

**STATE OF ALASKA**  
**ALASKA OIL AND GAS CONSERVATION COMMISSION**  
**3001 Porcupine Drive**  
**Anchorage, Alaska 99501-3192**

Re: **THE REQUEST OF UNION OIL )**  
**COMPANY OF CALIFORNIA )**  
for a Freshwater Aquifer )  
Exemption Order. )

Aquifer Exemption Order No. 3  
  
Lewis River Well D- 1  
Lewis River Gas Field

March 30, 1989

**IT APPEARING THAT:**

1. By letter dated December 1, 1988, Union Oil Company of California (Unocal) submitted an application requesting the Alaska Oil and Gas Conservation Commission (the Commission) to issue an order exempting those portions of all freshwater aquifers occurring below the depth equivalent of 2300' in Lewis River Well D-1 and falling within an area circumscribed by a one-quarter (1/4) mile radius around the well.
2. Notice of an opportunity for a public hearing on January 13, 1989 was published in the Anchorage Daily News on December 14, 1988.
3. By letter dated December 28, 1988, Trustees for Alaska and the Alaska Center for the Environment protested issuance of subject aquifer exemption and requested a hearing for Unocal's Freshwater Aquifer Exemption Order request.
4. On January 13, 1989, at 9:00 AM AST in the conference room of the Alaska Oil and Gas Conservation Commission, 3001 Porcupine Drive, Anchorage, Alaska, a hearing was held on Unocal's application for an order exempting portions of freshwater aquifers below 2300 feet in the area of Lewis River Well D- 1.
5. The hearing record remained open to provide for the filing of additional comments for the hearing record, with Trustees for Alaska agreeing to make filings on January 18 and 27, 1989; and Unocal agreeing to make a filing on January 20, 1989. Unocal and Trustees for Alaska made their filings as scheduled. No public comments were filed.
6. The Commission has jurisdiction in this matter by authorities expressed in AS 31.05.030(h), 20 AAC 25.440, and 40 CFR 147, Subpart C - Alaska.
7. In accord with Section 13 of the January 29, 1986 Memorandum of Agreement between the U.S. Environmental Protection Agency, Region 10, (USEPA Region 10) and the Commission, a copy of Unocal's Freshwater Aquifer Exemption request was submitted to USEPA Region 10 on December 2, 1988.
8. The hearing record closed at 5:00 PM, January 30, 1989. A copy of the hearing record was promptly submitted by the Commission to USEPA Region 10.

## **FINDINGS:**

1. Trustees for Alaska raise the questions of: 1) whether Unocal has applied for a waste disposal permit or an Alaska Coastal Zone Management Program (ACMP) consistency determination; 2) the Commission's authority to exempt aquifers outside the boundaries of existing oil and gas units; 3) whether the Commission's procedures for processing Unocal's application must conform with 40 CFR 124, Subpart A; 4) whether the Commission's procedure for issuing a public notice must conform with the public notice requirement of 40 CFR 124; 5) the appropriateness of substituting an analytical well log analysis for a laboratory analysis of fluid samples to determine the total dissolved solids of formation fluids; 6) whether aquifers requested for exemption are penetrated by a water well; and 7) need for a determination of consistency with the ACMP.
2. The Commission's authority to act in this matter is embodied in 40 CFR 147 Subpart C, the Alaska Oil and Gas Conservation Act (AS 31.05), and the Alaska Administrative Code (20 AAC 25.005 through 20 AAC 25.570).
3. The Commission's procedures in matters involving handling of the subject application and posting of public notice fully conforms to the Alaska Oil and Gas Conservation Act, AS 31.05; the Commission's regulations, 20 AAC 25; and 40 CFR 147, Subpart C (which is in consort with those sections of 40 CFR Part 124 that apply to state UIC program requirements as set out by 40 CFR 145 Subpart B).
4. The analytical determination of the sodium chloride equivalent for total dissolved solids occurring in formation water from the wireline log measurement of osmotic electromotive forces generated in a wellbore has been an accepted industry practice for over 50 years. 20 AAC 25.252© (10) provides the authority for the Commission to accept analytical methods in lieu of a laboratory water analysis determination.
5. Investigation of freshwater resources in the general area of the Lewis River Gas Field indicate that all freshwater supply wells are 300 feet or less in depth.
6. The portions of freshwater aquifers occurring at depths of 2300 feet or more in Unocal's Lewis River Well D-1, and within an area circumscribed by a one-quarter (1/4) mile radius around Unocal's Lewis River Well D- 1, do not serve as a source of drinking water and cannot be reasonably expected to supply a public water system.
7. Those portions of freshwater aquifers occurring at depths of 2300 feet or more in Unocal's Lewis River Well D-1 contain ground water with a total dissolved solids content in excess of 3000 mg/l and less than 10,000 mg/l.
8. Drill stem tests of formations below 2300 feet in Unocal's Lewis River well D-1 and of stratigraphically equivalent formations in other wells within the general area indicate the formations to be low in fluid productivity.
9. Water produced by Pretty Creek Unit #2 from an equivalent stratigraphic section exhibits TDS in excess of 5000 mg/l.
10. The freshwater supply wells in the general area exhibit formation productivity that is several fold the indicated productivity for aquifers below 2300' in Unocal's Lewis River Well D-1.
11. Based on wireline log interpretation, abundant freshwater aquifers occur from the land

surface to a depth of 1000' in Unocal Lewis River Well D- 1 that appear to contain freshwaters of less than 3000 mg/l.

12. Unocal has applied for an ACMP consistency determination for the activities it proposes to conduct at Lewis River well D- 1. Pursuant to AS 46.03.100(d), Department of Environmental Conservation permits are not required for injection activities at Lewis River Well D-1.
13. By letter of March 28, 1989, the USEPA Region 10 approves the exemption of freshwater aquifers occurring below 2300' in Unocal's Lewis River Well D-1, Lewis River Gas Field.

## **CONCLUSION:**

Freshwater aquifers occurring at depths of 2300' or more in Unocal's Lewis River Well D - 1, and within an area circumscribed by a one-quarter (1/4) mile radius around the well, meet the qualifications set out by 20 AAC 25.440(a)(2) for exemption of freshwater aquifers.

**NOW, THEREFORE, IT IS ORDERED THAT** the portions of freshwater aquifers lying below a depth of 2300' in Unocal's Lewis River Well D-1 and within a circle of one-quarter (1/4) mile radius around the well be exempt for purposes of Class II underground injection activities only.

**DONE** at Anchorage, Alaska, and dated March 30, 1989.

C V Chatterton, Chairman  
Alaska Oil and Gas Conservation Commission

Lonnie C Smith, Commissioner  
Alaska Oil and Gas Conservation Commission