



STATE OF NEVADA

Department of Conservation & Natural Resources

Brian Sandoval, Governor

Leo M. Drozdoff, P.E., Director

DIVISION OF ENVIRONMENTAL PROTECTION

Colleen Cripps, Ph.D., Administrator

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(Pursuant to NAC 445A.874)

Permit Number: UNEV93216
Permit Action: 2013 UIC Permit Modification
Facility Name: Eagle Springs Oil Field
Facility Address: Nye County, NV
Permittee: Kirkwood Oil & Gas LLC
Permittee Address: PO Box 2850 120 S. Durbin
Casper, WY 82602
Property Owner: Bureau of Land Management; Ghost Ranch Federal Lease

Number of Permitted Wells: Five injection wells including:
Well: Latitude/Longitude
1-34 38° 35' 53.8" N/115° 32' 34.1" W
84-35 38° 35' 48.3" N/115° 31' 56.3" W

Other Permitted Discharges: No other permitted discharges associated with this permit.
Reporting Frequency: Quarterly by 28th of January, April, July and October
Annual Permit Fee Due: July 1st of each year
Permit originally issued: 1993

A. Description of Discharge

Location: Injection wells will be located in portions of sections 22, 28, 33, 34, 35 and 36, T9N, R57E and portions of sections 1 and 2, T8N, R57E, Nye County, Nevada. On March 3, 2006, NDEP was notified that there was a typographical error in previous documents regarding the legal description.

Characteristics: All injectate is fluid produced in conjunction with conventional oil production. The injectate fluid has TDS concentration ranging between approximately 17,500 and 21,000 mg/L. Elevated levels of arsenic (0.02-0.28 mg/L), chloride (9,300-13,200 mg/L), sodium (5700-11,407 mg/L), fluoride (2.8-3.22 mg/L), and boron (0.02-195 mg/L) are present.

B. Synopsis

Permit History:

2013: permit modified to increase number of permitted injection wells.

81-35 removed from permit and plugged

2012: 3rd permit renewal with same three injection wells.

2010: Permit transferred to Berry Petroleum

2006: 2nd permit renewal with three injection wells: #1-34, #81-35 and #84-35.

2006: Temporary Permit for #81-35 (due to failed mechanical integrity test and workover).

2002: Temporary Permit adding injector #84-35.

1999: 1st permit renewal with two injectors: #1-34 and #81-35.

1993: Original permit issued with #81-35 as sole injector.

Table 1: Injection Well Details

Well	TD ¹	PBTD ²	Perforations
1-34	8694' KB	7256' KB	7175'-7250' (GRV ³) and 7584' - 7781' (SPF ⁴)
81-35	7708' KB	7345' KB	6760' - 6770' (GRV ³) and 7176 - 7347' (SPF ⁴)
84-35	6900' KB	N/A	6174' - 6612' (SPF ⁴)

¹TD= total depth ²PBTD= Plugged Back Total Depth ³GRV = Garrett Ranch Volcanics ⁴SPF = Sheeps Pass Formation KB = kelly bushing

The permittee has requested renewal of UIC permit #UNEV93216 to inject into the three injection wells identified above. The only wells known to exist within the area of review are associated with oil production. The closest wellhead protection zone or municipal water supply well is twenty miles away from the disposal wells. Injectate fluids are produced in conjunction with conventional oil production activities from other wells in the area. Since 1997, only produced fluids from the Eagle Springs and Ghost Ranch oil fields have been approved for disposal under this permit. The average injection rate into well #81-35 has been approximately 1500 barrels (bbls) of water (1 barrel = 42 gals.) per day. Maximum injection pressure is 1800 psig (pounds per square inch gauge) (below the fracture pressure of 2300 psig based on UIC regulation) and the maximum injection rate is 2800 barrels per day (but at no time will the rate be such that the maximum pressure is exceeded).

Well #1-34 has produced on and off from 1967 to 1986, then became idle as a producer due to low oil production and became a disposal well. Well #81-35 was drilled in 1961 and then plugged and abandoned. The well was re-entered in 1993 and completed as a disposal well. Well #84-35, which was completed as a production well, was added as an injection well via temporary permit in 2002. The injection zones for these wells are delineated in Table 1 above.

C. Receiving Water Characteristics

The injection zones will be within the Sheeps Pass Formation and the Garrett Ranch Volcanic Group. Injection zones are delineated in Table 1 above. Both zones have been characterized by water analysis during completion and by other wells in the area to be very high in total dissolved solids (>25,000 mg/L) and to contain hydrocarbons. An impermeable clay zone has been identified between the valley fill and the lower Paleozoic Carbonates/Garrett Ranch Volcanics.

Well Head and Drinking Water Supply Protection: The facility is not located within an established Wellhead Protection Area (WHPA).

D. Procedures for Public Comment

The Notice of the Division's intent to modify permit UNEV93216 authorizing the facility to discharge to the ground water of the State of Nevada, was sent to the *Ely Daily Times* for publication no later than July 19, 2012. The notice is being mailed to interested persons on our mailing list (see Attachment A). Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator, EPA Region IX or any interested agency, person or group of persons.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. Proposed Determination

The Division has made the tentative determination to modify the proposed permit for additional injection wells in additional sections.

F. Proposed Injectate Limitations and Special Conditions

The only limitations on the injectate is that fluids come from production wells in the Eagle Springs and Ghost Ranch fields, and that contamination of a USDW does not occur as a result of injection. The injection wells will be required to undergo testing to demonstrate mechanical integrity prior to use and every two and a half (2 1/2) years thereafter. Maximum wellhead pressure is 1800 psig, and maximum rate is 2800 bbls per day

G. Rationale for Permit Requirements

Permit requirements will verify that the quality of fluid discharged to the injection well remains constant and will confirm that fluids disposal does not adversely affect the existing hydrologic regime.

Prepared by: Russ Land
Date: 1993
Updated by Russ Land, June, 2013