed the upper secondary MCL.

h. Sulfate concentrations at MW-29 exceed the upper secondary MCL.

60. Groundwater quality at Ranch 72 is presented below. Wells MW-21 through MW-23, MW-28, and MW-32 monitor groundwater at Ranch 72. MW-21 and MW-32 are up-gradient wells. MW-22, MW-23, and MW-28 are down-gradient wells. Pre-discharge groundwater quality, as determined by the Discharger using data from MW-21, MW-22, MW-23, and former MW-12, is shown in the table below. Salinity and nitrate concentrations were much higher in MW-21 than those observed in MW-22, MW-23, and former MW-12. Although these wells are down-gradient from the former LAAs and possibly influenced by previous discharge activities; water quality is similar to up-gradient well MW-9. Current groundwater quality is the average of available data from 2014 through 2015 as reported in the Discharger's Annual Reports. Groundwater monitoring at Ranch 72 was performed from 2005 through 2010 and resumed in June 2014. Ranch 72 has not received wastewater since the 2007 season.

Groundwater Quality at Ranch 72, mg/L unless specified							
			Current Average[8]				
Constituent	**Concentration Protective of Beneficial Uses**	**Pre-Discharge (MW-21, -22, -23, -12)[7]**	**MW-21**	**MW-22**	**MW-23**	**MW-28**	**MW-32**
TDS	450[1] - 1,000[4]	850	525	336	307	317	325
FDS	--	612	363	258	228	250	239
Nitrate Nitrogen	10[2]	35	5.8	2.3 [5]	1.1[5]	2.6	1.8
Iron, dissolved	0.30[3]	0.18	0.11[5]	2.1[5]	0.69[5]	2.0[5]	0.61[5]

Groundwater Quality at Ranch 72, mg/L unless specified							
			Current Average[8]				
Constituent	Concentration Protective of Beneficial Uses	Pre-Discharge (MW-21, -22, -23, -12)[7]	MW-21	MW-22	MW-23	MW-28	MW-32
Manganese, dissolved	0.05[3]	0.26	0.01[5]	0.08[5]	0.03[5]	0.07[5]	0.03[5]
Sodium	69[1]	97	64	35	42	41	25

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Non-detect values set equal to one-half the reporting limit to determine average concentration.
6 *Groundwater Characterization Report,* 4 August 2006, Appendix F. Based on MW-9 data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
7 *Groundwater Characterization Report*, 4 August 2006, Appendix F. Based on MW-21, MW-22, MW-23 and former MW-12 combined into a single data set. Based on available data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
8 Based on data collected from 2014 through 2015. Groundwater monitoring was not performed during the years 2010 through 2013. Number of samples varies by constituent. Non-detect values reported as one-half the reporting limit for purposes of averaging.

61. For TDS, nitrate, and manganese, pre-discharge quality exceeds concentrations protective of beneficial uses; however the discharge has not caused degradation based on current groundwater quality.

62. Current groundwater quality in down-gradient wells MW-22, MW-23, and MW-28 exceeds pre-discharge quality for iron. Ranch 72 was last irrigated with process wastewater during the 2007 season. Because no wastewater was applied to Ranch 72 over the last 10 years and cropping and irrigation operations is not currently managed by the Discharger, the discharge has not caused degradation with respect to iron.

63. For sodium, pre-discharge concentration exceeds the agricultural water quality goal, but the discharge has not caused degradation based on current groundwater quality.

Basin Plan, Beneficial Uses, and Regulatory Considerations

64. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition, revised June 2015* (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 Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

65. Local drainage is to Colusa Basin Drain The beneficial uses of Colusa Basin Drain, as stated in the Basin Plan, are agricultural supply; water contact recreation; warm

freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wild habitat.

66. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

67. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets a numeric objective for total coliform organisms.

68. 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.

69. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the Maximum Contaminant Levels (MCLs) specified in Title 22 of the California Code of Regulations (hereafter 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.

70. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

71. 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. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

72. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

73. The Central Valley Water Board is developing amendments to the Basin Plan to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley. Strategies currently under consideration may:

a. Alter the way the Board calculates available assimilative capacity for nitrate, which could result in new or modified requirements for nitrate management;

b. Require dischargers to implement actions identified under an interim salinity permitting approach; and/or

c. Establish alternate compliance approaches that would allow dischargers to participate in efforts to provide drinking water to local communities in consideration for longer compliance time schedules.

Should the Board adopt amendments to the Basin Plan to effectuate such strategies, these waste discharge requirements may be amended or modified to incorporate any newly-applicable requirements.

74. The stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has been coordinating efforts to implement new salt and nitrate management strategies. The Board expects dischargers that may be affected by new salt and nitrate management policies to coordinate with the CV-SALTS initiative.

Special Considerations for High Strength Waste

75. For the purpose of this Order, high strength waste is defined as wastewater that contains concentrations of readily degradable organic matter that exceed typical concentrations for domestic sewage. Such wastes contain greater than 500 mg/L BOD and often contain commensurately high levels of total Kjeldahl nitrogen (TKN), which is a measure of organic nitrogen and ammonia nitrogen. Typical high strength wastewaters include septage, some food processing wastes, winery wastes, and rendering plant wastes.

76. Excessive application of high organic strength wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the soil profile and causing waste constituents (i.e., organic carbon, nitrates, other salts, and metals) to percolate below the root zone. Such groundwater degradation can be prevented or minimized through implementation of best management practices which include planting crops to take up plant nutrients and maximizing oxidation of BOD to prevent nuisance conditions.

77. Unless groundwater is very shallow, groundwater degradation with nitrogen species such as ammonia and nitrate can be prevented by minimizing percolation below the root zone of the crops and ensuring that the total nitrogen load does not exceed crop needs over the course of a typical year. Where there is sufficient unsaturated soil in the vadose zone, excess nitrogen can be mineralized and denitrified by soil microorganisms.

78. With regard to BOD, excessive application of high organic strength wastewater can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen

is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.

79. Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the ground surface, within the evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. The maximum BOD loading rate that can be applied to land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system.

80. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency, cites BOD loading rates in the range of 36 to 600 lb/acre-day to prevent nuisance, but indicates the loading rates can be even higher under certain conditions. The studies that supported this report did not evaluate actual or potential groundwater degradation associated with those rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have been done are not readily adapted to the varying soil, groundwater, and climate conditions that are prevalent throughout the region.

81. The California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* proposes risk categories associated with particular BOD loading rate ranges as follows:

    a. Risk Category 1: (less than 50 lb/ac/day; depth to groundwater greater than 5 feet) Indistinguishable from good farming operations with good distribution important.
    b. Risk Category 2: (less than 100 lb/ac/day; depth to groundwater greater than 5 feet) Minimal risk of unreasonable groundwater degradation with good distribution more important.
    c. Risk Category 3: (greater than 100 lb/ac/day; depth to groundwater greater than 2 feet) Requires detailed planning and good operation with good distribution very important to prevent unreasonable degradation, as well as use of oxygen transfer design equations that consider site-specific application cycles and soil properties and special monitoring.

    The *Manual of Good Practice* recommends allowing a 50 percent increase in the BOD loading rates in cases where sprinkler irrigation is used, but recommends that additional safety factors be used for sites with heavy and/or compacted soils. The

Manual of Good Practice also states that the use of surface irrigation (boarder check method) makes uniform application difficult, especially for coarse textured soils.

82. Although it has not been subject to a scientific peer review process, the *Manual of Good Practice* provides science-based guidance for BOD loading rates that, if fully implemented, are considered a best management practice to prevent groundwater degradation due to reduced metals.

83. This Order sets an irrigation cycle average BOD loading rate for the LAAs of 100 lb/acre/day consistent with Risk Category 2 in the *Manual of Good Practice* and requires the Discharger to ensure the even application of wastewater over the available land application areas.

Antidegradation Analysis

84. State Water Resources Control Board Resolution 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.

85. Degradation of groundwater by some of the typical waste constituents associated with discharges from a food processing facility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The Discharger's operation provides full time and seasonal employment at the facility to process tomatoes and produce tomato products. In addition, the Discharger provides a needed service for local growers, trucking services, and equipment manufactures as well as provides a tax base for local and county governments. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

86. The Discharger has been monitoring groundwater quality at the site since 1995 and at the current land applications since 2005. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of

compliance with Resolution 68-16 for this facility must be based on available existing groundwater quality.

87. Because of the spatial variability in shallow groundwater across the discharge locations (storage pond, Ranch 71, and Ranch 72), the antidegradation analysis focuses on groundwater conditions at each specific location.

88. Shallow groundwater quality at the storage pond is summarized in the table below. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS and sodium), nitrates, iron, and manganese.

Water Quality at Storage Pond, mg/L unless specified				
Constituent	**Concentration Protective of Beneficial Uses**	**Wastewater[5]**	**Up-gradient Groundwater MW-9[6]**	**Current Groundwater MW-8[7]**
TDS	450[1] –1,000[4]	1,760	931	519
FDS	---	1,124	998	440
Nitrate as N	10[2]	4.4	44	10
Iron	0.30[3]	11.0	0.26	0.95
Manganese	0.05[3]	0.7	3.9	0.62
Sodium	69[1]	327	102	59

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Representative of the average wastewater quality during the fresh pack and the off season collected between February 2008 and December 2015, greater of the two values is shown.
6 Groundwater Characterization Report, 4 August 2006, Appendix F. Based on MW-9 data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
7 Average based on available data for MW-8, February 2012 through May 2015. Non-detect values were reported as one-half the reporting limit for purposes of averaging.

89. **TDS.** For the purpose of evaluation, TDS is representative of overall salinity. The best measure for total salinity in groundwater samples are TDS. FDS is the inorganic fraction of TDS that have the potential to percolate or leach into the shallow groundwater. Therefore the best measure for salinity of process wastewater is FDS. The narrative water quality objective for chemical constituents requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. Data show up-gradient groundwater quality (MW-9) does not exceed the upper secondary MCL for TDS. In addition, TDS concentrations in down-gradient well MW-8 are below TDS concentrations in MW-9. Based on the Antidegradation Policy, an acceptable degree of degradation is allowable if the Discharge employs BPTC to minimize degradation.

Due to water conservation efforts during the drought years, process wastewater FDS concentrations have increased to approximately 1,070 mg/L. However, implementation of additional salinity control measures and reduction efforts in 2015 and 2016 resulted in much lower FDS concentrations approximately 770 and 750 mg/L, respectively. The Discharger is requesting a flow increase during the off-season months but has no plans to expand the LAAs. All wastewater will continue to be applied to Ranch 71 and Ranch 72 will be available to accept wastewater. There is the potential for increased water conservation practices which may result in FDS effluent quality increases in the future.

Based on the continued implementation of salinity control measures and efforts and management of the available LAAs to minimize waste constituent loadings, the discharge does not pose a threat to groundwater with respect to TDS. To protect groundwater underlying the storage pond, this Order imposes a protective-based FDS effluent limit (as a flow-weighted annual average) that will not cause groundwater to exceed the upper secondary MCL for TDS. Although more recent FDS data show concentrations below 1,100 mg/L, the effluent limit will allow flexibility for increases due to additional water conservation efforts. Because it is not possible to predict the level of salinity increases due to water conservation efforts, the Monitoring and Reporting Program (MRP) establishes a numeric effluent FDS trigger concentration that is below the effluent concentration to serve as a means of assessing whether the discharge might potentially cause a violation of the effluent limitation at some later date. Continued groundwater monitoring will also serve as a means of assessing whether the discharge has impacted groundwater quality.

90. **Sodium.** Sodium is known to be a key salinity constituent in food processing wastewater. Current sodium concentrations in groundwater exceed the agricultural water quality goal. In the absence of a locale-specific determination of agricultural water quality goals, this Order requires continued groundwater monitoring for sodium. In addition, compliance with the FDS effluent limits will ensure sodium concentrations in the wastewater do not increase significantly. To serve as a means of assessing whether the discharge might potentially cause groundwater degradation, the MRP establishes a numeric groundwater trigger concentration that is below the up-gradient quality (MW-9).

91. **Nitrate.** For nutrients such as nitrate, the potential for groundwater degradation depends on wastewater quality; crop uptake, and the ability of the vadose zone below the LAAs to support nitrification and denitrification to convert the nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization) in the LAAs. The remaining ammonia can be oxidized to nitrate in the soils, absorbed to soil, immobilized by bacteria, or take up by crops. Under excessive loading conditions, some ammonia can be leached to shallow groundwater.

Up-gradient groundwater quality at the storage pond exceeds 10 mg/L. This Order does not allow any further degradation of this groundwater quality. Based on management of the LAAs, including but not limited to even application of wastewater and other nutrient sources over the LAAs and the use of vegetation or crops to take up those nutrients, the discharge does not pose a threat to groundwater. This Order limits the application of wastewater to be consistent with the PAN for the type of crop to be grown on the LAAs. The groundwater limitations of this Order do not allow a statistically significant increase of the up-gradient groundwater quality with respect to nitrate as determined in the *2006 Groundwater Report*.

92. **Iron.** Up-gradient groundwater quality at the storage pond is below the recommended secondary MCL for iron of 0.3 mg/L. The current average iron concentration in down-gradient well MW-8 exceeds up-gradient quality; however, groundwater data show iron concentrations trending downward. Excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Based on the available groundwater data, infrequent discharges to the pond, and routine pond maintenance, the Discharger has not degraded groundwater quality with respect to iron. The Antidegradation Policy is applicable. This Order limits organic loading rates to 100 lb/acre-day as an irrigation cycle average to minimize wastewater discharges from causing reducing conditions below the LAAs. This Order does not allow the discharge of waste to cause an exceedance of the water quality objective for iron as it relates to the pond wells.

93. **Manganese.** Up-gradient groundwater quality exceeds the recommended secondary MCL for manganese of 0.05 mg/L. However, manganese concentrations in down-gradient well MW-8 do not exceed up-gradient quality. As stated previously, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Organic loading rates are prescribed to minimize wastewater discharges from causing reducing conditions below the LAAs. This Order does not allow a statistically significant increase of the up-gradient groundwater quality with respect to manganese as determined in the *2006 Groundwater Report* as it relates to the pond wells.

94. Shallow groundwater quality at Ranch 71 is summarized in the table below. Because pre-discharge quality was established for MW-26 and MW-27, this analysis will primarily focus on these wells. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, chloride, sodium, sulfate), nitrates, iron, manganese, and boron.

Water Quality at Ranch 71, mg/L unless specified						
Constituent	**Concentration Protective of Beneficial Uses**	**Wastewater[5]**	**Pre-discharge Groundwater MW-26[6]**	**Current Groundwater MW-26[7]**	**Pre-discharge Groundwater MW-27[6]**	**Current Groundwater MW-27[7]**
TDS	450[1] – 1,000[4]	1,760	1,049	1,129	2,674	1,803
FDS	---	1,124	954	992	2,260	1,623

Water Quality at Ranch 71, mg/L unless specified						
Constituent	**Concentration Protective of Beneficial Uses**	**Wastewater[5]**	**Pre-discharge Groundwater MW-26[6]**	**Current Groundwater MW-26[7]**	**Pre-discharge Groundwater MW-27[6]**	**Current Groundwater MW-27[7]**
Nitrate as N	10[2]	4.4	0.4	1.7	0.4	1.9
Iron	0.30[3]	11	0.05	0.23	0.08	0.34
Manganese	0.05[3]	0.7	1.1	0.09	1.0	0.35
Boron	0.7[1]	0.5	2.3	1.6	1.1	1.0
Chloride	106[1] - 500[4]	403	70	140	863	322
Sodium	69[1]	327	404	286	709	409
Sulfate	250[3] -500[4]	86	167	183	930	522

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Representative of the average wastewater quality during the fresh pack and the off season collected between February 2008 and December 2015, greater of the two values is shown.
6 Groundwater Characterization Report, 4 August 2006, Appendix F. Based on data collected from July 2005 through March 2006. Non-detect values, concentration limit set equal to the laboratory limit.
7 Average based on available data collected from 2012 through 2015. Non-detect values reported as one-half the reporting limit for purposes of averaging.

95. **TDS.** Currently, Ranch 71 receives all of the process wastewater. Groundwater quality at Ranch 71 is spatially variable. TDS concentrations vary from approximately 900 to 2,000 mg/L. Pre-discharge TDS concentrations exceed the upper secondary MCL.

    a. Although current TDS concentrations at MW-26 are slightly above the pre-discharge concentration, groundwater concentrations stabilized in 2011 and average approximately 1,129 mg/L. In consideration of the salinity control measures implemented and current groundwater quality trends, this Order imposes a protective-based FDS effluent limit that will not cause a statistically significant increase in the current groundwater quality at MW-26. With the potential for increased water conservation efforts, the MRP establishes a numeric effluent trigger concentration that is below the effluent concentration to serve as a means of assessing whether the discharge might potentially cause a violation of the effluent limitation at some later date.

    b. Current TDS concentrations at MW-27 are below pre-discharge quality and concentrations are trending downward. Based on continued salinity control efforts and even application of waste to the LAAs to minimize over application of waste constituents, the discharge does not pose a threat to groundwater. This Order imposes a protective-based FDS effluent limit that will not cause a statistically

significant increase in the pre-discharge quality at MW-27 as determined in the *2006 Groundwater Report*.

96. **TDS.** Because wells MW-29, MW-30, and MW-31 were installed after discharge activities began; this analysis is based on available current groundwater quality.

    a. Overall, current TDS concentrations at MW-29 show no significant trend. Current groundwater quality exceeds the upper secondary MCL for TDS. This Order imposes a protective-based FDS limit and does not allow a statistically significant increase in current groundwater quality at MW-29.

    b. Overall, current TDS concentrations at MW-30 are trending downward and are below the upper secondary MCL for TDS. The groundwater limitations of this Order do not allow an exceedance of the TDS water quality objective at MW-30.

    c. Although TDS concentrations at MW-31 have increased, concentrations have stabilized in 2012. This Order does not allow a statistically significant increase in current groundwater quality at MW-31.

97. **Chloride and Sodium.** Chloride and sodium are known to be key salinity constituents in food processing wastewater. Compliance with the FDS effluent limit will ensure chloride and sodium concentrations in the wastewater do not increase significantly. Due to the large degree of spatial variability in groundwater quality underlying Ranch 71, this Order prohibits the following:

    a. Pre-discharge chloride concentration at MW-26 does not exceed the upper secondary MCL. And current chloride concentrations do not exceed pre-discharge quality. Therefore, the Antidegradation Policy is applicable and the groundwater limitations of this Order do not allow an exceedance of the water quality objective.

    b. Pre-discharge chloride concentration at MW-27 exceeds the upper secondary MCL. More recent groundwater data show chloride concentrations trending downward. For MW-27, this Order does not allow a statistically significant increase of the pre-discharge quality as determined in the Discharger's *2006 Groundwater Report*.

    c. For MW-29, MW-30, and MW-31, current chloride concentrations do not exceed the upper secondary MCL. Chloride concentrations are spatially variable, but concentrations are fairly constant within each well. The Antidegradation Policy is applicable and the groundwater limitations of this Order do not allow an exceedance of the water quality objective with respect to chloride.

    d. Pre-discharge and current groundwater quality at wells MW-26, MW-27, MW-29, MW-30, and MW-31 exceed the agricultural water quality goal for sodium. In the absence of a locale-specific determination of agricultural water quality goals, this Order requires continued groundwater monitoring for sodium. In addition, compliance with the FDS effluent limits will ensure sodium concentrations in the wastewater do not increase significantly. To serve as a means of assessing

whether the discharge might potentially cause groundwater degradation, the MRP establishes a numeric groundwater trigger concentration for MW-26 and MW-27 that is below the pre-discharge quality for sodium.

98. **Sulfate.** Sulfate concentrations at Ranch 71 are spatially variable, but relatively constant over time. Compliance with the FDS effluent limit will ensure sulfate concentrations in the wastewater do not increase significantly.

    a. Pre-discharge sulfate concentration at MW-26 does not exceed the upper secondary MCL. The Antidegradation Policy is applicable. For MW-26, this Order does not allow an exceedance of the water quality objective with respect to sulfate.

    b. Pre-discharge sulfate concentration at MW-27 exceeds the upper secondary MCL. For MW-27, this Order does not allow a statistically significant increase of the pre-discharge quality as determined in the Discharger's 2006 Groundwater Report.

    c. Sulfate concentrations at MW-29 exceed the upper secondary MCL, but remain relatively constant over time. For MW-29, the groundwater limitations of this Order do not allow a statistically significant increase in the current groundwater quality.

    d. Sulfate concentrations at MW-30 and MW-31 do not exceed the upper secondary MCL and remain relatively constant over time. The Antidegradation Policy is applicable. The groundwater limitations of this Order do not allow exceedance of the water quality objective for sulfate.

99. **Nitrate.** Pre-discharge groundwater quality at MW-26 and MW-27 does not exceed the primary MCL for nitrate. However, current concentrations exceed pre-discharge quality. This Order requires that the Discharger manage the LAAs so that wastewater and other sources are evenly applied at rates consistent with the specific crop grown at the LAA. Based on the available groundwater conditions and management of the LAAs, the Antidegradation Policy is applicable. This Order limits the application of wastewater to be consistent with the PAN for the type of crop to be grown on the LAAs. This Order imposes groundwater limitations that will not cause exceedance of the water quality objective for nitrate in MW-26, MW-27, MW-29, MW-30, and MW-31. The MRP also establishes a numeric groundwater trigger concentration at Ranch 71 that is below the water quality objective to serve as a means of assessing whether the discharge might potentially cause a violation of the groundwater limitation at some later date.

100. **Iron.** Pre-discharge iron concentrations at Ranch 71 do not exceed the recommended secondary MCL. However, current groundwater quality exceeds pre-discharge quality. The Antidegradation Policy is applicable. For the most part, current groundwater data show non-detections or below the reporting limit for iron. Iron concentrations exceeding the secondary MCL are minimal and sporadic. Excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. This Order prescribes an organic loading rate to minimize wastewater discharges from causing reducing conditions

below the LAAs. This Order imposes a groundwater limitation that prohibits exceedance of the water quality objective for iron in any compliance well at Ranch 71.

101. **Manganese.** Pre-discharge manganese concentrations at Ranch 71 exceed the recommended secondary MCL. For the most part, current groundwater data show manganese concentrations below pre-discharge quality. This Order prescribes an organic loading rate to minimize wastewater discharges from causing reducing conditions below the LAAs and imposes the following groundwater limitations:

    a. This Order does not allow a statistically significant increase of the pre-discharge groundwater quality for MW-26 and MW-27 as determined in the Discharger's *2006 Groundwater Report*.

    b. For MW-29, MW-30, and MW-31, this Order does not allow a statistically significant increase in the current groundwater quality.

102. **Boron.** Pre-discharge boron concentrations at Ranch 71 exceed the lowest agricultural water quality goal, but the discharge has not caused groundwater degradation based on current groundwater data. In the absence of a locale-specific determination of agricultural water quality goals, this Order requires continued groundwater monitoring for boron to verify that unreasonable degradation is not occurring.

103. Shallow groundwater quality at Ranch 72 is summarized in the table below. Current groundwater quality represents groundwater from wells down-gradient of Ranch 72. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS and sodium), nitrates, iron, and manganese.

Water Quality at Ranch 72, mg/L unless specified						
Constituent	**Concentration Protective of Beneficial Uses**	**Wastewater[5]**	**Pre-Discharge Groundwater[6]**	**Current Groundwater MW-22[7]**	**Current Groundwater MW-23[7]**	**Current Groundwater MW-28[7]**
TDS	450[1] – 1,000[4]	1,760	850	336	307	317
FDS	---	1,124	612	258	228	250
Nitrate as N	10[2]	4.4	35	2.3	1.1	2.6
Iron	0.30[3]	11	0.18	2.1	0.69	2.0
Manganese	0.05[3]	0.7	0.26	0.08	0.03	0.07
Sodium	69[1]	327	97	35	42	41

1 Lowest agricultural water quality goal.
2 Primary Maximum Contaminant Level.
3 Secondary Maximum Contaminant Recommended Level.
4 Secondary Maximum Contaminant Upper Level.
5 Representative of the average wastewater quality during the fresh pack and the off season collected between February 2008 and December 2015, greater of the two values is shown.
6 Groundwater Characterization Report, 4 August 2006, Appendix F. Based on MW-21, MW-22, MW-23 and former MW-12 combined into a single data set. Non-detect values, concentration limit set equal to the laboratory limit.

[7] Based on data collected from 2014 through 2015 at MW-22 and MW-23. Non-detect values reported as one-half the reporting limit for purposes of averaging.

104. **TDS.** Pre-discharge TDS concentration at Ranch 72 does not exceed the upper secondary MCL. Current TDS concentrations in the down-gradient wells do not exceed pre-discharge concentrations. Based on the limited wastewater discharges to Ranch 72, the discharge has not caused degradation with respect to TDS. To protect groundwater underlying Ranch 72, this Order imposes a protective-based FDS effluent limit.

105. **Nitrate.** Pre-discharge nitrate concentrations exceed the primary MCL. Current nitrate concentrations in the down-gradient wells do not exceed pre-discharge concentrations. This Order limits the application of wastewater to be consistent with the PAN for the type of crop to be grown on the LAAs.

106. **Iron.** Pre-discharge iron concentration exceeds the recommended secondary MCL. Current groundwater quality does exceed pre-discharge conditions. This Order prescribes an organic loading rate to minimize wastewater discharges from causing reducing conditions below the LAAs.

107. **Manganese.** Pre-discharge manganese concentration exceeds the recommended secondary MCL. Current manganese concentrations in the down-gradient wells do not exceed pre-discharge conditions. This Order prescribes an organic loading rate to minimize wastewater discharges from causing reducing conditions below the LAAs.

108. Because Ranch 72 is not currently receiving process wastewater, groundwater quality as described in this Order may not reflect groundwater impacts from the discharge. Due to potential influences from agricultural activities at Ranch 72 outside of the Discharger's control and because the Discharger has no current plans to irrigate Ranch 72, this Order prescribes narrative groundwater limitations that prohibit a statistically significant increase in the current groundwater quality. In addition, the Provisions of this Order will require Regional Water Board notification and determination of groundwater quality prior to initiating wastewater discharges to Ranch 72.

109. This Order establishes effluent limitations that will not unreasonably threaten present and anticipated beneficial uses. Permit limitations are structured to prohibit unreasonable degradation where the Antidegradation Policy applies.

110. The Discharger provides treatment and control of the discharge that incorporates:

    a. Salinity source reduction and solid waste control measures as described in Findings 18 and 19.

    b. The use of pressure steam peeling over lye-peeling, which is a salinity source control or reduction measure.

c. Over 500 acres of LAAs cropped with sudan grass or similar crop, which take up nutrients found in the wastewater if application rates are carefully controlled.

d. Management of the LAAs including, crop rotations to help utilize residual nitrogen in the soil during the non-irrigation season and resting periods between wastewater application.

e. Irrigation with center pivot sprinklers.

f. Availability to higher quality water for supplemental irrigation.

g. A tailwater return system that captures irrigation runoff for reapplication as irrigation water.

The Board finds that these treatment and control practices are reflective of BPTC.

Other Regulatory Considerations

111. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

112. Based on the threat and complexity of the discharge, the Facility is determined to be classified as 2B as defined below:

a. Category 2 threat to water quality: “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations 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.”

113. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:

> (…)(b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields if the following conditions are met:
>
> (1) The applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) The discharge is in compliance with the applicable water quality control plan; and
>
> (3) The wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.(…)

114. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

    a. Discharges to the Storage Pond and the LAAs are exempt pursuant to Title 27, section 20090(b) because they are discharge of wastewater to land and:

        i. The Central Valley Water Board is issuing WDRs.

        ii. The discharge is in compliance with the Basin Plan, and;

        iii. The treated effluent discharged to the ponds does not need to be managed as hazardous waste.

    b. Discharge of food processing residual solids to the LAAs is exempt pursuant to Title 27, section 20090(b) because it constitutes use of nonhazardous decomposable waste as a soil amendment and this Order requires implementation of applicable best management practices.

115. The U.S. EPA published *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (hereafter "Unified Guidance") in 2009. As stated in the Unified Guidance, the document:

> …is tailored to the context of the RCRA groundwater monitoring regulations … [however, t]here are enough commonalities with other regulatory groundwater monitoring programs … to allow for more general use of the tests and methods in the Unified Guidance… Groundwater detection monitoring involves either a comparison between different monitoring stations … or a contrast between past and present data within a given station… The Unified Guidance also details methods to compare background data against measurements from regulatory compliance points … [as well as] techniques for comparing datasets against fixed numerical standards … [such as those] encountered in many regulatory programs.

The statistical data analysis methods in the Unified Guidance are appropriate for determining whether the discharge complies with groundwater limitations of this Order.

116. The State Water Board adopted Order 2014-0057-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. All storm water at the Facility is collected and commingled with process wastewater for discharge to the LAAs or conveyed to the storage pond for winter storage prior to application to the LAAs. Storm water is not discharged offsite or discharged to waters of the U.S. Coverage under NPDES General Permit CAS000001 is not required at this time.

117. Water Code section 13267(b)(1) states:

> In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste 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.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2018-0006 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the Facility that discharges the waste subject to this Order.

118. 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 Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

119. This Order places additional requirements on the continued operation of the Facility in order to ensure the protection of waters of the state. The issuance of this Order is exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the “operation, repair, maintenance, [and] permitting … of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review.

120. The California Department of Resources Recycling and Recover (CalRecycle) adopted regulations governing compostable material handling facilities (Cal. Code Reg., tit. 14, § 17850 et seq.). The regulations address composting operations including facility siting, design standards, operation standards, environmental health standards, such as sampling and pathogen reduction requirements for the compost products derived from compostable materials prior to being sold or given away,

recording keeping, monitoring, reporting, and site restoration. CalRecycle's authority does not include regulating discharges of waste that may affect water quality. The State Water Board and each Regional Water Board have primary responsibility for coordination and control of water quality (Wat. Code, § 13001). This Order will address potential impacts the composting operation may have to water quality.

121. Pursuant to Water Code 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

122. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.

123. The Discharger(s) 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.

124. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order R5-2006-0047 is rescinded and, pursuant to Water Code sections 13263 and 13267, Olam West Coast, T & P Farms, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.

3. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

5. Discharge of toxic substances into any wastewater treatment system or land application area such that biological treatment mechanisms are disrupted is prohibited.

6. Application of residual solids to the land application areas as shown on Attachment C not designated to receive solids is prohibited.

7. Discharge of domestic wastewater to the process wastewater treatment system is prohibited.

8. Discharge of process wastewater to the domestic wastewater treatment system (septic system) is prohibited.

9. Discharge of domestic wastewater to the process wastewater ponds, land application area or any surface waters is prohibited.

10. Discharge of industrial wastewater to septic systems is prohibited.

11. Discharge of domestic waste to anything other than a septic system or regularly serviced portable toilets is prohibited.

12. Discharge of anything other than domestic wastewater to the septic tank and leach field system is prohibited.

B. Composting Operation Requirements

1. Any feedstock, additive, amendment, or compost (active, curing, or final product) stored, processed, or composted outside of the designated composting operation areas, as those boundaries are specified in the Findings, and approved by the Regional Water Board, is prohibited.

2. Any volume of any feedstock, additive, amendment, or compost (active, curing, or final product) exceeding 40,000 cubic yards is prohibited.

3. Use of any feedstock, additive, amendment, or material, other than those described in the Findings is prohibited.

4. Discharge of any of the following wastes, including storage thereof, at the composting operation areas is prohibited:

    a. Animal carcasses;

    b. Liquid wastes other than those of food origin;

    c. Medical wastes as defined in the Health and Safety Code section 117690;

    d. Radioactive wastes;

    e. Septage;

    f. Sludge, including but not limited to sewage sludge, water treatment sludge, and industrial sludge;

    g. Wastes classified as “designated” as defined in Water Code section 13173;

h. Wastes classified as “hazardous” as defined in California Code of Regulations, title 22, section 66261.3;

i. Wood containing lead-based paint or wood preservatives, or ash from such wood; or

j. Any feedstock, additive, or amendment other than those specifically described in this General Order, unless approved by the Regional Water Board.

5. Discharges of feedstocks, additives, amendments, or wastes to lands not owned, leased, or otherwise controlled by the Discharger for the purposes of composting is prohibited.

6. Discharge of wastes to surface waters is prohibited, except as authorized by an NPDES permit.

7. Discharge of wastes including overflow, wastewater, or bypass from transport, treatment, storage, or disposal systems to adjacent drainages or adjacent properties is prohibited.

8. Use of biosolids as a feedstock with concentrations of a metal that exceeds the ceiling concentration presented in 40 Code of Federal Regulations section 503.13 (Table 1) as shown in the table below, is prohibited.

Constituent	Ceiling Concentration, mg/kg
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

9. Use of biosolids as an additive or amendment is prohibited.

10. Use of anaerobic digestate derived from sewage sludge as an additive or amendment is prohibited.

11. Evapo-concentration of constituents in any detention pond that results in hazardous constituent concentration levels, as defined in California Code of Regulations, title 22, section 66261.3 is prohibited.

12. Additives and amendments must be handled, stored, and processed in the manner specified in the RWD and/or technical report and approved by the Regional Water Board.

13. All feedstocks, additives, amendments, and compost (active, curing, or final product) must not cause, threaten to cause, or contribute to conditions of pollution, contamination, or nuisance. These discharges must comply with the applicable Basin Plan requirements.

14. All feedstocks, additives, amendments, and compost (active, curing, or final product) must be located on working surfaces and containment structures designed, constructed, operated and maintained to:

    a. Facilitate drainage and minimize ponding by sloping or crowning pads to reduce infiltration of liquids;

    b. Reliably transmit free liquid present during storage, treatment, and processing of materials to a containment structure to minimize the potential for waste constituents to enter groundwater or surface water: and

    c. Prevent conditions that could contribute to, cause, or threaten to cause a condition of contamination, pollution, or nuisance.

15. Dischargers must submit a *Compost Wastewater Management Plan* that describes how wastewater will be managed to prevent discharge. The plan must describe the design, operations, and maintenance of the systems, including water balance calculations and assumptions, if required.

16. Wastewater shall be handled and managed in accordance with an approved *Compost Wastewater Management Plan*.

17. Feedstocks for composting shall be limited to the feedstock as described in the Findings.

18. Composting operations shall be setback at least 100 feet from the nearest surface water body and/or the nearest water supply well.

C. Flow Limitations

1. **Effectively immediately,** process wastewater flow to the land application areas shall not exceed the following limit:

Flow Measurement	Flow Limit	Applicability
Maximum Average Daily Flow [1]	4.0 mgd	June through October
Maximum Average Daily Flow [1]	0.4 mgd	November through May
Total Annual Flow [2]	652 mgal	Calendar Year

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

D. Effluent and Mass Loading Limitations

1. The blend of treated wastewater, storm water, and supplemental irrigation water applied to the LAAs shall not exceed the following effluent and mass loading limits:

Constituent	Units	Irrigation Cycle Average	Annual Maximum
BOD Mass Loading	lb/ac/day	100	--
Average FDS Concentration	mg/L	--	1,100 [1]
Total Nitrogen Mass Loading	lb/ac/year	--	Crop Demand [2]

[1] Flow-weighted average based on total flow and concentration for each source of water discharged.
[2] Based on plant available nitrogen (PAN) for the type of crop to be grown.

Compliance with the above requirements shall be determined as specified in the Monitoring and Reporting Program.

E. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will cause a violation of the groundwater limitations of this Order.

2. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

3. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

4. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

5. All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

6. Objectionable odors shall not be perceivable beyond the limits of the property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions.

7. As a means of discerning compliance with Discharge Specification E.6, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond or ditch shall not be less than 1.0 mg/L for three consecutive 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. The Discharger shall operate and maintain all ponds and ditches sufficiently to protect the integrity of containment dams and berms 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 requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

9. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. 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.

10. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications E.8 and E.9.

11. All ponds, ditches, and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

    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.

    d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

12. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

13. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 9.0.

14. Storage of residual solids, including pomace and/or diatomaceous earth on areas not equipped with means to prevent storm water infiltration, or a paved leachate collection system is prohibited.

F. Groundwater Limitations

Release of waste constituents from any portion of the Facility shall not cause groundwater to:

1. Contain any of the specified constituents in a concentration statistically greater than the maximum allowable concentration tabulated below. The wells to which these requirements apply are specified in the Monitoring and Reporting Program.

Discharge Location: Storage Pond		
Constituent	**Units**	**Maximum Allowable Concentration [1]**
TDS	mg/L	Up-gradient Groundwater Quality [2] or 1,000, whichever is greater
Nitrate nitrogen	mg/L	Up-gradient Groundwater Quality [2] or 10, whichever is greater
Iron, dissolved	mg/L	Up-gradient Groundwater Quality [2] or 0.3, whichever is greater
Manganese, dissolved	mg/L	Up-gradient Groundwater Quality [2] or 0.05, whichever is greater
Discharge Location: Ranch 71		
Constituent	**Units**	**Maximum Allowable Concentration [1]**
TDS	mg/L	Current Groundwater Quality [3] or 1,000 whichever is greater
Nitrate nitrogen	mg/L	Current Groundwater Quality [3] or 10, whichever is greater
Iron, dissolved	mg/L	Current Groundwater Quality [3] or 0.3, whichever is greater
Manganese, dissolved	mg/L	Current Groundwater Quality [3] or 0.05, whichever is greater
Chloride	mg/L	Current Groundwater Quality [3] or 500, whichever is greater
Sulfate	mg/L	Current Groundwater Quality [3] or 500, whichever is greater
Discharge Location: Ranch 72		
Constituent	**Units**	**Maximum Allowable Concentration [1]**
TDS	mg/L	Current Groundwater Quality [3] or 1,000, whichever is greater
Nitrate nitrogen	mg/L	Current Groundwater Quality [3] or 10, whichever is greater
Iron, dissolved	mg/L	Current Groundwater Quality [3] or 0.3, whichever is greater
Manganese, dissolved	mg/L	Current Groundwater Quality [3] or 0.05, whichever is greater

[1] Applies only to the specific compliance monitoring wells listed in the Monitoring and Reporting Program.
[2] "Up-gradient groundwater quality" as determined in the *Groundwater Characterization Report* (2006 *Groundwater Report*) dated 4 August 2006.
[3] "Current groundwater quality" means the quality of groundwater as evidenced by monitoring completed as of the December 2016 Report of Waste Discharge for each of the specified compliance monitoring wells listed in the Monitoring and Reporting Program.

2. For all compliance monitoring wells, except as specified in F.1 above, contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.

3. For all compliance monitoring wells, except as specified in F.1 above, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

4. Compliance with these limitations shall be determined annually as specified in the Monitoring and Reporting Program using approved statistical methods.

G. Land Application Area Specifications

1. Crops or other vegetation (which may include pasture grasses, native grasses and trees, and/or ornamental landscaping) that has similar water and nutrient uptake demands as sudan grass shall be grown in the LAAs.

2. Wastewater shall be distributed uniformly on adequate acreage within the land application areas to preclude the creation of nuisance conditions or unreasonable degradation of groundwater.

3. The Discharger shall maximize the use of the available land application areas to minimize waste constituent loadings.

4. Hydraulic loading of wastewater and irrigation water shall be at reasonable agronomic rates.

5. Land application of wastewater shall be managed to minimize erosion.

6. The LAAs shall be managed to prevent breeding of mosquitoes or other vectors. In particular:

    a. Conveyance or tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation.

    b. Low-pressure and unpressurized pipelines or ditches accessible to mosquitoes shall not be used to store wastewater.

7. LAAs shall be designed, maintained, and operated to comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)
Edge of LAA to property boundary	25
Edge of LAA to manmade or natural surface water drainage course	25
Edge of LAA to domestic water supply well	100

8. Irrigation of the LAAs shall occur only when appropriately trained personnel are on duty.

9. LAAs shall be inspected periodically to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance with this Order, the Discharger shall temporarily stop discharge immediately and implement corrective actions to ensure compliance with this Order.

10. Spray irrigation with wastewater is prohibited when wind speed (including gusts) exceeds 30 mph.

11. Sprinkler heads shall be designed, operated and maintained to create a minimum amount of mist.

12. Any irrigation runoff (tailwater) shall be confined to the LAAs or returned to the storage pond and shall not enter any surface water drainage course or storm water drainage system.

13. Discharge to the LAAs shall not be performed during rainfall or when the ground is saturated.

14. Discharge to the LAAs that are inundated is prohibited.

15. Discharge of storm water runoff from the LAAs to off-site land or surface water drainage courses is prohibited.

16. Grazing of animals on the land application areas is prohibited.

17. Upon approval of the report submitted pursuant to Provision I.1.g by the Executive Officer, residual solids may be land applied as specified below:

    a. Solids shall not be applied to land during periods of precipitation or when the land application area is saturated.

b. The depth and frequency of the solids application shall not exceed those proposed in an approved *Solids Use and Disposal Practice Plan*.

c. Solids shall be incorporated into the soil by disking within 24 hours of application.

d. A winter crop shall be grown on the solids application area each year. The winter crop shall be selected based on nutrient uptake rate capacity, tolerance of anticipated soil conditions, water needs, and evapotranspiration rates. All crops shall be harvested and removed from the solids application area prior to the beginning of the next fresh pack season.

e. The total annual nitrogen loading rate from solids, wastewater, and any other source shall not exceed the plant available nitrogen for the type of crop to be grown.

H. Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid organic matter removed from wastewater treatment, settling, and storage vessels or ponds. Solid waste refers to solid inorganic matter removed by screens and soil sediments from washing of unprocessed fruit or vegetables. Except for waste solids originating from meat processing, residual solids means organic food processing byproducts such as culls, pulp, stems, leaves, and seeds that will not be subject to treatment prior to disposal or land application.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and ditches as needed to ensure optimal operation and adequate storage capacity.

2. Any handling and storage of sludge, solid waste, and residual solids shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

3. Residual solids may be discharged to land in accordance with the Land Application Area Specifications of this Order.

4. If removed from the site, sludge, solid waste, and residual solids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for reuse as animal feed, or land disposal at facilities (i.e., landfills, composting facilities, soil amendment sites operated in accordance with valid waste discharge requirements issued by a Regional Water Board) will satisfy this specification.

5. Any proposed change in solids use or disposal practice, including resuming residual solids application to the LAAs, shall be reported in writing to the Executive Officer **at least 90 days** in advance of the change.

I. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision I.3:

   a. By **1 May 2018**, the Discharger shall submit a *Revised Groundwater Limitations Compliance Assessment Plan*. The plan shall propose and justify the statistical methods used to evaluate compliance with the groundwater limitation of this Order for the compliance wells and constituents specified in the MRP. Compliance shall be determined using appropriate statistical methods that have been selected based on site-specific information and the U.S. EPA Unified Guidance document cited in Finding 115 of this Order. The report shall explain and justify the selection of the appropriate statistical methods.

   b. By **1 May 2018**, the Discharger shall submit a *Sampling and Analysis Plan* (SAP) for approval. The SAP shall be utilized as a guidance document that is referred to by individuals responsible for conducting effluent and groundwater monitoring and sampling activities. The SAP shall include a written description of standard operating procedures including but not limited to the following:

      i. Equipment to be used during sampling;
      ii. Equipment decontamination procedures;
      iii. Water level measurement procedures;
      iv. Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged);
      v. Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used);
      vi. Purge water disposal;
      vii. Analytical methods and required reporting limits;
      viii. Sample containers and preservatives;
      ix. General sampling techniques;
      x. Record keeping during sampling;
      xi. QA/QC samples;
      xii. Chain of Custody; and
      xiii. Sample handling and transport.

   c. By **1 July 2018**, the Discharger shall submit a *Compost Operation Design and Construction Report*. The Report shall describe design and construction of the working surfaces and containment structures used for receiving, processing, or storing of feedstocks, additives, amendments, or compost (active, curing, or

final product). The Report shall demonstrate that the areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost meet the following requirements:

i. Working surfaces must be constructed to allow year round equipment access to feedstocks, additives, amendments, and compost without damage to the working surfaces and containment structures.

ii. Areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost be designed, constructed, and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas, from a 25-year, 24hour peak storm event at a minimum.

iii. Areas used for receiving, processing, or storing feedstocks, additives, amendments, or compost be protected from inundation by surface flows associated with a 25-year, 24-hour peak storm event at a minimum.

iv. Berms must be designed, constructed, and maintained to prevent run-on and run-off from a 25-year, 24-hour peak storm event at a minimum. Berms must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions resulting in contamination, pollution, or nuisance.

v. Drainage conveyance systems must be designed, constructed, and maintained for conveyance of wastewater from the working surface in addition to direct precipitation from a 25-year, 24-hour peak storm event at a minimum. Ditches must be properly sloped to minimize ponding and kept free and clear of debris to allow for continuous flow of liquid. Ditches must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions resulting in contamination, pollution, or nuisance. Ditches must be inspected and cleaned out prior to the wet season every year.

Or submit a *Compost Site Improvements Plan and Schedule* that describes proposed site improvements that are consistent with the requirements listed above and a time schedule for those improvements to be completed. **At least 90 days** upon completion of the proposed site improvements, the Discharger shall submit a *Compost Site Improvements Completion Report* that certifies construction and completion of the site improvements as specified in the *Compost Site Improvements Plan and Schedule*.

d. By **1 February 2019**, the Discharger shall submit a *Compost Wastewater Management Plan.* The Plan shall characterize the leachate or runoff from any area of the composting operation, describe management of drainage and wastewater runoff, and describe any measures and controls to prevent wastewater from changing groundwater quality to the extent beneficial uses are impacted. Provide a description of the operations during periods of wet

weather to ensure integrity of the containment systems or management practices to protect groundwater quality. The plan shall include a description of and/or plan illustrating all precipitation controls, containment structures, (i.e., conveyance systems for wastewater and detention ponds), best management practices, and contingency plan including:

i. A wastewater conveyance system for controlling run-on and runoff from the working surface.

ii. A description of how water and wastewater is obtained and used in the compost process.

iii. A description of how the operation collects and manages wastewater. Information may include, but not limited to, quantity that is reused back in the process, description of wastewater treatment systems, other water quality permits, and best management practices (i.e. covering materials) that reduce the production of wastewater.

iv. If using a detention pond, provide a water balance demonstrating compliance with Design, Construction and Operation Requirements

e. **At least 120 days prior** to discharging process wastewater to Ranch 72, the Discharger shall notify the Central Valley Water Board their intent to begin discharging. The notification shall identify the amount of acres available for use as a LAA, anticipated volume of process wastewater for application, type of irrigation method (flood, drip, sprinkler, etc.), and type of vegetation/crop to which process wastewater will be applied. The Discharger shall submit a map of Ranch 72 that shows the location of the head/conveyance and tailwater ditches (including flow direction) and location where supplemental water may be added. In addition, the Discharger shall assess and determine current groundwater quality at Ranch 72 as defined as the most recent four monitoring events prior to initiation of discharge. Describe and justify the statistical methods used to determine current groundwater quality at Ranch 72 for the constituents listed in the Monitoring and Reporting Program.

f. **At least 90 days prior** to any pond sludge removal and disposal, the Discharger shall submit a *Sludge Cleanout Plan*. The plan shall include a detailed plan for sludge removal, drying, and disposal. The plan shall specifically describe the phasing of the project, measures to be used to control runoff or percolate from the sludge as it is drying, and a schedule that shows how all dried sludge will be removed from the site prior to the onset of the rainy season **(1 October)**.

g. **At least 90 days prior** to any change in on-site solids use or disposal practice, including resuming residual solids application to the LAAs, the Discharger shall submit a *Solids Use and Disposal Practice Plan* for approval by the Executive Officer. The plan shall describe the proposed solids use and/or disposal practice, including a map showing the location of the solids application and/or

disposal area; proposed application depth and frequency with technical justification that the proposed loading would not cause nuisance or reducing conditions; and description of operational procedures, management practices, and control measures to ensure compliance with the nitrogen mass loading and groundwater limitations of this Order.

2. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.

3. 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.

4. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

5. The Discharger shall comply with Monitoring and Reporting Program R5-2018-0006, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

6. 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)."

7. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board 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. 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 rescission of this Order.

8. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.

9. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

10. 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.

11. 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."

12. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

13. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

14. In the event of any change in control or ownership of the Facility, 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 the Central Valley Water Board.

15. 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 Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

16. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

17. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 1 February 2018.

- Original signed by -

PAMELA C. CREEDON, Executive Officer

LLA: 011618

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-0006

FOR

OLAM WEST COAST, INC. AND T & P FARMS
OLAM WEST COAST WILLIAMS FACILITY
COLUSA COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Except as specified otherwise in this MRP, grab samples will be considered representative of water, wastewater, soil, solids/sludges, and groundwater.

The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions). Field test instruments (such as those used to measure pH, electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

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

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);
- *Test Methods for Evaluating Solid Waste* (EPA);
- *Methods for Chemical Analysis of Water and Wastes* (EPA);
- *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);
- *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and
- *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health’s Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower

than concentrations that implement applicable water quality objectives/limits for the constituents to be analyzed.

If monitoring consistently shows no significant variation in a constituent concentration or parameter after at least 8 consecutive monitoring events, the Discharger may request this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

A glossary of terms used in this MRP is included on the last page.

GENERAL POND MONITORING

The Discharger shall monitor all wastewater storage and tailwater ponds in accordance with the following. Sampling will be conducted from permanent monitoring locations that will provide samples representative of the wastewater in the ponds. Freeboard shall be measured vertically from the water surface to the lowest elevation of pond berm (or spillway/overflow pipe invert), and shall be measured to the nearest 0.10 feet. If any pond is dry, the monitoring report shall so state. Pond monitoring shall include, at a minimum, as specified below:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen [1]	mg/L	Grab	Weekly	Quarterly
Freeboard	0.1 feet	Measurement	Weekly	Quarterly
Odors	--	Observation	Weekly	Quarterly
Berm condition	--	Observation	Monthly	Quarterly

[1] Samples shall be collected opposite the inlet at a depth of one foot from each pond in use. Samples shall be collected between 0700 and 0900 hours.

EFFLUENT MONITORING

Effluent samples shall be collected just prior to discharge to the land application areas or storage pond. Grab samples collected from a pipeline or sump pit will be considered representative. Effluent monitoring is only required during periods when wastewater is discharged to the land application areas or storage pond. If no wastewater was discharged to land, the corresponding monitoring report shall so state. Analytical methods shall be selected to provide reporting limits below concentrations that implement the applicable water quality objectives/limits for each constituent. At a minimum, the Discharger shall monitor the wastewater as follows:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
pH	pH units	Grab	Weekly	Quarterly
BOD_5 [1]	mg/L	Grab	Weekly	Quarterly
Total Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Fixed Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Quarterly
Nitrate Nitrogen	mg/L	Grab	Monthly	Quarterly
Ammonia Nitrogen	mg/L	Grab	Monthly	Quarterly
Dissolved Iron [2]	mg/L	Grab	Quarterly	Quarterly
Dissolved Manganese [2]	mg/L	Grab	Quarterly	Quarterly
Standard Minerals [3]	mg/L	Grab	Annual	Annual

[1] Five-day, 20˚ Celsius biochemical oxygen demand.
[2] Samples shall be filtered with a 0.45-micron filter prior to sample preservation.
[3] Standard Minerals shall include, at a minimum, the following: Boron, chloride, sodium, and sulfate.

Effluent Trigger Concentrations

The following effluent trigger concentration is intended only to serve as a means of assessing whether the discharge might potentially cause a violation of the Effluent Limitations of the WDRs at some later date.

Constituent	Trigger Concentration
FDS	950 mg/L

If the annual evaluation of effluent limitation performed pursuant to the Annual Monitoring Report section of this MRP shows that the flow-weighted annual average of the FDS limit has exceeded the trigger concentration during the calendar year, the Discharger shall include in the following discussion in the annual report.

1. A technical evaluation of the reason[s] for the concentration increase[s];
2. A technical demonstration that the FDS effluent concentration, although has increased, continuing the discharge without additional treatment or control will not result in exceedance of the FDS effluent limitation and or applicable groundwater limitation with respect to salinity; and
3. A discussion of additional treatment or controls to be implemented or actions implemented to prevent unreasonable groundwater degradation.

SUPPLEMENTAL IRRIGATION WATER MONITORING

Samples of supplemental irrigation water shall be collected at the wellhead. Sampling is not required during periods when no water is discharged to the land application areas. Grab samples collected from a pipeline will be considered representative. At a minimum, the Discharger shall monitor the supplemental irrigation supply water as follows:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
pH	pH units	Grab	Monthly	Quarterly
Total Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Fixed Dissolved Solids	mg/L	Grab	Monthly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Quarterly
Nitrate Nitrogen	mg/L	Grab	Monthly	Quarterly
Dissolved Iron [1]	mg/L	Grab	Quarterly	Quarterly
Dissolved Manganese [1]	mg/L	Grab	Quarterly	Quarterly
Standard Minerals [2]	mg/L	Grab	Annual	Annual

1 Samples shall be filtered with a 0.45-micron filter prior to sample preservation.

2 Standard Minerals shall include, at a minimum, the following: Boron, chloride, sodium, and sulfate.

FLOW MONITORING

The Discharger shall monitor wastewater and supplemental irrigation water flows as follows:

Flow Source	Units	Type of Measurement	Measurement Frequency	Reporting Frequency
Processing plant to wastewater pond	gpd	Meter [1]	Daily	Quarterly
Daily discharge to each irrigation field or check:				
Wastewater	gpd	Meter [2]	Daily	Quarterly
Supplemental Water	gpd	Meter [2]	Daily	Quarterly

"gpd" denotes gallons per day.

1 Report as total daily flow from the flow source to the pond.

2 Calculations based on total daily flow, flow rates, checks in use, and length of set time for each check.

LAND APPLICATION AREA MONITORING

A. Daily Field Inspections

The Discharger shall inspect the land application areas at least once daily prior to and during irrigation events and observations from those inspections shall be documented for inclusion in the quarterly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

1. Evidence of erosion;
2. Berm condition;
3. Condition of each standpipe and flow control valve (if applicable);
4. Proper use of valves;
5. Condition of all ditches used for the conveyance of wastewater and tailwater;
6. Soil saturation;
7. Ponding;
8. Tailwater ditches and potential runoff to off-site areas;
9. Potential and actual discharge to surface water;
10. Accumulation of organic solids in ditches and at soil surface;
11. Soil clogging;
12. Odors that have the potential to be objectionable at or beyond the property boundary; and
13. Insects.

The Discharger shall monitor the dissolved oxygen content of the wastewater at least once per day at the following locations:

1. The point of discharge from the force main into the conveyance ditch;
2. The downstream end of the conveyance ditch;
3. Any location where water is standing longer than six hours after delivery to the field has stopped.

Temperature; wind direction and relative strength; and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on observations made, including fresh water flushing of the force main and head ditches. A copy of entries made in the log during each month shall be submitted as part of the Quarterly Monitoring Report.

B. Routine Monitoring

The Discharger shall perform the following routine monitoring and loading calculations during all months when land application occurs, and shall present the data in the Quarterly and Annual Monitoring Reports.

Constituent	Units	Type of Measurement	Measurement Frequency	Reporting Frequency
Precipitation	0.1 inch	Rain Gauge [1]	Daily	Quarterly, Annual
Irrigation fields and checks receiving wastewater	--	Observation	Daily	Quarterly, Annual
Hydraulic Loading Rate:				
Wastewater	inch	Calculated [2]	Daily	Quarterly, Annual
Supplemental Water	inch	Calculated [2]	Daily	Quarterly, Annual
Total	inch	Calculated [2]	Daily	Quarterly, Annual
BOD_5 Loading Rate:				
Peak Daily	lb/ac/day	Calculated [2,3]	Daily	Quarterly, Annual
Cycle Average	lb/ac/day	Calculated [2,3]	Daily	Quarterly, Annual
Total Nitrogen Loading:				
Wastewater	lb/ac	Calculated [2,4]	Daily	Quarterly, Annual
Supplemental Water [6]	lb/ac	Calculated [2,4]	Daily	Quarterly, Annual
Total	lb/ac	Calculated [2,4,5]	Daily	Quarterly, Annual
TDS Loading Rate:				
Wastewater	lb/ac	Calculated [2,4]	Monthly	Quarterly, Annual
Supplemental Water [6]	lb/ac	Calculated [2,4]	Monthly	Quarterly, Annual
Total	lb/ac	Calculated [2,4]	Monthly	Quarterly, Annual
Flow-weighted FDS Concentration (Combined wastewater and freshwater)	mg/L	Calculated	Monthly	Annual

[1] Data obtained from the nearest National Weather Service rain gauge is acceptable.
[2] Rate shall be calculated for each irrigation check.
[3] BOD_5 shall be calculated using the daily applied volume of wastewater, actual application area, and the average of the three most recent BOD_5 results.
[4] Total nitrogen and TDS loading rates shall be calculated as a flow-weighted average using the applied volume of wastewater, actual application area, and effluent monitoring results.
[5] Loading rates for supplemental nitrogen shall be calculated using the actual load and the application area.
[6] Identify supply well used for each check on each day.

GROUNDWATER MONITORING

The Discharger shall maintain the groundwater monitoring well network. If a groundwater monitoring well is dry for more than four consecutive sampling events or is damaged, the Discharger shall submit to the Regional Board a work plan and proposed time schedule to replace the well. The well shall be replaced following approval of the work plan.

Prior to construction of any additional groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Once installed, all new monitoring wells shall be added to the MRP, and shall be monitored on a quarterly basis for a minimum of eight consecutive quarters before a reduction in monitoring frequency can be considered.

The groundwater monitoring program applies to groundwater monitoring wells tabulated below and any wells subsequently installed under direction of the Central Valley Water Board.

Location	Monitoring Well	Well Function
Wastewater Storage Pond	MW-8	downgradient well, compliance monitoring
Compost Facility	MW-29	downgradient well, compliance monitoring
Ranch 71	MW-24	upgradient well
	MW-25A	upgradient well
	MW-26	downgradient well, compliance monitoring
	MW-27A	downgradient well, compliance monitoring
	MW-30A	downgradient well, compliance monitoring
	MW-31A	downgradient well, compliance monitoring
Ranch 72	MW-21A	upgradient well
	MW-22	downgradient well, compliance monitoring
	MW-23	downgradient well, compliance monitoring
	MW-28	downgradient well, compliance monitoring.
	MW-32	upgradient well

Prior to sampling, depth to groundwater measurements shall be measured in each monitoring well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction. Sampling activities shall be conducted in accordance with an approved Sampling and Analysis Plan. Samples shall be collected and analyzed using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	0.01 feet	Measurement	Quarterly [4,5]	Annual
Groundwater Elevation[1]	0.01 feet	Calculated	Quarterly [4,5]	Annual
Gradient	feet/feet	Calculated	Quarterly [4,5]	Annual
Gradient Direction	degrees	Calculated	Quarterly [4,5]	Annual
pH	pH units	Grab	Quarterly [4,5]	Annual
TDS	mg/L	Grab	Quarterly [4,5]	Annual
TKN	mg/L	Grab	Quarterly [4,5]	Annual
Nitrate Nitrogen	mg/L	Grab	Quarterly [4,5]	Annual
Dissolved Iron [2]	mg/L	Grab	Quarterly [4,5]	Annual
Dissolved Manganese [2]	mg/L	Grab	Quarterly [4,5]	Annual
Standard Minerals [3]	mg/L	Grab	Annual [4,5]	Annual

1 Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.
2 Samples shall be filtered with a 0.45-micron filter prior to sample preservation.
3 Standard minerals shall include, at a minimum, the following: boron, chloride, sodium, and sulfate.
4 Annual sampling is required for all wells at Ranch 72 until such time when wastewater is applied to Ranch 72 then quarterly monitoring is required.
5 Annual sampling is required for up-gradient wells MW-24 and MW-25A.

As footnoted above, annual groundwater sampling is required for wells MW-21A, MW-22, MW-23, MW-28, and MW-32 until such time when wastewater is applied to Ranch 72, then quarterly monitoring is required. In addition, annual groundwater sampling is required for wells MW-24 and MW-25A at Ranch 71.

APPLICABILITY OF GROUNDWATER LIMITATIONS

The Groundwater Limitations set forth in Section F of the WDRs shall apply to the specific compliance monitoring wells tabulated below. This table is subject to revision by the Executive Officer following construction of any new compliance monitoring wells.

Discharge Location: Storage Pond		
Constituent	**Maximum Allowable Concentration, mg/L unless specified**	**Compliance Well**
TDS	Water Quality Objective	MW-8
Nitrate nitrogen	44	MW-8
Iron [1]	Water Quality Objective	MW-8
Manganese [1]	3.9	MW-8

[1] Dissolved, samples shall be filtered with a 0.45-micron filter prior to sample preservation.

Discharge Location: Ranch 71		
Constituent	**Maximum Allowable Concentration, mg/L unless specified**	**Compliance Well**
TDS	1,300	MW-26
TDS	2,680	MW-27A
TDS	2,130	MW-29
TDS	Water Quality Objective	MW-30A
TDS	1,850	MW-31A
Nitrate nitrogen	Water Quality Objective	MW-26, MW-27A, MW-29, MW-30A, MW-31A
Iron [1]	Water Quality Objective	MW-26, MW-27A, MW-29, MW-30A, MW-31A
Manganese [1]	1.1	MW-26
Manganese [1]	1.0	MW-27A
Manganese [1]	0.1	MW-29
Manganese [1]	0.7	MW-30A
Manganese [1]	0.9	MW-31A
Chloride	Water Quality Objective	MW-26, MW-29, MW-30A, MW-31A
Chloride	860	MW-27A
Sulfate	Water Quality Objective	MW-26, MW-30A, MW-31A
Sulfate	930	MW-27A
Sulfate	670	MW-29

[1] Dissolved, samples shall be filtered with a 0.45-micron filter prior to sample preservation.

Discharge Location: Ranch 72		
Constituent	**Maximum Allowable Concentration, mg/L unless specified**	**Compliance Well**
TDS	Current groundwater quality [2]	MW-22, MW-23, MW-28
Nitrate nitrogen	Current groundwater quality [2]	MW-22, MW-23, MW-28
Iron [1]	Current groundwater quality [2]	MW-22, MW-23, MW-28
Manganese [1]	Current groundwater quality [2]	MW-22, MW-23, MW-28

[1] Dissolved, samples shall be filtered with a 0.45-micron filter prior to sample preservation.
[2] Current groundwater is defined as the most recent four monitoring events prior to initiation of wastewater discharges to Ranch 72.

Groundwater Trigger Concentrations

The following groundwater trigger concentrations are intended only to serve as a means of assessing whether the discharge might potentially cause a violation of one or more of the Groundwater Limitations of the WDRs at some later date.

Constituent	Compliance Wells	Trigger Concentration
Nitrate as N	MW-26, MW-27A, MW-29, MW-30A MW-31A	7 mg/L
Sodium	MW-8	80 mg/L
Sodium	MW-26	350 mg/L
Sodium	MW-27A	650 mg/L

If the annual evaluation of groundwater quality performed pursuant to the Annual Monitoring Report section of this MRP shows that the annual average of one or more of the trigger concentrations has been exceeded in any compliance well during the calendar year, the Discharger shall submit one or both of the following technical reports, as applicable, by **1 May of the following calendar year** (e.g., if one or more trigger concentrations are exceeded for calendar year 2020, the appropriate report is due by 1 May 2021):

1. A technical evaluation of the reason[s] for the concentration increase[s] and a technical demonstration on a constituent-by-constituent basis that, although the concentration has increased more than expected in one or more compliance wells, continuing the discharge without additional treatment or control will not result in exceedance of the applicable groundwater limitation.

2. An *Action Plan* that presents a systematic technical evaluation of each component of the facility's waste treatment and disposal system to determine whether additional treatment or control is feasible for each constituent that exceeds a trigger concentration. The plan shall:

a. Evaluate each component of the wastewater treatment, storage, and disposal system (as applicable);
b. Describe available treatment and/or control technologies that have not yet been implemented;
c. Provide preliminary capital and operation/maintenance cost estimates for each technology;
d. Designate the preferred option[s] for implementation; and
e. Specify a proposed implementation schedule. The schedule for full implementation shall not exceed one year, and the Discharger shall immediately implement the proposed improvements.

COMPOSTING MONITORING

The Discharger shall inspect the composting operation in accordance with the following schedule and record, at a minimum, the observations described below:

A. Operations Areas – Perform quarterly inspections of the working surfaces, berms, ditches, facility perimeter, erosion control best management practices (BMPs), and any other operational surfaces (as specified in the WDRs and/or a technical report, and approved by the Regional Water Board). The Discharger shall include the following observations in the Annual Report:

1. Date and time of inspections, along with the name of the inspector;
2. Evidence of areas of deficiency such as cracking or subsidence in the working surfaces;
3. Evidence of ponding over the working surfaces and within ditches (show affected area on a map);
4. Effectiveness of erosion control BMPs;
5. Maintenance activities associated with, but not limited to, the working surfaces, berms, ditches, and erosion control BMPs;
6. Evidence of any water or wastewater leaving or entering the facility, estimated size of affected area, and estimated flow rate (show affected area on a map);
7. Integrity of drainage systems during the wet season; and
8. Photographs of observed and corrected deficiencies.

B. Annual Survey – Perform annual survey of the facility to confirm that all containment structures are prepared for the pending wet season. Dischargers shall conduct an annual survey prior to the anticipated wet season, but **no later than August 31** and complete any necessary construction, maintenance, or repairs **by October 31**. The Discharger shall include the following in the Annual Report:

1. The observation date and time of the survey, along with the name of the inspector.
2. The type of deficiency/non-compliance observed;
3. The cause for the deficiency/noncompliance;
4. Map showing the area of deficiency/noncompliance;
5. The corrective actions undertaken, or planned to resolve the deficiency/non-compliance, including the date and time of repairs;
6. The measures undertaken by the Discharger to prevent the recurrence of the observed deficiency/noncompliance; and
7. Photographs of the observed deficiencies/noncompliance with corresponding location on the map.

C. Major Storm Events - The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following major storm events. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs including photographs of the problem and repairs in the Annual Report.

REPORTING

All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to:

centralvalleysacramento@waterboards.ca.gov

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
ECM Mailroom
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670

To ensure that your submittals are routed to the appropriate staff, the following information block should be included in any correspondence used to transmit documents to this office:

Olam West Coast, Inc., Olam West Coast Williams Facility, Colusa County		
Program: Non-15 Compliance	Order: R5-2018-0006	CIWQS Place ID: 642425

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate

compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Central Valley Water Board.

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Professional Engineer or Geologist and signed by the registered professional.

A. Quarterly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in the quarterly monitoring report. Quarterly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following the quarter** (i.e. the January - March Report quarterly report is due by **1 May**). At a minimum, the report shall include:

1. Results of General Pond Monitoring in tabular format for each month during the reported quarter.

2. Results of Effluent Monitoring in tabular format for each month during the reported quarter.

3. Results of Supplemental Irrigation Water Monitoring in tabular format for each month during the reported quarter.

4. Results of Flow Monitoring in tabular format for each month during the reported quarter, including calculated values for the total flow and average daily flow for each month and total annual flow to date.

5. Results of Land Application Area Monitoring, including:

    a. Calculated hydraulic loading rate for each month during the reported quarter and cumulative loading to date.

    b. Calculated irrigation cycle average BOD loading rate for each LAA using the following formula:

$$M = \frac{8.345(CV)}{AT} + M_x$$

Where:	M	=	mass of BOD applied to an LAA in lb/ac/day.
	C	=	concentration of BOD in mg/L based on a 3-week running average.
	V	=	total volume of wastewater applied to the LAA during the irrigation cycle, in millions of gallons.
	A	=	area of the LAA irrigated in acres.
	T	=	irrigation cycle length in days (from the first day water was applied to the last day of the drying time).
	8.345	=	unit conversion factor.
	M_x	=	mass of BOD from other sources.

c. Calculated total nitrogen loading rate for each LAA using the following formula:

$$M = \sum_{i=1}^{12} \frac{8.345(C_i V_i)}{A} + M_x$$

Where:	M	=	mass of nitrogen applied to LAA in lb/ac/yr.
	C_i	=	Monthly average concentration of total nitrogen for month *i* in mg/L.
	V_i	=	volume of wastewater applied to the LAA during calendar month *i* in million gallons.
	A	=	area of the LAA irrigated in acres.
	i	=	the number of the month (e.g., January = 1, February = 2, etc.).
	M_x	=	nitrogen mass from other sources (e.g., fertilizer and compost) in pounds.
	8.345	=	unit conversion factor.

d. The total plant available nitrogen (PAN) shall be calculated as 73 percent of the total applied nitrogen and compared with the Effluent Limitations of the WDRs.

e. Calculated TDS loading rate for each LAA using the following formula:

$$M = \frac{8.345(CV)}{A} + M_x$$

Where:	M	=	mass of TDS applied to an LAA in lb/ac/day.
	C	=	concentration of TDS in mg/L based on a 3-week running average.
	V	=	volume of wastewater applied to the LAA in millions of gallons per day.
	A	=	area of the LAA irrigated in acres.
	8.345	=	unit conversion factor.
	M_x	=	mass of TDS from other sources.

6. A summary of the daily field inspection reports, including any corrective actions taken based on observations made or fresh water flushing of the force main and all conveyance ditches.

7. A comparison of monitoring data to the flow limitations, effluent limitations, and discharge specifications and an explanation of any violation of those requirements;

8. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program; and

9. Copies of the laboratory analytical data reports shall be maintained by the Discharger and provided upon request by the Regional Water Board.

B. Annual Monitoring Reports

An Annual Monitoring Report shall be submitted to the Central Valley Water Board by **1 February** each year and shall include the following:

Flow Monitoring

1. Total annual flow discharged to land applications areas and determination of compliance with the annual flow limitation of the WDRs.

Groundwater Monitoring

1. A narrative description of all preparatory, monitoring, and sample and handling, for groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements.

2. A field log for each well documenting depth to groundwater; method of purging, parameters measured before, during, and after purging; sample preparation (e.g., filtering); and sample preservation. Low or no-purge sampling methods are acceptable if described in an approved Sampling and Analysis Plan.

3. Results of Groundwater Monitoring in tabular format for the month during the reported quarter, including calculation of the groundwater elevation at each monitoring well, and determination of groundwater flow direction and gradient on the date of measurement.

4. Summary data tables of historical and current water table elevations and analytical results, comparison with previous flow direction and gradient data, and discussion of seasonal trends if any.

5. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to an appropriate datum (e.g., NGVD).

6. An evaluation of the groundwater quality beneath the site and determination of compliance with the Groundwater Limitations of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved Groundwater Limitations Compliance Assessment Plan. Where the Groundwater Limitation is the maximum allowable concentration of the "cumulative groundwater quality" near the specified Use Area or land discharge area, "cumulative groundwater quality" shall be the intra-well statistical average from the first monitoring event after discharge began to the previous monitoring event of the current monitoring year for each of the specified compliance monitoring well. Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.

7. Copies of the laboratory analytical data reports shall be maintained by the Discharger and provided upon request by the Regional Water Board.

Land Application Area Monitoring

1. Calculated flow-weighted annual average FDS effluent concentration and determination of compliance with Effluent Limitations of the WDRs. The flow-weighted annual average FDS effluent concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{1}^{12}[(C_{Pi} \times V_{Pi}) + (C_{Si} \times V_{Si})]}{\sum_{1}^{12}(V_{Pi} + V_{Si})}$$

Where:
- C_a = Flow-weighted average annual FDS concentration in mg/L.
- $_i$ = the number of the month (e.g., January = 1, February = 2, etc.).
- C_{Pi} = Monthly average process wastewater FDS concentration for calendar month i in mg/L.
- C_{Si} = Monthly average supplemental irrigation water FDS concentration for calendar month i in mg/L (considering each supplemental source separately).
- V_{Pi} = Volume of process wastewater applied to LAA during calendar month i in million gallons.
- V_{Si} = Volume of supplemental irrigation water applied to LAA during calendar month i in million gallons (considering each supplemental source separately).

Composting Reporting

1. Summarize all monitoring and maintenance activities performed and adverse conditions noted since the prior reporting period with respect to all berms, ditches, working surfaces, and monitoring systems.

Additional Reporting

1. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

2. Monitoring equipment maintenance and calibration records, as described in Standard Provision C.4., shall be maintained by the Discharger and provided upon request by the Regional Water Board.

3. A discussion of the following:

    a. Waste constituent reduction efforts implemented in accordance with any required workplan;

    b. Other treatment or control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order;

    c. A discussion of anticipated pond sludge removal in the coming year, and if so, include anticipated schedule for cleaning, drying, and disposal; and

    d. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.

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

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: *- Original signed by -*

PAMELA C. CREEDON, Executive Officer

1 February 2018

(Date)

LLA: 011618

GLOSSARY

BOD_5	Five-day biochemical oxygen demand
$CaCO_3$	Calcium carbonate
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
NTU	Nephelometric turbidity unit
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots over a 24-hour period.
Daily	Every day except weekends or holidays
Twice Weekly	Twice per week on non-consecutive days
Weekly	Once per week.
Twice Monthly	Twice per month during non-consecutive weeks
Monthly	Once per calendar month.
Bimonthly	Once every two calendar months (i.e., six times per year) during non-consecutive months.
Quarterly	Once per calendar quarter.
Semiannually	Once every six calendar months (i.e., two times per year) during non-consecutive quarters.
Annually	Once per year.
mg/L	Milligrams per liter
mL/L	Milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
gpd	Gallons per day
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
MTF	Multiple tube fermentation

INFORMATION SHEET

ORDER R5-2018-0006
OLAM WEST COAST, INC. AND T & P FARMS
OLAM WEST COAST WILLIAMS FACILITY
COLUSA COUNTY

Facility Description

The Olam West Coast Williams processing plant site processes tomatoes and tomato products and cans chilies. The paste line processes fresh tomatoes into tomato paste and has been operating since 1982. The retail line produces retail packed tomato products and began operating in 2001. The processing plant typically operates 24-hours daily, 7-days a week during the fresh pack season and intermittently during the off-season.

WDRs Order R5-2006-0047, adopted on 5 May 2006, prescribes requirements for the discharge of tomato processing wastewater to land application areas (LAAs) known as Ranch 71 and Ranch 72. Olam West Coast, Inc. (Olam) dba Olam Spices and Vegetable Ingredients owns and operates the processing plant site that generates the waste. Ranch 71 and Ranch 72 is owned by T & P Farms and leased to Olam. The Facility consists of the processing plant site (which includes the storage pond), the LAAs, and the composting area. Order R5-2006-0047 allows an average daily wastewater flow of up to 4.0 million gallons per day (mgd) during the months of July through October and up to 0.2 mgd during the months of November through June.

The Discharger requested a fixed dissolved solids (FDS) and plant available nitrogen (PAN) effluent limit in lieu of their current total dissolved solids (TDS) and total nitrogen effluent limit; an expansion of the fresh pack season to include June; and an increase of the average daily wastewater flow during the off-season months from 0.2 to 0.4 mgd.

Process Wastewater

Process wastewater is generated from the paste and retail lines, which are commingled and discharged to a sump. That same sump also collects storm water runoff at the processing plant site. Process wastewater is typically high in salinity and nitrogen, mostly in the form of TKN.

The process wastewater is screened then pumped to the LAAs by a force main approximately 3.6 miles long to an unlined conveyance ditch at each LAA. From the conveyance ditch, process wastewater flows into a smaller unlined headwater canal for land application by ridge and furrow or conveyed through pipe for land application by sprinklers. Typical crops grown and harvested at the LAAs include rye grass, sudan grass, sorghum-sudan grass, and corn. During emergencies and during the wet season months, process wastewater is diverted to a wastewater storage pond located at the processing plant site.

Prior to 2006, process wastewater was discharged to former LAAs known as the Myers and Reynolds Property. From 1982 until October 2005, the Myers Property received process wastewater from the paste line during the fresh pack season. Between 2002 and 2005, the Reynolds Property received process wastewater from the retail line during the fresh pack season.

Annual wastewater flow rates measured between 2012 and 2016 range from 170 to 220 million gallons. Supplemental irrigation water was used in 2014.

Existing Composting Operation

Prior to 2012, all residual solid wastes or wet wastes were land applied to a portion of Field 71-3 SW. Currently, the Discharger operates a composting operation on a 25-acre portion of Field 71-3 SW. This operation is capable of handling up to 40,000 cubic yards of compost annually, with an equivalent weight of 20,000 tons and a daily handling limit of 500 tons. Solids (tomato pomace) generated at the processing plant site, along with crops harvested from the LAAs and other nearby farms, including almond, rice, and mushroom byproducts are incorporated into compost windrows. Rice hulls (or husk) and other similar bulking agents are also used.

Site-Specific Conditions

Surrounding land uses are predominately agricultural lands and a few residences. The annual average precipitation in the Williams area is approximately 17 inches and the 100-year total annual precipitation is approximately 28 inches. Based on data published by the California Irrigation management Information System (CIMIS, 2015) for Colusa, California, Station 32, the reference evapotranspiration rate is approximately 53 inches per year.

Groundwater Conditions

The local gradient typically flows from the west to the east. Depth to underlying groundwater is summarized below:

Location	Units	Depth to Underlying Groundwater
Storage Pond	feet below ground surface	6.6 to 22
Ranch 71	feet below ground surface	1.0 to 16
Ranch 72	feet below ground surface	3.5 to 31

The groundwater monitoring well network consists of multiple wells and lysimeters located at the storage pond, the former LAAs (Reynolds and Myers properties), and the current LAAs (Ranch 71 and 72). Based on groundwater concentration trends and minimal groundwater impacts observed at the Reynolds and Myers properties, the Discharger's request to abandon the wells specific to the former LAAs was approved by Water Board staff. The Discharger currently monitors groundwater at the storage pond and at Ranch 71 and 72. Wells currently monitored are summarized in the table below.

Monitoring Well Network at the Storage Pond		
Well Name	**Well Installation Date**	**Well Position**[3]
LF-1	1995	upgradient
MW-8	2001	downgradient
Monitoring Well Network at Ranch 72		
Well Name	**Well Installation Date**	**Well Position**[3]
MW-21/21A	July 2005/July 2014	upgradient
MW-22	July 2005	downgradient
MW-23	July 2005	downgradient
MW-28	March 2007	downgradient
MW-32	June 2014	upgradient
Monitoring Well Network at the Ranch 71		
Well Name	**Well Installation Date**	**Well Position**[3]
MW-24	July 2005	upgradient
MW-25/25A [1]	July 2005/November 2009	upgradient
MW-26	July 2005	downgradient
MW-27/27A [2]	July 2005/June 2013	downgradient
MW-29	March 2007	downgradient
MW-30/30A [1]	March 2007/November 2009	downgradient
MW-31/31A [2]	March 2007/June 2013	downgradient

[1] Wells MW-25A and MW-30A were installed to replace former wells MW-25 and MW-30, which were presumed destroyed or buried.
[2] Well MW-27A and MW-31A were installed to replace former wells MW-27 and MW-31, which were damaged.
[3] Location with respect to groundwater gradient direction.

Shallow groundwater quality varies at the three discharge locations. In a *Groundwater Characterization Report* (2006 *Groundwater Report*) dated 4 August 2006, statistical methods were used to determine up-gradient or pre-discharge groundwater quality at the storage pond and at Ranch 71 and 72. Where appropriate, up-gradient or pre-discharge groundwater quality were determined as an upper, one-sided, 95 percent tolerance interval with 99 percent coverage.

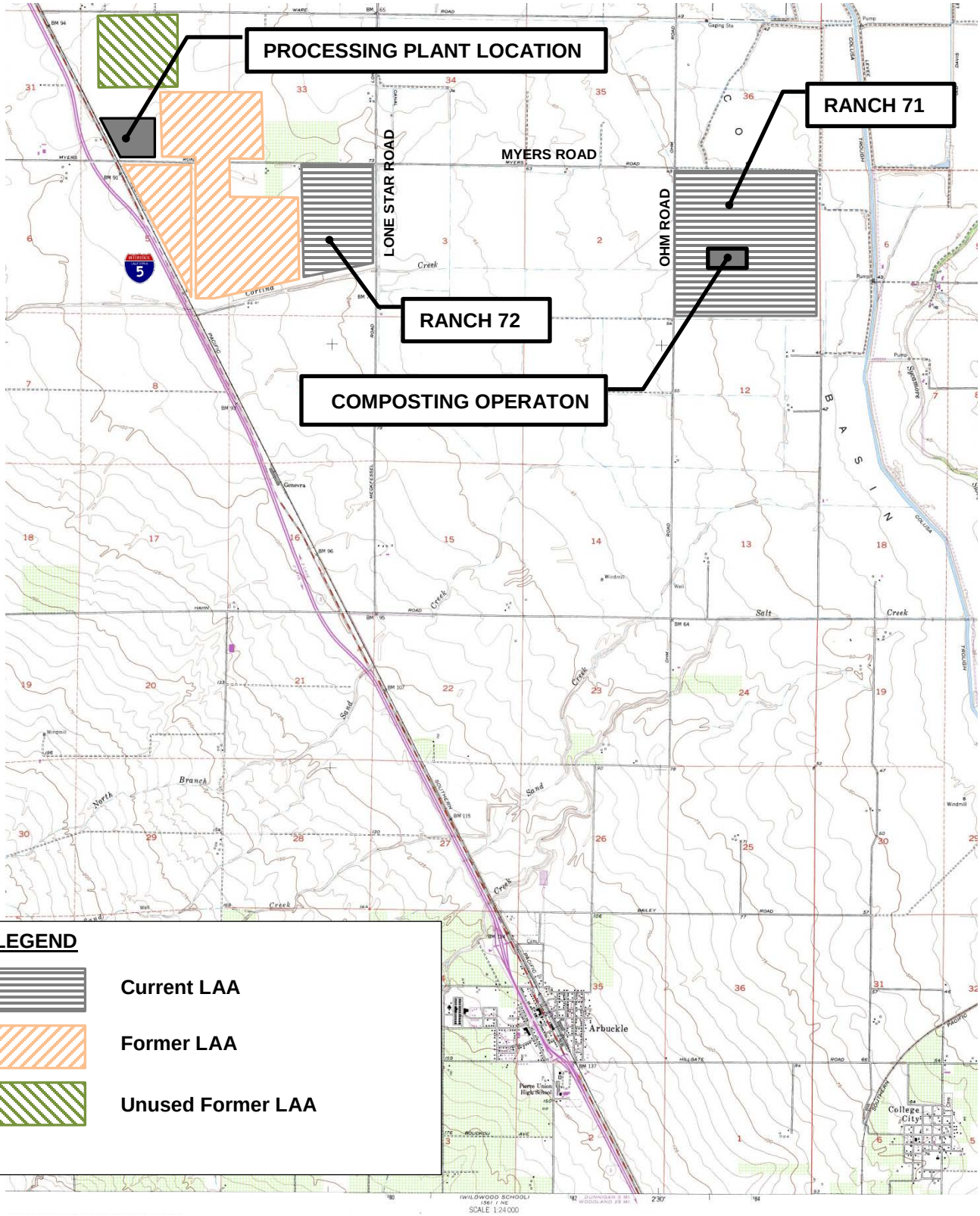
Legal Effect of Rescission of Prior WDRs or Orders on Existing Violations

The Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement actions to address violations of prior prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.

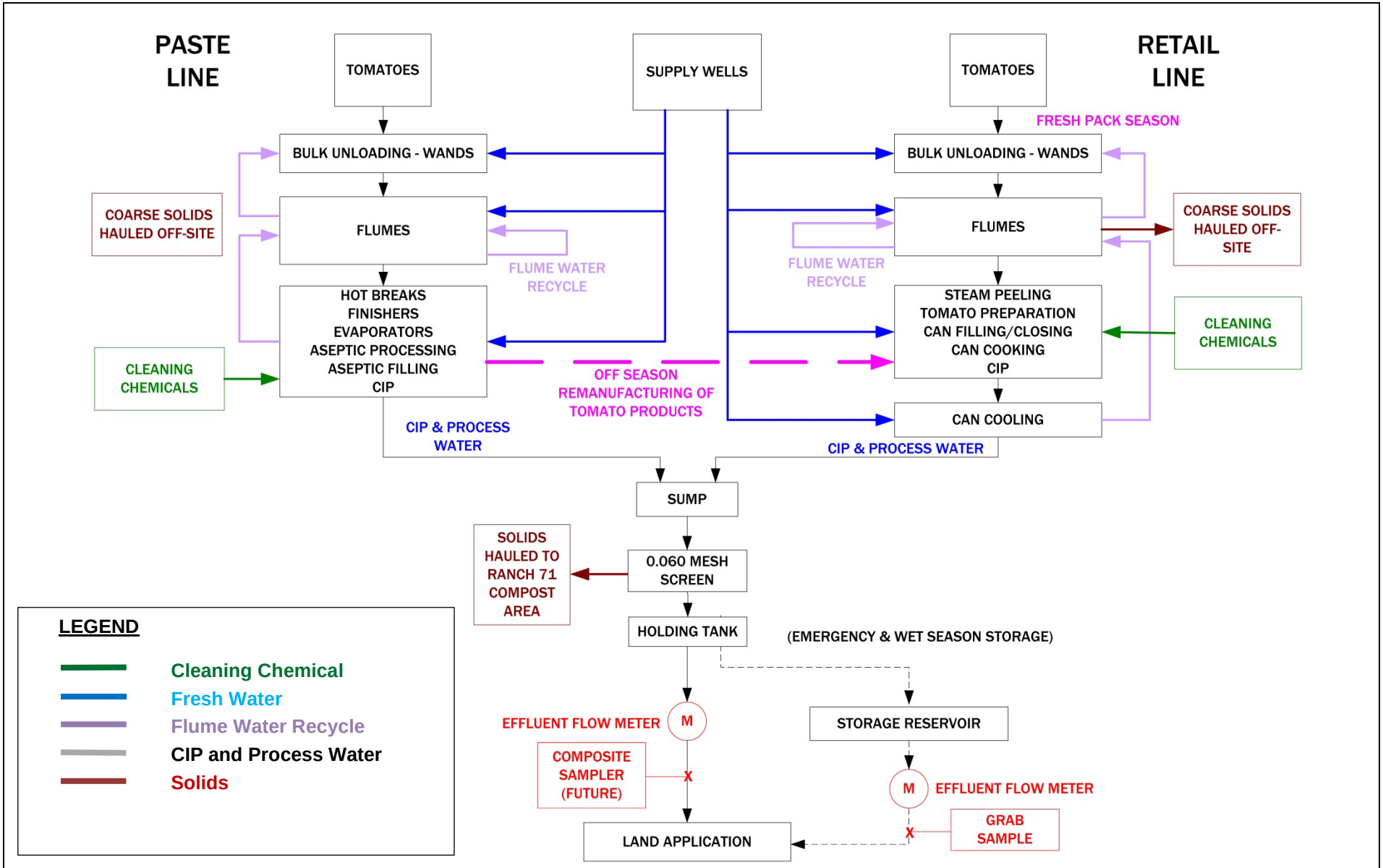
Monitoring and Reporting Program

The Monitoring and Reporting Program is designed to verify compliance with effluent limitations and operational requirements of the WDRs.

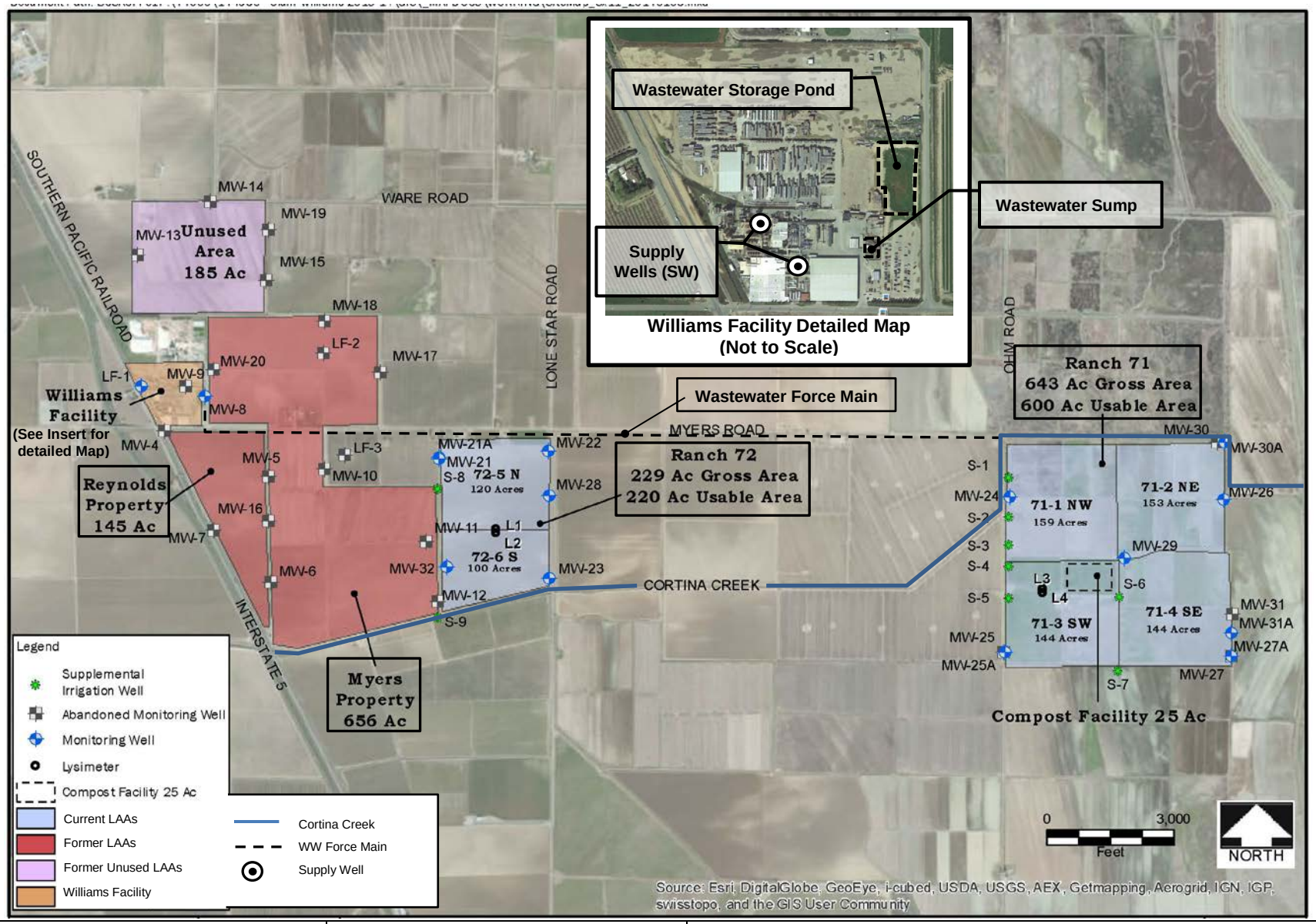
LLA: 011618



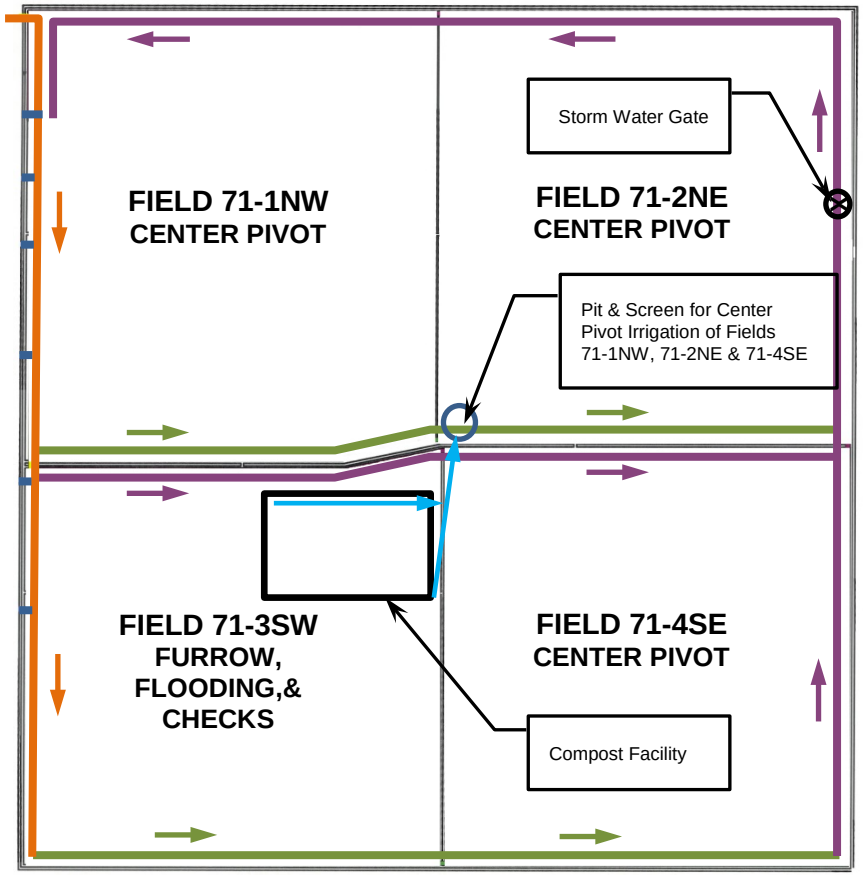
Drawing Reference: USGS Arbuckle TOPOGRAPHIC MAP 7.5' QUADRANGLE	**SITE LOCATION MAP** OLAM WEST COAST, INC Dba OLAM SPICES AND VEGETABLE INGREDIENTS WILLIAMS FACILITY COLUSA COUNTY	N W E S approx. scale 1 inch = 2,000 feet

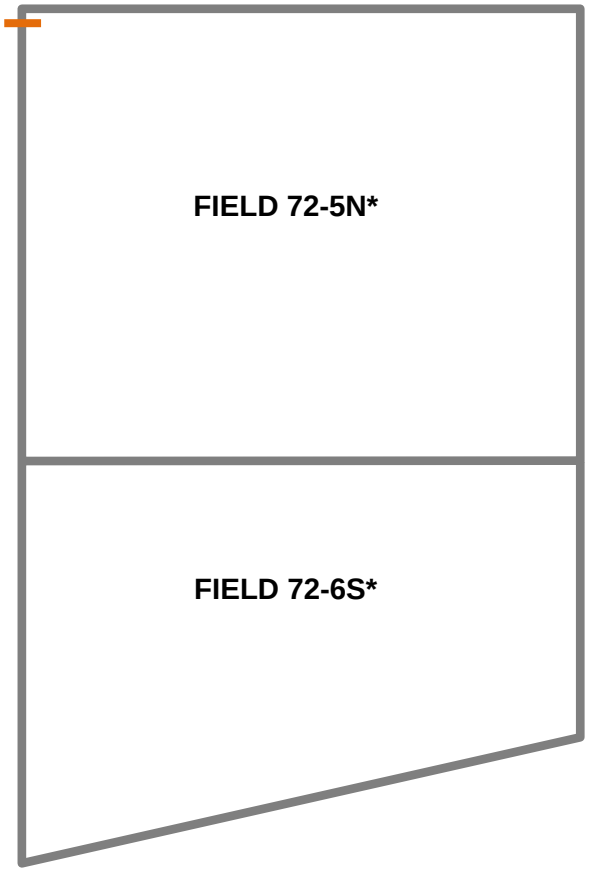


Approximate Scale: NOT TO SCALE N W E S	Drawing Reference: RWD, 19 December 2016	**PROCESS FLOW DIAGRAM** OLAM WEST COAST, INC Dba OLAM SPICES AND VEGETABLE INGREDIENTS WILLIAMS FACILITY COLUSA COUNTY



Approximate Scale: AS NOTED	Drawing Reference: RWD, 19 DECEMBER 2016	**SITE MAP** OLAM WEST COAST, INC Dba OLAM SPICES AND VEGETABLE INGREDIENTS WILLIAMS FACILITY COLUSA COUNTY





LEGEND

- Force Main/Unlined Conveyance Ditch
- Freshwater Addition
- Unlined Headwater Canal
- Unlined Tailwater Canal
- Compost Drainage

***** Not currently receiving process wastewater.

Approximate Scale: NOT TO SCALE	Drawing Reference:	**IRRIGATION DETAILS** OLAM WEST COAST, INC Dba OLAM SPICES AND VEGETABLE INGREDIENTS WILLIAMS FACILITY COLUSA COUNTY