

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2014-0137

WASTE DISCHARGE REQUIREMENTS
FOR
CARUTHERS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

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

Background

1. The Caruthers Community Services District (hereafter Caruthers or Discharger) owns and operates a wastewater collection, treatment, and disposal system that provides sewage service for the community of Caruthers (population 2,500), which is about 12 miles south of Fresno in Fresno County. The Wastewater Treatment Facility (WWTF) and effluent disposal ponds occupy Assessor's Parcel Number (APN) 041-280-059, in the southern half of the northwest quarter of the southeast quarter of section 13, T16S, R19E, MDB&M, as shown on Attachment A, which is attached hereto and made part of this Order by reference.
2. The Discharger submitted a Report of Waste Discharge (RWD) on 6 May 2010 in support of an increase in discharge flow to 0.28 mgd consistent with recent WWTF improvements, including a new influent lift station and headworks, extended aeration activated sludge system with nitrification/denitrification (Biolac System©, hereafter Biolac), secondary clarifiers, an aerobic sludge digester, sludge drying beds, and construction of a new disposal pond. Attachment B and Attachment C, which are attached hereto and made part of this Order by reference, are a site map and a process flow diagram, respectively. The Discharger submitted additional information to complete the RWD on 12 October 2010. In December 2013, the Discharger issued notice that the proposed improvements to the WWTF were completed.
3. Waste Discharge Requirements (WDRs) Order 91-191, adopted by the Central Valley Water Board on 6 September 1991, prescribes requirements for the WWTF. Order 91-191 limits wastewater flow to no more than 0.24 mgd and generally does not reflect the current WWTF and discharge. The purpose of this Order is to rescind the previous Order and update waste discharge requirements, in part, to ensure the discharge is consistent with water quality plans and policies, to prescribe requirements that are effective in preserving existing and potential beneficial uses of receiving waters, and to reflect the Discharger's expansion.
4. The Discharger owns and operates the WWTF and collection system and is responsible for compliance with these WDRs.

Wastewater Treatment and Disposal

5. WDRs Order 91-191 describes the WWTF constructed in 1963. It consisted of four unlined ponds: two aerated ponds (PND-001 and PND-002) and two stabilization ponds (PND-003 and PND-004). The influent pump station capacity was about 0.16 mgd (later upgraded to 0.24 mgd). WWTF effluent was discharged to two disposal ponds (PND-005 and PND-006) for percolation and evaporation.
6. In May 2005, the Discharger submitted a letter report indicating that wastewater flows were approaching 80 percent of the design WWTF capacity and that it was planning for expansion.
7. On 11 July 2006, Central Valley Water Board staff issued a letter and memorandum assessing conditions and outlining issues that needed to be addressed in a RWD. The memorandum states that groundwater underlying the WWTF had elevated electrical conductivity (EC) and elevated concentrations of total dissolved solids (TDS), nitrate, manganese, arsenic, and barium. Staff recommended in the memorandum that, unless effluent was stored in a lined pond, updated WDRs should include an effluent limit for total nitrogen as low as 8 mg/L.
8. The Discharger obtained a grant for over \$1 million from the United States Department of Agriculture and a Community Development Block Grant for \$300,000 in support of the WWTF improvements described in Finding 2 for necessary improvements to the WWTF.
9. The new influent lift station, completed in April 2011, and headworks, have a reported capacity of up to 0.43 mgd. The remainder of the WWTF has capacity for 0.28 mgd. All the WWTF improvements were completed by May 2013, with the exception of the sludge digester and Pond 7, which were completed in December 2013. All treatment units and the sludge drying beds are lined with reinforced concrete. The new percolation pond (PND-007) is adjacent to PND-006 to the east.
10. The table below presents the design flow and design waste constituent concentration data listed in the RWD.

Table 1. WWTF Design Parameters

<u>Parameter</u>	<u>Units</u>	<u>Influent</u>	<u>Effluent</u>
Average Daily Flow	mgd	0.28	0.28
Peak Daily Flow	mgd	0.42	0.42
Peak Hourly Flow	mgd	0.84	0.84
BOD ₅ ¹	mg/L	250	40
Total Suspended Solids (TSS)	mg/L	220	40
<u>Total Nitrogen</u>	<u>mg/L</u>	40	10

¹ Five-day biochemical oxygen demand.

11. The RWD includes a water balance that indicates the WWTF is capable of accommodating design flows plus seasonal precipitation with a 100-year return period.

12. Though now unused, the unlined treatment ponds still contain accumulated biosolids from many years of use. When moisture from precipitation contacts biosolids in the ponds, it threatens to transmit waste constituents to groundwater by percolation in concentrations that could cause pollution. Provision F.18 requires Caruthers to address the issue by removing the solids and properly closing the ponds.

Wastewater Characteristics

13. The Discharger's self-monitoring reports (SMRs) from January 2011 through December 2013 indicate the monthly average influent flow is about 0.16 mgd, ranging from 0.13 mgd to 0.18 mgd.
14. Order 91-191 does not require influent monitoring or effluent monitoring for nitrogen species or alkalinity. For monitoring and optimization of the new facilities at the WWTF, Caruthers initiated influent monitoring and expanded effluent monitoring in January 2013. Caruthers performed weekly monitoring in the first quarter, twice a month monitoring in the second quarter, and once per month for the second half of 2013. The monitoring data presented in Table 2 were calculated to evenly weight each month so that the average is not skewed toward months when more samples were collected (e.g., January, February, and March during startup of the nitrogen removal system). The pH shown is the median for the year.

Table 2. Average influent and effluent quality (2013)

Parameter	Units	Influent		Effluent	
		Average	Range	Average	Range
Alkalinity	mg/L	262	230 - 290	NS	NS
BOD ₅	mg/L	151	81 - 240	3.8	1 - 17
TSS	mg/L	240	79 - 780	7.4	< 1 - 33
Nitrate (as nitrogen) ¹	mg/L	NS	NS	3.6	0.22 - 32
Total Kjeldahl Nitrogen	mg/L	63	46 - 93	1.8	< 1 - 6.6
Ammonia	mg/L	40	32 - 48	0.3	0.11 - 1.8
Total Nitrogen	mg/L	NS	NS	5.8	1 - 37
EC ²	umhos/cm	NS	NS	469	156 - 561
pH	std.	NS	NS	7.2 ³	6.6 - 8.2

¹ Self-monitoring reports do not distinguish between nitrate as NO₃ and nitrate as nitrogen. The average nitrate concentration shown may be slightly inflated as staff only converted nitrate as NO₃ results to nitrate as nitrogen when reported total nitrogen results were inconsistent with reported nitrate results for the same sample.

² Electrical conductivity.

³ Median for the year.

NS No samples were analyzed for the listed constituents.

15. Table 2 shows the average concentration of total nitrogen in WWTF effluent was less than 10 mg/L in 2013. The average effluent total nitrogen concentration in the first quarter was 19 mg/L during startup of the Biolac pond. The Discharger reports that after seeding the Biolac pond with nitrifying and denitrifying microbes in January 2013, it took until the middle of March 2013 to build biomass and reach steady-state conditions. The WWTF began operating within design specifications about the middle of March 2013. From the end of March 2013 to December

2013, analytical results for effluent total nitrogen were consistently less than 5 mg/L, less than 3 mg/L on average. As shown above, effluent ammonia concentrations were low in 2013. The total Kjeldahl nitrogen results show most of effluent nitrogen was either in the form of organic nitrogen or nitrate, rather than ammonia.

16. Analytical results from an effluent sample collected during a Central Valley Water Board staff inspection on 30 April 2014 show total nitrogen of 30 mg/L (total Kjeldahl nitrogen of 30 mg/L, of which 29 mg/L was ammonia). Staff collected a follow-up sample on 22 May 2014, which had a total nitrogen concentration of 12 mg/L with 11 mg/L ammonia. Neither sample had detectable concentrations of nitrate. The results show little to no nitrification was occurring at the WWTF at the time the samples were collected, which is a typical result of insufficient aeration.
17. Insufficient aeration is an operational issue. The WWTF operator indicated he recently lowered the set-point for dissolved oxygen that controls the aerators, which he thought could explain the relatively high effluent nitrogen concentrations. The April 2014 Central Valley Water Board staff inspection report notes that the WWTF appears to have been constructed in accordance with plans and specifications. The nitrogen monitoring results submitted in self-monitoring reports demonstrate that the treatment units are capable of nitrogen removal to below 10 mg/L under varied conditions, including low temperatures and changing influent character throughout the year.

Source Water Characteristics

18. The Discharger supplies the community of Caruthers with drinking water from four groundwater wells installed in the unconfined aquifer.
19. The Discharger has not performed quarterly monitoring of source water EC as required by Order 91-191. The Discharger submitted its 2008 and 2013 Consumer Confidence Reports to characterize source water. The table below summarizes the results.

Table 3. Water supply monitoring results (2008 and 2013)

<u>Parameter</u>	<u>Units</u>	<u>2008</u>		<u>2013</u>	
		<u>Average</u>	<u>Range</u>	<u>Average</u>	<u>Range</u>
EC ¹	umhos/cm	213	120 - 380	260	120 - 270
Nitrate as nitrogen	mg/L	1.5	< 1 - 5.2	1.3	0.29 - 3.6
Chloride	mg/L	7.4	7.4	17.3	3.7 - 31
Sodium	mg/L	NS	NS	31.5	31 - 32
Sulfate	mg/L	5.6	5.6	10.1	4.3 - 16
TDS ²	mg/L	120	120	155	110 - 200
Arsenic	ug/L	16.4	7.4 - 25	18.3	6.5 - 28
Hardness	mg/L	NS	NS	33	6.3 - 66

¹ Electrical conductivity.

² Total dissolved solids.

NS No samples were analyzed for sodium.

20. In terms of salinity and nitrate, the water supply is excellent quality. However, it contains arsenic in a concentration above the Primary Maximum Contaminant Level (MCL) of 10 ug/L. The Discharger has been in communication with the State Water Resources Control Board (State Water Board) Division of Drinking Water regarding the exceedance. The Discharger recently completed a feasibility study for an arsenic removal system and is moving forward with construction. Soils in the area contain arsenic and, as a result, naturally-occurring groundwater contains arsenic.

Wastewater Collection System

21. On 2 May 2006, the State Water Resources Control Board (hereafter State Water Board) adopted a General Sanitary Sewer System Order (State Water Resources Control Board Order No. 2006-0003-DWQ, *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*) (the "General Order"). The General Order requires that all public agencies that own or operate sanitary sewers systems greater than one mile in length comply with the General Order. The Discharger's collection system is greater than one mile in length. The Discharger has been enrolled under the General Order since 13 August 2007.

Biosolids Management

22. In May 2013, the Discharger completed construction of reinforced concrete sludge drying beds. Saturated biosolids separated from the wastewater in the secondary clarifier by settling and surface skimming are directed to the sludge drying beds or the sludge digester. Digested biosolids are also pumped to the sludge drying beds.
23. Screenings removed at the headworks are conveyed by an auger to a waste bin and are hauled to a landfill.
24. The WWTF design criteria submitted as part of the RWD projects that 183 tons of dried biosolids will need to be hauled away annually. In 2013, the Discharger reported disposal of 10 tons of Class B biosolids. Jim Brisco Enterprises, Inc., reportedly hauled the biosolids for land application at Eddie Sylva Farms near El Nido in Merced County. The Discharger reportedly wasted less sludge in 2013 than specified in the design in order to build biomass required for startup of the Biolac pond.

Site-Specific Conditions

25. Land uses in the vicinity of the WWTF are primarily agricultural. The primary crops grown in the area are field crops, pasture, and tree crops including almonds, apples, apricots, cherries, figs, peaches, pistachios, plums, prunes, and walnuts, according to data published by the Department of Water Resources (DWR).
26. The WWTF is in an arid climate characterized by dry summers and mild winters. The rainy season generally extends from November through April. Average annual pan evaporation in the area is about 65 inches, according to DWR Bulletin No. 113-3. The average annual precipitation in the discharge area is about 11 inches. The 100-year return period wet year precipitation is about 21 inches, according to DWR Bulletin No. 95.

27. Soils in the vicinity of the WWTF are predominately loamy sands and sandy loams, according to the Web Soil Survey published by the United States Department of Agriculture Natural Resources Conservation Service. The most prevalent soils in the area are Calhi loamy sand, Hesperia sandy loam, and Delhi loamy sand, all of which are sandy with high permeability and low available water storage.
28. The WWTF is within the Consolidated Irrigation District, near the southwestern boundary.
29. According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number FM06019C2625H, revised 18 February 2009, the WWTF is outside of the 100-year and 500-year return frequency flood zones.
30. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System General Industrial Storm Water Permit for the discharge because all storm water runoff is retained onsite and does not discharge to a water of the United States.

Groundwater Considerations

31. The WWTF is in the Consolidated Hydrologic Area (No. 551.70) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986.
32. Regional groundwater underlying the area is first-encountered at about 150 feet below ground surface (bgs) and flows to the southwest, according to *Lines of Equal Elevation of Water in Wells, Unconfined Aquifer*, published by DWR in 2010.
33. The District installed three groundwater monitoring wells (MW-001, MW-002, and MW-003) to monitor first-encountered groundwater in 1999, and one additional monitoring well (MW-004) in 2012.
34. Groundwater levels have dropped significantly since the District installed the wells. All three of the original groundwater monitoring wells installed in 1999 have gone dry. The groundwater level in new well MW-004 has dropped from about 149 feet bgs in March 2012 to more than 160 feet bgs in December 2013.
35. Assuming a relatively planar groundwater surface at the scale of the WWTF, the groundwater gradient and direction can be estimated using groundwater elevation measurements in three wells. Groundwater has dropped to the point that the surface elevation has only been measureable in one or two wells at a time since March 2007, which does not provide enough information to calculate the groundwater gradient. Based on measurements from 1999 to 2007, groundwater flow direction is generally toward the community of Caruthers to the east. Pumping in the area appears to affect the groundwater gradient in the vicinity of the WWTF.
36. Based on quarterly groundwater monitoring results from self-monitoring reports for January 2010 through December 2013, annual average groundwater characteristics for constituents of concern are tabulated below.

Table 4. Average groundwater monitoring results.

		<u>MW-002</u>	<u>MW-003</u>	<u>MW-004</u>
EC (umhos/cm)	2010	941	831	NS ¹
	2011	884	790	NS ¹
	2012	867	700	640
	2013	dry ²	dry ²	640
TDS ³ (mg/L)	2010	723	595	NS ¹
	2011	695	583	NS ¹
	2012	865	520	455
	2013	dry ¹	dry ²	458
Nitrate as nitrogen (mg/L)	2010	8.9	< 2	NS ¹
	2011	8.6	< 1	NS ¹
	2012	12	< 1	9.0
	2013	dry ²	dry ²	11
Sulfate (mg/L)	2010	46	35	NS ¹
	2011	31	22	NS ¹
	2012	27	9.1	45
	2013	dry ²	dry ²	45
Chloride (mg/L)	2010	58	55	NS ¹
	2011	55	53	NS ¹
	2012	56	53	61
	2013	dry ²	dry ²	60

¹ NS indicates no samples were collected from Well MW-004 (predates installation).

² The groundwater surface elevation was below the screened interval of the well. Well MW-001 has been dry since 2008.

³ Total dissolved solids.

37. Monitoring well MW-003 generally appears to represent upgradient groundwater, but it may also be affected by the discharge. The concentration of nitrate in MW-003 is typically below the limit of detection (about 1 mg/L) with an EC of about 700 umhos/cm to 1,000 umhos/cm and chloride from about 50 mg/L to 60 mg/L. The well exhibiting the lowest EC is new well MW-004, which may reflect the quality of percolated wastewater. MW-004 has the highest concentrations of sulfate and chloride, and quarterly monitoring shows the concentration of nitrate as nitrogen has risen to above the Maximum Contaminant Level (MCL) of 10 mg/L.
38. Monitoring well MW-004 is the only well remaining where the screened interval of the well is in groundwater. Additional wells are necessary to perform required monitoring.

Basin Plan, Beneficial Uses, and Water Quality Objectives

39. The *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies

adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

40. The WWTF is in Detailed Analysis Unit (DAU) No. 236, within the Kings Basin hydrologic unit. The beneficial uses of underlying groundwater as set forth in the Basin Plan for this DAU are municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND) and industrial process supply (PRO).
41. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
42. The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Taste and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.
43. The Basin Plan requires that each RWD for a land disposal operation justify why reclamation is not practiced or proposed.

Antidegradation Analysis

44. State Water Board Resolution No. 68-16 (*"Policy with Respect to Maintaining High Quality Water of the State"*) (the "Antidegradation Policy") prohibits degradation of groundwater unless it has been shown that:
 - a. 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;
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The discharger employs Best Practicable Treatment or Control (BPTC) to minimize degradation; and
 - d. The degradation is consistent with the maximum benefit to the people of the state.
45. The Discharger has been monitoring groundwater quality at the site since 1999. 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 best groundwater quality unaffected by the discharge.
46. The discharge is not expected to cause significant groundwater degradation. Degradation that does occur will not violate water quality objectives. Effluent quality meets the most stringent water quality objectives for protection of salt sensitive plants and is of similar quality as

groundwater. Based on this, the proposed discharge will not cause exceedences of water quality objectives nor impair beneficial uses.

47. This Order includes influent, effluent, and groundwater monitoring requirements to verify that the discharge does not cause violations of water quality objectives or impairment of beneficial uses.
48. The WWTF described in Findings 5 through 17, will provide treatment and control of the discharge that incorporates:
 - a. Secondary treatment of wastewater;
 - b. Nitrogen removal treatment;
 - c. An operation and maintenance manual;
 - d. Lined treatment ponds to limit the amount of wastewater that percolates to groundwater.
 - e. Certified operators to ensure proper operation and maintenance; and
 - f. Source water, discharge, and groundwater monitoring.

The Board finds that the preceding treatment and control measures represent BPTC for these discharges.

49. Generally, limited degradation of groundwater by some of the typical waste constituents of concern (e.g., sodium, chloride, sulfate, and nitrate) released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the state. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the state, and therefore provides sufficient reason to accommodate planned growth and allow for limited groundwater degradation.

CEQA

50. With Resolution 2008-01, the Board of Directors of the Caruthers Community Services District certified an Initial Study and Negative Declaration (SCH #2008041144) for the expansion of the WWTF from 0.24 mgd to 0.28 mgd. The expansion project included conversion of the existing aerated pond system to an activated sludge system with nitrification and denitrification. Caruthers Community Services District filed a Notice of Determination on 19 June 2008.
51. Central Valley Water Board staff reviewed the Negative Declaration and concurs that the project will not have a significant impact on water quality.
52. The District has not expanded or altered operations beyond the scope of the project description for which it completed an environmental review and certified the Negative Declaration as

described in Finding 50. The adoption of this Order for an existing facility is exempt from the requirements of the California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

53. The scope of the environmental review for expansion of the WWTF did not include any recycled water project. In the case that the District proposes a recycled water project, a separate environmental review and determination pursuant to the California Environmental Quality Act will be required.

Other Regulatory Considerations

54. Based on the threat and complexity of the discharge, the WWTF 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: “Any discharger not included in 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.”

55. California Code of Regulations, title 27 (“Title 27”) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste, which includes designated waste, as defined by Water Code section 13173. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt wastewater discharges. The exemption, found at Title 27, section 20090(b), is presented below:

(b) Wastewater – Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

- (1) The applicable regional water quality control board has issued WDRs, reclamation requirements, or waived such issuance;
- (2) The discharge is in compliance with 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.

56. The discharge authorized herein is exempt from the requirements of Title 27 in accordance with Title 27, section 20090(b) because:

- a. The Central Valley Water Board is issuing WDRs.
- b. The discharge is in compliance with the Basin Plan, and;
- c. The treated effluent discharged to the disposal ponds does not need to be managed as hazardous waste.

57. The State Water Board adopted Order 97-03-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. The wastewater treatment facility has a design capacity of less than 1.0 mgd; therefore, the Discharger is not required to obtain coverage under NPDES General Permit CAS000001.
58. Water Code section 13267(b) states that:

In conducting an investigation specified in subdivision (a), the Central Valley Water 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...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Central Valley Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Central Valley Water 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.
59. The technical reports required by this Order and monitoring reports required by the attached MRP R5-2014-0137 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the wastewater treatment facility that discharges the waste subject to this Order.
60. The Department of Water Resources set standards for the construction and destruction of groundwater wells, as described in California Well Standards Bulletin 74-90 (June 1991). These standards, and any more stringent standards adopted by the State or county pursuant to California Water Code section 13801, apply to all monitoring wells.
61. On 3 February 2009, the State Water Board adopted Resolution 2009-0011, *Adoption of a Policy for Water Quality Control for Recycled Water* (Recycled Water Policy). The Recycled Water Policy promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gases.
62. The Discharger notified the owners of surrounding properties by mail in 2005 and 2010 that WWTF effluent is available for recycled water projects. Specifically, the letters note that the WWTF treats an average of 190,000 gpd of wastewater with effluent defined as undisinfected secondary, with a copy of recycled water regulations attached. The letters do not provide any detailed water quality information, suggest possible uses of the water, or propose terms of a potential recycled water agreement. None of the recipients of the letters responded in 2005 or 2010. All WWTF effluent is disposed of by discharge to onsite percolation ponds. While the letters demonstrate some effort to pursue recycled water projects, the Discharger has not provided sufficient justification to indicate that recycled water projects are "not possible," as required in the Basin Plan for WWTF expansion projects that do not include plans for recycling effluent. Provision F.17 of this Order requires the Discharger to either submit plans for a recycled water project or present reasons why this is not possible.

63. Title 22, section 60323, requires recyclers of treated municipal wastewater to submit an engineering report detailing the use of recycled water, contingency plans, and safeguards. The Discharger has not submitted a Title 22 Engineering Report to the State Water Board Division of Drinking Water. A provision requiring the Discharger to submit a Title 22 Engineering Report to the Division of Drinking Water (prior to implementation of a recycled water project) and a written copy of the letter from the Division of Drinking Water approving the Title 22 Engineering Report prior to the application of recycled water is included in this Order.
64. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 Code of Federal Regulations part 503, Standards for the Use or Disposal of Sewage Sludge, which establish management criteria for protection of ground and surface waters, sets limits and application rates for heavy metals, and establishes stabilization and disinfection criteria. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to EPA.
65. 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.
66. 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.

Public Notice

67. 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 conditions of discharge of this Order.
68. The Discharger and interested agencies and persons have been notified of the intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
69. All comments pertaining to the discharge were heard and considered in a public meeting.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order 91-191 is rescinded and, pursuant to Water Code sections 13263 and 13267, Caruthers Community Services District, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

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

2. Bypass or overflow of untreated wastes, except as allowed by Standard Provisions E.2 in *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991, is prohibited.
3. Discharge of waste classified as 'hazardous', as defined in California Code of Regulations, title 23, section 2521(a), is prohibited.
4. Discharge of wastewater in a manner or location other than that described herein or in the RWD is prohibited.

B. Effluent Limitations

1. The effluent shall not have a pH less than 6.5 or greater than 9.0.
2. Effluent shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅ ¹	mg/L	40	80
TSS ²	mg/L	40	80

¹ Five-day biochemical oxygen demand

² Total suspended solids

3. The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 20 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (80 percent removal).
4. The 12-month rolling average EC of the discharge shall not exceed the 12-month flow weighted average EC of the source water plus 500 umhos/cm. Compliance with this effluent limitation shall be determined monthly based on representative samples from location EFF-001, as identified in MRP R5-2014-0137.
5. The discharge (EFF-001) shall not contain total nitrogen (the total mass of nitrogen occurring in any form) in a concentration exceeding 10 mg/L as nitrogen.

C. Discharge Specifications

1. The monthly average dry weather discharge flow shall not exceed 0.28 mgd.
2. No waste constituent shall be released, discharged, or placed where it will cause violation of Groundwater Limitations of this Order.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
4. The discharge shall remain within the permitted waste treatment/containment structures at all times.

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.
6. All conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
7. Public contact with effluent (treatment works, percolation ponds) shall be precluded through such means as fences, signs, or acceptable alternatives.
8. Objectionable odors shall not be perceivable beyond the limits of the WWTF property at an intensity that creates or threatens to create nuisance conditions.
9. The 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 pond storage capacity shall be at least equal the volume necessary to comply with Discharge Specification C.9.
11. All ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - a. An erosion control plan should assure that coves and irregularities are not created around the perimeter of the water surface.
 - b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
 - c. Dead algae, vegetation and other 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.
 - e. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but not during, the April 1 to June 30 bird nesting season.
12. The Discharger shall periodically monitor sludge accumulation in the wastewater treatment/storage ponds and shall remove sludge as necessary to maintain adequate treatment and storage capacity.

D. Solids Disposal Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening

material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially used as soil amendment for agriculture, silviculture, horticulture, and land reclamation activities pursuant to federal and state regulations.

1. Sludge and solid waste shall be removed from screens, sumps, aeration basins, ponds, clarifiers, etc., as needed to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary (i.e., no longer than two years) and 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 sludge, solid waste, and biosolids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, and soil amendment sites) operated in accordance with valid waste discharge requirements will satisfy this specification.
4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board or a local (e.g., county) program authorized by a regional water board. In most cases, this means the General Biosolids Order (State Water Board Water Quality Order No. 2004-12-DWQ, "*General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities*"). For a biosolids use project to be authorized by the General Biosolids Order, the Discharger must file a complete Notice of Applicability for each project.
5. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

E. Groundwater Limitations

1. Release of waste constituents from any treatment, reclamation or storage component associated with the discharge shall not cause or contribute to groundwater:
 - a. Containing constituent concentrations in excess of the concentrations specified below or natural background quality, whichever is greater:
 - (i) Nitrate (as nitrogen) of 10 mg/L.
 - (ii) For constituents identified in Title 22, the MCLs quantified therein.
 - b. Containing Total Coliform Organisms over any 7-day period equaling or exceeding 2.2 MPN/100 mL.

F. Provisions

1. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions), which are part of this Order.
2. The Discharger shall comply with MRP R5-2014-0137, which is part of this Order, and any revisions thereto as adopted by the Central Valley Water Board or approved by the Executive Officer.
3. 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.
4. The Discharger shall keep at the WWTF a copy of this Order, including its MRP, Information Sheet, attachments, and Standard Provisions, for reference by operating personnel. Key operating personnel shall be familiar with its contents.
5. The Discharger shall not allow pollutant-free wastewater to be discharged into the WWTF collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means storm water (i.e., inflow), groundwater (i.e., infiltration), cooling waters, and condensates that are essentially free of pollutants.
6. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Accordingly, the Discharger shall submit to the Central Valley Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter 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.
7. The Discharger must 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 include 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 only when the operation is necessary to achieve compliance with the conditions of this Order.
8. The Discharger shall provide certified wastewater treatment plant operators in accordance with California Code of Regulations, title 23, division 3, chapter 26.
9. 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."

10. The Discharger shall maintain and operate ponds sufficiently to protect the integrity of containment levees and prevent overtopping or overflows. 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 shall never be less than two feet (measured vertically). As a means of management and to discern compliance with this Provision, the Discharger shall install and maintain a permanent marker with calibration that indicates the water level at the design capacity and enables determination of available operational freeboard.
11. The Discharger shall submit the technical reports and work plans required by this Order for Central Valley Water Board staff consideration and incorporate comments they may have in a timely manner, as appropriate. The Discharger shall proceed with all work required by the following provisions by the due dates specified.
12. All technical reports and work plans required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports and work plans must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work. All reports required herein are required pursuant to Water Code section 13267.
13. The Discharger shall continue to maintain coverage under, and comply with Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ and any revisions thereto as adopted by the State Water Board.
14. 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.
15. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall 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.
16. To assume operation 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 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.

17. **By 8 April 2015**, the Discharger shall submit a demonstration that it has determined the current land uses for each parcel within a 1 mile radius of the WWTF (including District-owned parcels), identified potential uses of recycled water for each parcel, and appropriately informed land owners and formally requested their consideration of accepting WWTF effluent for a recycled water project. The Discharger shall provide an explanation if no potential uses of recycled water are identified for a particular parcel. Notification of land owners must include pertinent effluent monitoring results and water quality goals for the recycled water uses identified. If the Discharger identifies a feasible recycled water project, the Discharger shall submit a Report of Waste Discharge and arrange for preparation of a Title 22 Engineering Report in accordance with Title 22, section 60323, and a copy of this report shall be provided to the State Water Board Division of Drinking Water. This provision shall be considered satisfied upon submittal by the Discharger of a complete Report of Waste Discharge and a letter from the Division of Drinking Water determining the corresponding Title 22 Engineering Report is complete, or when the Executive Officer concludes that the Discharger has provided sufficient justification for not using effluent for recycled water.
18. The Discharger shall, in accordance with the following time schedule, properly close the old, unlined treatment ponds:
 - a. **By 8 April 2015**, the Discharger shall submit a pond closure work plan for staff review detailing a proposal to remove and properly dispose of accumulated waste associated with the previous treatment ponds in the southwest corner of the WWTF that are no longer in service. The report must include a characterization of the waste and affected soils, address the issue of potential seepage of waste constituents to groundwater at the site, and demonstrate that the proposed removal project will be consistent with the plans and policies of the Central Valley Water Board and applicable statute and regulations.
 - b. **By 6 October 2015**, the Discharger shall provide a letter report documenting the work has been completed to properly close the unlined ponds consistent with the work plan submitted pursuant to Provision F.18.a.
19. **By 6 October 2015**, the Discharger shall submit a Salinity Management Plan, with salinity source reduction goals and a proposed implementation time schedule. The control plan shall identify any additional methods, if any, that could be used to further reduce the salinity of the discharge to the maximum extent feasible (i.e., switch from a sodium based to a potassium based cleaner, use of liquid detergent at laundry facilities, community outreach), and provide a description of the tasks, cost, and time required to investigate and implement various elements of the Salinity Management Plan. The Discharger shall implement the plan in accordance with the proposed schedule.
20. The Discharger shall maintain a complete groundwater monitoring well network. If monitoring well(s) go dry, the Discharger shall replace the monitoring well(s). The new well(s) shall be constructed in a similar manner as the existing monitoring well(s). Upon installation of the

monitoring well(s), the Discharger shall submit a Groundwater Monitoring Well Installation Report. The installation report shall describe well construction details for each new well, including the location, groundwater elevation, reference point elevation, geologic logs, and other details. The work proposed shall be consistent with applicable well standards described in Finding 60, and shall comply with *Standard Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports*, attached hereto and made a part of this Order by reference. Given that the groundwater monitoring well network is currently inadequate, the Discharger shall:

- a. **By 8 April 2015**, submit a Groundwater Monitoring Well Installation Work Plan for Executive Officer approval. The Work Plan shall include an assessment of available groundwater data and propose the locations and construction details for additional wells required to monitor the effects of the discharge on groundwater quality. The Work Plan shall include a proposed schedule for implementation.
- b. **By 6 October 2015 or 180 days following Executive Officer approval of the Groundwater Monitoring Well Installation Work Plan, whichever is sooner**, submit a Groundwater Monitoring Well Installation Report describing the completed installation of the additional monitoring wells described in Provision F.20.a.

21. If the Central Valley Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of an objective for groundwater, this Order may be reopened for consideration of addition or revision of appropriate numerical effluent or groundwater limitations for potential constituents.
22. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan amendment that will establish a salt and nitrate management plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objectives are to be interpreted for the protection of agricultural use. If new information or evidence indicates that groundwater limitations are different than those prescribed herein are appropriate, this Order will be reopened to incorporate such limits.
23. 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, section 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 filling 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 the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 10 October 2014.

Original signed by:

PAMELA C. CREEDON, Executive Officer

Order Attachments:

A Vicinity Map

B Site Map

C Process Flow Diagram

Monitoring and Reporting Program R5-2014-0137
Information Sheet

Standard Provisions (1 March 1991)

Standard Requirements for Monitoring Well Installation Work Plans
and Monitoring Well Installation Reports

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2014-0137
FOR
CARUTHERS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

This monitoring and Reporting Program (MRP) is required 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. Changes to sample location shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as pH) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer and in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *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 State Water Resources Control Board Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer.

If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after at least 12 months of monitoring, the Discharger may request the MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for the requested reduction in monitoring frequency.

A glossary of terms used within this MRP is included on page 9.

Monitoring Location Name	Monitoring Location Description
INF-001	Location where a representative sample of the WWTF's influent can be obtained prior to any additives, treatment processes, and plant return flow.
EFF-001	Location where a representative sample of the WWTF's effluent can be obtained prior to discharge into the percolation ponds.
MW-001 through MW-004	Groundwater Monitoring Wells MW-001 through MW-004 and any other wells added to the groundwater monitoring network.
SPL-001	Location where a representative sample of the District's water supply can be obtained.

INFLUENT MONITORING

Influent samples shall be collected at the inlet of the headworks of the WWTF. Samples shall not be collected while waste from another treatment unit of the WWTF could affect wastewater at the sample point (e.g., during digester overflow to the influent lift station). Time of collection of the sample shall be recorded. Influent monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Continuous	Flow	mgd	Meter
Weekly	pH	pH units	Grab
Weekly	EC	umhos/cm	Grab
Weekly	TSS	mg/L	Grab
Weekly	BOD ₅	mg/L	Grab
Monthly	Monthly Average Flow	mgd	Computed

EFFLUENT MONITORING

Effluent samples shall be collected at a point in the system following treatment and before discharge to the effluent disposal ponds. Time of collection of the sample shall be recorded. Effluent monitoring shall include the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly	pH	pH Units	Grab
Weekly	EC	umhos/cm	Grab
Monthly	TDS	mg/L	24-hour composite
Weekly	BOD ₅	mg/L	24-hour composite
Weekly	TSS	mg/L	24-hour composite
Monthly	TKN	mg/L	24-hour composite

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Monthly	Nitrate (as nitrogen)	mg/L	24-hour composite
Monthly	Ammonia (as nitrogen)	mg/L	24-hour composite
Monthly	Total Nitrogen	mg/L	Computed
Monthly	Chloride	mg/L	24-hour composite
Monthly	Sodium	mg/L	24-hour composite
Biannually ¹	General Minerals	mg/L	24-hour composite
Annually ²	Arsenic	ug/L	24-hour composite

¹ Biannually monitoring shall consist of two samples per year.

² Beginning in July 2015.

POND MONITORING

Permanent markers (e.g., staff gages) shall be placed in all storage ponds. The markers shall have calibrations indicating water level at the design capacity and available operational freeboard. Effluent storage pond monitoring shall include at least the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Weekly	DO	mg/L	Grab
Weekly	Freeboard	Feet ¹	Observation
Weekly	Odors	---	Observation
Weekly	Berm Condition	---	Observation

¹ To the nearest tenth of a foot.

The Discharger shall inspect the condition of the storage ponds weekly and record visual observations in a bound logbook. Notations shall include observations of whether weeds are developing in the water or along the bank, and their location; whether grease, dead algae, vegetation, scum, or debris are accumulating on the storage pond surface and their location; whether burrowing animals or insects are present; and the color of the reservoirs (e.g., dark green, dull green, yellow, gray, tan, brown, etc.). A summary of the entries made in the log shall be included in the subsequent monitoring report.

GROUNDWATER MONITORING

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of standing water within the well casing and screen, or additionally the filter pack pore volume. Samples shall be collected and analyzed for the following:

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Quarterly	Depth to groundwater	Feet ¹	Measured
Quarterly	Groundwater Elevation	Feet ²	Calculated

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Quarterly	pH	pH units	Grab
Quarterly	EC	umhos/cm	Grab
Quarterly	TDS	mg/L	Grab
Quarterly	TKN	mg/L	Grab
Quarterly	Nitrate (as nitrogen)	mg/L	Grab
Quarterly	Ammonia (as nitrogen)	mg/L	Grab
Quarterly	Total Nitrogen	mg/L	Grab
Quarterly	General Minerals ³	mg/L	Grab
Annually	Arsenic	ug/L	Grab

¹ To the nearest hundredth of a foot.

² To the nearest hundredth of a foot above mean Sea Level

³ Groundwater monitoring well samples must be filtered. If field filtering is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24-hours with a request (documented on the chain-of-custody form) to immediately filter then preserve the sample.

SOURCE WATER MONITORING

For each source (either well or surface water supply), the Discharger shall calculate the flow-weighted average concentrations for the specified constituents utilizing monthly flow data and the most recent chemical analysis conducted in accordance with Title 22 drinking water requirements. Alternatively, the Discharger may establish representative sampling stations within the distribution system serving the same area as is served by the WWTF.

<u>Frequency</u>	<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>
Quarterly	Flow-Weighted EC	umhos/cm	Computed Average
Annually	General Minerals	mg/L	Grab

BIOSOLIDS/SLUDGE MONITORING

The Discharger shall perform the following monitoring when biosolids are removed from the treatment system.

Arsenic	Copper	Nickel
Cadmium	Lead	Selenium
Molybdenum	Mercury	Zinc

Monitoring shall be conducted: using the methods in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) and updates thereto, as required in Title 40 of the Code of Federal Regulations (40 CFR), Part 503.8(b)(4).

The Discharger shall demonstrate that treated sludge (i.e., biosolids) meets Class A or Class B pathogens reduction levels by one of the methods listed in 40 CFR, Part 503.32. The Discharger

shall track and keep records of the operational parameters used to achieve Vector Attraction Reduction requirements in 40 CFR, Part 503.33(b). The Discharger needs to demonstrate that the facility where sludge is hauled to complies with Title 40 CFR, Part 503.

REPORTING

All monitoring results shall be reported in **Quarterly Monitoring Reports** which are due by the first day of the second month after the calendar quarter. Therefore, monitoring reports are due as follows:

First Quarter Monitoring Report:	1 May
Second Quarter Monitoring Report:	1 August
Third Quarter Monitoring Report:	1 November
Fourth Quarter Monitoring Report:	1 February

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory.

The following information is to be included on all monitoring and annual reports, as well as report transmittal letters, submitted to the Central Valley Water Board:

Caruthers Community Services District
Wastewater Treatment Facility
Monitoring and Reporting Program R5-2014-0137
Contact Information (telephone number and email)

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

Laboratory analysis reports do not need to be included in the monitoring reports; however, the laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. Monitoring data or discussions submitted concerning WWTF performance must also be signed and certified by the chief plant operator. If the chief plant operator is not in direct line of supervision of the laboratory function for a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

At any time henceforth, the State or Central Valley Water Board may notify the Discharger to electronically submit monitoring reports using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>) or similar system. Until such notification is given, the Discharger shall submit hard copy monitoring reports.

A. All Quarterly Monitoring Reports shall include the following:

Wastewater Reporting

1. The results of Influent, Effluent, and Pond Monitoring specified on page 2 and 3.
2. For each month of the quarter, calculation of the maximum daily flow and the monthly average flow.
3. For each of the quarters, calculation of the 12-month rolling average EC of the discharge using the EC value for that month averaged with EC values for the previous 11 months.
4. For each month of the quarter, calculation of the monthly average effluent BOD₅ and TSS concentrations, and calculation of the percent removal of BOD₅ and TSS compared to the influent.
5. A summary of the notations made in the pond monitoring log during each quarter. Copies of log pages covering the quarterly reporting period shall not be submitted unless requested by Central Valley Water Board staff.

Groundwater Reporting

1. The results of Groundwater Monitoring specified on page 3 and 4.
2. For each monitoring well, a table showing constituent concentrations for at least five previous years, if available, through the current quarter.
3. A groundwater contour map based on groundwater elevations for that quarter. The map shall show the gradient and direction of groundwater flow under/around the facility and/or effluent disposal area(s). The map shall also include the locations of monitoring wells and wastewater discharge areas.

Source Water Reporting

1. The results of Source Water Monitoring specified on page 4.

2. For each month of the quarter, calculation of the flow-weighted 12-month rolling average EC of the source water using monthly flow data and the source water EC values for the most recent four quarters.

B. Fourth Quarter Monitoring Reports, in addition to the above, shall include the following:

Wastewater Treatment Facility Information

1. The names, certificate grades, and general responsibilities of all persons in charge of wastewater treatment and disposal.
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations.
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibrations (Standard Provision C.4).
4. A statement whether the current operation and maintenance manual, sampling plan, and contingency plan, reflect the WWTF as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.
5. The results of an annual evaluation conducted pursuant to Standard Provision E.4 and a figure depicting monthly average discharge flow for the previous five calendar years.
6. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.

Biosolids/Sludge Monitoring

1. Annual production totals in dry tons or cubic yards.
2. A description of disposal methods, including the following information related to the disposal methods used. If more than one method is used, include the percentage disposed of by each method.
 - a. For landfill disposal, include: the name and location of the landfill, and the Order number of WDRs that regulate it.
 - b. For land application, include: the location of the site, and the Order number of any WDRs that regulate it.
 - c. For incineration, include: the name and location of the site where incineration occurs, the Order number of WDRs that regulate the site, the disposal method of ash, and the name and location of the facility receiving ash (if applicable).

d. For composting, include: the location of the site, and the Order number of any WDRs that regulate it.

3. Include the results of monitoring specified on pages 4 and 5.

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
10 October 2014
(Date)

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand		
CBOD	Carbonaceous BOD		
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-Hour Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots.		
Daily	Samples shall be collected at least every day.		
Twice Weekly	Samples shall be collected at least twice per week on non-consecutive days.		
Weekly	Samples shall be collected at least once per week.		
Twice Monthly	Samples shall be collected at least twice per month during non-consecutive weeks.		
Monthly	Samples shall be collected at least once per month.		
Bimonthly	Samples shall be collected at least once every two months (i.e., six times per year) during non-consecutive months.		
Quarterly	Samples shall be collected at least once per calendar quarter. Unless otherwise specified or approved, samples shall be collected in January, April, July, and October.		
Semiannually	Samples shall be collected at least once every six months (i.e., two times per year). Unless otherwise specified or approved, samples shall be collected in April and October.		
Annually	Samples shall be collected at least once per year. Unless otherwise specified or approved, samples shall be collected in October.		
mg/L	Milligrams per liter		
mL/L	milliliters [of solids] per liter		
ug/L	Micrograms per liter		
umhos/cm	Micromhos per centimeter		
mgd	Million gallons per day		
MPN/100 mL	Most probable number [of organisms] per 100 milliliters		
General Minerals	Analysis for General Minerals shall include at least the following:		
	Alkalinity	Chloride	Sodium
	Bicarbonate	Hardness	Sulfate
	Calcium	Magnesium	TDS
	Carbonate	Potassium	Nitrate
	General Minerals analyses shall be accompanied by documentation of cation/anion balance.		

INFORMATION SHEET

INFORMATION SHEET-ORDER R5-2014-0137
CARUTHERS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

Background

The Caruthers CSD WWTF serves a population of about 2,500 people in the 2-square-mile community. The original WWTF was reportedly constructed in 1963. Waste Discharge Requirements (WDRs) Order 91-191 currently regulates the Caruthers Community Services District (District or Discharger) wastewater treatment facility (WWTF). Order 91-191 authorizes a discharge of 0.24 million gallons per day (mgd) of wastewater to percolation ponds. It describes the WWTF's unlined treatment units (two aerated ponds and two stabilization ponds) having capacity to treat 0.24 mgd of domestic wastewater, with an influent pump station and headworks that limit capacity to 0.16 mgd (later upgraded to 0.24 mgd). The WDRs include typical effluent limits for biochemical oxygen demand, total settleable solids, pH, and EC (500 umhos/cm over source), but not for nitrogen or constituents with Maximum Contaminant Levels.

In May 2005, the Discharger submitted a letter report indicating that wastewater flows were approaching 80 percent of the design WWTF capacity and that it was planning for expansion. Central Valley Water Board staff issued a letter and memorandum in July 2006 assessing conditions and outlining issues that needed to be addressed in a Report of Waste Discharge (RWD). The memorandum states that groundwater underlying the WWTF had elevated electrical conductivity (EC) and elevated concentrations of total dissolved solids (TDS), nitrate, manganese, arsenic, and barium. Staff recommended in the memorandum that, unless effluent was stored in a lined pond, updated WDRs should include an effluent limit for total nitrogen as low as 8 mg/L.

Caruthers submitted a RWD on 7 May 2010. Staff requested more information, which it submitted on 20 December 2010. The RWD describes major changes to the WWTF, for which Caruthers received a grant of over \$1 million from the United States Department of Agriculture and a Community Development Block Grant for \$300,000 to help pay for the approximately \$3-million project. It implemented the changes from April 2011 to December 2013. The improvements include a new influent pump station and headworks, a new power/blower building, a Biolac System[®] treatment unit (for nitrogen removal), sludge digester, and concrete-lined sludge drying beds.

The RWD describes improvements that include a new influent pump station and headworks, a new blower building, a Biolac pond treatment unit (for nitrogen removal), sludge digester, and concrete-lined sludge drying beds. A diesel generator provides backup power. The blower building houses the blowers and computer control station used to monitor sensor readings, adjust diffuser chain air flow, etc. All treatment units are now lined with reinforced concrete.

The new 0.28-mgd design is based on a population estimate for 2027 of about 3,200. As described in the RWD, three proposed developments have potential to increase the population to an estimated 4,300 by 2027. The new lift station and headworks were designed for up to 0.43 mgd to accommodate potential growth. The RWD indicates the remainder of the WWTF was designed for 0.28 mgd.

Facility and Discharge

The influent lift station, constructed in 2011, is about 18-feet deep and contains three pumps that rotate operation. A magnetic flow meter between the lift station and the headworks continuously

records flow. Screenings removed at the headworks are conveyed by an auger to a waste bin. A bypass channel around the auger includes a fixed bar screen.

From the headworks, the wastewater enters the Biolac pond, the extended aeration nitrification/denitrification treatment pond. The distinguishing feature of the Biolac pond is a chain of diffusers hanging from a flexible float. Bubbles rising from the diffusers cause the floats to move back and forth, reportedly enhancing distribution of oxygen. At the WWTF, six flexible aerators (120 diffusers) control the concentration of dissolved oxygen in the Biolac pond. Areas of high dissolved oxygen and low dissolved oxygen provide nitrification and denitrification, respectively. The blowers are controlled based on dissolved oxygen readings in the pond, allowing the operator to maximize nitrogen removal by having the system automatically turn blowers on and off in a programmed sequence.

The Biolac system is designed to operate with a mixed liquor suspended solids ratio of 2,000 to 5,000 and loading rates of biological oxygen demand (BOD) and ammonium of 594 pounds per day and 83 pounds per day, respectively.

The secondary clarifiers include bottom scrapers and floating scum collectors. An air-lift pump conveys sludge from the bottom of the clarifiers either directly to the sludge drying beds or to the sludge digester. Both the surface-skimmed material from the clarifier and overflow from the digester flow back to the influent lift station (prior to the influent sample location). Sludge production is reportedly exceeding expectations, but the digester is generally not used for lack of trained personnel. The RWD includes a water balance that indicates the WWTF is capable of accommodating design flows plus seasonal precipitation with a 100-year return period.

The table below presents the design flow and waste constituent concentration data listed in the RWD.

<u>Parameter</u>	<u>Units</u>	<u>Influent</u>	<u>Effluent</u>
Average Daily Flow	mgd	0.28	0.28
Peak Daily Flow	mgd	0.42	0.42
Peak Hourly Flow	mgd	0.84	0.84
BOD ₅ ¹	mg/L	250	40
Total Suspended Solids (TSS)	mg/L	220	40
<u>Total Nitrogen</u>	<u>mg/L</u>	40	10

² Five-day biochemical oxygen demand.

WDRs 91-191 does not require influent monitoring or effluent monitoring for nitrogen species or alkalinity. For monitoring and optimization of the new facilities at the WWTF, Caruthers initiated influent monitoring and expanded effluent monitoring in January 2013. Caruthers performed weekly monitoring in the first quarter, twice a month monitoring in the second quarter, and once per month for the second half of 2013. The monitoring data presented in the table below were calculated to evenly weight each month so that the average is not skewed toward months when more samples were collected (e.g., January, February, and March during startup of the nitrogen removal system). The pH shown is the median for the year.

Parameter	Units	Influent		Effluent	
		Average	Range	Average	Range
Alkalinity	mg/L	262	230 - 290	NS	NS
BOD ₅	mg/L	151	81 - 240	3.8	1 - 17
TSS	mg/L	240	79 - 780	7.4	< 1 - 33
Nitrate (as nitrogen)	mg/L	NS	NS	12	0.22 - 140
Total Kjeldahl Nitrogen	mg/L	63	46 - 93	1.8	< 1 - 6.6
Ammonia	mg/L	40	32 - 48	0.3	0.11 - 1.8
Total Nitrogen	mg/L	NS	NS	5.8	1 - 37
EC ¹	umhos/cm	NS	NS	469	156 - 561
pH	std.	NS	NS	7.2 ²	6.6 - 8.2

¹ Electrical conductivity.

² Median for the year.

The extended aeration nitrification/denitrification treatment in the Biolac pond appears to have been working after initial startup until December 2013, after which the Discharger has not submitted effluent monitoring results for nitrogen constituents. Self-monitoring reports show effluent total nitrogen was consistently less than 5 mg/L (averaging less than 3 mg/L) from the middle of March 2013 through the end of the year. However, analytical results from a sample collected during a Central Valley Water Board staff inspection on 30 April 2014 show total nitrogen of 30 mg/L (total Kjeldahl nitrogen of 30 mg/L, of which 29 mg/L was ammonia). Staff collected a follow-up sample on 22 May 2014, which had a total nitrogen concentration of 12 mg/L with 11 mg/L ammonia. Neither sample had detectable concentrations of nitrate. The results show little to no nitrification was occurring at the WWTF at the time the samples were collected, which is a typical result of insufficient aeration.

The WWTF operator indicated he recently lowered the set-point for dissolved oxygen that controls the aerators, which he thought could explain the relatively high effluent nitrogen concentrations. The April 2014 Central Valley Water Board staff inspection report notes that the WWTF appears to have been constructed in accordance with plans and specifications. The nitrogen monitoring results submitted in self-monitoring reports demonstrate that the treatment units are capable of nitrogen removal to below 10 mg/L under varied conditions, including low temperatures and changing influent character throughout the year.

Biosolids

In May 2013, the Discharger completed construction of reinforced concrete sludge drying beds. Saturated biosolids separated from the wastewater in the secondary clarifier by settling and surface skimming are directed to the sludge drying beds or the sludge digester. Digested biosolids are also pumped to the sludge drying beds. Screenings removed at the headworks are conveyed by an auger to a waste bin and are hauled to a landfill.

The WWTF design criteria submitted as part of the RWD projects that 183 tons of dried biosolids will need to be hauled away annually. In 2013, the Discharger reported disposal of 10 tons of Class B biosolids. Jim Brisco Enterprises, Inc. reportedly hauled the biosolids for land application at Eddie Sylva Farms near El Nido in Merced County. The Discharger reportedly wasted less sludge in 2013 than specified in the design in order to build biomass required for startup of the Biolac pond.

Though now unused, the unlined treatment ponds still contain accumulated biosolids. When moisture from precipitation contacts biosolids in the ponds, it threatens to transmit waste constituents to groundwater by percolation in concentrations that could cause pollution. The proposed Order includes a provision requiring the Discharger to address the issue by removing the solids.

Source Water

The Discharger supplies the community of Caruthers with drinking water from four groundwater wells installed in the unconfined aquifer. The table below presents water quality data from Consumer Confidence Reports for 2008 and 2013.

<u>Parameter</u>	<u>Units</u>	2008		2013	
		<u>Average</u>	<u>Range</u>	<u>Average</u>	<u>Range</u>
EC	umhos/cm	213	120 - 380	260	120 - 270
Nitrate as nitrogen	mg/L	1.5	< 1 - 5.2	1.3	0.29 - 3.6
Chloride	mg/L	7.4	7.4	17.3	3.7 - 31
Sodium	mg/L	NS	NS	31.5	31 - 32
Sulfate	mg/L	5.6	5.6	10.1	4.3 - 16
TDS	mg/L	120	120	155	110 - 200
Arsenic	ug/L	16.4	7.4 - 25	18.3	6.5 - 28
DBCP ¹	pg/L	0.17	0.17	0.11	0.11
Fluoride	mg/L	0.24	0.24	0.06	ND - 0.12
Vanadium	ug/L	81	81	100	26 - 150
Hardness	mg/L	NS	NS	33	6.3 - 66

¹ Dibromochloropropane

The Discharger’s four water supply wells provide excellent quality water, in terms of salinity and nitrate. However, it contains arsenic in a concentration above the Primary Maximum Contaminant Level (MCL) of 10 ug/L. The water supply contains vanadium above the Notification Level, above which local government notification is required and customer notification is recommended. The Response Level, at which the drinking water source is recommended to be taken out of service, is 500 ug/L. Soils in the area contain arsenic and vanadium. As a result, naturally-occurring groundwater also contains these constituents.

The Discharger recently completed a feasibility study paid for with grant money for an arsenic removal treatment system for its water supply. A construction grant was just approved to move forward with the installation, which is expected to result in arsenic concentrations less than 10 ug/L in the water supply to the District. The District has been in communication with the State Water Resources Control Board (hereafter State Water Board) Division of Drinking Water (formerly California Department of Public Health) about these issues.

Wastewater Collection System

On 2 May 2006, the State Water Board adopted a General Sanitary Sewer System Order (State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems) (the “General Order”). The General Order requires that all public agencies that own or operate sanitary sewers systems greater than one mile in length

comply with the General Order. The Discharger's collection system is greater than one mile in length. The Discharger has been enrolled under the General Order since 13 August 2007.

Site-Specific Conditions

Land uses in the vicinity of the WWTF are primarily agricultural. The primary crops grown in the area are field crops, pasture, and tree crops including almonds, apples, apricots, cherries, figs, peaches, pistachios, plums, prunes, and walnuts, according to data published by the Department of Water Resources (DWR).

The WWTF is in an arid climate characterized by dry summers and mild winters. The rainy season generally extends from November through April. Average annual pan evaporation in the area is about 65 inches, according to DWR Bulletin No. 113-3. The average annual precipitation in the discharge area is about 11 inches. The 100-year return period wet year precipitation is about 21 inches, according to DWR Bulletin No. 95.

Soils in the vicinity of the WWTF are predominately loamy sands and sandy loams, according to the Web Soil Survey published by the United States Department of Agriculture Natural Resources Conservation Service. The most prevalent soil series' in the area are Calhi loamy sand, Hesperia sandy loam, and Delhi loamy sand, all of which are sandy with high permeability and low available water storage.

The WWTF is within the Consolidated Irrigation District, near the southwestern boundary. According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number FM06019C2625H, revised 18 February 2009, the WWTF is outside of the 100-year and 500-year return frequency flood zones.

The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System General Industrial Storm Water Permit for the discharge because all storm water runoff is retained onsite and does not discharge to a water of the United States.

Groundwater Considerations

The WWTF is in the Consolidated Hydrologic Area (No. 551.70) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986. Regional groundwater underlying the area is first-encountered at about 150 feet below ground surface (bgs) and flows to the southwest, according to Lines of Equal Elevation of Water in Wells, Unconfined Aquifer, published by DWR in 2010.

Limited published groundwater quality data from the United States Geological Survey (USGS) shows nitrate concentrations in first-encountered groundwater are variable from less than 1 mg/L as nitrogen to concentrations above the MCL of 10 mg/L. The data also shows high variability in groundwater EC, from less than 300 umhos/cm to more than 1,000 umhos/cm in wells less than 200 feet deep. None of the wells represented in the published data appears to be upgradient of the WWTF. The Discharger has been monitoring groundwater quality at the site since 1999.

The District installed three groundwater monitoring wells (MW-001, MW-002, and MW-003) to monitor first-encountered groundwater in 1999, and one additional monitoring well (MW-004) in 2012. Monitoring results show the groundwater surface is about 120 to 160 feet bgs.

Groundwater levels have dropped significantly since the District installed the wells. All three of the original groundwater monitoring wells installed in 1999 have gone dry. The groundwater level in new well MW-004 has dropped from about 149 feet bgs in March 2012 to more than 160 feet bgs in December 2013.

Assuming a relatively planar groundwater surface at the scale of the WWTF, the groundwater gradient and direction can be estimated using groundwater elevation measurements in three wells. Groundwater has dropped to the point that the surface elevation has only been measureable in one or two wells at a time since March 2007, which does not provide enough information to calculate the groundwater gradient. Based on measurements from 1999 to 2007, groundwater flow direction is generally toward the community of Caruthers to the east. Pumping in the area appears to affect the groundwater gradient in the vicinity of the WWTF.

Based on quarterly groundwater monitoring results from self-monitoring reports for January 2010 through December 2013, annual average groundwater characteristics for constituents of concern are tabulated below.

		MW-001	MW-002	MW-003	MW-004
EC (umhos/cm)	2007	810	1,118	953	NS
	2008	790	1,168	864	NS
	2009	dry	1,045	753	NS
	2010	dry	941	831	NS
	2011	dry	884	790	NS
	2012	dry	867	700	640
	2013	dry	dry	dry	640
TDS (mg/L)	2007	520	798	665	NS
	2008	600	895	640	NS
	2009	dry	825	610	NS
	2010	dry	723	595	NS
	2011	dry	695	583	NS
	2012	dry	865	520	455
	2013	dry	dry	dry	458
Nitrate as nitrogen (mg/L)	2007	25	16	0.5	NS
	2008	22	25	0.5	NS
	2009	dry	15	1.0	NS
	2010	dry	8.9	1.0	NS
	2011	dry	8.6	0.5	NS
	2012	dry	12	0.5	9.0
	2013	dry	dry	dry	11
Sulfate (mg/L)	2007	43	42	50	NS
	2008	40	69	32	NS
	2009	dry	38	30	NS
	2010	dry	46	35	NS
	2011	dry	31	22	NS
	2012	dry	27	9.1	45
	2013	dry	dry	dry	45

		MW-001	MW-002	MW-003	MW-004
Chloride (mg/L)	2007	60	61	57	NS
	2008	60	63	53	NS
	2009	dry	59	53	NS
	2010	dry	58	55	NS
	2011	dry	55	53	NS
	2012	dry	56	53	61
	2013	dry	dry	dry	60

dry The groundwater surface elevation was below the screened interval of the well during the monitoring event.
 NS No samples were collected from the monitoring well because it had not been constructed yet.

Monitoring well MW-003 generally appears to represent upgradient groundwater, but it may also be affected by the discharge. The concentration of nitrate in MW-003 is typically below the limit of detection (about 1 mg/L) with an EC of about 700 umhos/cm to 1,000 umhos/cm and chloride from about 50 mg/L to 60 mg/L. The well exhibiting the lowest EC is new well MW-004, which may reflect the quality of percolated wastewater. MW-004 has the highest concentrations of sulfate and chloride, and quarterly monitoring shows the concentration of nitrate as nitrogen has risen to above the Maximum Contaminant Level (MCL) of 10 mg/L.

Basin Plan, Beneficial Uses, and Water Quality Objectives

The Water Quality Control Plan for the Tulare Lake Basin, Second Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

The WWTF is in Detailed Analysis Unit (DAU) No. 236, within the Kings Basin hydrologic unit. The beneficial uses of underlying groundwater as set forth in the Basin Plan for this DAU are municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND) and industrial process supply (PRO).

The Basin Plan includes a water quality objective for chemical constituents that at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in Title 22. The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

The Basin Plan establishes narrative water quality objectives for Chemical Constituents, Taste and Odors, and Toxicity. The Toxicity objective, in summary, requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

The Basin Plan requires that each RWD for a land disposal operation justify why reclamation is not practiced or proposed. The Discharger notified the owners of surrounding properties by mail in 2005 and 2010 that WWTF effluent is available for recycled water projects. Specifically, the letters note that the WWTF treats an average of 190,000 gpd of wastewater with effluent defined as undisinfected

secondary, with a copy of recycled water regulations attached. The letters do not provide any detailed water quality information, suggest possible uses of the water, or propose terms of a recycled water agreement with the District. None of the recipients of the letters responded. All WWTF effluent is disposed of by discharge to onsite percolation ponds.

Antidegradation Analysis

State Water Board Resolution No. 68-16 (“Policy with Respect to Maintaining High Quality Water of the State”) (the “Antidegradation Policy”) prohibits degradation of groundwater unless it has been shown that:

- a. 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;
- b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
- c. The discharger employs Best Practicable Treatment or Control (BPTC) to minimize degradation; and
- d. The degradation is consistent with the maximum benefit to the people of the state.

The Discharger has been monitoring groundwater quality at the site since 1999. 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 best groundwater quality unaffected by the discharge.

The discharge is not expected to cause significant groundwater degradation. Degradation that does occur will not violate water quality objectives. Effluent quality meets the most stringent water quality objectives for protection of salt sensitive plants and is of similar quality as groundwater. Based on this, the proposed discharge will not cause exceedances of water quality objectives nor impair beneficial uses.

This Order includes influent, effluent, and groundwater monitoring requirements to verify that the discharge does not cause violations of water quality objectives or impairment of beneficial uses. The WWTF will provide treatment and control of the discharge that incorporates: secondary treatment of wastewater; nitrogen removal treatment; an operation and maintenance manual; lined treatment ponds to limit the amount of wastewater that percolates to groundwater; certified operators to ensure proper operation and maintenance; and source water, discharge, and groundwater monitoring.

Generally, limited degradation of groundwater by some of the typical waste constituents of concern (e.g., sodium, chloride, sulfate, and nitrate) released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the state. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impacts on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the state, and therefore provides sufficient reason to accommodate planned growth and allow for limited groundwater degradation.

California Environmental Quality Act

With Resolution 2008-01, the Board of Directors of the Caruthers Community Services District certified an Initial Study and Negative Declaration (SCH #2008041144) for the expansion of the WWTF from 0.24 mgd to 0.28 mgd. The expansion project included conversion of the existing aerated pond system to an activated sludge system with nitrification and denitrification. Caruthers Community Services District filed a Notice of Determination on 19 June 2008. Central Valley Water Board staff reviewed the Negative Declaration and concurs that the project will not have a significant impact on water quality.

The District has not expanded or altered operations beyond the scope of the project description for which it completed an environmental review and certified the Negative Declaration. The adoption of this Order for an existing facility is exempt from the requirements of the California Environmental Quality Act in accordance with California Code of Regulations, title 14, section 15301.

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions

The proposed Order prohibits the discharge of waste to surface waters and to surface water drainage courses.

The proposed Order restricts the discharge to a monthly average daily flow limit of 0.28 mgd. This Order sets effluent limits for BOD₅ and TSS of 40 mg/L as monthly average and 80 mg/L as daily maximum percent removal.

The proposed Order prescribes groundwater limitations that ensure the discharge does not affect present and anticipated beneficial uses of groundwater.

The Order also includes Provisions requiring the Discharger to pursue water recycling, properly close old ponds, submit a Salinity Management Plan, and submit a Groundwater Monitoring Well Installation Work Plan to improve groundwater monitoring.

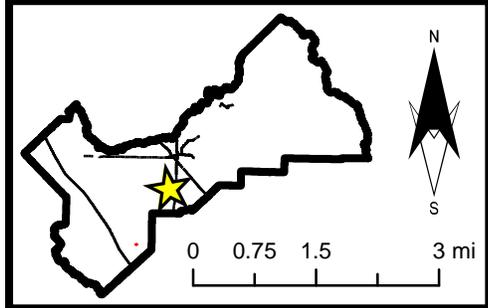
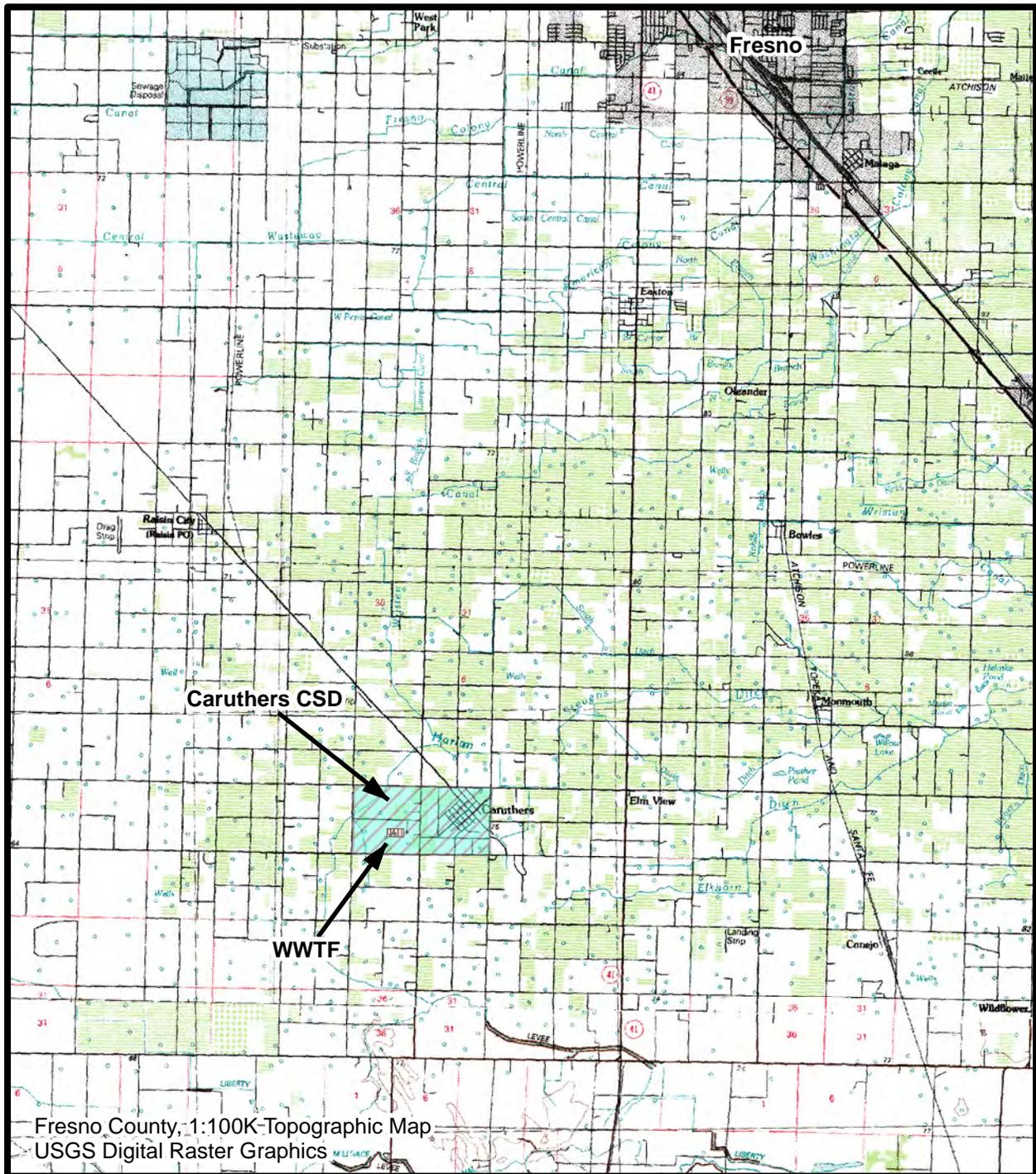
Monitoring Requirements

Section 13267 of the Water Code authorizes the Central Valley Water Board to require the District to submit monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the State.

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, source water monitoring, biosolids/sludge monitoring, and groundwater monitoring. This monitoring is necessary to characterize the discharge, evaluate compliance with effluent limitations prescribed by the Order, and evaluate groundwater quality and the extent of degradation, if any, caused by the discharge.

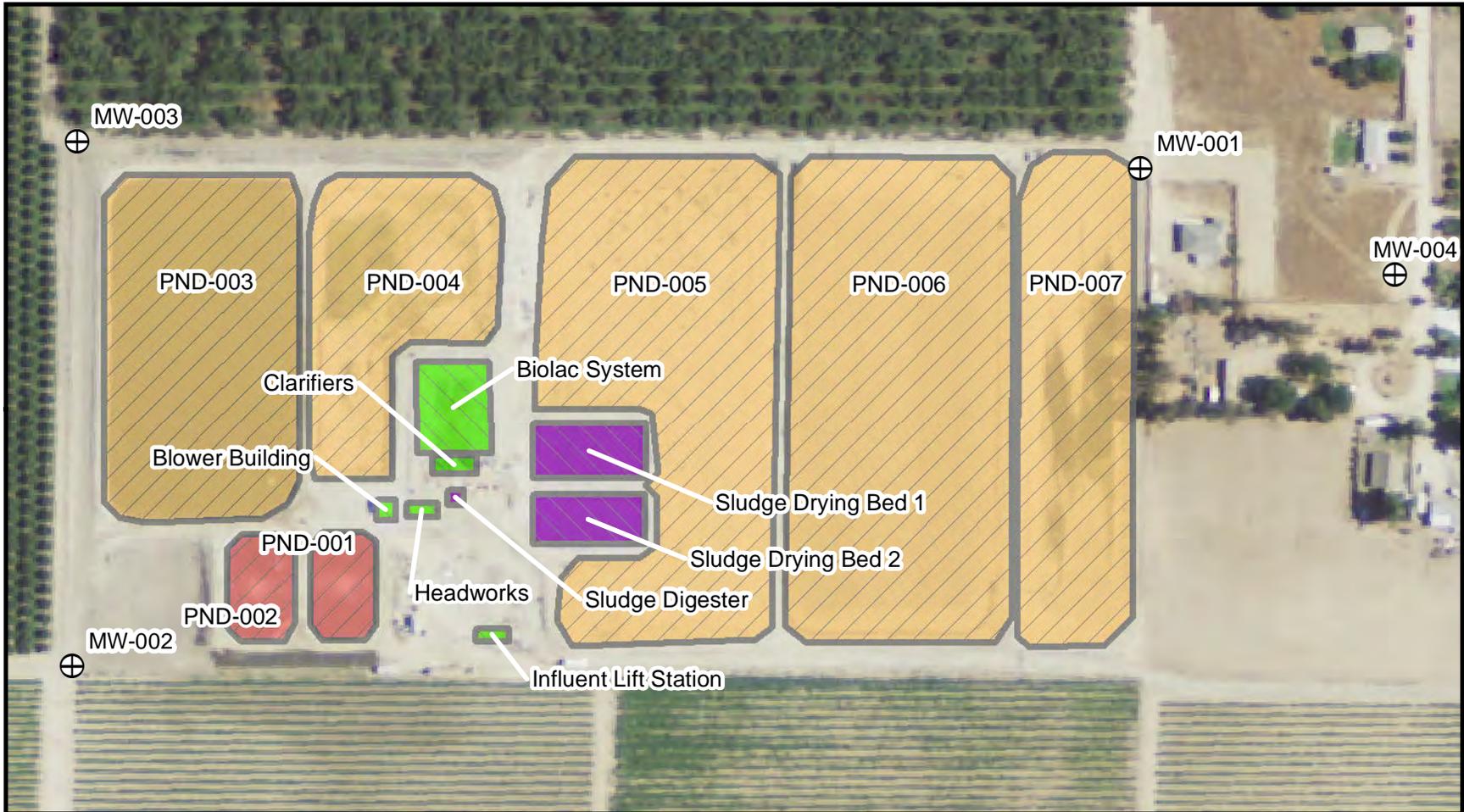
Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if new technical information is received or if applicable laws and regulations change.



VICINITY MAP
 ORDER R5-2014-0137
 WASTE DISCHARGE REQUIREMENTS
 CARUTHERS COMMUNITY SERVICES DISTRICT
 WASTEWATER TREATMENT FACILITY
 FRESNO COUNTY

ATTACHMENT A



-  Wastewater treatment
-  Former treatment ponds
-  Effluent disposal ponds
-  Biosolids
-  Groundwater monitoring well

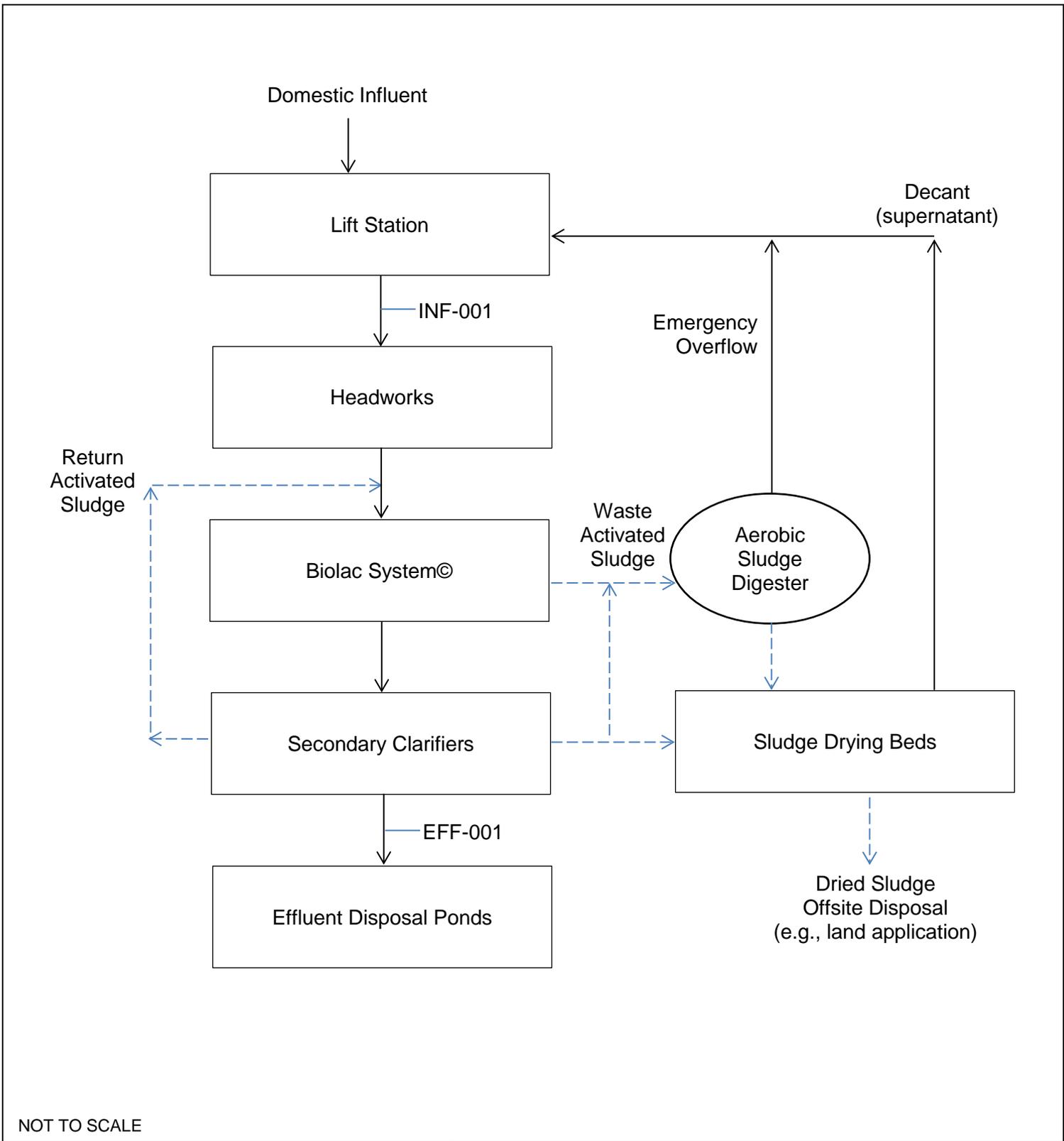
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SITE MAP

ORDER R5-2014-0137
WASTE DISCHARGE REQUIREMENTS
CARUTHERS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY

ATTACHMENT B



NOT TO SCALE

Symbol



Description

Wastewater
Sludge

Sampling Points

INF-001 Influent
EFF-001 Effluent

PROCESS FLOW DIAGRAM

ORDER R5-2014-0137
WASTE DISCHARGE REQUIREMENTS
FOR
CARUTHERS COMMUNITY SERVICES DISTRICT
WASTEWATER TREATMENT FACILITY
FRESNO COUNTY