

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2015-XXXX

WASTE DISCHARGE REQUIREMENTS

FOR  
CALIFORNIA RESOURCES PRODUCTION CORPORATION  
AND NORTH KERN WATER STORAGE DISTRICT

OIL FIELD PRODUCED WATER RECLAMATION PROJECT  
KERN COUNTY

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

1. On 25 March 2015, Kennedy/Jenks Consultants (Kennedy/Jenks) submitted a Report of Waste Discharge (RWD) on behalf of the California Resources Production Corporation (CRC), a Delaware Corporation, and the North Kern Water Storage District (District), hereafter jointly referred to as Discharger. CRC and District are proposing that CRC provide oil field produced water (produced water) from its Kern Front Oil Field to the District to augment its water supplies for irrigation and groundwater recharge.
2. CRC is an oil and natural gas exploration and production company with production facilities in the Kern Front Oil Field. CRC owns and operates the CRC Section 23 Treatment Facility in the Kern Front Oil Field at 9522 Oilfield Road, Bakersfield, CA 93308 (Sections 23&26, T28S, R27E, Mount Diablo Baseline & Meridian, (MDB&M); Assessor's Parcel Number (APN) 481-130-35), as shown in Attachment A, which is attached hereto and made part of this Order by reference.
3. The District currently provides water for groundwater recharge and the irrigation of crops on approximately 55,000 acres in Kern County Attachment A shows the District Boundaries and the Rosedale Spreading Basin (Rosedale Basin), a 608-acre facility used for groundwater recharge (Sections 22 and 27, T28S, R26E, MDB&M; APNs 091-190-17 and 091-120-04).
4. This Order places regulatory restrictions on the discharge of treated produced water to about 55,000 acres of irrigated farmland and about 1,500 acres of spreading basins, including the 608-acre Rosedale Spreading Basin (Rosedale Basin). In order to bring the produced water to the irrigated farmland and spreading basins, the District conveys water from the CRC Section 23 Treatment Facility through CRC pipelines and/or canals and utilizes the Lerdo canal to blend the produced water with surface or groundwater. The CRC and District are jointly responsible for compliance with these Waste Discharge Requirements (WDRs).

**Background and Current Practices**

5. The District was formed in 1935 with the intent to "build-up and maintain the groundwater storage underlying the District". This was to be accomplished through the acquisition of rights to water accruing to pre-1914 water rights on the Kern River and through construction of facilities to manage these water supplies for the benefit of landowners within the District. In 1952, the District acquired the right in perpetuity to all water accruing to these Kern River water rights, subject primarily to place of use restrictions and monthly usage caps. The District uses imported surface water and pumped groundwater for irrigation. During months when irrigation requirements are low,

excess surface water is discharged to approximately 1,500 acres of spreading basins, including the Rosedale Basin.

6. The primary source of the surface water used by the District is the Kern River. The quality of the Kern River water is summarized in the following Table. The Kern River results are from 49 sampling events from February 2009 through November 2011. The exception is arsenic which is from two samples collected in 2011. The upper number shown is the average and the range is shown below in parentheses.

**Kern River Water Quality**

<u>Constituents</u>	<u>Units<sup>1</sup></u>	<u>Results</u>
Electrical Conductivity	umhos/cm	170 (80 – 290)
Boron	mg/L	0.2 (nd <sup>2</sup> – 3.1)
Chloride	mg/L	6.4 (nd <sup>2</sup> – 10)
Sodium	mg/L	15 (nd <sup>2</sup> – 30)
Arsenic	ug/L	nd <sup>2</sup>
Sulfate	mg/L	17 (3.3 – 41)

1. umhos/cm = micromhos per centimeter; mg/L = milligrams per liter; ug/L = micrograms per liter,

2. nd = not detected by the laboratory.

7. The District has 100 groundwater wells throughout the District that are used for irrigation water supply and are also sampled and analyzed for water quality during years when groundwater is being extracted. Attachment B, attached hereto and made a part of this Order by reference, shows the locations of the wells within the District. The wells are completed at a range of depths and the well locations represent areas adjacent to unlined canals, lined canals, areas where recharge to groundwater occurs, and areas with effects of pumping. The quality of the groundwater in the District is discussed in greater detail in the Groundwater Considerations section of this Order beginning on page 12.
8. The amounts of surface water and groundwater used by District vary by year according to the timing and availability of surface water. When surface water supply is low, groundwater wells are used to increase water supply for the District. The period from 1991 to 2014 was used to assess year-to-year variability because complete records are available for this period. The table below shows surface water and groundwater supply records for irrigation and for discharge to the Rosedale Basin.

<u>Year</u>	<u>Kern River to Irrigation</u> <u>ac-ft/yr<sup>1</sup></u>	<u>Groundwater to Irrigation</u> <u>ac-ft/yr<sup>1</sup></u>	<u>Kern River to Spreading</u> <u>Basins</u> <u>ac-ft/yr<sup>1</sup></u>
1991	57,607	36,183	0
1992	44,754	51,851	1,501
1993	133,785	0	2,705
1994	51,174	71,748	305
1995	124,873	0	62,202
1996	140,781	0	22,861

<u>Year</u>	<u>Kern River to Irrigation</u> <u>ac-ft/yr<sup>1</sup></u>	<u>Groundwater to Irrigation</u> <u>ac-ft/yr<sup>1</sup></u>	<u>Kern River to Spreading</u> <u>Basins</u> <u>ac-ft/yr<sup>1</sup></u>
1997	135,657	0	31,920
1998	95,135	0	76,278
1999	79,502	30,621	7,938
2000	97,235	21,182	0
2001	77,144	29,366	0
2002	101,129	11,033	206
2003	107,865	0	0
2004	78,132	45,230	54
2005	138,753	0	33,715
2006	140,039	0	60,815
2007	38,892	95,061	14,616
2008	100,791	49,197	38
2009	105,655	42,004	2,025
2010	133,530	0	1,202
2011	137,532	0	65,203
2012	65,459	80,672	2,943
2013	17,852	114,381	177
2014	4,100	119,599	742
Total	2,207,376	798,128	387,447
Average	91,974	33,255	16,144

1. <sup>1</sup> ac-ft/yr = acre feet per year.

9. The District has established irrigation water quality limits for flows that go to the irrigators in the District. The following table summarizes these limits. The values for electrical conductivity (EC), Boron, and Chloride are lower than proposed Groundwater Limits for the project.

**North Kern Water Storage District  
 Proposed Irrigation Limits**

<u>Constituent</u>	<u>Units</u>	<u>District Limit</u>
Electrical Conductivity	umhos/cm	650
Boron	mg/L	0.5
Chloride	mg/L	100
Sodium	mg/L	140

10. CRC recovers crude oil in the Kern Front Oil Field from approximately 850 oil production wells in the Kern Front Oil Field. The process produces significant amounts of produced water that is treated at CRC's Section 23 Treatment Facility. Attachment C, which is attached hereto and made part of this Order by reference, provides a flow schematic of the treatment processes at the facility. Treatment consists of gas separation, free-water knock-out tanks, air flotation (WEMCO units) and skimming. Following treatment, produced water is currently discharged to one of three uses:

further treatment followed by steam flooding in the oil field, disposal by deep well injection, or discharge to an irrigation reuse program operated by the Cawelo Water District. The proposed project described here would provide a fourth discharge alternative.

### Proposed Discharge

11. CRC will provide up to an average of 58 acre-feet per day (ac-ft/day) or about 21,200 acre feet per year (ac-ft/yr) of produced water (Discharge 001) annually to the District. CRC produced water, surface water, and groundwater will primarily be blended in the Lerdo Canal and used to meet agricultural irrigation demands in the District. During the irrigation season, discharge of blended produced water from CRC's treatment facility will be used primarily to help meet agricultural irrigation demands in the District (Discharge 002). During the non-irrigation season, discharge from CRC's treatment facility will be discharged to spreading basins within the District, primarily the 608-acre Rosedale Basin. Additionally, in wet years when there is surplus Kern River water, produced water will be discharged to the Rosedale Basin during the irrigation season as well for groundwater recharge.
12. The quality of the CRC produced water is summarized in the following table. The oil and grease, EC, boron, chloride, and arsenic results are from 12 monthly sampling events conducted in 2014. The sodium results were from nine samples collected from January through September 2014, and the sulfate result is from one sample collected in September 2014. The results for benzene, naphthalene, and total petroleum as crude oil are from one sample collected in April 2015. For constituents with multiple samples collected, the first number shown is the average value and the range of detections is shown in the parentheses to the right.

### CRC Produced Water Quality

<u>Constituents</u>	<u>Units</u>	<u>Results</u>
Oil and Grease	mg/L	21 (15 – 22)
Electrical Conductivity	umhos/cm	772 (708 – 806)
Boron	mg/L	1.1 (0.9 – 1.2)
Chloride	mg/L	85 (77 – 90)
Sodium	mg/L	172 (155 – 185)
Arsenic	ug/L	76 (68 – 86)
Sulfate	mg/L	2.7
Benzene	ug/L	1.2
Napthalene	ug/L	0.84
Total Petroleum Hydrocarbons as Crude Oil	ug/L	20,000
Molybdenum	mg/L	12
Radium 226	pCi/L <sup>1</sup>	1.01
Radium 228	pCi/L <sup>1</sup>	1.81

1. pCi/l = picocurie per liter.

13. The estimated blended water quality of the discharge to irrigation is shown in the following table. The calculations were made using surface water and groundwater flow averages from 1991 to

2014 that will be blended with the CRC design produced water discharge. Both a flow weighted average over the 24 years of record and the average annual concentration for 24 years are shown.

**Estimated Blended Irrigation Water Quality**

<u>Constituent</u>	<u>Units</u>	<u>Flow Weighted Average<sup>1</sup></u>	<u>Annual Average<sup>2)</sup></u>
Electrical Conductivity	umhos/cm	363	364
Arsenic	ug/L	15	15
Boron	mg/L	0.30	0.3
Chloride	mg/L	32	32
Sodium	mg/L	48	49

1. Flow weighted average water quality discharged to the Lerdo Canal (RWD Table 4-9).

2. Average of 24 annual water quality values discharged to the Lerdo Canal (RWD Table 4-9)

14. During the non-irrigation season, discharge to the Rosedale Basin will consist primarily of CRC treated produced water. CRC produced water without blending will be discharged to the spreading basins in January when the District drains the Lerdo Canal for a two week annual maintenance period. The produced water flow is not expected to be more than 812 ac-ft for the two week time period; however, it could be as much as 1,740 ac-ft if the discharge continues for as many as 30 days. During this maintenance period, no Kern River water or groundwater is discharged to the Rosedale Basin; only produced water and process wastewater from Grimmway Enterprises (Grimmway), a carrot processor in Shafter, will be discharged.
15. Grimmway’s carrot processing discharge is regulated by WDRs R5-2015-0057. While not a part of the discharge proposed under this Order, the quality of the Grimmway discharge presented below was included by Kennedy/Jenks in the estimating of the quality of the blended waters discharged to the Rosedale Basin as discussed in Finding 16. The approximate location of the Grimmway facility and pipeline to transport its wastewater to the Rosedale Basin is shown on Attachment D, which is attached hereto and made part of this Order by reference. The quality of the Grimmway wastewater in 2013 is shown in the following table. The EC results shown are the 2013 annual averages from 12 monthly sampling events. The remaining constituents were from 2013 quarterly monitoring events. The first number shown is the average value and the range of detections is shown in the parentheses to the right.

**Grimmway Carrot Processing Wastewater Quality**

<u>Constituents</u>	<u>Units</u>	<u>Results</u>
Electrical Conductivity	umhos/cm	2189 (1970 – 2250)
Total Dissolved Solids	mg/L	1403 (1170 – 1900)
Boron	mg/L	Non detect
Chloride	mg/L	378 (330 – 420)
Sodium	mg/L	337 (293 – 388)
Sulfate	mg/L	490 (370 -800)
Calcium	mg/L	153 (99 – 249)

16. Discharge water quality to the Rosedale Basin was estimated in the RWD based on 24 years of historical data in order to demonstrate the effect of varying Kern River flows on the overall blended water quality discharged to the Rosedale Basin. The table below shows the estimated water

quality assuming CRC produced water flow of 21,200 ac-ft/yr, Grimmway process wastewater flow at 158 ac-ft/yr, and the range of Kern River flow from 0 to 65,000 ac-ft/yr.

### Estimated Rosedale Basin Effluent Quality

<u>Constituent</u>	<u>Units</u>	<u>Flow Weighted Average<sup>(1)</sup></u>	<u>Annual Average<sup>(2)</sup></u>
Electrical Conductivity	umhos/cm	213	462
Arsenic	ug/L	9.1	27
Boron	mg/L	0.23	0.44
Chloride	mg/L	13	53
Sodium	mg/L	25	82
Sulfate	mg/L	20	39

1. Flow weighted average blended water quality discharged to the Rosedale Basin (RWD Table 4-8).

2. Average of 24 annual blended water quality values discharged to the Rosedale Basin (RWD Table 4-8).

### Water Reclamation Policies

17. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition – revised January 2004*, (hereinafter Basin Plan) specifically provides that “blending of wastewater with surface or groundwater to promote beneficial reuse of wastewater in water short areas may be allowed where the Regional Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein.”
18. The Basin Plan further provides as follows: “The irrigation season in the Tulare Lake Basin area typically extends 9 to 10 months, but monthly water usage varies widely. To maximize reuse, users should provide water storage and regulating reservoirs, or percolation ponds that could be used for groundwater recharge of surplus waters when there is no irrigation demand.”
19. Resolution No. R5-2009-0028 *In support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants* was adopted by the Central Valley Water Board in April 2009 to promote wastewater reuse projects such as the CRC District project authorized by this Order.
20. The Water Conservation Act of 2009, Senate Bill (SBX7-7), requires 20 percent reduction in statewide water use by 2020 to be achieved through implementation of Best Management Practices (BMPs) and optimization of water reclamation opportunities in the urban, industrial, and agricultural sectors. The proposed project is consistent with these goals.

### Site-Specific Conditions

21. The total land area within the District is approximately 60,000 acres. In 2012, nonagricultural lands in the service area were about 12 percent of the total area. Of the remaining 88 percent of irrigated area, approximately 80 percent were planted in permanent crops of nuts, vineyards, and fruit. The District provided crop acreage estimates in the RWD and those are shown in the following table.

<u>Crop</u>	<u>Acres</u>
Almonds	30,289
Grapes, Table	5,818
Alfalfa hay	3,678
Roses	2,961
Pistachios	2,601
Misc. Vegetables	1,723
Open Land	1,568
Apples	1,256
Cotton	754
Grain, Wheat	626
Pomegranates	334
Pecans	188
Grain, Com	182
Others	156
Peppers	152
Olives	83
Cherries	27
Total Crops	52,396

22. The land surface in the District slopes gently to the southwest in the southern portions of the District; to the west in the central portion of the District; and to the northwest in the northern portion of the District. Elevations within the District range from about 400 feet above mean sea level in the northwestern portion of the District to about 300 feet above mean seal level along the western boundary. The elevation at the Rosedale Basin is about 375 feet above mean sea level.
23. According to Federal Emergency Management Agency (FEMA) map numbers 06029C1800E and 06029C1825E, the Rosedale Basin and CRC's produced water Treatment Facility, respectively, are outside of the 100-year return frequency flood zones. According to FEMA Map Numbers 06029C0725E and 06029C1280E, portions of the proposed irrigated acreage in the northern portion of the District along Poso Creek and both spreading basins set along Poso Creek are within a 100-year return flood event. Considering the quality of the produced water and that surface waters are already used so that the blended discharge will meet District irrigation standards, inundation by floodwaters of the two northern most spreading basins would not threaten the underlying groundwater quality.
24. According to the Web Soil Survey published by the United States Department of Agriculture, Natural Resources Conservation Service, soils in the northern portion of the District consist primarily of Wasco sandy loam and the McFarland loam, with lesser amounts of Lewkalb sandy loam, Milham sandy loam, Driver coarse sandy loam, and the Kimberlina fine sandy loam. Soils in the Rosedale are in similar percentages, but the Lewkalb sandy loam is not present.
25. The Wasco sandy loam is a Class 2s soil that has moderate limitations that reduce the choice of plants or that require moderate conservation practices. The "s" subclass indicates the soil is limited mainly because it is shallow, droughty, or stony. The Wasco sandy loam is described as well

drained with a high capacity to transmit water. The McFarland loam is a Class 1 soil that has few limitations that restrict usage. The McFarland loam is listed as prime farmland if irrigated that is well drained with a moderately high capacity to transmit water.

26. The District area is characterized by hot dry summers and cooler, humid winters. The rainy season generally extends from November through March. Average annual precipitation is about 6.5 inches and annual evapotranspiration data is 54.6 inches with monthly averages ranging from 1.3 inches in January and December to 8.1 inches in July (California Irrigation Management Information System (CIMIS) Shafter Station # 5). The 100-year, 24-hour maximum precipitation is about 2.9 inches, based on maps obtained from the Kern County Resource Management Agency, Engineering, Survey and Permit Services, Floodplain Management Section.

### **Basin Plan, Beneficial Uses, and Water Quality Objectives**

27. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, revised January 2004 (the "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. The beneficial use of water in the Districts spreading basins and distribution systems is by design agricultural supply. Surface water flows in the District are to the South Valley Floor hydrologic unit, Valley Floor Waters, The beneficial uses of Valley Floor Waters, as stated in the Basin Plan for Hydrologic Area No. 558, are agricultural supply; industrial service supply; industrial process supply; groundwater recharge; water contact recreation; non-contact water recreation; warm freshwater habitat; wildlife habitat; and enhancement of rare, threatened, or endangered species.
28. The District is in the Kern County Basin hydrologic unit, Poso groundwater hydrographic unit with regards to groundwater. The Basin Plan designates the beneficial uses of groundwater in the Kern County Basin as municipal and domestic supply (MUN), agricultural supply, industrial process supply, and industrial service supply.
29. Water in the Tulare Lake Basin is in short supply, requiring importation of surface water from other parts of the State. The Basin Plan encourages use of recycled water on irrigated crops wherever feasible and indicates that evaporation of recyclable wastewater is not an acceptable permanent disposal method where the opportunity exists to replace existing uses or proposed use of fresh water with recycled water.
30. The Basin Plan includes a water quality objective for chemical constituents that, at a minimum, require waters designated as MUN to meet the State drinking water maximum contaminant levels (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.
31. 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.

32. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.
33. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as Water Quality for Agriculture by Ayers and Westcot and similar references, indicate that yield reductions in nearly all crops are not evident when irrigating with water having an EC less than 700 umhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops. It is possible to achieve full yield potential for some crops with waters having EC up to 3,000 umhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop. The list of crops in Finding 21 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but is representative.
34. The Basin Plan contains the following salt management requirements that are applicable to the groundwater within the District:
  - a. The Basin Plan policy for disposal of oil field wastewater includes effluent limits for EC, chloride, and boron of 1,000 umhos/cm, 200 mg/L, and 1.0 mg/L respectively.
  - b. In 1982, the Central Valley Water Board amended the Basin Plan to allow discharges of oil field wastewater to exceed the above limits to facilitate use for irrigation and other beneficial uses where the exception would not cause an exceedance of a water quality objective. The Basin Plan, therefore, provides some flexibility to allow oil field wastewater exceeding Basin Plan salinity limits to be used for agricultural use in water short areas, provided the discharger first successfully demonstrates to the Central Valley Water Board that the increases will not cause exceedances of water quality objectives.
  - c. The Basin Plan includes water quality objectives for the incremental increase in groundwater EC for specific Hydrographic Units. To this end, the Basin Plan Table III-4 states that the maximum average annual increase in salinity as measured by EC shall not exceed 6 umhos/cm in the Poso hydrographic unit. The average annual increase in EC will be determined from monitoring data by calculation of a cumulative average and annual increase over a 5-year period.
35. The rationale for specific effluent limits within this Order follow:
  - a. **Oil and Grease:** An effluent limit of 35 mg/L for Oil and Grease is established in 40 CFR Part 435.50, Oil and Grease Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory. While the discharges to land described here are not subject to federal requirements, the Basin Plan requires the Discharger to comply with, or justify a departure from, effluent limitations set forth in 40 CFR 400 et seq. if discharge is to land. The Discharger has not provided such a justification, but rather has shown that the Treatment Facility is capable of consistently meeting the oil and grease limit of 35 mg/L. Thus the limit is applied for this permit.
  - b. **Electrical Conductivity:** This Order applies the Basin Plan effluent limit for produced water of 1,000  $\mu$ mhos/cm as an annual average for discharge to the Lerdo Canal (Discharge 002).

This same limit is appropriate for discharge to the Rosedale Basin because, during some dry years when little or no Kern River water is available to discharge to the Rosedale Basin, the blended discharge, consisting largely of CRC produced water and Grimmway process wastewater, will have annual average EC levels that approach this limit. During wet years, high Kern River water flows will be blended in the discharge to the spreading basin and the flow weighted average EC will be very low (Finding 16).

- c. **Boron:** This Order applies the Basin Plan effluent limit of 1.0 mg/L for oil field wastewater as an annual average for Discharge 002. This same limit is appropriate for discharge to the Rosedale Basin because, during some dry years when little or no Kern River water is available to discharge to the Rosedale Basin, the blended discharge, consisting largely of CRC produced water and Grimmway process wastewater, will have annual average boron concentrations that approach this limit. During wet years, high Kern River water flows will be blended in the discharge to the spreading basin and the flow weighted average boron will be very low (Findings 13 and 16).
- d. **Chloride:** This Order applies the Basin Plan effluent limit of 200 mg/L for oil field wastewater as an annual average for Discharge 002. This same limit is appropriate for discharge to the Rosedale Basin because, during some dry years when little or no Kern River water is available to discharge to the Rosedale Basin, the blended discharge, consisting largely of CRC produced water and Grimmway process wastewater, will have annual average chloride concentrations that approach this limit. During wet years, high Kern River water flows will be blended in the discharge to the spreading basin and the flow weighted average chloride will be very low (Findings 13 and 16).
- e. **Sodium:** The CRC produced water sodium concentration averages 172 mg/l. Therefore the effluent limit at Discharge 002 is set at an average annual sodium concentration of 175 mg/l. Blended concentrations discharged to the Rosedale Basin during Individual low Kern River flow years will have average annual sodium concentrations as high as 165 mg/l (and high Kern River flow years will have average annual sodium concentrations of 20 mg/l or less). Therefore, the same annual average sodium concentration, 175 mg/l, is proposed for discharge to the Rosedale Basin. During some dry, low flow years, the average annual sodium concentration may exceed the effluent limit of 175 mg/l. This value is supported by the antidegradation analysis (Finding 51).
- f. **Arsenic:** The Discharger completed an arsenic soil-adsorption removal evaluation based on recent laboratory and field studies done at the Cawelo Water District (CWD) which is adjacent to the District, and has the same soils and subsurface condition: similar lithology, percentage of fine-textured soils and approximately 300 feet of unsaturated sediments above groundwater. The CWD study results for arsenic adsorption capacity of local area soils and soil and subsurface conditions at the District are provided in the Report of Waste Discharge. This analysis demonstrates that the unsaturated soils underlying the Rosedale Basin and the irrigated areas have sufficient capacity to adsorb all arsenic from the proposed project discharge containing a concentration as high as 120 ug/L. Discharges from the CRC Section 23 Treatment Facility will not contain arsenic concentrations approaching 120 ug/L. The results demonstrate that there will be no change in the arsenic concentration in underlying groundwater associated with project discharges. Therefore, this Order does not contain arsenic limits.

### Groundwater Considerations

36. Basin Plan water quality objectives to protect the beneficial uses of groundwater include numeric and narrative objectives, including objectives for chemical constituents, toxicity of groundwater, and taste and odor. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the MCLs in Title 22 of the California Code of Regulations. The Basin Plan requires the application of the most stringent objective necessary to ensure that groundwater does not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.
37. The California Legislature enacted A.B. 3030 during the 1992 session, subsequently codified in Water Code section 10750, *et seq.* Water Code section 10750 states, in part, that:
- “Any local agency, whose service area includes a groundwater basin, or a portion of a groundwater basin, that is not subject to groundwater management pursuant to other provision of law or a court order, judgment, or decree, may, by ordinance, or by resolution if the local agency is not authorized to act by ordinance, adopt and implement a Groundwater Management Plan pursuant to this part within all or a portion of its service area.”
38. Water Code section 60224 empowers the District to take any action needed for protection and preservation of underlying groundwater supplies including:
- The prevention of contaminants from entering groundwater supplies;
  - The removal of contaminants from groundwater supplies;
  - The locating and characterizing of contaminants which may enter the groundwater supplies;
  - The identification of parties responsible for contamination of groundwater; and
  - The performance of engineering studies.
39. The District adopted an updated Groundwater Management Plan (Plan) in August 2012 with an overarching goal of “*preserving the groundwater resource as a viable source of water supply to support overlying uses into the foreseeable future through local control and management.*” Objectives of the plan are:
- Maintain groundwater levels at economically viable pumping depths for the overlying agricultural uses.
  - Protect groundwater quality in general and minimize increases in salinity.
  - Avoid conditions conducive to inelastic land surface subsidence.
  - Protect and preserve surface water rights and contracts.
  - Protect and preserve surface water quality.

40. Monitoring elements of the Groundwater Management Plan include:

- Semi-annual monitoring of groundwater levels of wells within the District;
- Quarterly monitoring of groundwater quality of District wells during years when their use is required;
- Monthly sampling of water in the District's canals;
- Subsidence monitoring following significant pumping seasons; and
- Preparation of quarterly and annual monitoring reports.

41. The District adopted an Agricultural Water Management Plan (AWMP) in August 2014 in accordance with the requirements of the Water Conservation Bill of 2009 (SBX7-7, Water Code §10820). The AWMP presents the Districts existing and planned activities and programs designed to improve water use efficiency.

42. To sustain existing irrigated agriculture, the District supplements the landowner's use of groundwater with imported surface water, groundwater, and the treated produced water from CRC. Through its authority and Plan, the District proposes to manage the project within its boundaries to meet Basin Plan objectives. The Basin Plan allows blending of wastewater with surface and groundwater to promote reuse of wastewater in areas with water shortages provided it is otherwise consistent with water quality policies.

### **District Groundwater Considerations**

43. The District is located in the recharge area of the Kern County Subbasin. The aquifer system in the District area consists of unconfined conditions in the upper few hundred feet, and confined conditions at greater depths depending on the local extent of the clay layers. Within this region, there are three general zones of clay lenses named the "300-foot clay", the "700-foot clay", and the "900-foot clay" as shown in the geologic cross sections in the 2012 North Kern Groundwater Management Plan. The 300-foot clay is not entirely continuous and so allows for downward groundwater movement. The 700-foot clay is generally thicker and more contiguous than the 300-foot clay. In the eastern side of the basin, including the District, fresh water occurs to depths of approximately 1,500 feet. Hydrologic conditions of the District differ from those of adjacent areas to the west where shallow clay layers restrict surface water percolation.

44. Based on groundwater elevation contours for 2009 and 2011, the groundwater flow direction in the southern half of the District, including beneath the Rosedale Basin, has generally been from the southeast to the northwest, with a gradient of 12 to 15 feet per mile (ft/mi), as shown in Attachment E, which is attached hereto and made part of this Order by reference. In the northern half of the District, the groundwater flow direction has generally been from east to west, with a gradient of 7 to 10 ft/mi. The groundwater flow gradient in the vicinity of the Rosedale Basin was estimated to be 17 ft/mi based on 2012 groundwater elevation measurements (Attachment E). The transmissivity of the aquifer is estimated to be 160,000 to 460,000 gallons per day per foot and the hydraulic conductivity is approximately 53 to 152 feet per day. Based on these estimates of aquifer properties and using the 2012 hydraulic gradient estimate of 17 ft/mi, the flow of the groundwater underlying the Rosedale Basin is estimated to be between 3.8 and 11 mgd.

45. Subsurface conditions in the Rosedale Basin were evaluated using available well logs, and logs for a series of six shallow borings placed in the dominant soil types present in the spreading basin. Available well logs for three of the seven wells located within the Rosedale Basin were analyzed. Soil textures in the upper 100 feet below the ground surface (bgs) are generally silty or clayey sands, textures between 100 and 350 feet bgs are generally sands and gravels, and below 350 feet bgs, there are varying layers of sands, gravels, and clays. The 300-foot clay, 700-foot clay, and 900-foot clay layers appear to be present beneath the Rosedale Basin, with a possible additional clay layer present at around 500-feet bgs. The well logs and boring logs were also analyzed to determine the ratio of coarse-grained material (sands and gravels, including trace clays or silts) to fine-grained materials (clays and silts). Overall, the ratio was determined to be 52 percent coarse-grained material to 48 percent fine-grained material. The surface soils and alluvium present at the Rosedale Basin are primarily poorly graded sands underlain by silty and sandy alluvium to a depth of 30 feet bgs.
46. The Dischargers are proposing to monitor seven deep extraction wells that are within the 680-acre Rosedale Basin as shown on Attachment F, which is attached hereto and made part of this Order by reference. Central Valley Water Board staff added MW-4, a shallow monitoring well installed within the central portion of the Rosedale Basin that will be used to monitor first encountered groundwater when present.
47. The following table shows groundwater results for wells within the District and those that are specifically within the Rosedale Basin. The first number shown is the average and the range is to the right in parentheses.

**North Kern Water Storage District - Groundwater Quality**

<u>Constituent</u>	<u>Units</u>	<u>District Wells</u>	<u>Rosedale S.B. Wells</u>
Electrical Conductivity	umhos/cm	659 (160 – 2500)	429 (240 – 890)
Boron	mg/L	0.11 (0.1 – 0.48)	0.13 (0.1 – 0.22)
Chloride	mg/L	72 (9 – 470)	47 (9 – 100)
Sodium	mg/L	80 (20 – 390)	74 (13 – 160)
Sulfate	mg/L	130 (12 – 750)	74 (22 – 230)
Arsenic	ug/L	Not analyzed	2.44 (2 – 3.5)

49. The Cawelo Water District is immediately upgradient of and adjacent to the District. The background groundwater quality used for the CWD Project (WDR Order R5-2012-0058) is shown in the following table:

**Background Groundwater Quality**

<u>Constituent</u>	<u>Units</u>	<u>CWD Background<sup>1</sup></u>
Electrical Conductivity	umhos/cm	618
Arsenic	ug/L	3.4
Boron	mg/L	0.14
Chloride	mg/L	87.7
Sodium	mg/L	55.7

<sup>1</sup> Source: Cawelo Water District, 2011, *Famoso Basins Antidegradation Analysis*.

### Antidegradation Analysis

50. State Water Board Resolution No. 68-16 (*Policy with Respect to Maintaining High Quality Waters of the State*) (Anti-Degradation Policy) generally prohibits the Central Valley Water Board from authorizing activities that will result in the degradation of high-quality waters unless it has been shown that:
- The degradation will not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;
  - The degradation will not unreasonably affect present and anticipated future beneficial uses;
  - The discharger will employ Best Practicable Treatment or Control (BPTC) to minimize degradation; and
  - The degradation is consistent with the maximum benefit to the people of the state.
51. For the purposes of determining whether the discharges regulated by this Order have the potential to degrade high-quality groundwater, the blended water that will be discharged pursuant to this Order has been compared to the groundwater beneath the Rosedale Basin (using the 2013-2014 average groundwater quality for seven wells completed beneath the Rosedale Basin) and the CWD's background water quality, which is directly upgradient of the District and unaffected by discharges from the District. The water quality constituents that may be expected to degrade groundwater are arsenic, boron, chloride, sodium, sulfate, and EC. With the exception of sulfate, these constituents are known to be present in produced water. Sulfate was added to the analysis because the Grimmway process wastewater is high in sulfate.
52. The following table compares discharge constituent levels with measured groundwater quality, background groundwater quality from an adjacent water district, and applicable water quality objectives (WQOs). The discharge water quality is based on the flow weighted average of 24 years of actual surface water deliveries that incorporate the variations in annual precipitation and variations in annual Kern River water supply.

	<u>EC</u> umhos/cm	<u>Arsenic</u> ug/L	<u>Boron</u> mg/L	<u>Chloride</u> mg/L	<u>Sodium</u> mg/L	<u>Sulfate</u> mg/L
<b>Blended Groundwater Recharge</b>	213	9.1	0.23	13	25	20
<b>Groundwater Beneath Rosedale Basin</b>	429	2.4	0.13	47	74	74
<b>CWD Background Groundwater Quality</b>	618	3.4	0.14	88	56	-
<b>Water Quality Objectives</b>	900	10	0.75	175	115	250

53. The Rosedale Basin discharge has lower flow weighted levels of EC, chloride, sodium, and sulfate than the average of the seven wells in the Rosedale Basin. The constituents at concentrations greater than underlying groundwater are arsenic and boron. As mentioned in Finding 35.f, it is anticipated based on soil and subsurface conditions at the Rosedale Basin that soil adsorption of arsenic will result in no impact to groundwater. The boron in flows discharged to the Rosedale

Basin, 0.23 mg/l, exceeds that of underlying groundwater but is much lower than the WQO of 0.75 mg/l.

54. This Order establishes effluent and groundwater limitations for the discharges that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan.
55. The Discharger implements the following treatment or control measures to minimize the potential for the waste discharges to degrade groundwater:
  - a. Treatment of produced water to lower oil and grease concentrations in order to ensure that oil and grease are not present in the water that will be blended and used for irrigation and discharged to the spreading basins.
  - b. Real-time monitoring of oil and grease concentrations in the treatment process to either divert out-of-specification produced water to other discharge methods (such as underground injection) or to recirculate the out-of-specification produced water for further treatment.
  - c. Blending of produced water supplies so that the blended concentrations are protective of designated beneficial uses of the underlying aquifers.
  - d. Use of water management practices and monitoring at the irrigation and groundwater recharge points of discharge to ensure that groundwater, surface water, and crops are protected.

The Board finds that these treatment and control practices represent BPTC of the wastes that may threaten to degrade waters of the state.

56. The discharges as regulated by this Order will provide the following benefits:
  - a. Provide up to 21,200 Ac-ft/yr (6.9 billion gallons) of produced water for irrigation and groundwater recharge. This could result in the same amount of water conservation because existing water supplies would not need to be utilized for these purposes.
  - b. Provide a significant benefit for agriculture that would not be realized if the produced water was discharged to deep wells for disposal.
  - c. Result in the protection and maintenance of surface water and groundwater resources. Groundwater recharge, in particular, can reduce the rate of groundwater decline in the project area and decrease pumping costs for any groundwater extraction needed.
  - d. Make available an additional water supply to support the agricultural economy of the District and the Central Valley region.
  - e. Provide a 'drought proof' water supply that will be available without regard for weather-related uncertainty. This has additional benefit for crop production planning.
  - f. Convert flows that otherwise would be disposed of by well injection to a beneficial use as irrigation water supply. In addition, this reuse program also provides the oil industry with a reliable and environmentally beneficial way to manage produced water.
57. This Order complies with the Anti-Degradation Policy because it ensures that any degradation that may occur as a result of the discharges regulated by this Order will not result in water quality less than that prescribed in state and regional policies, that the degradation will not unreasonably

affect present and anticipated future beneficial uses, that the Discharger will employ BPTC to minimize degradation, and that the degradation is consistent with the maximum benefit to the people of the state due to the significant benefits provided by the activities regulated by this Order as described in Finding No. 56.

### **Other Regulatory Considerations**

58. Based on the threat to water quality and complexity of the discharge, the facility is determined to be classified as 2-B. California Code of Regulations, title 23, section 2200, defines these categories to include any of the following:
- 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."
59. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Title 27, section 20090 states, in relevant part:
- (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 RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
  - (2) the discharge is in compliance with the applicable water quality control plan; and
  - (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.
- Discharges of produced water from CRC to the District via either the Lerdo Canal or the Rosedale Basin are exempt from the requirements of Title 27 because the Board is issuing these waste discharge requirements, because the discharge as regulated by this Order will comply with the Basin Plan, and because the wastes subject to regulation under this Order do not need to be managed as hazardous wastes.
60. The oil and grease collected on floating booms at the CRC Section 23 Treatment Facility and associated CRC canals is considered a "designated waste" as defined in Title 27 and the discharge of these wastes is not exempt from the requirements of Title 27. However, this Order does not authorize the discharge of these wastes to land, but instead requires that the booms be routinely collected and disposed of appropriately at a landfill that is regulated under the requirements of Title 27 and that is authorized to accept such designated wastes. The oil captured by the removal system is stored in tanks and sold as a product, and this Order does not provide authorization to discharge the oil contained in the tanks, either.

61. Water Code section 13267(b) states, in relevant part, that:

In conducting an investigation ... the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional 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 regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2015-XXXX are necessary to assure compliance with these WDRs. The Discharger owns and operates the facility that discharges the waste subject to this Order.

62. In accordance with the requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the District prepared an Initial Study and Mitigated Negative Declaration (IS/MND) for the construction and operation of facilities to accept, convey, and use the Kern Front Oil Field produced water for irrigation and groundwater recharge. The IS/MND was circulated for public review and comment from 26 March 2015 through 24 April 2015 (State Clearinghouse No. 2015031098). The Board, acting as a responsible agency, was consulted during the development of these documents. The District certified the IS/MND and issued a Notice of Determination on 30 April 2015.
63. The California Department of Water Resources (DWR) sets standards for the construction and destruction of groundwater wells, as described in the *California Well Standards Bulletin 74-90 (June 1991)* and *Water Well Standards: State of California Bulletin 74-81 (December 1981)*. These standards and any more stringent standards adopted by the State or county pursuant to Water Code section 13801, apply to all monitoring wells.
64. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

**Public Notice**

65. All of the above and the supplemental information and details in the attached Information Sheet, which is incorporated herein, were considered in establishing the following conditions of discharge.
66. The CRC, District, and interested agencies and persons have been notified of the intent to prescribe WDRs for this discharge, and they have been provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
67. All comments pertaining to the discharge were heard and considered in a public hearing.

**IT IS HEREBY ORDERED** that pursuant to sections 13263 and 13267 of the Water Code, California Resources Corporation, North Kern Water Storage District, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions**

1. Discharge of wastes other than treated produced water at the location and in the manner described in the Findings and authorized herein is prohibited.
2. The bypass or overflow of wastes to surface waters is prohibited.
3. The discharge of water from canals used to transport industrial wastewater (Lerdo Canal).to canals used to transport municipal and domestic water sources ( Friant-Kern Canal and/or others) is prohibited.
4. The discharge to land of any fluids from wells that have undergone a “well stimulation treatment”, as defined by California Code of Regulations, title 14, section 1761 (including hydraulic fracturing, acid fracturing, and acid matrix stimulation) is prohibited.
5. The discharge of fluids associated with the frac-packing process (i.e., emplacement of a filter pack into the well annulus using a pressurized high-viscosity fluid that is not a drilling mud and that does not meet the standard of well stimulation) to land are prohibited. The discharge of produced water from wells that have been frac-packed is prohibited, unless the Discharger meets the requirements of Provision E.13, below.
6. Neither the discharge nor its treatment shall create a nuisance or pollution as defined in Water Code section 13050.
7. Discharge of waste classified as ‘hazardous’, as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

**B. Effluent Limitations**

1. The discharge of treated produced water from CRC to the District (**Discharge 001**) shall not exceed the following for the constituents listed:

<u>Constituent</u>	<u>Units</u>	<u>Daily Maximum</u>	<u>Annual Average</u>
Flow	mgd	18.5	-
Electrical Conductivity	umhos/cm	-	1,000
Boron	mg/L	-	1.0
Chloride	mg/L	-	200
Sodium	mg/L	-	175
Oil & Grease	mg/L	35	-

2. The discharge of blended CRC produced water, Grimmway process wastewater, and Kern River surface water to the District’s farmlands (**Discharge 002**) and the discharge to the Rosedale Basin shall not exceed the following for the constituents listed:

<u>Constituent</u>	<u>Units</u>	<u>Annual Average</u>
Electrical Conductivity	umhos/cm	1,000
Boron	mg/L	1.0
Chloride	mg/L	200
Sodium	mg/L	175

**C. Discharge Specifications**

1. Wastewater treatment and use of blended, reclaimed, produced water for groundwater recharge shall not cause pollution or a nuisance as defined by Water Code section 13050.
2. The Discharger shall operate all systems and equipment to optimize treatment of wastewater and the quality of the discharge.
3. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations (see Section D.2).
4. Produced water shall not be discharged to a canal used to transport municipal and domestic water sources (Friant-Kern Canal and/or others).
5. The discharge of the produced water shall not create objectionable odors perceivable beyond the limits of the Rosedale Basin property at an intensity that creates or threatens to create nuisance conditions.
6. Recharge basins shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter. 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.
7. All spreading basins shall be managed to prevent breeding of mosquitos. 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. Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but not during, the 1 April to 30 June bird nesting season.
8. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

**D. Groundwater Limitations**

1. The discharge of produced water, in combination with other sources, shall not cause groundwater underlying the District to contain waste constituents in concentrations that adversely affect beneficial uses. In no case shall the discharge, in combination with other sources, cause average EC in groundwater on a basin-wide basis to increase by more than six (6)  $\mu\text{mhos/cm}$  per year. The average annual increase in EC will be determined from monitoring data by calculation of a cumulative average and annual increase over a 5-year period.
2. The discharge of produced water shall not cause groundwater in the area potentially affected by discharges to the spreading basins to contain waste constituents in concentrations greater than the following:

<u>Constituent</u>	<u>Units</u>	<u>Limitation</u>
Electrical Conductivity	$\mu\text{mhos/cm}$	1,000
Arsenic	$\mu\text{g/L}$	10
Boron	$\text{mg/L}$	0.75
Chloride	$\text{mg/L}$	175
Sodium	$\text{mg/L}$	115

**E. 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 a part of this Order.
2. The Discharger shall comply with Monitoring and Reporting Program (MRP) R5-2015-XXXX, 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 keep at the District office and the CRC Treatment Facility, copies 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.
4. The District and CRC must at all times properly operate and maintain their respective facilities and systems of treatment and control (and related appurtenances) that are installed or used 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 only when the operation is necessary to achieve compliance with the conditions of the Order.
5. 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 a person 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 California Water Code Section 13267.

6. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
7. 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.
8. 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 California 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.
9. 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.
10. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
11. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
12. By **(no later than 3 months from the adoption of this Order)**, the Discharger shall submit a technical report describing a proposed methodology, including statistical analyses, for

determining groundwater quality goals to quantify degradation caused by discharges of produced water to the Rosedale Basin. The proposed methodology is subject to the approval of the Executive Officer.

13. The discharge of any produced water from wells that have undergone a frac-packing may only be authorized in writing by the Executive Officer following a demonstration by the Discharger that frac-packing fluids are not present in the produced water from the specific well or wells that have been frac-packed.
14. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

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

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

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on XX December 2015.

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PAMELA C. CREEDON, Executive Officer

Order Attachment

- A. Site Location Map
- B. NKWSD Well Locations
- C. CRC Process Flow Diagram

- D. Project Area Map
- E. Groundwater Contour Map
- F. Rosedale Spreading Basin Groundwater Monitoring Wells

Monitoring and Reporting Program R5-2015-XXXX  
Information Sheet Order R5-2015-XXXX  
Standard Provisions (1 March 1991) (separate attachment to Discharger only)