CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0057

WASTE DISCHARGE REQUIREMENTS
FOR
CATHER-HERLEY OIL COMPANY
CALIFORNIA FEDERAL A LEASE
ASPHALTO OILFIELD
KERN COUNTY

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

1. Cather-Herley Oil Company (hereafter Discharger) is a California corporation that owns and operates crude oil production wells at the lease designated as "California Federal A" in the Asphalto Oil Field within the McKittrick Valley. The California Federal A Lease is a United States Federal Government minerals fee property regulated by the U. S. Department of Interior, Bureau of Land Management.

2. The Discharger operates four unlined surface impoundments (with approximate dimensions ranging from 39' x 105' to 100' x 100'), generally known in the industry as a sump, at the California Federal A Lease. Approximately 700 barrels/day of produced wastewater is discharged to the sumps for disposal by solar evaporation and percolation.

3. The wastewater disposal operation is currently regulated by Waste Discharge Requirements (WDRs), Resolution No. 69-223. The WDRs are being updated since they are no longer adequate or consistent with current State regulations and Regional Board policies and guidelines.

4. This Order implements the *Water Quality Control Plan for the Tulare Lake Basin, Second Edition-1995* (hereafter Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

LOCATION AND DESCRIPTION

5. The Discharger's facility is approximately two miles southeast of the unincorporated community of McKittrick, in the NE ¼ of the NW ¼, of Section 26, T30S, R22E, MDB&M, Assessor Parcel No. 157-220-06-00-5, as shown on Attachments A, B, and C that are attached to and made part of this Order. The Asphalto Oil Field, covers approximately four square miles within the McKittrick Valley, extending from McKittrick at the northwest to approximately six miles southeast of McKittrick at the southeast end of the valley as shown on Attachments A, B, and C.

6. The McKittrick Valley is a localized northwest-southeast structural trough formed by tectonic compressional forces associated with movement along the San Andreas Fault. McKittrick Valley is situated between the surficial features of the Elk Hills, McKittrick, Belgian Anticline and Buena Vista Hills oilfields where Pliocene-Pleistocene rocks crop out surrounding the valley. The trough contains over 10,000 feet of sedimentary deposits ranging in age from the Jurassic to Recent. The most recent sediments deposited in the valley trough are the 1,000+ foot thick Pleistocene Tulare

Formation and the Quaternary Alluvium, which ranges up to 450 feet thick in the center of the valley.

7. The Tulare Formation, which lies stratigraphically below the Alluvium, consists of coarse-grained beds of poorly sorted sands and gravel, and beds of clay, silt, and fine sand. It is not an oil producing formation in Asphalto Oil Field.

8. No known active faults occur on or near the facility. The nearest known active faults are the Buena Vista Fault and the San Andreas Fault, which are approximately eleven miles southeast and ten miles southwest of the facility, respectively.

9. Land within the immediate area is used for oil exploration and production.

10. The discharge occurs in the Antelope Plain Hydrologic Area (No. 558.60), as depicted on interagency hydrologic maps prepared by the Department of Water Resources (DWR) in August 1986.

11. The climate in McKittrick Valley is semi-arid, with hot, dry summers and cool winters. Available weather data from a monitoring station in Taft (13-miles south) indicates the average annual precipitation is 5.6 inches and the average annual Class A pan evaporation is 95.7 inches.

12. The 100-year and 1000-year, 24-hour precipitation events calculated by DWR are 2.03 and 2.63 inches, respectively.

13. Small, unnamed drainage courses traverse the area in the vicinity of the facility. Some surface flow can be observed in the drainage courses following infrequent storm events during the months of November through April.

14. Flood Insurance Rate Map, Community Parcel Number 060075 950 B, dated 29 September 1986, indicates that the facility is not within a 100-year flood plain.

GROUNDWATER INFORMATION

15. The Basin Plan designates beneficial uses for groundwater in this region of the Tulare Lake Basin as municipal, agricultural, and industrial supply.

16. The West Kern Water District supplies domestic and industrial water to a 250 square mile area in western Kern County, including the McKittrick Valley area, from groundwater wells in the Tupman area. Other sources of water supply include State Water project deliveries and agreements with various Kern County water agencies. There are no other known alternative water supplies. There is no record of groundwater wells within 17 miles of the facility.

17. Pursuant to 40 Code of Federal Regulation (40 CFR), Section 146.4, the Tulare Formation in the Asphalto Oil Field has been exempted by the U.S. EPA for the purpose of underground injection of non-hazardous fluids associated with the production of hydrocarbons. The California State

Division of Oil, Gas & Geothermal Resources is the permitting authority for Class II injection wells used for the subsurface injection of produced oilfield wastewater.

18. A detailed hydrogeologic study was conducted for the McKittrick Valley area. Technical information was developed during the study characterizing the hydrogeologic conditions in the area including the Discharger's facility. Results of the study demonstrate the absence of groundwater within the Alluvium in the McKittrick Valley. Both the Alluvium and Upper Tulare are geologically isolated from usable groundwater in the San Joaquin Valley to the east.

19. The Alluvium, approximately 350 feet thick, consists of poorly sorted, unconsolidated silt and clay with lenticular sand and gravel deposits chiefly derived from coalescing alluvial fans. The alluvial section is underlain throughout the valley, by an approximately 62-foot thick, laterally continuous, basal alluvial clay. Review of the geophysical logs indicates that the base of the upper alluvial sediments dip inward, in an elongated and continuous basin-like structure near the center of the McKittrick Valley.

20. The uppermost groundwater occurs nearly 200 feet below the basal alluvial clay, in a confined sand within the Upper Tulare, approximately 545 feet below ground surface. The groundwater is of poor quality, with a Total Dissolved Solids concentration of greater than 6,200 mg/L and a boron concentration greater than 10 mg/L.

21. The following is a summary of groundwater conditions in the area: 1) groundwater of limited aereal extent occurs in the Upper Tulare formation beneath the Asphalto Oil Field; 2) the groundwater occurs at a depth of over 500-feet; 3) is of poor quality with Total Dissolved Solids of greater than 6,200 mg/L and a boron concentration greater than 10 mg/L; 5) it has no identified existing beneficial uses; 6) it is geologically isolated from usable groundwater in the south San Joaquin Valley; and 7) it is not currently used, or likely to be used in the foreseeable future, and without extensive treatment, is not suitable for municipal or domestic supply.

22. Based on Finding Nos. 15-21, there is no groundwater in the area of the discharge that can reasonably be expected to be used for municipal, agricultural, or industrial supply.

WASTEWATER CHARACTERISTICS

23. Connate formation water (wastewater) is co-produced in association with crude oil, primarily from hydrocarbon bearing marine formations in the Asphalto Oil Field by the oilfield operators. The wastewater at the Discharger's facility is a sodium-chloride type having a high inorganic salt content. Benzene, including toluene, ethylbenzene and xylene (BTEX) can be naturally occurring in the light fraction of crude oils. Analytical results show that the wastewater has the following approximate range of characteristics:

Constituent	Range of Concentrations

Total Dissolved Solids (TDS) (mg/L)	20,000 - 30,000
Electrical conductivity (EC) (µmhos/cm)	40,000 – 60,000
Chloride (mg/L)	13,000 - 17,000
Boron (mg/L)	100 – 250
Benzene (µg/L)	N/D to 25
Toluene, ethylbenzene, and xylene (µg/L)	N/D to 20

POLICY & REGULATIONS

24. Implementation policies in the Basin Plan regarding the disposal of oilfield wastewater indicate that the maximum salinity limits for wastewater in unlined sumps overlying groundwater with existing and future probable beneficial uses are: 1,000 µmhos/cm electrical conductivity (EC), 200 mg/L chloride, and 1 mg/L boron. Discharges to unlined sumps may be permitted if the Discharger successfully demonstrates to the Regional Board in a public hearing that exceeding the maximum salinity limits will not substantially affect water quality nor cause a violation of water quality objectives.

25. The Basin Plan policy noted in Finding No. 24 was adopted to allow the Regional Board the flexibility to consider the beneficial reuse of some wastewater having salinities slightly above the maximum numerical limitations. The reuses included agricultural supply, stock watering and wildlife habitat enhancement. Based on the water quality at this facility, the Discharger does not propose to reuse the wastewater.

26. The "Sources of Drinking Water" policy, which was added to the Basin Plan in 1988, provides that all groundwater in the Tulare Lake Basin is considered to be suitable or potentially suitable for municipal or domestic water supply, and should be so designated by the Regional Board with certain exceptions. One of those exceptions is for groundwater that exceeds 3,000 mg/L in TDS (5,000 µmhos/cm EC), and is not reasonably expected to supply a public water system. A second exception is as stated in Finding No. 17, where pursuant to 40 CFR, Section 146.4, the Tulare Formation has been exempted by the U.S. EPA for the purpose of underground injection of non-hazardous fluids associated with the production of hydrocarbons.

27. Generally, designated waste is non-hazardous waste that contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan. The discharge of designated waste to land is subject to the requirements of Title 27, California Code of Regulations (CCR), Section 20090(b) (hereafter Title 27).

28. The Discharger is exempt from the requirements of Title 27. The exemption is based upon the following:

a) The Regional Board is issuing waste discharge requirements;

b) The wastewater discharge, as permitted in the Order, is in compliance with the applicable water quality control plan; and,

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

OTHER LEGAL REFERENCES

29. The action to adopt waste discharge requirements for existing facilities is exempt from the provisions of the California Environmental Quality Act (CEQA), in accordance with Title 14, CCR, Section 15301.

30. This Order requires the Discharger to submit technical reports as authorized under California Water Code (CWC) Section 13267 (b)(1), which states in part:

"In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of water within its region, shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

31. The technical reports required by this Order and attached "Monitoring and Reporting Program No. R5-2004-0057, are necessary to assure compliance with these Waste Discharge Requirements. The Discharger operates the facility that discharges the waste subject to this Order.

32. The Discharger is not required to obtain coverage under a National Pollutant Discharge Elimination System (NPDES) general industrial stormwater permit provided it has not experienced a reportable spill since 19 November 1987. It is the Discharger's responsibility to comply with USEPA federal stormwater regulations (40 CFR Parts 122,123, and 124) should it not qualify for exemption.

33. The Regional Board has notified the Discharger, interested agencies, and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

34. The Regional Board, in a public meeting, heard and considered all comments pertaining to this facility and discharge.

35. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.swrcb.ca.gov/water_laws/index.html and will be provided on request.

IT IS HEREBY ORDERED that Resolution No. 69-223 be rescinded, and that pursuant to §13263 and §13267 of the California Water Code, Cather-Herley Oil Company, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and plans, policies, and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. The acceptance, treatment, or discharge of "hazardous waste" is prohibited. For the purposes of this Order, the term "hazardous waste" is as defined in Title 27, Section 20164.

2. Discharges to surface water or surface water drainage courses are prohibited except for stormwater discharges permitted by an active NPDES permit or for discharge from facilities exempt from the NPDES permitting requirements.

3. The discharge of wastes other than wastewater associated with the production of crude oil on this lease is prohibited.

B. Discharge Specifications

1. Wastewater shall only be discharged to and confined to the sumps described in Finding No. 2.

2. Wastewater production shall be controlled to the extent necessary to maintain consistent compliance with the terms of this Order.

3. Containment berms for the sumps shall be designed and maintained to prevent leakage, whether from erosion, slope failure, animal burrowing, or some other cause.

4. The sumps shall have sufficient freeboard to prevent overtopping as a result of heavy successive precipitation events, high velocity winds, and seismic shaking. **In no case shall there be less than two feet (measured vertically) of freeboard.**

5. Precipitation and drainage control system shall be designed, constructed, operated, and maintained to accommodate the anticipated volume of precipitation and peak flows from

surface runoff under 100-year, 24-hour precipitation conditions. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the sumps.

6. The sumps shall be free of oil or effectively netted to preclude entry of wildlife in accordance with Title 14, CCR, Section 1770 (b), (3).

7. All wastewater storage and disposal facilities shall be operated and maintained to prevent liquids, precipitates, and sludges from concentrating to hazardous levels.

8. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.

C. Provisions

1. The Discharger shall comply with those applicable sections of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991, which are attached to and made part of this Order. To the extent that the Standard Provisions are inconsistent with any terms, conditions, or requirements in this Order, this Order shall govern.

2. Technical and monitoring reports specified in this Order are requested pursuant to Section 13267 of the Water Code. The Discharger shall comply with Monitoring and Reporting Program No. R5-2004-0057, which is attached to and made part of this Order. Failing to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may result in assessment of civil liabilities against the Discharger.

3. The Discharger may be required to submit additional technical reports as directed by the Executive Officer.

4. The Discharger shall notify Regional Board staff in writing of any proposed change in ownership or responsibility for construction or operation of the facility. This notification shall be given **90 days** prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents needed to demonstrate continued compliance with this Order. In the event of any change in ownership of the wastewater facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Board office.

5. The Discharger shall maintain a copy of this Order and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel upon request.

6. The Discharger shall immediately notify Regional Board staff of any flooding, equipment failure, slope failure, or other change in site conditions, which could impair the integrity of waste containment facilities or precipitation and drainage control structures.

7. The Regional Board staff will review this Order periodically and will revise these requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 23 April 2004.

_____
THOMAS R. PINKOS, Executive Officer

CDH:cdh/rac

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0057
FOR
CATHER-HERLEY OIL COMPANY
CALIFORNIA FEDERAL A LEASE
ASPHALTO OIL FIELD
KERN COUNTY

Compliance with this Monitoring and Reporting Program, and with the Standard Provisions and Reporting Requirements dated 1 March 1991, is ordered by Waste Discharge Requirements Order No. R5-2004-0057.

Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes noncompliance with the Waste Discharge Requirements and the Water Code, which can result in the imposition of civil monetary liability.

A. REQUIRED REPORTS

Report		Due
1.	Wastewater Monitoring (Section C.1)	**Annually**[1]
2.	Facility Inspection (Section C.2)	**Annually**[1]

[1] The Annual Report is due by 1 May of each year and shall include all analytical results and measurements performed during the year, and the facility inspection results.

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required by appropriate sections of the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the Waste Discharge Requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible.

C. MONITORING

1. Wastewater Monitoring

At least once annually, a representative sample for wastewater analysis shall be taken at the point of discharge into the sump. If discharge is not occurring, a representative sample shall be taken from wastewater within the sump. Chemical analyses used in monitoring shall be performed as required by Water Code Section 13176, Health and Safety Code Section 100825. Minimum analytical requirements for waste discharged at the facility are as follows:

Parameter/Constituent	Analytical Method [1]	Reporting Units
Total Annual Flow	estimate	bbl or gal
Electrical Conductivity, EC @ 25°C	EPA 120.1	µmhos/cm
Total Dissolved Solids, TDS	SM 2540C	mg/L
Chloride	EPA 300.0	mg/L
Boron	EPA 200.7	mg/L
Benzene, Toluene, Ethylbenzene, and Xylene compounds	EPA 8260	µg/L

[1] Other approved analytical methods may be proposed if they provide equal or greater accuracy or precision.

2. Freeboard Inspection

The freeboard shall be monitored on the sumps to the nearest tenth of a foot. A permanent marker shall be placed in the sump with calibration including the water level at maximum capacity and available freeboard (minimum of two feet). Freeboard observations/measurements shall be conducted and recorded twice monthly. Freeboard monitoring reports shall be submitted with the annual reports.

3. Facility Inspection

The Discharger shall inspect all surface impoundment and drainage facilities for damage annually and following any major storm event and report any damage within 24 hours. Necessary repairs shall be implemented as soon as practicable and the Discharger shall report any subsequent repairs within 30 days of completion. The results of inspections shall be summarized in the annual report.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

23 April 2004
(Date)

CDH:cdh/rac

INFORMATION SHEET

ORDER NO. R5-2004-0057
CATHER-HERLEY OIL COMPANY
CALIFORNIA FEDERAL A LEASE
ASPHALTO OIL FIELD
KERN COUNTY

Cather-Herley Oil Company (Discharger) is a California corporation that owns and operates crude oil production wells at the California Federal A Lease in the NE ¼ of the NW ¼ of Section 26, T30S, R22E, MDB&M, Asphalto Oil Field. The field is approximately four square miles in size and Cather-Herley Oil Company is one of only three dischargers in the oil field. The facility is approximately two miles southeast of the unincorporated community of McKittrick. Approximately 700 barrels/day of wastewater is currently being discharged to unlined sumps at the lease for disposal by solar evaporation and percolation. The facility has been in operation since the early 1960's.

Wastewater discharged at the lease has been regulated by Waste Discharge Requirements (WDRs), Resolution No. 69-223. The WDRs are outdated and no longer consistent with Regional Board policy and State regulations. To achieve compliance with current policy and regulations, the WDRs are being updated and will incorporate regional hydrogeologic information developed from recent studies conducted in McKittrick Valley, designate the facility classification, and incorporate a monitoring and reporting program.

The climate in McKittrick Valley is semi-arid, with hot, dry summers and cool winters. The average annual precipitation is 5.6 inches and the average annual Class A pan evaporation is 95.7 inches. The facility is not within a 100-year flood plain.

The McKittrick Valley is a localized northwest-southeast structural trough formed by tectonic forces associated with the San Andreas Fault. The valley trough contains over 10,000 feet of sedimentary deposits ranging in age from the Jurassic to Recent. The most recent sediments deposited in the valley trough are the 1,500+ foot thick Pleistocene Tulare Formation and the Quaternary Alluvium, which ranges up to 450 feet thick in the center of the valley. No known faults occur on or near the facility.

The Alluvium consists of unconsolidated silt and clay with interbedded sand and gravel deposits derived from coalescing alluvial fans. The alluvial section is underlain throughout the valley, by an approximately 62-foot thick, laterally continuous, basal alluvial clay. Review of the geophysical logs indicates that the base of the upper alluvial sediments dip inward resulting in an elongated and continuous basin-like structure near the center of the McKittrick Valley.

A detailed hydrogeologic study was conducted for the McKittrick Valley area. Technical information was developed during the study characterizing the hydrogeologic conditions in the area of the Discharger's facility. There is no evidence of groundwater within the alluvial section beneath Asphalto or the McKittrick Valley.

However, groundwater occurs within the Upper Tulare at a depth of over 500-feet or nearly 200-feet below the basal alluvial clay, in a confined sand within the Upper Tulare. The groundwater is of poor quality, with a Total Dissolved Solids (TDS) concentration of greater than 6,200 mg/L and boron concentrations of approximately 10 mg/L. This Upper Tulare groundwater has no demonstrated beneficial uses, is isolated from usable groundwater in the south San Joaquin Valley, is not currently used or likely to be used in the foreseeable future, and is not suitable for municipal or domestic supply.

McKittrick Valley and Asphalto Oil Field are in an area where recent hydrogeological studies have been conducted to conclude that underlying poor quality groundwater has no beneficial uses and is isolated from usable groundwater to the east. There is no record of groundwater wells within 17 miles of the facility.

The West Kern Water District supplies domestic and industrial water to a 250 square mile area in western Kern County, including the McKittrick Valley area, from groundwater wells in the Tupman area. Other sources of water supply include State Water project deliveries and agreements with various Kern County water agencies.

Pursuant to 40 Code of Federal Regulation (40 CFR), Section 146.4, the Tulare Formation in the Asphalto Oil Field has been exempted by the U.S. EPA for the purpose of underground injection of non-hazardous fluids associated with the production of hydrocarbons. The California State Division of Oil, Gas & Geothermal Resources is the permitting authority for Class II injection wells used for the subsurface injection of produced oilfield wastewater.

Generally, designated waste is non-hazardous waste that contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan. The discharge of designated waste to land is subject to the requirements of Title 27, California Code of Regulations, Section 20090(b).

The Discharger is exempt from the requirements of Title 27 pursuant to Section 20090(b). The exemption is based upon: a) the Regional Board is issuing waste discharge requirements; 2) the wastewater discharge, as permitted in the Order, is in compliance with the applicable water quality control plan; and, c) the wastewater does not need to be managed according to Chapter 11, Division 4.5 of Title 22 as a hazardous waste.

The action to adopt WDRs for existing facilities is exempt from the provisions of the California Environmental Quality Act in accordance with Title 14, California Code of Regulations, Section 15301.

CDH:cdh/rac:4/23/2004