

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0124

NPDES NO. CA0081311

WASTE DISCHARGE REQUIREMENTS  
FOR  
VALLEY WASTE DISPOSAL COMPANY  
AND  
CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT-CAWELO RESERVOIR B  
KERN COUNTY

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

*BACKGROUND*

1. Valley Waste Disposal Company (hereafter VWDC) submitted a Report of Waste Discharge (RWD), dated 29 June 2000, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Kern Front No. 2 treatment plant into the Cawelo Water District (CWD) systems' Reservoir B and then to Poso Creek, a water of the United States. VWDC and CWD are hereafter collectively referred to as the Discharger. Supplemental information was provided on 24 August 2000. The discharge is currently regulated by Waste Discharge Requirements Order No. 96-009 (NPDES No. CA0081311), adopted by the Regional Water Board on 26 January 1996 and administratively extended by the Executive Officer on 5 January 2001. VWDC's RWD requests an increase of the discharge flow into Reservoir B from 4.3 mgd to 7.4 mgd as well as a slight increase in the effluent limits for EC, boron, and chloride.
2. The CWD covers approximately 45,000 acres and is between State Highway 99 on the west and Highway 65 on the east. The CWD was formed for the purpose of obtaining a "supplemental or partial water supply" and delivering it for irrigation of crops within the CWD. The CWD uses imported surface water conjunctively with pumped groundwater and produced water to provide the water supply to meet irrigation needs of the agricultural lands of the CWD.
3. VWDC receives oil production wastewater at its Kern Front No. 2 treatment plant from companies operating oil wells in the Kern Front oil field. The treatment plant is in the western half of Section 27, T28S, R27E, MDB&M, along the south side of James Road, as shown on Attachment A, a part of this Order. The companies presently conveying oil field produced water to VWDC via pipeline for final treatment and disposal are Bellaire Oil Company (Bellaire) and Vintage Production California LLC, a Delaware corporation (Vintage)(Formerly Oxy USA, Inc.). VWDC currently receives about 4.0 million gallons per day (mgd) of produced water from Vintage and Bellaire. Approximately 85% of the produced water received by VWDC originates from Vintage.

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

4. Vintage currently discharges about 4 mgd of its produced water to VWDC through a pipeline. Vintage historically discharged produced water to VWDC through series of unlined channels and retains a permit for the discharge. Discharge of up to 4.0 mgd of produced water to the unlined channels is regulated by WDRs Order No. 96-277 (NPDES No. CA0083852). On 16 May 2001, Vintage submitted an RWD to renew Order No. 96-277. Order No. 96-277 was administratively extended on 19 November 2001 and a new order is currently being drafted. When discharge to the unlined channels occurs, over half of the discharged produced water is lost through percolation, evaporation, and evapotranspiration. Vintage currently maintains the WDRs to discharge to the unlined channels as a back-up disposal option. Vintage, which had not regularly discharged to the unlined channels since July 2003, recently resumed intermittent discharges to the channels. Vintage also disposes of a portion of its produced water through deep well injection using Class II injection wells. Class II wells are regulated by the California Division of Oil, Gas, and Geothermal Resources.
5. Increases in the price of crude oil over the past several years have made it economically feasible for Vintage to employ steam more extensively in its oil extraction operations. Use of steam tends to leach salts such as boron and chlorides out of the formations, and this increases the EC of produced water. Vintage's increased use of steaming will increase the overall volume of produced water and the EC, boron, and chlorides in produced water discharged to VWDC.
6. VWDC has been operating in the Kern Front oil field since 1955, and has operated in its current configuration with storage and treatment ponds and conveyance to CWD since 1980. Wastewater received by VWDC is treated to remove oil and grease and inorganic sediment. Four unlined ponds, in series, provide initial gravity separation. Floating oil and grease in the ponds is periodically skimmed and removed. VWDC currently employs one Wemco air flotation unit to provide final polishing and proposes to add a second Wemco unit to increase its final polishing capacity. The Wemco units use air flotation techniques combined with chemical coagulants and mechanical agitation to remove free oil and grease. After final polishing, wastewater is discharged to a concrete-lined storage pond and then pumped to Reservoir B, which is clay lined. When Reservoir B is not available, 11 other unlined storage ponds provide temporary storage capacity. The two Wemco units will have a combined total design treatment capacity of 7.4 mgd. VWDC's treatment configuration and process has largely remained the same for the past 25 years, and the only modification that VWDC is currently proposing is the addition of one more Wemco unit.
7. Discharges from VWDC into Reservoir B (Discharge 001) from 2001 through 2005 exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	1.61
Electrical Conductivity @ 25 °C	umhos/cm	1030
Chloride	mg/L	70.7
Boron	mg/L	0.71
Oil and Grease	mg/L	9.9

8. VWDC conveys its treated wastewater from the storage pond through a 20-inch, 3.4-mile pipeline to the CWD's Reservoir B. The discharge point from the 20-inch pipeline into Reservoir B is Discharge 001. Reservoir B is an integral part of the CWD's water distribution system, which consists of 5.3 miles of lined canal and 38 miles of pipeline ranging in size from 15" to 60." Reservoir B is on the boundary between the Kern Uplands Hydrologic Area (No. 558.90) and the North Kern Hydrologic Area (558.80) as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986. Reservoir B supplies irrigation water used in the North Kern Hydrologic Area via the Distribution Canal. The outfall from Reservoir B into the Distribution Canal is hereafter referred to as Discharge 002.
  
9. Oil and grease removed by the Wemco units is transferred to a concrete-lined collection sump. According to a sludge management plan submitted on 29 March 1996, oil and grease that accumulates in the sump is removed with a vacuum truck approximately three times per year and returned to the oil field operators to be processed as crude oil.
  
10. On 24 February 1995, the Regional Water Board adopted WDRs Order No. 95-031 (NPDES Permit No. CA0082295) for Texaco Exploration and Production Inc. (Texaco) and CWD. Order No. 95-031 allows Texaco to discharge up to 18 mgd (five-year average) of oil-field produced water from the Kern River oil field into Reservoir B. CWD is required to manage the water through management practices and blending to ensure protection of applicable beneficial uses. In July 1999, Texaco submitted an RWD in support of renewing Order No. 95-031. The July 1999 RWD proposes increasing the permitted maximum daily discharge to 27.3 mgd. Order No. 95-031 was administratively extended on 19 January 2000, and a new order is currently being drafted. In 2001 Texaco merged with Chevron U.S.A., Inc. Texaco subsequently changed its name to ChevronTexaco and then to Chevron U.S.A., Inc. (Chevron). In 2005, Chevron indicated that it intends to increase the permitted maximum daily discharge into Reservoir B to approximately 50 mgd. However, Chevron has not yet submitted a RWD that supports this proposed flow increase.
  
11. Discharges from Chevron into Reservoir B from 2001 through 2005 exhibited the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	17.4
Electrical Conductivity @ 25 °C	umhos/cm	955
Chloride	mg/L	138.3
Boron	mg/L	0.98
Oil and Grease	mg/L	9.2

12. CWD blends produced water from Chevron and VWDC in Reservoir B with water from other surface and groundwater supplies of CWD to meet the effluent and receiving water limits set forth in this Order and Order No. 95-031. Surface water blended into Reservoir B consists of Kern River, State Water Project, and Central Valley Project water delivered from the Beardsley

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

Canal through Lerdo Pumping Station B. CWD delivers blended water to farmers for irrigation of crops within the CWD. Through use of its Distribution Canal, CWD discharges blended water to Poso Creek, a water of the United States, for recharge of the groundwater basin in the winter months when irrigation demand is low. The outfall from the Distribution Canal into Poso Creek is hereafter referred to as Discharge 003.

13. Surface water deliveries to Reservoir B from Lerdo Pumping Station B between 2001 and 2005 exhibited the following characteristics:

**Irrigation Season (April through September)**

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	80.1
Electrical Conductivity @ 25 °C	umhos/cm	186
Chloride	mg/L	26.3
Boron	mg/L	0.11

**Non-Irrigation Season (October through March)**

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	12.3
Electrical Conductivity @ 25 °C	umhos/cm	207
Chloride	mg/L	18.4
Boron	mg/L	0.16

14. Discharges of reclaimed water (consisting of a blend of Chevron and VWDC produced water and surface water from Lerdo Pumping station B) from the outfall of Reservoir B into the Distribution Canal (Discharge 002) between 2001 and 2005 exhibited the following characteristics:

**Irrigation Season (April through September)**

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	88.0
Electrical Conductivity @ 25 °C	umhos/cm	338
Chloride	mg/L	46.7
Boron	mg/L	0.29

**Non-Irrigation Season (October through March)**

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	26.0
Electrical Conductivity @ 25 °C	umhos/cm	706
Chloride	mg/L	104.2
Boron	mg/L	0.74

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

15. Discharges from the CWD into Poso Creek occur on an irregular basis, usually in the winter months. CWD obtains water supplies from many sources and manages all the irrigation water within its distribution network. To retain as much water within the CWD as possible, CWD attempts to discharge to Poso Creek (Discharge 003) only when there is no surface water flow or insufficient surface water flow in Poso Creek to extend past the downstream boundary of the CWD. The CWD and the downstream water districts (North Kern Water Storage District or NKWSD and Semitropic Water Storage District or SWSD) filed competing applications for rights to waters in Poso Creek. CWD, by subsequent agreement with NKWSD and SWSD, has right to approximately the first 135 cfs as measured at State Highway 65. Flows greater than 135 cfs at State Highway 65 are allocated to NKWSD and SWSD until said flow exceeds 685, cfs, after which the flow is allocated to CWD, NKWSD, and SWSD relative to remaining demands. The right approximates the flow that matches CWD's Poso Creek recharge capacity. Between 2001 and 2005, CWD reported discharging to Poso Creek only in late 2004 and early 2005. The following shows the number of days CWD discharged to Poso Creek each month, and the average volume of the discharges:

<u>Month</u>	<u>Days Discharging to Poso Creek</u>	<u>Volume of discharge to Poso Creek (mgd)</u>
November 2004	14	14.3
December 2004	14	14.3
January 2005	14	14.3
February 2005	27	21.0
March 2005	7	31.0

16. Poso Creek exhibits the following average monthly flows at Highway 65, upstream of the CWD:

<u>Month</u>	<u>Average Flow (mgd)</u>
January	20.61
February	42.23
March	45.03
April	35.73
May	21.09
June	9.10
July	2.37
August	0.40
September	0.22
October	0.86
November	4.54
December	9.58

17. Discharges from CWD into Poso Creek (Discharge 003) between 2001 and 2005 exhibited the following average characteristics:

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Electrical Conductivity @ 25 °C	umhos/cm	761
Chloride	mg/L	101.4
Boron	mg/L	0.77

18. Poso Creek flows within the CWD from 1993 through 2005 exhibited the following average characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Electrical Conductivity @ 25 °C	umhos/cm	251.5
Chloride	mg/L	14.4
Boron	mg/L	0.03

19. The CWD's Reservoir B, Distribution Canal, and other facilities may be shut down for maintenance or emergency reasons for up to four weeks each year. At such times, VWDC is unable to discharge to Reservoir B and instead diverts its wastewater to on-site temporary storage ponds. All sixteen on-site storage ponds reportedly have 300 acre-feet (98 million gallons) of combined available storage capacity. Stored wastewater not lost to percolation or evaporation is delivered to CWD's Reservoir B upon resumption of its operation.
20. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes narrative and numerical water quality objectives, and contains implementation plans and policies for protecting all waters of the Basin. The Basin Plan includes plans and policies of the State Water Resources Control Board (State Water Board) incorporated by reference. Pursuant to Section 13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.
21. The U.S. Environmental Protection Agency (USEPA) promulgated the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality criteria (WQC) applicable to this discharge. The State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan or SIP) on 18 May 2000, which contains implementation procedures for criteria of the NTR and the CTR. The SIP was amended by the State Water Board on 24 February 2005.
22. On 27 February 2001, the Regional Water Board issued a request pursuant to Water Code Section 13267 for the Discharger to submit Priority Pollutant Monitoring Data to comply with the Implementation Policy. The Discharger conducted the analyses using test methods specified in the 27 February letter and submitted the results to Regional Water Board staff. The Priority Pollutant Monitoring Data show that arsenic has a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective. This Order contains effluent limitations for arsenic.

*BENEFICIAL USES OF THE RECEIVING STREAM*

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

23. The Basin Plan designates the following beneficial uses for Poso Creek: agricultural supply (AGR), water contact and non-contact water recreation, warm and cold water freshwater habitat, wildlife habitat, groundwater recharge, and freshwater replenishment.
24. Based on USGS Professional Report 437B and interpretation by CWD's consulting geologist, the Poso Creek recharge area extends across the CWD and can be characterized as sandy surface soils overlying greater than 550 feet of continental deposits. The continental deposits consist of sandy soils with several gravel layers, and exhibit high percolation rates. Unless creek flows enter the CWD at the upstream gauging station in sufficient magnitude to exceed the evaporative rate and infiltrative and percolative capacity of the CWD recharge area, all water in Poso Creek will recharge the groundwater.
25. The beneficial use of water in CWD Reservoir B and the CWD distribution system by design is AGR.

*GROUNDWATER*

26. The beneficial uses of the underlying groundwater, as designated in the Basin Plan, are municipal and domestic supply (MUN), agricultural supply (AGR), industrial process supply, and industrial service supply.
27. Basin Plan water quality objectives to protect the beneficial uses of groundwater include numeric objectives 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 maximum contaminant levels (MCLs) in Title 22, CCR. The Basin Plan requires the application of the most stringent objective necessary to ensure that groundwaters do 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.
28. State Water Board Resolution No. 68-16 (hereafter Resolution 68-16) requires the Regional Water Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that the discharge meet best practicable treatment and control (BPTC).
29. The California Legislature enacted A.B. 3030 during the 1992 session, subsequently codified in California Water Code §10750, *et seq.* Water Code §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.

30. Water Code §60224 empowers the CWD to take any action needed for protection and preservation of groundwater supplies within the CWD including:
- The prevention of contaminants from entering CWD groundwater supplies;
  - The removal of contaminants from groundwater supplies of the CWD;
  - The location and characterizing of contaminants which may enter the groundwater supplies of the CWD;
  - The identification of parties responsible for contamination of groundwater; and
  - The performance of engineering studies.
31. The CWD adopted a Ground Water Management Plan (Plan) on 21 July 1994 to establish a policy of efficient water use, conservation, and management. Action elements in the Plan include:
- Acquire and import available, supplemental surface water for crop irrigation and groundwater recharge.
  - Continue the application for appropriation of Poso Creek water and develop Poso Creek as a groundwater recharge facility within the CWD.
  - Facilitate conjunctive use operations by the importation and recharge use of supplemental water.
  - Construct and operate CWD wells.
  - Monitor well construction and abandonment as administered by Kern County.
- Monitoring elements of the Plan include:
- Semi-annual monitoring of groundwater levels of wells within the CWD.
  - Semi-annual preparation of maps of equal elevation of water in wells.
  - Monitor groundwater quality at 5-year intervals and prepare maps of conductivity, chloride, and boron concentrations.
  - Operate and maintain the Poso Creek gauging station above State Highway 65.
32. In August 1994, the Discharger and Chevron submitted a study entitled *Proposed CWD/TEPI-BPD Groundwater Recharge Project – Discharges Into Reservoir “B” and Poso Creek* (hereafter 1994 Study) prepared by R.L Schafer and Associates. The 1994 Study used a simple environmental fate model to evaluate the potential impact on groundwater of salt applied through the produced water reclamation project. Using assumptions set forth in the 1994 Study, the Discharger concluded that the change in water usage in CWD due to the discharge of 15,920 acre-feet/year of reclaimed produced water would increase salinity in the groundwater

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

aquifer by 2.3 umhos/cm annually above that resulting from the then current use of surface water imports. The 1994 Study did not calculate the overall potential annual change in groundwater EC throughout the CWD due to produced water reclamation and irrigation activities in the CWD for comparison with the Basin Plan. Using the model of the 1994 Study, discharges of imported surface water, produced water, and pumped groundwater at levels allowed by current permits have the potential to increase the EC of groundwater in the CWD significantly greater than the Basin Plan allowed 6 umhos/cm per year with VWDC and Chevron discharging year-round at maximum flow rates and effluent limitations. It also allows no attenuation of the EC in soils, as any attenuation would be temporal at best.

33. The 1994 Study evaluated the effect of importing 920 acre-feet/year (0.82 mgd) of VWDC produced water and 15,000 acre-feet/year (13.4 mgd) of Chevron produced water on groundwater underlying the CWD.
34. In July 2003, the Discharger and Chevron submitted a study entitled, *Technical Study Update for the Proposed Modification of Waste Discharge Requirements for Discharges Into Reservoir "B," Distribution Canal, and Poso Creek* (hereafter 2003 Study). The 2003 Study evaluated potential impacts to groundwater underlying the CWD resulting from proposed increases in effluent limitations for salts and flow rates of produced water from VWDC and Chevron (see Finding Nos. 47, 48, and 49). The 2003 Study does not quantify what gross annual average increase the increases in effluent limits will have on the EC of groundwater underlying the CWD.
35. The Discharger submitted a groundwater monitoring report on 1 February 2005 in conformance with the Plan described in Finding No. 31. The 1 February report states that the average EC of groundwater in the CWD decreased from 711 umhos/cm to 662 umhos/cm between 1999 and 2004. The large number of monitoring wells, the variability of well construction specifications and screening intervals, the fact that different wells are sampled each year, and the 400-foot vadose zone make it difficult to determine what actual effect the recent increases in use and poorer quality of produced water have had on the quality of groundwater throughout the CWD.
36. Groundwater depth, flow, and mixing varies depending on factors such as irrigation demand, precipitation, surface water applied, groundwater flow into and out of the area, and the groundwater extraction zone. The Discharger's and Regional Water Board simple models of the effect of the discharge on groundwater look at averages over the entire CWD. The actual impact can vary considerably both vertically and spatially. The impacts will be less noticeable in upgradient (eastern areas) where there is an influx of good quality groundwater.
37. To sustain existing irrigated agriculture, CWD supplements its existing limited surface water supplies and overdrafted groundwater with the produced water reclamation project using treated Valley Waste Disposal Company wastewater (and reclaimed treated wastewater from other sources) as described herein. Through its Plan, the CWD 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 water short areas provided it is

otherwise consistent with water quality policies. The Poso Creek Subarea and CWD are water-short areas.

38. Irrigation wells within the CWD extend to 1200 feet below ground surface, typically draw water from perforated zones in an unconfined aquifer that extends from 450 feet bgs to 1200 feet bgs. The base of the aquifer is about 1500 feet bgs. The CWD model assumes that compliance with Basin Plan objectives is determined over the full depth of the active well zone. Domestic wells within CWD are typically shallower.

*EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL*

39. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto that are applicable to the discharge are contained herein.
40. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Water Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for arsenic. An effluent limitation for arsenic is included in this Order.
41. The Basin Plan establishes the following limits for discharges to land and surface water within the Poso Creek Subarea:

EC	1,000 umhos/cm
Chloride	200 mg/L
Boron	1.0 mg/L

The Poso Creek Subarea consists of about 35,000 acres of land between State Highways 99 and 65, about six miles north of Bakersfield and corresponds with the CWD. It is reasonable to apply these limits for beneficial use of water for irrigated agriculture for discharges to land within the CWD (Discharge 002).

42. The Basin Plan states in part that:

Policies regarding the disposal of oil field wastewater are:

- Maximum salinity limits for wastewaters in unlined sumps overlying groundwater with existing and future probable beneficial uses are 1,000 umhos/cm EC, 200 mg/L chlorides, and 1 mg/L boron, except in the White Wolf subarea where more or less restrictive limits apply. The limits for the White Wolf subarea are discussed in the “Discharges to Land” subsection of the “Municipal and Domestic Wastewater” section.

- Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives.

43. At the request of the NKWSD, the Regional Water Board conducted public hearings in 1985 to determine appropriate limits for state and federal waters conveyed in canals serving the NKWSD and CWD to encourage reclamation of produced water and fully protect citrus and other sensitive crops grown in both districts. The Regional Water Board adopted NPDES permits specifying that supplies of the NKWSD comply with the following quality to protect such crops:

EC	700 umhos/cm
Chloride	106 mg/L
Boron	0.5 mg/L

44. The Basin Plan states that the maximum average annual increase in salinity measured as EC shall not exceed 6 umhos/cm per year for groundwater within the Poso Groundwater Hydrographic Unit. The Poso Creek Subarea and CWD are both within the Poso Groundwater Hydrographic Unit.
45. **pH:** The Basin Plan numeric water quality objective states that the pH “...*shall not be depressed below 6.5 nor raised above 8.3.*” Effluent limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.
46. **Oil and Grease:** VWDC receives wastewater from facilities subject to 40 CFR § 435.50, Oil and Gas Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory. 40 CFR 435.52 specifies that a daily maximum oil and grease effluent limit of 35 mg/L is best practical control technology currently available (BPT). The Board has determined, based on Best Professional Judgment (BPJ), that daily maximum effluent limitations for oil and grease are necessary for the protection of water quality and shall be consistent with limitations imposed on facilities discharging wastewaters to VWDC. Effluent limitations for oil and grease are included in this Order and are technology-based limitations based on BPJ and that represent BPT.
47. **Conductivity @ 25 °C (EC):** WDRs Order No. 96-009 requires that the EC of the discharge not exceed a daily maximum of 1,200 umhos/cm and a monthly average of 1,100 umhos/cm. The VWDC has requested that the limitations for EC at Discharge 001 be raised to a daily maximum of 1,300 umhos/cm and a monthly average of 1,250 umhos/cm. In response to a request for demonstration that the requested changes would not adversely affect water quality or cause a violation of water quality objectives, the Discharger and Chevron submitted the 2003 Study (Finding No. 34). Neither the 1994 Study nor 2003 Study indicate the requested EC limitations will not cause a gross annual increase in groundwater EC in excess of the 6 umhos/cm per year allowed by the Basin Plan. Therefore, this Order restricts EC for Discharge 001 to 1,200 umhos/cm (daily maximum) and 1,100 umhos/cm (monthly average) and requires further study and a report to address consistency with the degradation rate. Further, prior to the

Regional Water Board's reconsideration of an increase in flow or EC, it is appropriate that the Discharger provide technical documentation and other information that the gross annual average increase in groundwater EC will not be caused to exceed 6 umhos/cm by the requested increase. Alternatively, if the proposed increase or the cumulative effect of increases of multiple discharges will likely result in an increase greater than 6 umhos/cm, it is appropriate that the Discharger provide technical documentation and other supporting information that quantifies the projected increase and demonstrates it to be consistent with Resolution 68-16 and the California Environmental Quality Act, and otherwise a reasonably complete proposal for a Basin Plan Amendment. The 1,000 umhos/cm EC limits/specifications for Discharges 002 and 003 are consistent with Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 41 and 42).

48. **Boron:** Order No. 96-009 contains monthly average limitations for boron of 1.0 mg/L and daily maximum limitations of 1.2 mg/L respectively. VWDC's RWD requests raising the limitations for boron based on the quality of wastewater entering VWDC's treatment system. Calculated potential increases in groundwater boron concentrations are small and do not consider that significant attenuation of boron in the soil column can occur as irrigation waters percolate to groundwater. This Order contains boron limitations for Discharge 001 of 1.5 mg/L (monthly average) and 1.6 mg/L (daily maximum). The 1.0 mg/L boron limits/specifications for Discharges 002 and 003 are consistent with Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 41 and 42).
49. **Chloride:** WDRs Order No. 96-009 contains monthly average limitations for chloride of 80 mg/L and daily maximum limitations of 100 mg/L. The VWDC's RWD requests raising the limitations for chloride at Discharge 001. This Order contains chloride limitations for Discharge 001 of 100 mg/L (monthly average) and 125 mg/L (daily maximum). The effluent limitations for Discharge 001 are more restrictive than applicable Basin Plan limitations. The 200 mg/L chloride limits/specifications for Discharges 002 and 003 are consistent with the Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin (Finding Nos. 41 and 42).
50. **Arsenic:** The Basin Plan includes a water quality objective that "*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*" Groundwater recharge is a beneficial use of the receiving stream with the groundwater having a designated beneficial use of municipal supply. The maximum observed effluent arsenic concentration from VWDC was 55 ug/L. The maximum observed receiving water arsenic concentration was 6 ug/L. Arsenic in the discharge to Reservoir B exceeds the USEPA Primary Maximum Contaminant Level (MCL) of 10 µg/L. Pursuant to the Safe Drinking Water Act, the California Department of Health Services (DHS) must revise the arsenic MCL in Title 22 CCR to be as low or lower than the USEPA MCL. Under conditions where VWDC and Chevron are discharging at capacity, the concentration of arsenic in the discharge to Poso Creek (Discharge 003) could exceed the MCL. Applying the Basin Plan's "Policy for Application of Water Quality Objectives," to protect the future municipal and domestic water use of groundwater, it is

reasonable to apply the USEPA MCL for arsenic to discharges to Poso Creek, as water discharged to the creek is managed to recharge groundwater. An Effluent Limitation for arsenic is included in this Order and is based on protection of the beneficial use of groundwater recharge and municipal and domestic water supply, the Basin Plan water quality objective for chemical constituents, and toxicity; and the USEPA Primary MCL.

51. The Clean Water Act, Sections 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Water Board adopted numeric criteria in the Basin Plan. The Basin Plan is a regulatory reference for meeting the State and federal requirements for water quality control (40 CFR 131.20). Resolution 68-16, the Antidegradation Policy, does not allow changes in water quality less than that prescribed in Water Quality Control Plans (Basin Plans). The Basin Plan states that; “The numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” This Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Biostimulatory Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Radioactivity, Salinity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity and Turbidity.

#### *GENERAL*

52. Section 13267 of the California Water Code states, in part, “(a) A regional board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region” and “(b) (1) In conducting an investigation..., the regional board may require that any person who... discharges... waste...that could affect the quality of waters 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.” The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order

and the attached Monitoring and Reporting Program are necessary to determine compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

53. The Regional Water Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The Fact Sheet, Monitoring and Reporting Program No. R5-2006-0124, and Attachments A through D are a part of this Order.
54. The USEPA and the Regional Water Board have classified this discharge as a minor discharge.
55. Except for the oil and grease discharged to the concrete tank, this discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq., (hereafter Title 27) pursuant to Section 20090(b) for the following reasons:
  - a. The Regional Board is issuing these waste discharge requirements, which implement the Basin Plan;
  - b. The Discharger will comply with these waste discharge requirements; and
  - c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.
56. The oil and grease removed from produced water is a designated waste as defined in Title 27 and subject to the full containment specifications therein. However, the concrete tank that contains the oil and grease is a fully enclosed facility of limited extent and operated in a manner that precludes discharge of the designated waste, which is prohibited by this Order. Accordingly, it is exempt from the prescriptive and performance specifications of Title 27 pursuant to section 20090(i) thereof. The Wemco units are similarly exempt.
57. Pursuant to California 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.
58. This Regional Water Board considered degradation that could be caused by discharges of oilfield wastewater to land, groundwater, and surface water and determined degradation that results from discharges that comply with EC, chloride, and boron effluent limits of 1,000 umhos/cm, 200 mg/L, and 1.0 mg/L, respectively, as reasonable and of maximum benefit to the people of the State. The Basin Plan indicates that higher effluent limits may be considered if a discharger first demonstrates to this Regional Water Board that the discharge with higher limits will not substantially affect water quality or cause it to exceed water quality objectives. Such an exception was previously authorized under WDRs Order No. 96-009 and is conditionally continued by the proposed permit.

The CWD must manage the blended discharges so they will not substantially affect water quality and violate water quality objectives. A discharge for reclamation in a water short area is considered of maximum benefit to the people of the State as long as water quality objectives are

achieved. The discharge as conditioned in the proposed Order is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

59. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.

The discharge to land is an existing project and thus exempt from CEQA pursuant to Title 14, Chapter 3, CCR, Section 15301 (Existing Facility).

60. The Discharger and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
61. All comments pertaining to the discharge were heard and considered in a public meeting.
62. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided USEPA has no objections.

**IT IS HEREBY ORDERED** that Order No. 96-009 is rescinded and pursuant to CWC Sections 13623, 13267, 13337, and 13383, Valley Waste Disposal Company and Cawelo Water 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, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

**A. Discharge Prohibitions:**

1. Discharge of wastewater at a location or in a manner different from that described and approved herein is prohibited.
2. The by-pass or overflow of pollutants to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)”].
3. Discharge of waste classified as ‘hazardous’ as defined in Section 2521(a) of Title 23, CCR, Section 2510 et seq., is prohibited.
4. Discharge of waste classified as ‘designated’ as defined in CWC Section 13173, except as allowed by valid waste discharge requirements, is prohibited.
5. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

**B. Discharge Specifications:**

1. Effluent from Discharge 001 (from VWDC into Reservoir B) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Flow	mgd	---	4.3
Electrical Conductivity	umhos/cm	1,100	1,200
Chloride	mg/L	100	125
Boron	mg/L	1.5	1.6
Oil and Grease	mg/L	---	35

2. Effluent from Discharge 002 (from Reservoir B outfall into the Distribution Canal) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	umhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0

**C. Effluent Limitations**

1. Effluent from Discharge 003 (from the Distribution Canal outfall into Poso Creek) shall not exceed the following:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	umhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0
Arsenic	ug/L	---	10
Oil and Grease	mg/L	---	Non-Detect

2. Discharge 003 shall not have a pH less than 6.5 nor greater than 8.3.

3. Survival of aquatic organisms in 96-hour bioassays of undiluted waste from Discharge 003 shall be no less than:

Minimum for any one bioassay: 70%

Median for any three or more consecutive bioassays: 90%

**D. Receiving Water Limitations:**

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

Discharge 003 shall not cause the following conditions downstream of the Poso Creek outfall structure:

1. Concentrations of dissolved oxygen (DO) to fall below 7.0 mg/L. The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95<sup>th</sup> percentile concentration shall not fall below 75 percent of saturation. Where ambient DO is less than these objectives, discharges shall not cause a further decrease in DO concentrations.
2. Un-ionized ammonia to be present in amounts that adversely affect beneficial uses or that exceed 0.025 mg/l (as N).
3. Biostimulatory substances to be present in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
4. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses.
5. Discoloration that causes nuisance or adversely affects beneficial uses.
6. Suspended sediment load and suspended sediment discharge rate in such a manner that causes nuisance or adversely affects beneficial uses.
7. The turbidity to increase as follows:
  - a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
  - b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

- c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
  - d. More than 10 percent where natural turbidity is greater than 100 NTUs.
8. The ambient pH to fall below 6.5, exceed 8.3, or changed by more than 0.3 units.
  9. The ambient temperature to increase more than 5 °F.
  10. Deposition of material that causes nuisance or adversely affects beneficial uses.
  11. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
  12. Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
  13. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
  14. Violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board pursuant to the CWA and regulations adopted thereunder.
  15. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
  16. Chemical constituents in concentrations that adversely affect beneficial uses.
  17. Pesticides in concentrations that adversely affect beneficial uses.
  18. Water in Poso Creek downstream of the CWD to exceed the following:

EC	700 umhos/cm
Chloride	106 mg/L
Boron	0.5 mg/L

**E. Groundwater Limitations:**

The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations that adversely affect beneficial uses. In no case shall the discharge, in combination with other sources, cause underlying groundwater to increase in EC by more than 6 umhos/cm per year.

**F. Provisions:**

1. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
2. The Discharger shall comply with Monitoring and Reporting Program No. R5-2006-0124, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
3. Storage of wastewater in the VWDC's storage ponds shall be limited to the minimum time necessary to complete maintenance on the CWD distribution facilities.
4. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
5. All technical reports 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. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
6. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a work plan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Water Board evaluation, conduct the TRE. As a result of a TRE, this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State

Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric toxicity limitation.

7. The Discharger shall comply with the following time schedule to assure compliance with the monitoring and reporting requirements of Monitoring and Reporting Program No. R5-2006-0124:

<u>Task No.</u>	<u>Description</u>	<u>Compliance Date</u>
a.	Submit work plan and time schedule for installation of continuous flow and EC meters at Discharge 001 as required by this Order.	<b>8 January 2007</b>
b.	Begin installation of continuous flow and EC meters.	<b>12 March 2007</b>
c.	Full compliance with the terms of monitoring and reporting specified by this Order.	<b>5 June 2007</b>

The Discharger shall submit to the Regional Water Board on or before the compliance due date a written report detailing compliance or non-compliance with the specified date and task. If non-compliance is being reported, the reasons for such non-compliance shall be stated along with an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the schedule.

8. The Discharger shall comply with the following time schedule to conduct a study to evaluate whether the projected gross annual incremental increase in groundwater EC resulting from the authorized discharges to the CWD combined with other sources of salt native to and imported into the CWD does not exceed 6 umhos/cm for CWD or the Poso Groundwater Hydrographic Unit:

<u>Task No.</u>	<u>Description</u>	<u>Compliance Date</u>
a.	Submit a proposed work plan and time schedule describing methods that will be used to study and quantify the potential gross annual incremental increase in groundwater EC. The work plan shall propose to use or develop an appropriate salt balance/groundwater model, or provide a detailed description of technical information and methods that will be used to support the study.	<b>5 February 2007</b>

<u>Task No.</u>	<u>Description</u>	<u>Compliance Date</u>
b.	Implement approved work plan and time schedule.	<b>30 days</b> following Executive Officer approval of Task a.
c.	Submit a status report.	<b>15 June 2007</b> <b>15 December 2007</b> <b>15 June 2008</b>
d.	Complete study and submit results in the form of a technical report.	<b>8 December 2008</b>

The work plan and technical report required by this provision are subject to the requirements of Provision F.5. Based on the results of the required study, this Order may be reopened and modified to ensure compliance with the Basin Plan.

9. As a prerequisite to consideration of any further increases in the volumes or pollutant concentrations of discharges of oilfield produced water to the CWD, the Discharger must conduct a study to evaluate and quantify the impacts of such discharges on both the general environment and on surface water and groundwater and demonstrate that the combined effects of such discharges comply with the Basin Plan and satisfy CEQA. At minimum, the study must:
  - a. Quantify all potential sources of pollutants of concern (volumes, concentrations, and loadings) imported into the CWD and applied to CWD land,
  - b. Quantify the potential volumes and concentrations of pollutants of concern in water that will be distributed throughout the CWD and discharged to Poso Creek,
  - c. Quantify projected concentrations of pollutants of concern (including EC, boron, and chloride) in CWD groundwater and Poso Creek,
  - d. Quantify the gross annual rate of increase of pollutants in groundwater. Projected annual increases should be based on the results of appropriate and validated mass balance/groundwater/surface water models, and
  - e. Demonstrate that the overall management of the system will result in compliance with the Basin Plan, Resolution 68-16, and CEQA.

Alternatively, if the study indicates that the annual gross EC rate of increase will not comply with the Basin Plan, the Discharger may provide additional information necessary to demonstrate that the groundwater basin management plan of CWD is consistent with Resolution 68-16 and CEQA, and warrants a Basin Plan amendment to make it consistent with the Basin Plan.

- The Executive Officer shall determine whether the study results merit that this Order should be reopened to reconsider exception to oilfield produced water effluent limits or whether the information provided is suitable to support a Basin Plan amendment for consideration by the Regional Water Board of different water quality objectives for annual degradation.
10. Exceedances of monthly average and daily maximum effluent limitations based on results of a single sampling event may be considered violations of the requirements of this Order. The Discharger may sample more frequently than required by the attached Monitoring and Reporting Program to provide a more representative database and possibly lower reported average constituent values to demonstrate compliance with effluent limitations.
  11. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.
  12. When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.
  13. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by Monitoring and Reporting Program No. R5-2006-0124.
  14. This Order may be reopened for modification, or revocation and reissuance based on conditions that necessitate a major modification of a permit, as described in 40 CFR 122.62 and including:
    - a. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
    - b. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
  15. The NPDES requirements of this Order expire on **7 December 2011** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date an application for renewal of waste discharge requirements if it wishes to continue the surface water discharge (i.e. Discharge 003).

16. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Board (Division of Water Rights).
17. In the event of any change in control or ownership of land or waste discharge 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 this office.

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, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

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 7 December 2006.

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PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2006-0124

NPDES NO. CA0081311

FOR  
VALLEY WASTE DISPOSAL COMPANY  
AND  
CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – RESERVOIR B  
KERN COUNTY

The Discharger shall not implement any changes to this Program unless and until the Regional Water Board or Executive Officer issues a revised Monitoring and Reporting Program. Changes to sampling locations shall be established with concurrence of the Regional Water Board staff, and a description of the sampling stations shall be attached with said concurrence to the Discharger's copy of this Order.

Sample collection, storage, and analyses shall be performed according to 40 CFR Part 136 or other methods approved and specified by the Executive Officer of the Regional Water Board. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the Standard Provisions, Provisions for Monitoring.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS) or a laboratory waived by the Executive Officer from obtaining a certification for these analyses by the DHS. The director of the laboratory whose name appears on the certification or his or her laboratory supervisor who is directly responsible for analytical work performed shall supervise all analytical work, including appropriate quality assurance/quality control procedures in his or her laboratory, and shall sign all reports of such work submitted to the Regional Water Board.

For California Toxics Rule (CTR) constituents (priority pollutants), the Discharger shall report sample results as required by the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of the California (State Implementations Plan or SIP) Section 2.4. The Discharger's laboratory must meet minimum levels in the SIP Appendix 4.

**EFFLUENT MONITORING**

Effluent samples shall be representative of the volume and nature of the discharge. Time of collection of the samples shall be recorded.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed below, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

If results of monitoring a pollutant appear to violate monthly average limitations, the frequency of sampling should be increased to daily until compliance is verified. If effluent monitoring detects a pollutant at concentrations greater than a daily maximum limitation, the Discharger should resample and reanalyze the discharge immediately after receiving knowledge of the exceedance. If the Discharger does not increase monitoring frequency for instances of apparent violation, compliance with Daily Maximum and Monthly Average limitations will be determined with available monitoring data in accordance with Provision F.8.

*DISCHARGE 001*

Effluent samples shall be collected downstream from the treatment system and prior to discharge to Reservoir B. Effluent monitoring for Discharge 001 shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Recorded	Continuous <sup>1</sup>
Conductivity (EC) @ 25°C	µmhos/cm	Recorded	Continuous <sup>2</sup>
Boron	mg/L	Grab	Weekly
Chloride	mg/L	Grab	Weekly
Oil and Grease	mg/L	Grab	Monthly
Total Suspended Solids	mg/L	Grab	Monthly
pH	pH units	Grab	Monthly
Standard Minerals <sup>3</sup>	mg/L	Grab	Monthly

<sup>1</sup> Continuous flow monitoring systems shall be operational by no later than the date specified in the time schedule of Provision F.7. Until that time, grab samples shall be collected and analyzed at least daily.

<sup>2</sup> Continuous EC monitoring systems shall be operational by no later than the date specified in the time schedule of Provision F.7. Until that time, grab samples shall be collected and analyzed at least weekly.

<sup>3</sup> Includes TDS, Sulfate, Nitrate, Bicarbonate Alkalinity, Carbonate Alkalinity, Calcium, Magnesium, Potassium, Sodium, Hardness, Silica, Iron, Ammonia, and Phosphate.

*DISCHARGE 002*

Effluent samples shall be collected immediately downstream of the Reservoir B outfall structure. Effluent monitoring for Discharge 002 shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Computed	Daily
Conductivity (EC) @ 25°C	µmhos/cm	Grab	Weekly
Boron	mg/L	Grab	Weekly
Chloride	mg/L	Grab	Weekly
Standard Minerals <sup>1</sup>	mg/L	Grab	Monthly

<sup>1</sup> Includes TDS, Sulfate, Nitrate, Bicarbonate Alkalinity, Carbonate Alkalinity, Calcium, Magnesium, Potassium, Sodium, Hardness, Silica, Iron, Ammonia, and Phosphate.

*DISCHARGE 003*

Effluent samples shall be collected from the outfall structure from the Distribution Canal, prior to entry into Poso Creek. Effluent monitoring for Discharge 003 shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Computed	Daily
Conductivity (EC) @ 25°C	µmhos/cm	Grab	Weekly
Boron	mg/L	Grab	Weekly
Chloride	mg/L	Grab	Weekly
Oil and Grease	mg/L	Grab	Monthly
Total Suspended Solids	mg/L	Grab	Monthly
Antimony	µg/L	Grab	Monthly <sup>1</sup>
Arsenic	µg/L	Grab	Monthly
Temperature	°C (°F)	Grab	Monthly
Turbidity	NTU	Grab	Monthly
pH	pH units	Grab	Monthly
Standard Minerals <sup>2</sup>	mg/L	Grab	Monthly
Acute Toxicity	See Below		Twice per year

<sup>1</sup> If after twelve consecutive months of monitoring, the sample test results are ND (below MDL, PQL, or DLR, whichever is the lowest, and the detection limit is at or below the SIP required ML, and upon approval of the Executive Officer, the monitoring frequency may be reduced or eliminated.

<sup>2</sup> Includes TDS, Sulfate, Nitrate, Bicarbonate Alkalinity, Carbonate Alkalinity, Calcium, Magnesium, Potassium, Sodium, Hardness, Silica, Iron, Ammonia, and Phosphate.

**Acute Toxicity:**

All bioassays shall be performed according to *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition*, October 2002 (or latest edition) using *Pimephales promelas* with no pH adjustment, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

### THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002, EPA-821-R-02-013* (or latest edition). Chronic toxicity samples shall be collected at the outfall of Discharge 003 prior to its entering Poso Creek. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of sample collection shall be recorded. Dilution and control waters shall be from Poso Creek from an area unaffected by the discharge in the receiving waters. Standard dilution water can be used if the receiving water source exhibits toxicity and is approved by the Executive Officer. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

**Species:** *Pimphales promelas, Ceriodaphnia dubia and Selenastrum capricornutum*

**Frequency:** *Twice per year*

**Dilution Series:**

	Dilutions (%)					Controls	
	100	75	50	25	12.5	<i>Creek Water</i>	<i>Lab Water</i>
% Effluent	100	75	50	25	12.5	0	0
% Dilution Water*	0	25	50	75	87.5	100	0
% Lab Water	0	0	0	0	0	0	100

\* Dilution water shall be from Poso Creek. The dilution series and dilution water may be altered upon approval of Regional Water Board staff.

### PRIORITY POLLUTANT MONITORING

The State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). **The SIP states that the Regional Water Boards will require periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established.** Accordingly, the Regional Water Board is requiring, as part of this Monitoring and Reporting Program, that the Discharger conduct **effluent monitoring at Discharge 003 and receiving water monitoring at Poso Creek** for priority pollutants **at least annually**. If another discharger (i.e. Chevron) conducts priority pollutant monitoring which is identical to, or exceeds the

priority pollutant monitoring requirements specified herein, the Discharger may, at its discretion, submit results of such monitoring in lieu of separate monitoring. The list of priority pollutants and required minimum levels (MLs) (or criterion quantitation limits) is included in **Attachment D**. The Discharger must analyze **pH and hardness** at the same time as priority pollutants.

All analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the USEPA MDL determined by the procedure found in 40 CFR Part 136. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory.
- b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
- c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration." Numerical estimates of data quality may be by percent accuracy (+ or – a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

### RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Samples shall be collected at approximately the same time as the collection of effluent samples. Receiving water monitoring shall include at least the following and be performed at the sample stations associated with the approved discharge point in use:

<u>Sampling Station</u>	<u>Description</u>
R-1	At Lerdo Canal/Cawelo Pump Station B
R-2	Poso Creek – State Highway 65 gauging station
R-3	Poso Creek, 100 feet west of State Highway 99

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed below, after which the frequencies of analysis in the schedule shall apply for the duration of each such intermittent discharge. Monitoring at Stations R-2 and R-3 is not required unless discharge is occurring from Discharge 003 and measurable flow is passing or anticipated to pass through Station R-3. If another discharger (i.e., Chevron) conducts receiving water monitoring which is identical to, or exceeds the receiving water monitoring requirements specified herein, the Discharger may, at its discretion, submit results of such monitoring in lieu of separate monitoring.

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Computed	Daily
EC	µmhos/cm	Grab	Weekly
Boron	mg/L	Grab	Weekly
Chloride	mg/L	Grab	Weekly
pH	standard units	Grab	Weekly
Temperature	°C (°F)	Grab	Monthly
Turbidity	NTU	Grab	Monthly
Standard Minerals	mg/L	Grab	Monthly

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions, in the wetlands and all sampling locations. Attention shall be given to the presence or absence of:

- a. Floating or suspended matter
- b. Discoloration
- c. Bottom deposits
- d. Aquatic life
- e. Visible films, sheens or coatings
- f. Fungi, slimes, or objectionable growths
- g. Potential nuisance conditions

Notes on receiving water conditions shall be summarized in the monitoring report.

### **REPORTING**

Monitoring results shall be submitted to the Regional Water Board by the **first day of the second calendar month following sample collection**. Quarterly and annual monitoring reports shall be submitted by the **first day of second month following each calendar quarter or year** respectively. Reports shall be submitted whether or not there is a discharge. Failure to submit reports will result in the assessment of mandatory minimum penalties pursuant to CWC Section 13385. Pursuant to CWC Section 13385.1, any monitoring report submitted more than 30 days late is subject to a Mandatory Minimum Penalty.

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

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall be indicated on the Discharge Monitoring Report Form.

MONITORING AND REPORTING PROGRAM NO. R5-2006-0124  
VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – RESERVOIR B  
KERN COUNTY

By **1 February** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

- The names and general responsibilities of all persons employed to operate the produced water treatment systems.
- The names and telephone numbers of persons to contact regarding the facility for emergency and routine situations.
- A statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).
- A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the WTRS as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

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

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
7 December 2006  
(Date)

## INFORMATION SHEET

ORDER NO. R5-2006-0124  
VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – RESERVOIR B  
KERN COUNTY

### I. INTRODUCTION

Valley Waste Disposal Company (hereafter VWDC) owns and operates an oil field produced water reclamation facility (Kern Front No.2 treatment plant) serving oil field operators in the Kern Front oil field. The site is south of James Road and Oil Fields Road near Bakersfield. Produced water from the oil field is treated to remove oil, grease, and inorganic sediments and then conveyed to the Cawelo Water District (CWD) for reclamation on farm land, and for groundwater recharge within the CWD. VWDC and CWD are hereafter collectively referred to as the Discharger. During periods when the CWD's water storage and conveyance facilities are shut down for maintenance, VWDC stores produced water in storage ponds on VWDC's property. The Discharger has submitted a Report of Waste Discharge (RWD) dated 29 June 2000 in application for a permit renewal to discharge pollutants under the National Pollutant Discharge Elimination System (NPDES) from its Kern Front No. 2 treatment plant into CWD Reservoir B. Information supplementing the RWD was provided on 24 August 2000.

The Kern Front oil field encompasses an area of about 8.6 square miles (5,495 acres) in the eastern half of T28S, R27E, MDB&M, about 3 miles north of Oildale in Kern County. Discovered by Standard Oil Company in 1917, the field was developed by a number of different oil companies, and in 1929 the field reached a maximum oil production level of 4.5 million bbls/year. Production subsequently diminished to its current level of 2.2 million bbls/year. Like wells in other nearby oil fields such as the Kern River Oil Field, and Mount Poso Oil Field, wells in the Kern Front Oil Field produce large quantities of water commingled with recovered oil. In 1952 the ratio of produced water to bbls oil produced was about 5:1<sup>1</sup>. In 1973, the ratio was about 8.5:1<sup>2</sup>, and in 1994 the water to oil ratio was about 13.4:1.

VWDC was formed around 1932 to serve oil companies in management of production wastes. It began operating its Kern Front oil field facility in 1955 when it diverted the conveyance channel to a gravel pit on the south side of James Road in Section 27, T28S, R27E. VWDC first became regulated by the Regional Water Board when Waste Discharge Requirements (WDRs) Order No. 74-233 was adopted in March 1974. Order No. 74-233 allowed for a maximum discharge of 0.84 mgd to 20 acres of percolation/evaporation ponds. In 1980, VWDC constructed a pipeline to CWD Reservoir B and submitted an RWD in support of an application for an NPDES permit. WDRs Order No. 81-113, the first NPDES permit, then regulated VWDC's discharge to its percolation ponds and the discharge to the CWD Reservoir B. Order No. 81-113 was updated and renewed by WDRs Order No. 90-162. Order No. 90-162 was then updated and renewed by WDRs Order No. 96-009. Most of the year VWDC conveys all of its wastewater to the CWD, but VWDC stores the water in ponds for up to four weeks per year when it is necessary to accommodate Reservoir B shutdown and related maintenance activities in the CWD.

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<sup>1</sup> Division of Oil and Gas, *Summary of Operations, California Oil Fields*, Vol. 38, No. 2, 1952, p. 31

<sup>2</sup> Division of Oil and Gas, *California Summary of Operations*, Vol. 59, No. 2, 1973, p. 99

In June 1970, the Department of Water Resources (DWR) submitted a *Report on Poso Creek Water Quality Evaluation, Kern County*. The report evaluated the effect of produced water discharges from the Mt. Poso, Poso Creek, Round Mountain, and Kern Front Oil Fields on the Poso Creek Basin. The quality of the oil field discharges from the various oil fields impacting the basin varied widely. Mt. Poso and Round Mountain generated produced water with chlorides of 500 to 1,100 mg/L. Discharges for the Poso Creek oil field generated produced water with chloride concentrations from 215 to 715 mg/L. Chloride concentrations in produced water from the Kern Front oil field ranged from 60 to 100 mg/L. In 1969, chlorides in oil field discharges (720 mg/L average) totaled 26,050 tons, corresponding roughly to 75,000 tons of salt. Measured chlorides in groundwater samples from a well near the center of CWD indicated that chloride in groundwater increased from less than 20 mg/L in 1916 to over 600 mg/L in 1969. This report served as a basis for a Regional Water Board policy Resolution adopted on 23 November 1970. Resolution 71-122 limited the maximum EC, chloride, and boron concentration in oil field “waste waters discharged to Poso Creek or its tributaries and to... unlined sumps...” to 1,000 µmhos/cm, 200 mg/L and 1.0 mg/L, respectively. The Regional Water Board’s implementation of Resolution 71-122 effectively stopped uncontained discharge of oil field wastewater with unacceptably high salt concentrations in an area it called the Poso Creek subarea (which is not to be confused with the Poso Creek Hydrologic Area).

Follow-up sampling by the CWD shows the impact of the high salt oil field discharges persisted in 1980. CWD’s 1980 chloride concentration map shows a degraded area along Lerdo Highway with chloride concentrations exceeding 400 mg/L.

The Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) contains water quality objectives for surface and groundwaters in the Basin. The Basin Plan incorporates the Poso Creek policy (Resolution 71-122). The Basin Plan notes the entire basin is closed, meaning that salts discharged within the basin remain there. It recognizes that salt in basin groundwater will increase over time and adopts a strategy of controlled degradation (as opposed to prevention). As a measure of the acceptable rate of degradation the Basin Plan establishes as a water quality objective a maximum annual degradation rate no greater than 6 µmhos/cm per year for the Poso Groundwater Hydrographic Unit (Hydrologic Area Nos. 558.70, 558.80, and 558.90). The VWDC discharge occurs in the Poso Creek area, which is in turn within the North Kern Hydrologic area (558.80) of the Poso Groundwater Hydrographic Unit.

In 1982, the Regional Water Board adopted Resolution No. 82-136, amending the Basin Plan to allow VWDC and other similar discharges to exceed Basin Plan effluent limits to facilitate use for irrigation and other beneficial uses where the exception would not cause exceedance of a water quality objective. The Basin Plan, therefore, provides some flexibility to allow agricultural use of oil field wastewater when Basin Plan salinity limits to be exceeded provided the discharger first successfully demonstrates to the Regional Water Board that the proposed discharge will not substantially affect water quality nor cause a violation of a water quality objective.

VWDC receives oil production wastewater at its Kern Front No. 2 treatment plant from companies operating oil wells in the Kern Front oil field. The treatment plant is in the western half of Section 27,

T28S, R27E, MDB&M. The companies presently conveying oil field produced water to VWDC via pipeline for final treatment and disposal are Bellaire Oil Company (Bellaire) and Vintage. VWDC currently receives about 4.0 million gallons per day (mgd) of produced water from Vintage and Bellaire. Approximately 85% of the produced water received by VWDC originates from Vintage.

Vintage currently discharges its produced water to VWDC through a pipeline. Vintage historically discharged produced water to VWDC through series of unlined channels before construction of the pipeline and it retains an active NPDES permit for this. Discharge of up to 4.0 mgd of produced water to the unlined channels is regulated by WDRs Order No. 96-277 (NPDES No. CA0083852). On 16 May 2001, Vintage submitted a RWD to renew Order No. 96-277. Order No. 96-277 was administratively extended on 19 November 2001 and a new order is currently being drafted. At the historic discharge rate to the unlined channels, over half of the discharged produced water percolated, evaporated, and evapotranspired before reaching VWDC. Vintage ceased discharge to the unlined channels in July 2003 but recently resumed intermittent discharges. Vintage also recently advised that it wishes to reduce this allowed discharge to 0.68 mgd. Vintage also disposes of a portion of its produced water through deep well injection using Class II injection wells. Class II wells are regulated by the California Division of Oil, Gas, and Geothermal Resources.

Vintage uses steam injection to assist in crude oil extraction. Increases in the price of crude oil over the past several years have made it economical for Vintage to employ steam more extensively in its oil extraction operations. Use of steam tends to leach salts such as boron and chlorides out of the formations, and increases the EC of produced water. Vintage's increased use of steaming will increase the overall volume of produced water and the salinity and concentrations of boron and chlorides in produced water discharged to VWDC. To implement its plan, VWDC has requested that the permit allow the increased flow and greater effluent limitations for EC and boron.

Wastewater received by VWDC is treated for the removal of oil and grease and inorganic sediment. Four unlined ponds, in series, provide initial gravity separation. Floating oil and grease in the ponds is periodically skimmed and removed. VWDC proposes to add a second Wemco air flotation unit to supplement its existing Wemco unit. The two Wemco units will provide final polishing for VWDC's effluent. The Wemco units use air flotation techniques combined with chemical coagulants and mechanical agitation to remove free oil and grease. After final polishing, wastewater is discharged to a concrete-lined storage pond and then pumped to Reservoir B. The two Wemco units will have a combined total design treatment capacity of 7.4 mgd. Oil and grease removed by the Wemco units is transferred to a concrete-lined collection sump. According to a sludge management plan submitted on 29 March 1996, oil and grease that accumulates in the sump is removed with a vacuum truck approximately three times per year and returned to the oil field operators to be processed as crude oil.

VWDC conveys its treated wastewater from the storage pond through a 20-inch, 3.4-mile pipeline to the CWD's Reservoir B. Reservoir B is an integral part of the CWD's water distribution system, which consists of 5.3 miles of lined canal and 38 miles of pipeline ranging in size from 15" to 60." Reservoir B supplies irrigation water used in the CWD via the Distribution Canal.

On 24 February 1995, the Regional Water Board adopted WDRs Order No. 95-031 (NPDES Permit No. CA0082295) for Texaco Exploration and Production Inc. (Texaco) and CWD. Order No. 95-031 allows Texaco to discharge up to 18 mgd (five-year average) of oil-field produced water from the Kern River oil field into Reservoir B. CWD is required by Order No. 95-031 to manage the water through management practices and blending to ensure protection of applicable beneficial uses. In July 1999, Texaco submitted an RWD in support of renewing Order No. 95-031. The July 1999 RWD proposes increasing the permitted maximum daily discharge to 27.3 mgd. Order No. 95-031 was administratively extended on 19 January 2000, and a new order is currently being drafted. In 2001 Texaco merged with Chevron U.S.A., Inc. Texaco subsequently changed its name to ChevronTexaco and then to Chevron U.S.A., Inc. (Chevron). In 2005 Chevron informally requested that Order No. 95-031 be revised to increase the permitted maximum daily discharge into Reservoir B to approximately 50 mgd. However, Chevron has not yet submitted an amended RWD in support of this proposed flow increase.

Produced water from Chevron and VWDC discharged to Reservoir B is blended with water from other surface and groundwater supplies of CWD to meet the effluent and receiving water limits set forth in this Order and Order No. 95-031. Surface water blended into Reservoir B consists of Kern River, State Water Project, and Central Valley Project waters delivered from the Beardsley Canal through Lerdo Pumping Station B. Through use of its Distribution Canal, in the winter months when irrigation demand is low CWD discharges the blended water to Poso Creek, a water of the United States, in a manner intended to maximize recharge of groundwater within the CWD.

The CWD's Reservoir B, Distribution Canal, and other facilities may be shut down for maintenance or emergency reasons for up to four weeks each year. At such times, VWDC is unable to discharge to Reservoir B and instead diverts its wastewater to on-site storage ponds. The fourteen on-site storage ponds reportedly have 300 acre-feet (98 million gallons) of combined available storage capacity. Fifteen of the sixteen storage ponds are unlined. Stored wastewater not lost to percolation or evaporation is delivered to CWD's Reservoir B upon resumption of its operation.

## **II. BENEFICIAL USES OF THE RECEIVING WATER**

The Basin Plan identifies the following beneficial uses for Poso Creek: agricultural supply, water contact and non-contact water recreation, warm and cold water freshwater habitat, wildlife habitat, groundwater recharge, and freshwater replenishment.

Based on USGS Professional Report 437B and interpretation by CWD's consulting geologist, the Poso Creek recharge area extends across the CWD and is characterized as sandy surface soils overlying greater than 550 feet of continental deposits. The continental deposits consist of sandy soils with several gravel layers, and exhibit high percolation rates. Unless flow entering the CWD at the upstream gauging station is in sufficient volume to exceed the evaporation rates and infiltrative and percolative capacity of the recharge area, all waters in Poso Creek will recharge the groundwater within the CWD.

The CWD covers approximately 45,000 acres and is between State Highway 99 on the west and Highway 65 on the east. The CWD was formed for the purpose of obtaining a “supplemental or partial water supply” and delivering it for irrigation of crops within the CWD. The CWD uses imported surface water conjunctively with pumped groundwater and produced water to irrigate the agricultural lands of the CWD. Water in the CWD is used for agricultural supply.

### III. DESCRIPTION OF EFFLUENT

Data from the discharge monitoring reports submitted from 2001 through 2005 characterize the discharges as follows:

#### Discharge 001 (from VWDC into CWD Reservoir B)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	1.61
Electrical Conductivity @ 25 °C	µmhos/cm	1030
Chloride	mg/L	70.7
Boron	mg/L	0.71
Oil and Grease	mg/L	9.9

#### Discharge 002 (from Reservoir B into Distribution Canal)

##### Irrigation Season (April – September)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	88.0
Electrical Conductivity @ 25 °C	µmhos/cm	338
Chloride	mg/L	46.7
Boron	mg/L	0.29

#### Discharge 002 (from Reservoir B into Distribution Canal)

##### Non-Irrigation Season (October – March)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Flow	mgd	26.0
Electrical Conductivity @ 25 °C	µmhos/cm	706
Chloride	mg/L	104.2
Boron	mg/L	0.74

#### Discharge 003 (from Distribution Canal into Poso Creek)

<u>Constituent</u>	<u>Units</u>	<u>Average Value</u>
Electrical Conductivity @ 25 °C	µmhos/cm	761
Chloride	mg/L	101.4
Boron	mg/L	0.77

#### **IV. SUMMARY OF CHANGES TO CURRENT ORDER**

This Order includes changes from the Current Order. A summary of the key changes follows.

Order No. 96-009 applied effluent limitations on VWDC discharges to CWD Reservoir B and categorized Reservoir B and the Distribution Canal downstream of Reservoir B as receiving water, a carryover from earlier determinations to protect water in the Beardsley Canal. Order No. 96-009 specified receiving water limits on waters in Poso Creek downstream of the CWD. The Order now proposed considers Reservoir B and the distribution system to be an irrigation system in which produced water is reclaimed and the surface receiving water to be just Poso Creek. The Order as now proposed considers the point source of pollutants discharged to Poso Creek to originate from VWDC and subject to appropriate performance based limits before discharge to the Reservoir B. It also considers that the oilfield pollutants in Reservoir B and the distribution system, and as applied for irrigation, will degrade underlying groundwater. Given the objectives of the CWD and its operational practices, the proposed Order contains Discharge Specifications for VWDC discharges to CWD Reservoir B (Discharge 001) and the quality of water in Reservoir B and the Distribution Canal downstream of Reservoir B (Discharge 002) discharges to land. The proposed Order also contains Effluent Limitations for pollutant discharges from the CWD into Poso Creek (Discharge 003).

#### **Effluent Limitations**

**Discharge Points:** Discharge 002 and Discharge 003 have been added as additional compliance points, and each has appropriate discharge specifications or effluent limits to ensure protection of applicable beneficial uses.

**EC:** WDRs Order No. 96-009 requires that the EC of the treated produced water discharged to Reservoir B not exceed a daily maximum of 1,200  $\mu\text{mhos/cm}$  and a monthly average of 1,100  $\mu\text{mhos/cm}$ . This exceeds effluent limitations prescribed by the Basin Plan for produced water discharges in the Poso Creek area. For the reasons described below, the proposed Order carries over EC limitations from WDRs Order No. 96-009. CWD must then manage Reservoir B to ensure compliance with the discharge specification of 1,000  $\mu\text{mhos/cm}$  that has been added to Discharge 002 and the effluent limit of 1,000  $\mu\text{mhos/cm}$  added to Discharge 003, both of which meet the Basin Plan effluent limitation. CWD must also ensure that water in Poso Creek exiting the CWD does not exceed an EC of 700  $\mu\text{mhos/cm}$ . Blending of surface water and groundwater to promote beneficial reuse of wastewater in water short areas, as is the case here, is allowed by the Basin Plan if consistent with other water quality policies (e.g., provide the expected level of treatment, comply with water quality objectives).

**Chloride:** WDRs Order No. 96-009 requires that the concentration of chloride in treated produced water discharged into Reservoir B not exceed a daily maximum of 100 mg/L and a monthly average of 80 mg/L. This Order increases the chloride discharge specifications for discharges to Reservoir B to a daily maximum of 125 mg/L and a monthly average of 100 mg/L. Similar to the EC situation, a discharge specification of 200 mg/L has been added to Discharge 002 and an effluent limit of 200 mg/L

has been added to Discharge 003 to ensure consistency with the Basin Plan. CWD must ensure that water in Poso Creek exiting the CWD does not exceed a chloride concentration of 106 mg/L.

**Boron:** WDRs Order No. 96-009 requires that the concentration of boron in treated produced water discharged to Reservoir B not exceed a daily maximum of 1.2 mg/L and a monthly average of 1.0 mg/L. This Order increases the boron discharge specifications for discharges to Reservoir B to a daily maximum of 1.6 mg/L and a monthly average of 1.5 mg/L. CWD must then manage Reservoir B to ensure compliance with the discharge specification of 1.0 mg/L that has been added to Discharge 002 and the effluent limitation of 1.0 mg/L applied Discharge 003 to comply with the Basin Plan and to ensure that water in Poso Creek exiting the CWD meets a boron concentration of 0.5 mg/L.

**Arsenic:** WDRs Order No. 96-009 has no effluent limitations for arsenic. This Order includes arsenic limitations of 10 µg/L at Discharge 003. CWD must manage Reservoir B to ensure compliance with the arsenic limitations at Discharge 003.

The Discharger requested on 29 May 2003 in a letter to the Regional Water Board that the monitoring frequency for EC be reduced from continuous to daily. In a written response to the Discharger dated 31 July 2003, Regional Water Board staff required a statistical analysis of EC monitoring data of at least the previous two years. The statistical analysis was to include an average EC value, standard deviations, and maximum and minimum EC values. The Discharger never submitted the analysis; thus, the proposed monitoring frequency for EC is carried over from Order No. 96-009.

## V. PERMIT CONDITIONS

### Basis for Groundwater Limitations

Basin Plan water quality objectives to protect the beneficial uses of groundwater include numeric objectives 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 maximum contaminant levels (MCLs) in Title 22, CCR. The Basin Plan requires the application of the most stringent objective necessary to ensure that groundwaters do 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.

State Water Resources Control Board Resolution 68-16 (Antidegradation Policy) requires the Regional Water Board in regulating discharge of waste to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that the constituents contributing to degradation be regulated to meet best

practicable treatment or control to assure that pollution or nuisance will not occur and that the highest water quality consistent with the maximum benefit to the people of the State will be maintained.

With respect to salinity, the Basin Plan acknowledges that due to the closed nature of the Tulare Lake Basin, degradation of groundwater by salts is unavoidable without an effective means for removing salts from the Basin. The Basin Plan sets forth a plan to protect groundwater in the Basin by requiring that salinity increases be kept to a minimum through measures on controllable factors that are practicable and economically feasible. For the Poso Groundwater Hydrographic Unit, the water quality objective that establishes the allowable rate of degradation from all sources is an EC increase of no more than 6  $\mu\text{mhos/cm}$  per year. The area of the Poso Groundwater Hydrographic Unit is considerably greater than the area of the CWD.

On 1 June 1994, the USEPA, US Bureau of Reclamation, State Water Board, Department of Water Resources, Department of Health Services, Conference of Directors of Environmental Health, and Water Reuse Association of California signed a *Statement of Support for Water Reclamation* and resolved that agencies would reduce reclamation disincentives and regulatory constraints on water reclamation. The Regional Water Board concurs with this statement and supports the efficient use of the State's limited water supplies provided the beneficial uses of water are maintained and water quality objectives are met.

**Groundwater throughout CWD:** The California Legislature enacted A.B. 3030 during the 1992 session, subsequently codified in California Water Code §10750, *et seq.* Water Code §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.”

Water Code §60224 empowers the CWD to take any action needed for protection and preservation of ground water supplies within the CWD including:

- The prevention of contaminants from entering CWD groundwater supplies;
- The removal of contaminants from groundwater supplies of the CWD;
- The location and characterizing of contaminants which may enter the groundwater supplies of the CWD;
- The identification of parties responsible for contamination of groundwater; and
- The performance of engineering studies.

The CWD adopted a Ground Water Management Plan (Plan) on July 21, 1994 that establishes a policy of efficient water use, conservation, and management. Action elements in the Plan include:

- Acquire and import available, supplemental surface water for crop irrigation and groundwater recharge.
- Continue the application for appropriation of Poso Creek water and develop Poso Creek as a groundwater recharge facility within the CWD.
- Facilitate conjunctive use operations by the importation and recharge use of supplemental water.
- Construct and operate CWD wells.
- Monitor well construction and abandonment as administered by Kern County.

Monitoring elements of the Plan include:

- Semi-annual monitoring of groundwater levels of wells within the CWD.
- Semi-annual preparation of maps of equal elevation of water in wells.
- Monitor groundwater quality at 5-year intervals and prepare maps of electrical conductivity, chloride, and boron concentrations.
- Operate and maintain the Poso Creek gauging station above State Highway 65.

To sustain existing irrigated agriculture, CWD supplements its existing limited surface water supplies and overdrafted groundwater with the reclamation of produced water using treated VWDC wastewater (and treated produced water from other sources) as described herein. Through its Plan, the CWD proposes to manage water use within its boundaries to meet Basin Plan objectives.

In August 1994, the Discharger and Chevron submitted a study entitled *Proposed CWD/TEPI-BPD Groundwater Recharge Project – Discharges Into Reservoir “B” and Poso Creek* (hereafter 1994 Study) prepared by R.L. Schafer and Associates. The 1994 Study used a simple environmental fate model to evaluate the potential impact on groundwater of salt applied through the produced water reclamation project. Using assumptions set forth in the 1994 Study, the Discharger concluded that the change in water usage in CWD due to the discharge of 15,920 acre-feet/year of reclaimed produced water would increase salinity in the groundwater aquifer by 2.3  $\mu\text{mhos/cm}$  annually above that resulting from current surface water imports and groundwater usage. The 1994 Study did not calculate the overall potential change in groundwater EC throughout the CWD due to reclamation of produced water combined with all other sources of salt that contribute to EC. Further, the 1994 study and existing permits assume that restricting the incremental increase in the CWD to the Basin Plan objectives ensures the objectives will be achieved in the much larger Poso Groundwater Hydrographic Unit. While this is not necessarily valid, it is reasonable that, as long as the groundwater within the CWD is managed by a responsible entity such that it does not exceed the annual increment allowed, that this area then will not contribute to an exceedence in the larger area. Historically, it happens to be valid as the groundwater within the CWD has been in an overdraft condition. As CWD is a groundwater management agency with a Plan, it seems appropriate and reasonable that studies limited to its area be considered adequate to demonstrate whether degradation in the area is consistent with the Basin Plan. Using the model of the 1994 Study, Regional Water Board staff have estimated that discharges of imported surface water, produced water, and pumped groundwater at levels allowed by permits currently in effect have the potential to increase the EC of groundwater in the CWD by possibly as much as 16  $\mu\text{mhos/cm}$  per year. This estimate of potential impacts to groundwater assumes that VWDC and Chevron discharge year-round at the maximum flow rates and at effluent limitations currently authorized by permits, and that,

while there may be temporal storage of EC component constituents with in the extensive vadose zone, there will be insignificant attenuation of these inorganic ions. This estimate significantly exceeds the Basin Plan water quality objective and is reason to investigate this matter further. The Basin Plan establishes that a discharger must successfully demonstrate that produced water EC in excess of Basin Plan maximum effluent limits will not cause violation of a water quality objective. As the exception was previously granted and the cumulative effect is beyond the control of just VWDC, a time schedule that allows a collective study by all affected parties is appropriate. Should the study establish that the water quality objective cannot be achieved without cutbacks in produced water harmful to CWD’s goals and objectives, the study should provide documentation that the water quality objective is unreasonable as well as documentation of what rate of increase it can justify.

The 1994 Study evaluated the effect of importing 920 acre-feet/year (0.82 mgd) of VWDC produced water and 15,000 acre-feet/year (13.4 mgd) of Chevron produced water on groundwater underlying the CWD. The 1994 Study concludes that 42,183 tons/year (2,307 lbs/acre-year) of salt will be imported into the CWD. With an existing groundwater depression under the CWD, infiltrating salt will eventually begin to accumulate in the groundwater aquifer under the CWD. The 1994 Study states that the reclaimed produced water will reduce groundwater pumping and possibly reduce the groundwater depression. It will not eliminate the depression.

In July 2003, the Discharger and Chevron submitted a study entitled, *Technical Study Update for the Proposed Modification of Waste Discharge Requirements for Discharges Into Reservoir “B,” Distribution Canal, and Poso Creek* (hereafter 2003 Study). The 2003 Study evaluated potential impacts to groundwater underlying the CWD resulting from proposed increases in effluent limitations for salts and flow rates of produced water from VWDC and Chevron. The 2003 Study concludes that with the proposed increases in permit limitations, service area lands of the District would receive a total about 2200 lbs/acre-year of salt. The 2003 Study does not indicate what impact the proposed increases in effluent limits will have on the EC of groundwater underlying the CWD. In the absence of this information and the lack of demonstration of consistency with the Basin Plan necessary to qualify an exception, the Regional Water Board staff estimates the effect of the requested increases as a gross annual EC increase in groundwater of 18 µmhos/cm per year. This assumes that VWDC and Chevron discharge year-round at the maximum flow rates and effluent limitations that would be authorized with approval of the VWDC request, and no attenuation of EC in soils. The results of staff calculations are summarized in the tables below:

**EC**

**Scenario 1: Current permitted conditions**

	Flow rate		Salt concentration		Salt loading
	(mgd)	(acft/year)	EC (µmhos/cm)	TDS (mg/L)	(ton/year)
Valley Waste	4.3	4,817	1100	705	4,618
Chevron	18	20,164	1100	705	19,331
Schafer	1.4	1,568	1000	641	1,367
surface water		62,500	156	100	8,497
Fertilizer		-	-	-	639
groundwater		18,720	611	392	9,968

total irrigation: 107,769

total salts: 44,420

TDS increase (+mg/L): 10  
 EC increase (+µmhos/cm) : 16

INFORMATION SHEET – ORDER NO. R5-2006-0124  
 VALLEY WASTE DISPOSAL COMPANY  
 AND CAWELO WATER DISTRICT  
 KERN FRONT NO. 2 TREATMENT PLANT – RESERVOIR B  
 KERN COUNTY

**Scenario 2: Proposed permit conditions**

	Flow rate		Salt concentration		Salt loading
	(mgd)	(acft/year)	EC ( $\mu\text{mhos/cm}$ )	TDS (mg/L)	(ton/year)
Valley Waste	7.4	8,290	1250	801	9,031
Chevron	27.3	30,582	1100	705	29,318
Schafer	2.16	2,420	1000	641	2,109
surface water		62,500	156	100	8,497
Fertilizer		-	-	-	639
groundwater		<u>3,978</u>	611	392	<u>2,118</u>

total irrigation: 107,769

total salts: **51,712**

TDS increase (+mg/L): 12

EC increase (+ $\mu\text{mhos/cm}$ ): 18

**Scenario 3: Proposed permit conditions plus additional Chevron flow increase**

	Flow rate		Salt concentration		Salt loading
	(mgd)	(acft/year)	EC ( $\mu\text{mhos/cm}$ )	TDS (mg/L)	(ton/year)
Valley Waste	7.4	8,290	1250	801	9,031
Chevron	50.4	56,459	1100	705	54,126
Schafer	2.16	2,420	1000	641	2,109
surface water		40,601	156	100	5,520
Fertilizer		-	-	-	639
groundwater		<u>0</u>	611	392	<u>0</u>

total irrigation: 107,769

total salts: **71,425**

TDS increase (+mg/L): 16

EC increase (+ $\mu\text{mhos/cm}$ ): 25

Chevron has indicated that it intends to request an increase in the flow rate of its discharge up to 50.4 mgd (shown as Scenario 3). At this flow rate and under the same assumptions as earlier estimates, the estimated cumulative effect could be an average annual gross increase in EC of groundwater throughout the CWD of 25  $\mu\text{mhos/cm}$  per year. This would represent an increase of 9.46  $\mu\text{mhos/cm}$  per year above what is allowed by current permits, well over the Basin Plan prescription for the Poso Groundwater Hydrographic Unit. These estimates assume VWDC and Chevron discharge year-round at maximum flow rates and effluent limitations and, as this concerns inorganic salts, that there is no attenuation of EC in vadose zone soils.

**Boron**

**Scenario 1: Current permitted conditions**

	Flow rate		Boron concentration	Boron loading
	(mgd)	(acft/year)	(mg/L)	(ton/year)
Valley Waste	4.3	4,817	1.00	6.5
Chevron	18	20,164	1.40	38.4
Schafer	1.4	1,568	0.65	1.4
surface water		62,500	0.16	13.6
groundwater		<u>18,720</u>	0.10	<u>2.5</u>

total irrigation: 107,769

total boron: **62.5**

boron increase (+mg/L): 0.01

**Scenario 2: Proposed permit conditions**

	Flow rate		Boron concentration (mg/L)	Boron loading (ton/year)
	(mgd)	(acft/year)		
Valley Waste	7.4	8,290	1.50	16.9
Chevron	27.3	30,582	1.40	58.2
Schafer	2.16	2,420	0.65	2.1
surface water		62,500	0.16	13.6
groundwater		<u>3,978</u>	0.10	<u>0.5</u>

total irrigation: 107,769

total boron: 91.4

boron increase (+mg/L): 0.02

**Scenario 3: Proposed permit conditions plus additional Chevron flow increase**

	Flow rate		Boron concentration (mg/L)	Boron loading (ton/year)
	mgd	acft/year		
Valley Waste	7.4	8,290	1.50	16.9
Chevron	50.4	56,459	1.4	107.5
Schafer	2.16	2,420	0.65	2.1
surface water		40,601	0.16	8.8
groundwater		<u>0</u>	0.10	<u>0</u>

total irrigation 107,769

total boron: 135.3

boron increase (+mg/L): 0.03

The tables above show the potential impacts on boron concentrations in groundwater underlying the CWD resulting from proposed discharges of produced water. Using the assumptions from the 1994 Study, the discharge of produced water at currently permitted levels (Scenario 1) has the potential to increase boron concentrations in groundwater by 0.01 mg/L per year. Under the permit conditions of the proposed new Orders (Scenario 2), the increase in boron concentrations in groundwater throughout the CWD caused by discharges of produced water would be 0.02 mg/L per year. Therefore, based on the model of the 1994 Study, the proposed increases in effluent limitations for salts and flow rates will result in a potential increase in boron concentration of 0.01 mg/L per year in groundwater throughout the CWD beyond what is already allowed by existing permits. Boron is not as easily leached as more conservative constituents such as chloride, so in actuality no increase in boron should be seen in groundwater if the increase is authorized.

The Discharger submitted a groundwater monitoring report on 1 February 2005 that analyzed the quality of groundwater throughout the CWD. The 1 February report states that the average EC of groundwater in the CWD decreased from 711.3  $\mu$ mhos/cm to 662.2  $\mu$ mhos/cm between 1999 and 2004. This indicates improved groundwater quality. However, due to the large number of monitoring wells, the variability of well construction specifications and screening intervals, the depth to groundwater, and that different wells are sampled each year, the monitoring is not a reliable indicator at this point of the effect reclamation of produced water has had or will have on the quality of groundwater underlying the CWD. Because the majority of water applied within the CWD evapotranspires through crops, only the fraction of applied water that leaches salts from the root zone leaches to groundwater. With a 400-foot soil column, it will be some time before even standard monitoring wells would reveal increases in salts that can be attributed to current operations.

Thus the only means to project or assess the eventual impact from salt is by modeling, such as the above. In these calculations, the groundwater volume is considered constant; mixing of waste

constituents is considered to occur uniformly throughout the volume. The Basin Plan requires protection of all waters. Application of the annual incremental increase water quality objective must be evaluated in a basin context, and a Groundwater Management Agency is involved in the monitoring and managing the affected groundwater and ensuring suitable quality.

Given the above, it is appropriate to require the Discharger to perform an appropriate study to confirm that the previously authorized discharges comply with the Basin Plan EC water quality objectives. It is also appropriate to require the Discharge do demonstrate that proposed increases in flow and pollutant loading will either comply with the Basin Plan or provide appropriate information to demonstrate compliance with Resolution 68-16, CEQA, and applicable State and federal water quality policies and to support an appropriate Basin Plan amendment for consideration by the Regional Water Board.

**Summary of Effluent Limitations/Discharge Specifications**

The following summarizes Discharge Specifications and Effluent Limitations in the proposed permit. The bases for these requirements are described below.

**Discharge Specifications:**

1. Effluent from Discharge 001 (from VWDC into Reservoir B) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Flow	mgd	---	4.3
Electrical Conductivity	µmhos/cm	1,100	1,200
Chloride	mg/L	100	125
Boron	mg/L	1.5	1.6
Oil and Grease	mg/L	---	35

2. Effluent from Discharge 002 (from Reservoir B outfall into the Distribution Canal) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	µmhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0

**Effluent Limitations:**

1. Effluent from Discharge 003 (from the Distribution Canal outfall into Poso Creek) shall not exceed the following limits:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Electrical Conductivity	µmhos/cm	---	1,000
Chloride	mg/L	---	200
Boron	mg/L	---	1.0
Arsenic	µg/L	---	10
Oil and Grease	mg/L		Non-Detect

2. Discharge 003 shall not have a pH less than 6.5 nor greater than 8.3.
3. Survival of aquatic organisms in 96-hour bioassays of undiluted waste from Discharge 003 shall be no less than:

Minimum for any one bioassay: ----- 70%  
 Median for any three or more consecutive bioassays: ----- 90%

**Technology-Based Limitations**

**Oil and Grease:** The Discharger receives wastewater from facilities subject to 40 CFR § 435.50, Oil and Gas Extraction Point Source Category, Agricultural and Wildlife Water Use Subcategory. These regulations establish a daily maximum effluent oil and grease limitation of 35 mg/L that is applicable to VWDC.

**Reasonable Potential Analysis**

Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the RWD, in studies, and as directed by monitoring and reporting programs the Regional Water Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for pH, arsenic, conductivity, chloride, boron, and toxicity. Effluent limitations for these constituents are included in this Order.

**pH:** The Basin Plan includes numeric water quality objectives that the pH “...not be depressed below 6.5 nor raised above 8.3. Effluent limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

**Arsenic:** The Basin Plan includes a water quality objective that “*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.*” Groundwater recharge is a beneficial use of the receiving stream with the groundwater having a municipal supply beneficial use. The USEPA Primary Maximum Contaminant Level (MCL) of 10 µg/L for arsenic. Pursuant to the Safe Drinking Water Act, California Department of Health Services (DHS) must revise the arsenic MCL in Title 22 CCR to be as low or lower than the USEPA MCL. VWDC discharges into Reservoir B reportedly have arsenic concentrations of up to 55 µg/L. Chevron discharges into Reservoir B reportedly have arsenic concentrations of up to 19 µg/L. Water pumped into the Reservoir B from the Beardsley Canal reportedly has arsenic concentrations of approximately 6 µg/L. There is currently no data on the concentrations of arsenic in actual discharges from the CWD distribution system into Poso Creek. Under conditions where VWDC and Chevron are discharging at capacity, the concentration of arsenic in the discharge to Poso Creek (Discharge 003) could exceed the MCL. Applying the Basin Plan’s “Policy for Application of Water Quality Objectives,” to protect the future municipal and domestic water use of groundwater, it is reasonable to apply the USEPA MCL for arsenic to discharges to Poso Creek as water discharge to the creek is managed to recharge groundwater. An Effluent Limitation for arsenic is included in this Order and is based on protection of the beneficial use of groundwater recharge and municipal and domestic water supply, the Basin Plan water quality objective for chemical constituents, and toxicity, and the USEPA Primary MCL.

### **Conductivity, Boron, and Chlorides**

The Basin Plan encourages the reclamation of oilfield wastewater where its quality is appropriate for reuse. The Basin plan authorizes salinity limits of 1,000 µmhos/cm for conductivity, 200 mg/L for chlorides, and 1.0 mg/L for boron for discharges to land within the Poso Creek Subarea (i.e. CWD). The Basin Plan further states that, “Discharges of oil field wastewater that exceed the above maximum salinity limits may be permitted to unlined sumps, stream channels, or surface waters if the discharger successfully demonstrates to the Regional Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality objectives.”

**EC:** VWDC has requested that the limitations for EC from Discharge 001 be raised to a daily maximum of 1,300 µmhos/cm and a monthly average of 1,250 µmhos/cm. Regional Water Board staff calculations indicate that the existing authorizations and requested increases in the EC limitations exceed the annual increase in EC allowed by a Basin Plan water quality objective though CWD would manage the discharges from Reservoir B such that the blend would comply with the limits authorized by the Basin Plan. Thus, the requested increase in EC discharged to Reservoir B, particularly in light of other changes occurring with produced water, may cause a violation of water quality objectives set by the Basin Plan. Therefore, the EC limitations at Discharge 001 are not being increased to a daily maximum of 1,300 µmhos/cm and a monthly average of 1,250 µmhos/cm, but kept at previously authorized levels until consistency with the Basin Plan is confirmed. Should that not be possible, the Order has a reopener to reconsider the terms of discharge. The 1,000 µmhos/cm EC limitation/specification at Discharges 002 and 003 are consistent with the Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin.

**Boron:** VWDC has requested that the limitations for boron from Discharge 001 be raised to a daily maximum of 1.6 mg/L and a monthly average of 1.5 mg/L. Regional Water Board staff calculations indicate that the proposed increase in boron effluent limitations has little potential to cause additional increases in the concentration of boron in groundwater underlying the CWD above current conditions. The proposed Order requires the CWD to manage the discharges to Reservoir B so that discharges from Reservoir B comply with the limits authorized by the Basin Plan. Thus, the proposed increase in boron discharged to Reservoir B should not significantly impact groundwater quality or cause a violation of water quality objectives. Therefore, the boron limitations at Discharge 001 are proposed to be increased to 1.5 mg/L (monthly average) and 1.6 mg/L (daily maximum). The 1.0 mg/L boron limitation/specification at Discharges 002 and 003 are consistent with the Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin.

**Chloride:** VWDC has requested raising the limitations for chloride at Discharge 001. This Order contains chloride limitations for Discharge 001 of 100 mg/L (monthly average) and 125 mg/L (daily maximum). The effluent limitations for Discharge 001 are more restrictive than applicable Basin Plan limitations. The 200 mg/L chloride limitation/specification for Discharges 002 and 003 are consistent with the Basin Plan limitations for discharges to land within the Poso Creek Subarea and oil field discharges to surface waters within the Tulare Lake Basin.

At the request of the North Kern Water Storage District, the Regional Water Board conducted public hearings in 1985 to determine appropriate quality for water used for irrigation of crops in the Poso Creek Subarea. At the time, produced water was discharged to Beardsley Canal, the main canal for surface water being conveyed to North Kern Water Storage District and CWD. The Regional Water Board adopted the following receiving water limits as appropriate for supply waters used to irrigate citrus and other sensitive crops grown in the two districts:

EC	700 $\mu$ mhos/cm
Chloride	106 mg/L
Boron	0.5 mg/L

The proposed Order considers that CWD, in keeping with its responsibility and authority to provide water to its customers that is suitable for irrigation of all crops grown in the District, has the ability to control the quality by the blending of supply waters. Further, as a groundwater management agency and discharger under this Order, it has the authority and responsibility to comply with waste discharge requirements that implement the Basin Plan. Thus it may use its discretion to provide supply water of higher quality than prescribed by the Regional Water Board in its distribution system. However, ground and surface water not solely for the use of CWD, such as ground and surface waters that flow from CWD into the North Kern Water Storage District downgradient of CWD, must be consistent with the receiving water quality prescribed by the Regional Water Board since 1985. The proposed Order requires the CWD to ensure that discharges to Poso Creek do not cause the water in the creek that exits the CWD to exceed EC, chloride and boron levels of 700  $\mu$ mhos/cm, 106 mg/L, and 0.5 mg/L, respectively.

### **Acute Whole Effluent Toxicity**

The Basin Plan includes a narrative objective for toxicity, requiring that all waters be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental physiological responses in human, plant, animal, or aquatic life. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. Acute whole effluent toxicity limits are included in the Order and are based on interpretation the narrative water quality objective for toxicity in the Basin Plan.

### **Basis for Provisions**

Provisions are included the Order to ensure compliance with requirements in the Order pursuant to the CWA, CWC, implementing regulations, and the Basin Plan.

### **Basis for Self-Monitoring Requirements**

The Monitoring and Reporting Program is issued pursuant to California Water Code Sections 13383 and 13267. The Discharger shall not implement any changes to this Program unless and until the Regional Water Board or Executive Officer issues a revised Monitoring and Reporting Program.

Sample collection, storage, and analyses shall be performed according to 40 CFR Part 136 or other methods approved and specified by the Executive Officer of the Regional Water Board. All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the Standard Provisions, Provisions for Monitoring.

Water and waste analyses shall be performed by a laboratory approved for these analyses by DHS or a laboratory waived by the Executive Officer from obtaining a certification for these analyses by the DHS. The director of the laboratory whose name appears on the certification or his or her laboratory supervisor who is directly responsible for analytical work performed shall supervise all analytical work, including appropriate quality assurance/quality control procedures in his or her laboratory, and shall sign all reports of such work submitted to the Regional Water Board.

For California Toxics Rule (CTR) constituents (priority pollutants), the Discharger shall report sample results as required by the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of the California (State Implementations Plan or SIP) Section 2.4. The Discharger's laboratory must meet minimum levels in the SIP Appendix 4.

### **REOPENER**

The conditions of discharge in this Order were developed based on currently available technical information, currently available discharge and surface water quality information, applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. Additional information must be developed and documented by the Discharger as required by schedules set forth in this Order. It may be appropriate to reopen this Order if applicable laws and regulations change, or if new information necessitates the implementation of new or revised limitations to protect water quality consistent with the Basin Plan.

### **TITLE 27**

Except for the oil and grease discharged to the concrete tank, this discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq., (hereafter Title 27) pursuant to Section 20090(b) for the following reasons:

- a. The Regional Board is issuing these waste discharge requirements, which implement the Basin Plan;
- b. The Discharger will comply with these waste discharge requirements; and
- c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

The oil and grease removed from produced water is a designated waste as defined in Title 27 and subject to the full containment specifications therein. However, the concrete tank that contains the oil and grease is a fully enclosed facility of limited extent and operated in a manner that precludes discharge of the designated waste, which is prohibited by this Order. Accordingly, it is exempt from the prescriptive and performance specifications of Title 27 pursuant to section 20090(i) thereof.

### **ANTIDegradation**

In the Basin Plan, this Regional Water Board adopted criteria for the area managed by the CWD, which is in the Poso Groundwater Hydrographic Unit. Specifically this Regional Water Board has considered degradation that could be caused by discharges of oilfield wastewater to land, groundwater, and surface water and determined degradation that results from discharges that comply with EC, chloride, and boron effluent limits of 1000  $\mu$ mhos/cm, 200 mg/L, and 1.0 mg/L, respectively, is reasonable and appropriate. The Basin Plan also indicates that greater effluent limits may be considered if a discharger first demonstrates to this Regional Water Board that the discharge with higher limits will not substantially affect water quality or cause it to exceed water quality objectives. While an exception was previously authorized and will be continued by the proposed permit, it appears that it and greater effluent limitations at increased flow rates will cause violation of a water quality objective.

The CWD must manage the blended discharges so they will not substantially affect water quality and violate a water quality objective, including an approved incremental change in EC of no greater than 6  $\mu\text{mhos/cm}$ . Such degradation rate is consistent with the Basin Plan. The permitted discharge with reclamation is considered of maximum benefit the people of the State. However, as the cumulative effect of the existing EC exception and requested EC exception both appear sufficient to cause exceedances of the water quality objective for annual EC increase rate, provisions are include in the Order with time schedules to address this matter. The discharge as conditioned in the proposed Order is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

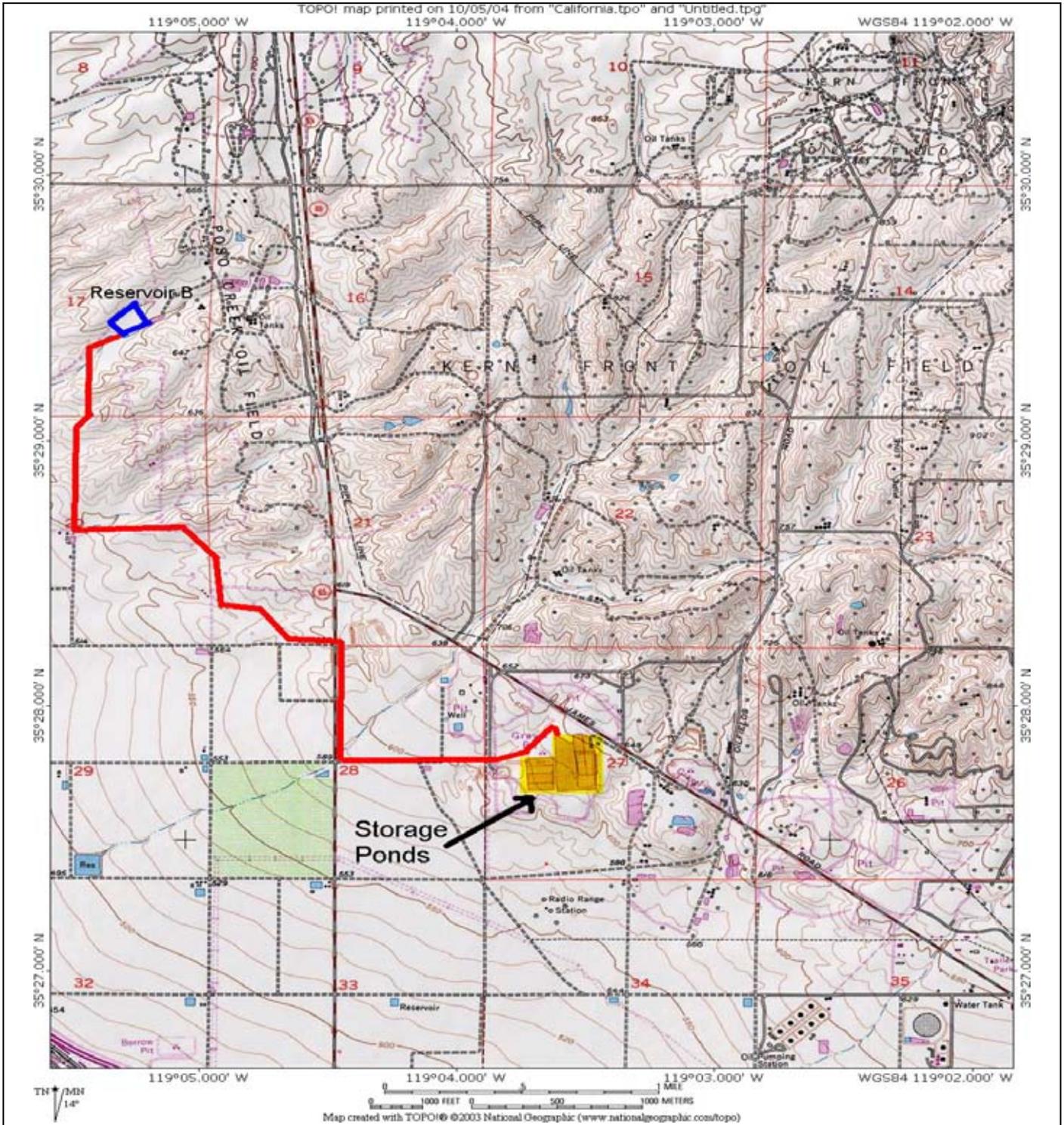
### CEQA

The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) in accordance with CWC Section 13389.

The discharge to land as proposed in the Order is an existing one and exempt form CEQA pursuant to Title 14, CCR, Section 15301. Before increases in annual mass loading of salt to the CWD and Poso Groundwater Hydrographic area can be permitted, the cumulative environmental effect of such increases must be evaluated for consistency with CEQA. As the CWD is carrying out the long-term plan for the area and is the recipient of its benefits, it is appropriate that CWD conduct an appropriate environmental review of the collective input of salt from all existing and proposed sources of salt on groundwater beneath CWD.

The Regional Water Board staff is cognizant of the potential benefits to the CWD such as increased reclamation, sustained agricultural production within CWD, and decreased over drafting of groundwater that should be factored into such an evaluation. Further, should CWD determine that the collective impact on groundwater from all extant sources and the combined total amount of the proposed produced water it expects to use will create a greater impact on groundwater than the Basin Plan gross annual allowable EC increase of 6  $\mu\text{mhos/cm/year}$ , it needs to scale back its proposals or provide sufficient documentation to support a CEQA determination and Basin Plan amendment.

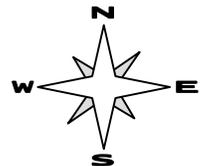
GEA: 12/7/06



Drawing Reference:

U.S.G.S TOPOGRAPHIC MAPS  
7.5 MINUTE QUADRANGLE

ATTACHMENT A  
VICINITY MAP  
WDR ORDER NO. R5-2006-0124  
VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT –  
CAWELO RESERVIOR B  
KERN COUNTY



# Kern

65



## Front

## Oil

## Field

Oil Fields Road

To CWD Reservoir B

VWDC  
Kern Front No. 2  
Treatment Facility

Bellaire Oil  
Section 27 Lease  
(pipeline)

ATTACHMENT B  
WDR ORDER Number R5-2006-0124  
VALLEY WASTE DISPOSAL COMPANY  
AND CAWALO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT -  
CAWALO RESERVOIR B  
KERN COUNTY  
Not to Scale

James Road

9

10

11

12

Vintage  
Fleishacker Lease

16

15

14

13

Vintage  
Young Lease

21

22

23

24

Vintage Pipeline

Vintage  
Fano Lease

Vintage  
Robinson Lease

28

27

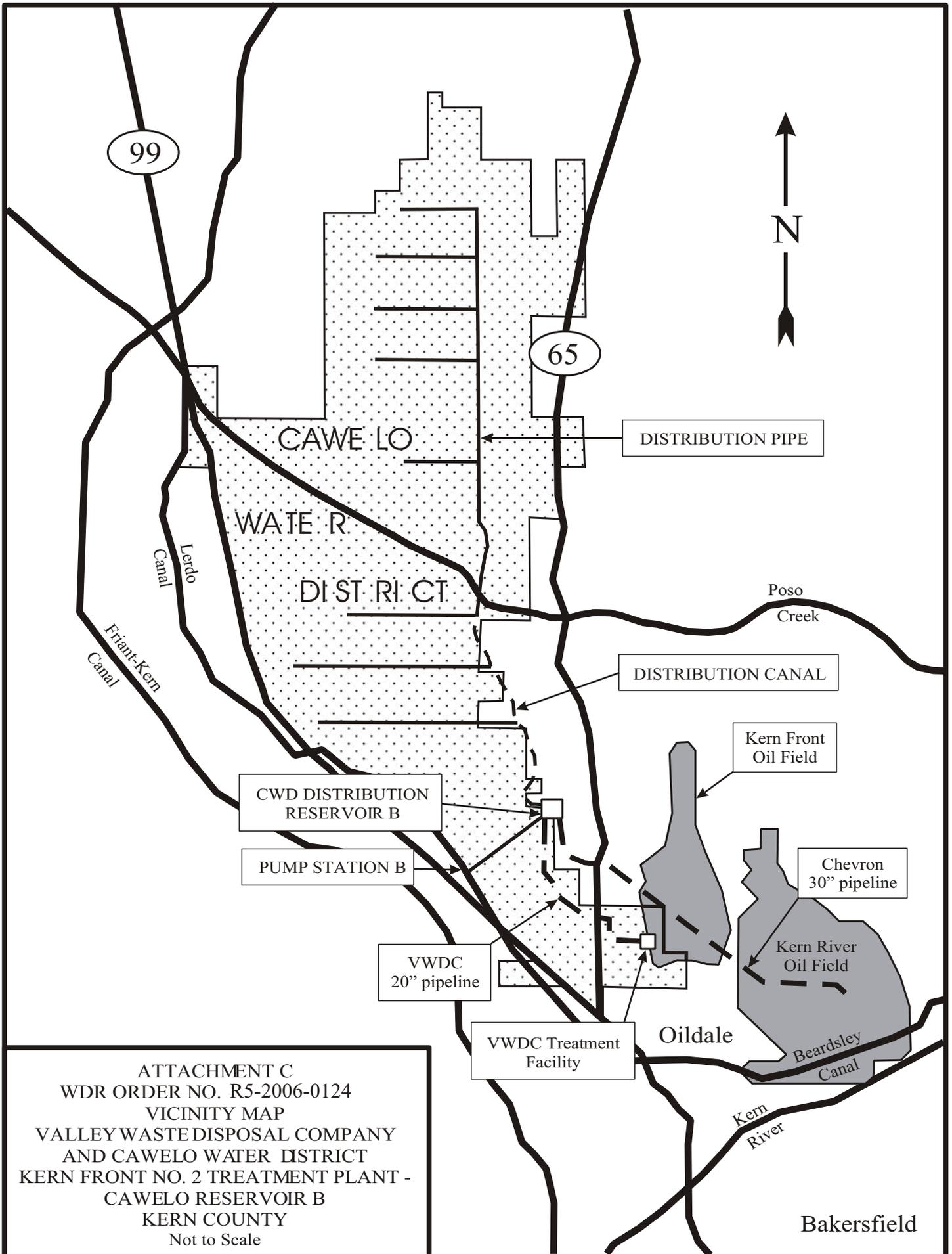
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ATTACHMENT C  
 WDR ORDER NO. R5-2006-0124  
 VICINITY MAP  
 VALLEY WASTE DISPOSAL COMPANY  
 AND CAWELO WATER DISTRICT  
 KERN FRONT NO. 2 TREATMENT PLANT -  
 CAWELO RESERVOIR B  
 KERN COUNTY  
 Not to Scale

Bakersfield

ATTACHMENT D  
CALIFORNIA TOXICS RULE  
REASONABLE POTENTIAL ANALYSIS

VALLEY WASTE DISPOSAL COMPANY  
AND CAWELO WATER DISTRICT  
KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
KERN COUNTY

**RECEIVING WATER DATA**

Constituent units CTR #	Sb µg/L #1	As µg/L #2	Be µg/L #3	Cd µg/L #4	Cr Total µg/L	Cr (III) µg/L #5a	Cr (VI) µg/L #5b	Cu µg/L #6	Pb µg/L #7	Hg µg/L #8	Ni µg/L #9	Se µg/L #10	Ag µg/L #11	Tl µg/L #12	Zn µg/L #13	CN µg/L #14	Asb MF/L #15
4/30/01	<0.02	5.0	<0.06	<0.05	1.00	1.00	<0.2	<0.05	<0.25	0.001	<0.05	<0.5	<0.2	<0.025	<2.0	<0.005	<1.53
10/25/01	2.0	6.0	<0.06	<0.05	3.00	3.00	<0.2	<0.05	<0.25	0.0659	<0.05	<0.5	<0.2	<0.025	<2.0	<0.005	<0.2
Observed Maximum SIP Section 1.4.3.1	2.0	6.0	<0.06	<0.05	3.00	3.00	<0.2	<0.05	<0.25	0.0659	<0.05	<0.5	<0.2	<0.025	<2.0	<0.005	<1.53





















ATTACHMENT D – CTR ANALYSIS  
 VALLEY WASTE DISPOSAL COMPANY  
 AND CAWELO WATER DISTRICT  
 KERN FRONT NO. 2 TREATMENT PLANT – CAWELO RESERVOIR B  
 KERN COUNTY

Constituent CTR #	4,4-DDE #109	4,4-DDD #110	Dieldrin #111	alpha- Endosulfan #112	beta- Endosulfan #113	Endosulfan Sulfate #114	Endrin #115	Endrin Aldehyde #116	Heptachlor #117	Heptachlor Epoxide #118	Polychlorinated biphenyls (PCBs) #119-125	Toxaphene #126
MEC (µg/L)	<1.448	<2.086	<0.001	<0.001	<0.001	<0.001	<0.001	<0.016	<0.001	<0.002	<0.12	<0.87
Background (µg/L)	<1.448	<2.086	<0.001	<0.001	<0.001	<0.001	<0.001	<0.016	<0.001	<0.002	<0.12	<0.87
SWRCB MLs (µg/L) SIP Appendix 4	0.05	0.05	0.01	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.5	0.5
BP Obj (µg/L)	-	-	-	-	-	-	2	-	0.01	0.01	0.5	3
CMC (µg/L)	-	-	0.24 w	0.22 g	0.22 g	-	0.086 w	-	0.52 g	0.52 g		0.73
CCC (µg/L)	-	-	0.056 w	<b>0.056</b> g	<b>0.056</b> g	-	<b>0.036</b> w	-	0.0038 g	0.0038 g	0.014 u	0.0002
H Health (µg/L) Water & Org Only	<b>0.00059</b> a,c	<b>0.00083</b> a,c	<b>0.00014</b> a,c	110 a	110 a	<b>110</b> a	0.76 a	<b>0.76</b> a	<b>0.00021</b> a,c	<b>0.00010</b> a,c	<b>0.00017</b> c,v	<b>0.00073</b> a,c
H Health (µg/L) Org Only	0.00059 a,c	0.00084 a,c	0.00014 a,c	240 a	240 a	240 a	0.81 a,j	0.81 a,j	0.00021 a,c	0.00011 a,c	0.00017 c,v	0.00075 a,c
Reasonable Potential	N	N	N	N	N	N	N	N	N	N	N	N

\*\*Footnotes taken from 40 CFR 131.38 (b)(1)