FILED

APR 29 2010

SECRETARY, BOARD OF
OIL, GAS & MINING

BEFORE THE BOARD OF OIL, GAS AND MINING
DEPARTMENT OF NATURAL RESOURCES
STATE OF UTAH

IN THE MATTER OF THE REQUEST FOR AGENCY ACTION OF MARION ENERGY, INC. FOR AN ORDER GRANTING AN AQUIFER EXEMPTION AND APPROVING THE CONVERSION OF THE ALPINE SCHOOL DISTRICT #6-17 WELL LOCATED IN SECTION 17, TOWNSHIP 13 SOUTH, RANGE 7 EAST, CARBON COUNTY, UTAH, TO A CLASS II INJECTION WELL	**MEMORANDUM OF AUTHORITY IN SUPPORT OF REQUEST** Docket No. 2010-021 Cause No. UIC-362.1

As requested by the Board, Petitioner Marion Energy, Inc. ("Marion"), by and through its counsel of record, Beatty & Wozniak, P.C., hereby respectfully submits its Memorandum of Authority in Support of Request.

The Utah Department of Natural Resources administers Utah's Class II injection program by grant of primacy from the EPA (*see* 40 CFR 147 Subpart TT, Exhibit "A" attached). The monitoring area for Class II injection wells, the Area of Review, established by the EPA is set out at 40 CFR 146.6 (Exhibit "B" attached). EPA allows a state seeking primacy to establish the applicable Area of Review for that state by one of two methods:

(a) Zone of endangering influence. The lateral distance in which pressures in the injection zone may cause migration of injection and/or formation fluid into an USDW; or

1) Wyoming Oil and Gas Conservation Commission Cause No. 6, Order No. 1, Docket No. 40-2004, issued July 26, 2004 (Exhibit "C" attached):

> IT IS THEREFORE HEREBY ORDERED BY THE COMMISSION that the application of Anadarko Petroleum Corporation, for an aquifer exemption for the Erickson Formation **in a quarter mile radius of the** No. 23-2 Table Rock Well, located in the Southwest Quarter Northeast Quarter of Section 23, Township 19 North, Range 98 West, Table Rock Field Area, Sweetwater County, Wyoming, be approved. (emphasis added)

2) North Dakota Industrial Commission Order No. 8303, Case No. 7114, entered July 30, 1998 (Exhibit "D" attached):

> The Mission Canyon Formation under the Beulah #1-4 SWD **and up to a 1/2 mile radius of influence** is hereby designated an exempted aquifer. (emphasis added)

Additionally, the Wyoming Oil and Gas Conservation Commission in Cause No. 6, Order No. 1, Docket No. 475-2008, issued January 7, 2009, granted an aquifer exemption for an entire unit (Exhibit "E" attached):

> IT IS THEREFORE HEREBY ORDERED BY THE COMMISSION that the application of El Paso E&P, L.P. Company, for an aquifer exemption for the Lower Parkman Formation underlying the aforedescribed lands in the proposed Savageton (Lower Parkman) Unit, House Creek Field, Campbell County, Wyoming, be approved.

Marion requests an order approving its application for an aquifer exemption for the Ferron Formation in a one-half mile radius of the Alpine School District #6-17 Well, located in Section 17, Township 13 North, Range 7 East, Carbon County, Utah. An identical request will be submitted for the 3-17 Well.

Thank you for your time and consideration in this matter.

Respectfully submitted this 29th day of April, 2010.

BEATTY & WOZNIAK, P.C.

By: _____

Relma M. Miller
6925 Union Park Center, Suite 525
Cottonwood Heights, UT 84047-6003
Telephone: (801) 566-8446
Facsimile: (801) 566-8447
E-mail: RMiller@bwenergylaw.com
Attorneys for Petitioner Marion Energy, Inc.

EXHIBIT A

Electronic Code of Federal Regulations
e-CFR TM

e-CFR Data is current as of April 27, 2010

Title 40: Protection of Environment

PART 147—STATE, TRIBAL, AND EPA-ADMINISTERED UNDERGROUND INJECTION CONTROL PROGRAMS

Browse Previous | Browse Next

Subpart TT—Utah

§ 147.2250 State-administered program—Class I, III, IV, and V wells.

The UIC program for Class I, III, IV, and V wells in the State of Utah, except those on Indian lands, is administered by the Utah Department of Health, Division of Environmental Health, approved by EPA pursuant to Section 1422 of the SDWA. Notice of this approval was published in theFederal Registeron January 9, 1983 (47 FR 2321). The effective date of this program is February 10, 1983. Changes to Utah's regulations for Class I wells were made on May 15, 1990, in response to modification of national rules as promulgated by 53 FR 28188, July 26, 1988. Utah's rules were effective July 20, 1990. The revised rules, Program Description, Attorney General's statement, and Memorandum of Agreement were approved as a minor program modification on October 3, 1990. This program consists of the following elements as submitted to EPA:

(a) *Incorporation by reference.* The requirements set forth in the State statutes and regulations cited in this paragraph are hereby incorporated by reference and made a part of the applicable UIC program under the SDWA for the State of Utah. This incorporation by reference was approved by the Director of the Federal Register on June 25, 1984.

(1) Utah Water Pollution Control Act, Utah Code Annotated, Title 26, Chapter 11, Sections 2, 8, and 10 (1989);

(2) Underground Injection Control Regulations; Utah Administrative Code, Section R448–7 (effective as of January 2, 1990);

(3) Underground Injection Control Program (adopted January 20, 1982 and revised effective July 20, 1990) (Officially submitted to EPA by the Executive Secretary of Utah Water Pollution Control Committee on August 16, 1990).

(b) *Other laws.* The following statutes and regulations, although not incorporated by reference except for selected sections identified in paragraph (a) of this section, are also part of the approved State-administered program:

(1) Utah Pollution Control Act, Utah Code Annotated, Sections 26–11–1 through –20 (Supp. 1990);

(c)(1) The revised Memorandum of Agreement between EPA, Region VIII and the Utah Department of Health, Division of Environmental Health, signed by the Regional Administrator on October 3, 1990.

(2) Letter from Director, Utah Department of Health, Division of Environmental Health, Bureau of Water Pollution Control, to EPA Region VIII, Re: Underground Injection Control Program—Utah, March 15, 1982;

(3) Letter from the Executive Secretary of the Utah Water Pollution Control Committee to EPA Region VIII, "Re: Utah UIC Class I Well Program Changes," August 16, 1990;

(d) *Statement of legal authority.* (1) "Underground Injection Control Program—Attorney General's statement," signed by Attorney General, State of Utah, January, 1982;

(2) Letter from Assistant Attorney General of Utah to Chief, Drinking Water Branch, EPA Region VIII, June 18, 1982;

(3) Addendum to Underground Injection Control Program, Attorney General's Statement signed by Attorney General of Utah, August 10, 1990.

(e) The Program Description (revised June 19, 1990) and any other materials submitted as part of the application or supplements thereto.

[56 FR 9419, Mar. 6, 1991]

§ 147.2251 State-administered program—Class II wells.

The UIC program for Class II wells in the State of Utah, except those on Indian lands, is the program administered by the Utah Department of Natural Resources, Division of Oil, Gas, and Mining, approved by EPA pursuant to section 1425 of the SDWA. Notice of this approval was published in theFederal Registeron October 8, 1982 (47 FR 44561); the effective date of this program is November 7, 1982. This program consists of the following elements, as submitted to EPA in the State's program application:

(a) *Incorporation by reference.* The requirements set forth in the State statutes and regulations cited in this paragraph are hereby incorporated by reference and made a part of the applicable UIC program under the SDWA for the State of Utah. This incorporation by reference was approved by the Director of the Federal Register on June 25, 1984.

(1) Utah Code Annotated, 1953, section 40–6–1 through 40–6–18, as amended 1988 and Cumm. Supp. 1990;

(2) The Oil and Gas Conservation General Rules, adopted under the authority of the Oil and Gas Conservation Act, 40–6–1 *et seq.,* Utah Code Annotated, as amended 1988 (revised March 1989), rules R615–1 through R615–4, and R615–8 through R615–10.

(b) *Other laws.* [Reserved]

(c)(1) The Memorandum of Agreement between EPA, Region VIII and the Utah Department of Natural Resources, Division of Oil, Gas, and Mining and the Board of Oil, Gas and Mining, signed by the EPA Regional Administrator on July 19, 1983;

(2) Letter from Director, Division of Oil, Gas and Mining, Utah Department of Natural Resources and Energy, to Regional Administrator, EPA Region VIII, "Re: Aquifer Exemption Process," June 16, 1982;

(3) "Memorandum of Understanding" between Utah Department of Health and Utah Department of Natural Resources, dated March 5, 1981;

(4) "Second Addition to Agreement between the Department of Health and the Department of Natural Resources and Energy," dated December 15, 1981.

(d) *Statement of legal authority.* (1) Part III of "Primacy Application—Class II Underground Injection Wells," consisting of "Synopsis of Pertinent Statutes and Regulations," "Statement of Legal Authority," and "Certification by the Attorney General," by Assistant Attorney General, Department of Natural Resources and Energy, dated December 18, 1981;

(2) Letter from Assistant Attorney General, State of Utah, to EPA Region VIII, undated, received in the EPA Office of Regional Counsel June 10, 1982.

(3) Memorandum to Director, Division of Oil, Gas and Mining from Assistant Attorney General regarding Underground Injection Control Program, January 8, 1985.

(e) The Program Description and any other materials submitted as part of the application or amendments thereto.

[49 FR 20197, May 11, 1984, as amended at 53 FR 43091, Oct. 25, 1988; 56 FR 9420, Mar. 6, 1991]

§ 147.2253 EPA-administered program—Indian lands.

(a) *Contents.* The UIC program for all classes of wells on Indian lands in the State of Utah, except for Class II wells on Navajo Indian lands for which EPA has granted the Navajo Nation primacy for the SDWA Class II UIC program (as defined in §147.3400), is administered by EPA. The program for wells on Navajo Indian lands, except for Class II wells on Navajo Indian lands for which EPA has granted the Navajo Nation primacy for the SDWA Class II UIC program, and for Ute Mountain Ute consists of the requirements set forth at subpart HHH of this part. The program for all other wells on Indian lands consists of the UIC program requirements of 40 CFR parts 124, 144, 146, 148, and any additional requirements set forth in the remainder of this subpart. Injection well owners and operators, and EPA shall comply with these requirements.

(b) *Effective date* . The effective date for this program for all other Indian lands in Utah, except for Class II wells on Navajo Indian lands for which EPA has granted the Navajo Nation primacy for the SDWA Class II UIC program (as defined in §147.3400), is November 25, 1988.

[53 FR 40391, Oct. 25, 1988, as amended at 56 FR 9420, Mar. 6, 1991; 73 FR 65565, Nov. 4, 2008]

Browse Previous | Browse Next

For questions or comments regarding e-CFR editorial content, features, or design, email ecfr@nara.gov.

For questions concerning e-CFR programming and delivery issues, email webteam@gpo.gov.

Section 508 / Accessibility

EXHIBIT B

Electronic Code of Federal Regulations
e-CFR TM

e-CFR Data is current as of April 27, 2010

Title 40: Protection of Environment

PART 146—UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS
Subpart A—General Provisions

Browse Previous | Browse Next

§ 146.6 Area of review.

The area of review for each injection well or each field, project or area of the State shall be determined according to either paragraph (a) or (b) of this section. The Director may solicit input from the owners or operators of injection wells within the State as to which method is most appropriate for each geographic area or field.

(a) *Zone of endangering influence.* (1) The zone of endangering influence shall be:

(i) In the case of application(s) for well permit(s) under §122.38 that area the radius of which is the lateral distance in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water; or

(ii) In the case of an application for an area permit under §122.39, the project area plus a circumscribing area the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water.

(2) Computation of the zone of endangering influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take.

$$r = \left[\frac{2.25\,KHt}{S10^{x}}\right]^{1/2}$$

where:

$$X = \frac{4\pi KH\left(h_w - h_{bo} \times S_p G_b\right)}{2.3Q}$$

r=Radius of endangering influence from injection well (length)

k=Hydraulic conductivity of the injection zone (length/time)

H=Thickness of the injection zone (length)

t=Time of injection (time)

S=Storage coefficient (dimensionless)

Q=Injection rate (volume/time)

h_{bo}=Observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water

h_w=Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water

S_pG_b=Specific gravity of fluid in the injection zone (dimensionless)

π=3.142 (dimensionless)

The above equation is based on the following assumptions:

(i) The injection zone is homogenous and isotropic;

(ii) The injection zone has infinite area extent;

(iii) The injection well penetrates the entire thickness of the injection zone;

(iv) The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

(v) The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

(b) *Fixed radius.* (1) In the case of application(s) for well permit(s) under §122.38 a fixed radius around the well of not less than one-fourth (1/4) mile may be used.

(2) In the case of an application for an area permit under §122.39 a fixed width of not less than one-fourth (1/4) mile for the circumscribing area may be used.

In determining the fixed radius, the following factors shall be taken into consideration: Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

(c) If the area of review is determined by a mathematical model pursuant to paragraph (a) of this section, the permissible radius is the result of such calculation even if it is less than one-fourth (1/4) mile.

[45 FR 42500, June 24, 1980, as amended at 46 FR 43161, Aug. 27, 1981; 47 FR 4999, Feb. 3, 1982]

Browse Previous | Browse Next

For questions or comments regarding e-CFR editorial content, features, or design, email ecfr@nara.gov.

For questions concerning e-CFR programming and delivery issues, email webteam@gpo.gov.

Section 508 / Accessibility

EXHIBIT C

BEFORE THE OIL AND GAS CONSERVATION COMMISSION

OF THE STATE OF WYOMING

IN THE MATTER OF A HEARING BROUGHT ON THE APPLICATION OF ANADARKO PETROLEUM CORPORATION FOR AN ORDER FROM THE COMMISSION UNDER THE RULES AND REGULATIONS OF THE UNDERGROUND INJECTION CONTROL PROGRAM FOR AN AQUIFER EXEMPTION FOR THE ERICSON FORMATION IN A QUARTER MILE RADIUS OF THE WELL BORE OF PROPOSED DISPOSAL WELL NO. 23-2 TABLE ROCK WHICH IS LOCATED IN THE SW¼ NE¼ OF SECTION 23, TOWNSHIP 19 NORTH, RANGE 98 WEST, TABLE ROCK FIELD AREA, SWEETWATER COUNTY, WYOMING; FOR APPROVAL OF USE OF THE WELL FOR DISPOSAL OF WATER; AND TO TAKE WHATEVER OTHER ACTION WHICH THE COMMISSION DEEMS APPROPRIATE	)	CAUSE NO. 6 ORDER NO. 1 DOCKET NO. 40-2004

Those in attendance were the following:

ANADARKO E&P COMPANY -	William W. Allen
STATE OF WYOMING -	Mark Watson Janie Nelson Craig Eggerman

REPORT OF THE EXAMINERS

This cause came on regularly for hearing before Mark Watson, Janie Nelson, and Craig Eggerman, duly appointed hearing examiners of the Wyoming Oil and Gas Conservation Commission at 2:15 P.M. on the 17th day of February 2004 in the Conference Room of the office of the State Oil and Gas Supervisor, 777 West First Street, Casper, Wyoming, after due and legal notice was given as required by law and as required by the Rules and Regulations of the Commission to consider the application of Anadarko Petroleum Corporation (Anadarko), for an order from the Commission under the rules and regulations of the Underground Injection Control Program for an aquifer exemption for the Ericson Formation in a quarter mile radius of the well bore of proposed disposal well No. 23-2 Table Rock which is located in the Southwest Quarter Northeast Quarter of Section 23, Township 19 North, Range 98 West, Table Rock Field Area, Sweetwater County, Wyoming; and approval for use of the well for disposal of water.

The examiners proceeded to swear the witness appearing on behalf of the applicant and, after considering the documentary evidence provided in the application and testimony provided by the

witness, make the following Findings of Fact, Conclusions of Law, and Order:

FINDINGS OF FACT

1. This action, brought by Anadarko to exempt the Ericson Formation in a quarter-mile radius of the well bore of proposed disposal well No. 23-2 Table Rock, located in the Southwest Quarter Northeast Quarter of Section 23, Township 19 North, Range 98 West, Table Rock Field Area, Sweetwater County, Wyoming, from the definition and protection of fresh and potable water is necessitated as a condition of approval of an application to dispose of water produced in association with the recovery of hydrocarbons under Chapter 4, Section 5 of the Commission's rules.

2. Notice of this matter was published on December 31, 2003, in the "Rock Springs Daily Rocket-Miner," a Sweetwater County newspaper, and on January 1, 2004, in the "Casper Star-Tribune," a paper in general circulation in Wyoming.

3. Notice was afforded to all interested parties on the Commission's mailing list, to the Department of Environmental Quality (DEQ), and to the Office of the State Engineer.

4. Accepted into evidence was an affidavit attesting that a copy of the application for disposal was provided to surface owners, mineral owners and working interest owners within a one-half mile radius of the proposed disposal well.

5. The Commission received no objections to the proposal to use the Ericson Formation for disposal of water produced in association with production of hydrocarbons from the Weber Formation.

6. The following geologic description of the Cretaceous Ericson Formation, encountered at depths in excess of 6,900 feet in the proposed disposal well was provided by the applicant:

> The proposed disposal zones in the Anadarko Table Rock SWD #23-2 well are sandstone intervals within the Cretaceous Ericson formation. The Ericson formation is encountered in the subject well bore from 6904 feet to the total depth of 7300 feet. The sandstones in the Ericson formation represent lower alluvial plain channels and delta distributary channels. Lithologically there are fine to medium grained sublitharenite sands. Measured porosities range from 14.4 to 15.9 percent in 6 rotary sidewall cores taken in the intervals from 6916 to 7214 feet. Permeabilities in these same cores range from 2.7 to over 60 millidarcies. The seal at the top of the Ericson sandstones is a 200 foot thick sequence of interbedded thin sandstones, shales, and coals. The log shows the sandstones to range in thickness from 2 to 4 feet, to contain average log porosities of less than 10% , and to exhibit nearly identical resistance values as recorded by five tool geometrics. This lack of resistance variation indicates that these sandstones contain very low permeabilities. Sealing conditions below the Ericson formation are not sampled by many wells in this area. Those wells that do penetrate below the Ericson interval exhibit an increasingly shaly section which grades down into Rock Springs sandstones and shales and finally becomes a

relatively massive shale in the Blair formation.

Standard analyses of water from Ericson intervals in the proposed disposal well showed total dissolved solids concentrations ranging from 93,340 to 99,125 milligrams per liter.

7. The estimated average surface injection pressure is 3,000 psi with a maximum surface disposal pressure of 3,500 psi. Step rate tests showed a frac gradient of 0.766 psi per foot of depth. Subsequent to the hearing, Anadarko provided temperature surveys that showed no fluid migration from the disposal interval at those surface pressures.

8. Proposed for disposal is a minimum of 8,000 barrels and a maximum of 12,000 barrels of water per day from the following listed wells in which Anadarko has a 50% interest.:

Table Rock Unit 123	-	NW¼ SW¼ Section 19, T.19N, R.97W
Table Rock Unit 23	-	NW¼ NE¼ Section 2, T.18N, R.98W
Table Rock Unit 21	-	NE¼ SE¼ Section 10, T.18N, R.98W
Table Rock Unit 124	-	SE¼ SE¼ Section 3, T.18N, R.98W
Table Rock Unit 125	-	NW¼ SE¼ Section 36, T.19N, R.98W
Table Rock Unit 37	-	SW¼ SW¼ Section 25, T.19N, R.98W

Water from the following wells operated by Anadarko will also be disposed in the 23-2 SWD:

Higgins Unit 19	-	NE¼ SE¼ Section 15, T.18N, R.98W -	Weber
Higgins Unit 17	-	NW¼ NW¼ Section 29, T.18N, R.98W -	Weber
Higgins Unit 21	-	SE¼ SE¼ Section 29, T.18N, R.98W -	Weber
Higgins Unit 18	-	SE¼ SE¼ Section 21, T.18N, R.98W -	Weber

Subsequent to the hearing, the applicant provided water analyses for 5 of the wells and requested approval to dispose of process water from the Table Rock Plant, which is located in Section 23, Township 19 North, Range 98 West. Information relative to processes used by the plant was not provided.

9. Evidence was sufficient to demonstrate that construction of the No. 23-2 Table Rock can reasonably be expected to be adequate to protect fresh water and to limit the disposal fluid from entering any zones other than the Ericson.

10. The applicant identified no problems with the seven plugged and abandoned wells which lie within the area of review of the proposed disposal well.

CONCLUSIONS OF LAW

1. Due and legal notice of time, place and purpose of this hearing was given in all respects as required by law.

2. The Commission has jurisdiction over this matter and over all parties interested, and

has jurisdiction to make and promulgate the order hereinafter set forth.

3. The testimony adduced at this hearing shall be transcribed and copies thereof may be obtained from the reporter by any and all interested parties.

4. The hearing was conducted in accordance with Chapter 4, Sections 5 and 12 of the Wyoming Oil and Gas Conservation Commission.

5. We conclude that the Cherokee Creek and Deep Creek Formations in a quarter mile radius of the proposed disposal well should be exempt from the definition and protection of fresh and potable water because water in the interval has total dissolved solids concentrations in excess of 10,000 milligrams per liter.

6. We further conclude that approval of the No. 23-2 Table Rock Well for disposal purposes should be granted with the following stipulations:

a). that the maximum authorized disposal pressure be set at 3,500 psi surface;

b). that casing in the proposed disposal well be successfully pressure tested in the presence of a Commission inspector prior to use of the well;

c). that samples representative of water from the all the wells proposed for disposal be obtained and that standard water analyses be provided to the staff prior to disposal;

d). that administrative approval be obtained for any additional sources proposed for disposal in the 23-2 Table Rock well;

e). that disposal of fluids from the sour gas treatment plant be prohibited until such time that detail about its processes is provided to the staff and a determination that the waste is suitable for disposal in the class II water disposal well may be made;

f). that volumes and pressures be reported monthly on Form 2 - Operator's Monthly Report of Wells.

ORDER

IT IS THEREFORE HEREBY ORDERED BY THE COMMISSION that the application of Anadarko Petroleum Corporation, for an aquifer exemption for the Ericson Formation in a quarter mile radius of the No. 23-2 Table Rock Well, located in the Southwest Quarter Northeast Quarter of Section 23, Township 19 North, Range 98 West, Table Rock Field Area, Sweetwater County, Wyoming, be approved.

IT IS FURTHER ORDERED that use of the No. 23-2 Table Rock Well be approved for disposal into the Ericson Formation with the stipulations in Conclusion of Law No. 6. The Supervisor shall be notified promptly of any changes in the operation of this project.

DATED this 26th day of July 2004.

WYOMING OIL AND GAS
CONSERVATION COMMISSION

/s/ Mark Watson
Mr. Mark Watson - Examiner

/s/ Lynne Boomgaarden
Ms. Lynne Boomgaarden
Acting Chairman-Commissioner

/s/ Janie Nelson
Ms. Janie Nelson - Examiner

/s/ Lance W. Cook
Mr. Lance W. Cook
Commissioner

/s/ Craig Eggerman
Mr. Craig Eggerman - Examiner

/s/ Robert A. King
Mr. Robert A. King,
Commissioner

/s/ Donald B. Basko
Mr. Donald B. Basko,
Commissioner

EXHIBIT D

BEFORE THE INDUSTRIAL COMMISSION

OF THE STATE OF NORTH DAKOTA

CASE NO. 7114
ORDER NO. 8303

IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF CONTINENTAL RESOURCES, INC. FOR AN ORDER PURSUANT TO SECTION 43-02-03-88.1 OF THE NORTH DAKOTA ADMINISTRATIVE CODE FOR THE CONVERSION TO SALTWATER DISPOSAL INTO THE MISSION CANYON FORMATION IN THE BEULAH #1-4 SWD WELL, LOCATED IN THE SE/4 NW/4 OF SECTION 4, T.129N., R.104W., BOWMAN COUNTY, NORTH DAKOTA, AS AN EXCEPTION TO SECTION 43-02-05-03 OF THE NORTH DAKOTA ADMINISTRATIVE CODE.

ORDER OF THE COMMISSION

THE COMMISSION FINDS:

(1) This cause came on for hearing at 9:00 a.m. on the 6th day of July, 1998.

(2) Continental Resources, Inc. (Continental) proposed to dispose of saltwater produced with crude and pit waters by injection into the Mission Canyon Formation through the Beulah #1-4 SWD well, located in the SE/4 NW/4 of Section 4, Township 129 North, Range 104 West, Cedar Hills Field, Bowman County, North Dakota.

(3) Continental needs to receive an aquifer exemption because the Mission Canyon Formation in this area contains less than ten thousand parts per million of total dissolved solids.

(4) The EPA must concur with all aquifer exemptions and submit a letter of concurrence for the record.

(5) No one appeared in person to support or object to the application and no written comments or objections to the application were received prior to the hearing date.

(6) Continental submitted an affidavit in accordance with the requirements of Section 43-02-03-88.1 NDAC, and an Application for Fluid Injection which includes attachments as required in Section 43-02-05-04 NDAC.

(7) A letter of concurrence from the EPA on exempting the Mission Canyon Aquifer was received July 30, 1998. This letter recommended a radius of influence of one-half mile.

(8) The proposed injection well is sited in such a fashion that it will inject into a formation which has confining zones that are free of known open faults or fractures within the area of review.

(9) The proposed injection well will be constructed in such a manner as to prevent the movement of fluids into or between underground sources of drinking water.

(10) In order to prevent possible damage to surface lands, and contamination of surface and subsurface waters, this application should be approved.

IT IS THEREFORE ORDERED:

(1) The Mission Canyon Formation under the Beulah #1-4 SWD and up to a 1/2 mile radius of influence is hereby designated an exempted aquifer.

(2) Continental, its assigns and successors, is hereby permitted to dispose of fluids, pursuant to Chapter 43-02-05 NDAC, by injection into the Mission Canyon Formation, through the Beulah #1-4 SWD well, located in the SE/4 NW/4 of Section 4, Township 129 North, Range 104 West, Cedar Hills Field, Bowman County, North Dakota.

(3) The permission granted herein is conditioned on the operator complying with all provisions of the injection permit issued by the Oil and Gas Division of the Industrial Commission.

(4) This order shall remain in full force and effect until further order of the Commission.

Dated this 30th day of July, 1998.

INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA

By the Director, on behalf of the Commission.

/s/ Lynn D. Helms, Director

EXHIBIT E

BEFORE THE OIL AND GAS CONSERVATION COMMISSION

OF THE STATE OF WYOMING

IN THE MATTER OF A HEARING BROUGHT ON THE APPLICATION OF EL PASO E&P, L.P. COMPANY FOR AN ORDER FROM THE COMMISSION UNDER THE RULES AND REGULATIONS OF THE UNDER-GROUND INJECTION CONTROL PROGRAM FOR AN AQUIFER EXEMPTION AND APPROVAL OF A WATERFLOOD PROJECT FOR THE LOWER PARKMAN FORMATION UNDERLYING LANDS IN THE PROPOSED SAVAGETON UNIT, HOUSE CREEK FIELD, CAMPBELL COUNTY, WYOMING; APPROVAL OF USE OF TWENTY-SIX (26) WELLS FOR WATER INJECTION; AND TO TAKE WHAT-EVER OTHER ACTION WHICH THE COMMISSION DEEMS APPROPRIATE	)	CAUSE NO. 6 ORDER NO. 1 DOCKET NO. 475-2008

APPEARANCES:

MICHAEL J. WOZNIAK, Attorney at Law Representing El Paso E&P, L.P. Company

Others in attendance were the following:

EL PASO E&P, L.P. COMPANY -	David M. Wheeler Joe H. Cox, Jr. Mary Sharon Balakas Michael T. Borah
STATE OF WYOMING -	Mark Watson Janie Nelson Craig Eggerman

REPORT OF THE EXAMINERS

This cause came on regularly for hearing before Mark Watson, Janie Nelson, and Craig Eggerman, duly appointed hearing examiners of the Wyoming Oil and Gas Conservation Commission at 3:22 P.M. on the 13th day of October 2008 in the Conference Room of the office of the State Oil and Gas Supervisor, 2211 King Boulevard, Casper, Wyoming, after due and legal notice was given as required by law and as required by the Rules and Regulations of the Commission to consider the application of El Paso E&P, L.P. Company (El Paso), for an order from the Commission under the rules and regulations of the Underground Injection Control Program for an aquifer exemption and approval of a waterflood project for the Lower Parkman Formation underlying lands in the proposed Savageton (Lower Parkman) Unit, House Creek Field, Campbell County, Wyoming; and to take whatever other action which the Commission deems appropriate.

The examiners proceeded to swear the witnesses appearing on behalf of the applicant and,

after considering the documentary evidence provided in the application and testimony provided by the witnesses, make the following Findings of Fact, Conclusions of Law, and Order:

FINDINGS OF FACT

1. This action, brought by El Paso to exempt the Lower Parkman Formation underlying the following lands in the proposed Savageton (Lower Parkman) Unit from the definition and protection of fresh and potable water is necessitated as a condition of approval of an application to inject water under Chapter 4, Section 7 of the Commission's rules:

Township 44 North, Range 74 West, 6th P.M.
Section 2: W½ W½
Section 3: All
Section 4: All
Section 5: N½ NE¼, SE¼ NE¼
Section 9: NE¼, E½ NW¼, N½ SE¼, SE¼ SE¼
Section 10: All
Section 11: W½ NW¼, NW¼ SW¼
Section 15: NW¼ NE¼, NW¼
Section 16: NE¼ NE¼

Township 45 North, Range 74 West, 6th P.M.
Section 3: W½ NW¼, SW¼, SW¼ SE¼
Sections 4-10: All
Section 11: W½ SW¼
Section 14: W½ W½
Sections 15-17: All
Section 18: E½, E½ W½, NW¼ NW¼
Section 19: E½, E½ NW¼
Sections 20-22: All
Section 23: W½ W½
Section 26: W½ NW¼, SW¼
Section 27: All
Section 28: All
Section 29: N½, N½ SW¼, SE¼ SW¼, SE¼
Section 30: NE¼ NE¼
Section 32: NE¼, E½ NW¼, N½ SE¼, SE¼ SE¼
Section 33: All
Section 34: All
Section 35: W½

Township 45 North, Range 75 West, 6th P.M.
Section 1: E½, E½ NW¼, NE¼ SW¼
Section 12: N½ NE¼, SE¼ NE¼

Township 46 North, Range 74 West, 6th P.M.
Section 7: S½ NW¼, SW¼, NW¼ SE¼, S½ SE¼
Section 17: NW¼ NW¼, S½ NW¼, SW¼
Section 18: All
Section 19: All
Section 20: SW¼ NE¼, W½, NW¼ SE¼, S½ SE¼
Section 28: NW¼ NW¼, S½ NW¼, SW¼, NW¼ SE¼, S½ SE¼
Sections 29-33: All
Section 34: SW¼ NW¼, W½ SW¼

Township 46 North, Range 75 West, 6th P.M.

Section 11:	S½ SW¼, NE¼ SE¼, S½ SE¼
Section 12:	E½, NE¼ NW¼, S½ NW¼, S½
Section 13:	All
Section 14:	All
Section 23:	E½, N½ NW¼, SE¼ NW¼, E½ SW¼, SE¼
Section 24:	All
Section 25:	All
Section 26:	NE¼, NE¼ SE¼
Section 36:	All

2. Notice of this matter was published on September 10 and November 26, 2008, in the "News-Record," a paper in circulation in Campbell County and on September 11, October 23, and November 26, 2008, in the "Casper Star-Tribune" a paper in general circulation in Wyoming.

3. Notice was afforded to all interested parties on the Commission's mailing list and to the Office of the State Engineer, the Department of Environmental Quality, and Region VIII of the Environmental Protection Agency.

4. Accepted into evidence was an affidavit attesting that a copy of the application for injection was provided to surface owners, mineral owners and working interest owners within a one-half mile radius of the proposed injection wells.

5. The Commission received no objections to the proposal to inject water from the Lower Parkman and Fox Hills Formations into the Lower Parkman underlying the proposed unit for the purpose of increasing ultimate recovery of hydrocarbons from the reservoir.

6. By letter dated November 12, 2008, Region VIII of the Environmental Protection Agency advised that they do not consider the Lower Parkman in the area a USDW under the Safe Drinking Water Act because the total dissolved solids is expected to be in excess of 10,000 mg/l.

7. The Lower Parkman Formation, encountered at depths in excess of 7,000 feet in the proposed unit area, was described by the applicant in the Unit Feasibility Study as follows:

> Parkman oil was discovered at Savageton by Ensign Oil and Gas in 2002 with a recompletion in the lower Parkman in the State 12-16, located in SW NW Section 16, T45N-R74W. Ensign followed this success with a re-entry and re-completion of the Zicari 1 well, one half mile northeast, in NW NE Section 16, and with the drilling of a new well, the Schlautmann 14-9, both with similar results. The Upper Cretaceous (Campian) Parkman Sandstone represents one of the major progradations of the Mesaverde Group. It conformably overlies, and inter-tongues with the Steele Shale, and is disconformably overlain by the Pierre (Lewis) Shale. In the Savageton area, the Parkman is generally 150-200 feet thick and is composed of sandstone, shaly sandstone and sandy shale. As the type log shows, the Parkman can be subdivided into three main units in Savageton. The producing zone is the shaly sandstone of the lower Parkman at the base of the formation. From routine analyses

of three cores, porosity ranges up to 17% and averages 13.5%; permeability ranges up to 36 md and averages 5.8 md. Through July, 2008, cumulative production from the 55 (51 horizontal, 4 vertical) active wells is 2.6 MMSTBO.

The applicant provided a net sandstone isopach map and a structure map. The reservoir has been defined by drilling and engineering and geologic study. A standard analysis of water from the interval shows a total dissolved solids concentration of 11,100 mg/L.

8. The estimated maximum surface injection pressure is 1,000 psi. The average fracture gradient for the Lower Parkman, based upon frac treatments on five wells is 0.574 psi per foot of depth, a fracture pressure of 1,053 psi. All of the proposed injection wells are horizontally completed as are the majority of the producing wells. El Paso stated that this development method was used in lieu of conventional vertical completions with hydraulic fracture stimulations to provide isolation from the water-saturated sands in the overlying Upper Parkman strata.

9. Proposed for injection is 500 barrels of water per day from the Lower or Upper Parkman and Fox Hills water wells as needed. The water wells have not been developed.

10. Evidence was sufficient to demonstrate that construction of the following wells proposed for use for injection can reasonably be expected to be adequate to protect fresh water and to limit the injection fluid from entering any zones other than the Lower Parkman Formation:

Geer #12-21H	SW¼ NW¼ Section 21, T.45N, R.74W
Schlautmann #12-9H	SW¼ NW¼ Section 9, T.45N, R.74W
Gilbertz Fed #12-22H	SW¼ NW¼ Section 22, T.45N, R.74W
Rassbach Trust Fed #12-5H	SW¼ NW¼ Section 35, T.45N, R.74W
Innes Fed #12-17H	SW¼ NW¼ Section 17, T.45N, R.74W
Schlautmann #12-8H	SW¼ NW¼ Section 8, T.45N, R.74W
Geer Fed #12-27H	SW¼ NW¼ Section 27, T.45N, R.74W
Rassbach Trust Fed #12-32H	SW¼ NW¼ Section 32, T.46N, R.74W
Innes Ranch Fed #12-31H	SW¼ NW¼ Section 31, T.46N, R.74W
Jones & Larsen Fed #12-28H	W½ NW¼ Section 28, T.45N, R.74W
Rassbach #12-20H	SW¼ NW¼ Section 20, T.45N, R.74W
Innes Fed #12-13H	SW¼ NW¼ Section 13, T.46N, R.75W
Innes Ranch #43-7H	NE¼ SE¼ Section 7, T.45N, R.74W
Schlautmann Fed #12-6H	SW¼ NW¼ Section 6, T.45N, R.74W
Innes Fed #12-30H	SW¼ NW¼ Section 30, T.46N, R.74W
McBeth Trust Fed #12-19H	SW¼ NW¼ Section 19, T.46N, R.74W
Geer Fed #12-34H	SW¼ NW¼ Section 34, T.45N, R.74W
Rassbach Trust #12-4H	SW¼ NW¼ Section 4, T.45N, R.74W
Innes Fed #12-24H	SW¼ NW¼ Section 24, T.46N, R.75W
Schlautmann #12-15H	SW¼ NW¼ Section 15, T.45N, R.74W
McBeth Fed #12-18H	SW¼ NW¼ Section 18, T.46N, R.74W
McBeth Fed #41-25H	NE¼ NE¼ Section 25, T.46N, R.75W
Geer Trust Fed #41-33H	NE¼ NE¼ Section 33, T.45N, R.74W
Innes Fed #41-14H	NE¼ NE¼ Section 14, T.46N, R.75W
Geer Fed #12-10H	SW¼ NW¼ Section 10, T44N, R.74W
Geer Fed #12-3H	SW¼ NW¼ Section 3, T.44N, R.74W

El Paso requested approval of a variance to the regulations to allow injection packers to be set in the vertical casing above the build section in each well.

11. The applicant stated that the 5 plugged and abandoned wells within the area of review have adequate open hole plugs to isolate the Parkman and that the 6 producing wells within the areas of review of the proposed injection wells have production casing cemented above the interval.

CONCLUSIONS OF LAW

1. Due and legal notice of time, place and purpose of this hearing was given in all respects as required by law.

2. The Commission has jurisdiction over this matter and over all parties interested, and has jurisdiction to make and promulgate the order hereinafter set forth.

3. The testimony adduced at this hearing shall be transcribed and copies thereof may be obtained from the reporter by any and all interested parties.

4. The hearing was conducted in accordance with Chapter 4, Sections 7 and 12 of the Wyoming Oil and Gas Conservation Commission.

5. We conclude that the Lower Parkman Formation underlying the unit area should be exempt from the definition and protection of fresh and potable water because the interval is hydrocarbon producing.

6. We further conclude that approval of use of the 26 wells proposed for injection into the Lower Parkman Formation should be granted with the following stipulations:

a). that the maximum authorized surface injection pressure be set at 1,000 psi;

b). that, prior to any use, casing in the proposed injection wells be successfully pressure tested in accordance with the Commission's rules in the presence of an agency inspector;

c). that the applicant run bond logs on the Geer #12-21H, Schlautmann #12-9H and 12-8H, and Rassbach Trust #12-4H wells and provide those to the Commission;

d). that a variance to allow injection packers to be set in vertical casing no more than 100 feet above the horizontal curve in each well be approved;

e). that volumes and pressures be reported monthly on Form 2 - Operator's Monthly Report of Wells.

ORDER

IT IS THEREFORE HEREBY ORDERED BY THE COMMISSION that the application of El Paso E&P, L.P. Company for an aquifer exemption for the Lower Parkman Formation underlying the aforedescribed lands in the proposed Savageton (Lower Parkman) Unit, House Creek Field, Campbell County, Wyoming, be approved.

IT IS FURTHER ORDERED that use of the twenty-six wells listed in Finding of Fact No. 10 be approved for injection into the Lower Parkman Formation with the stipulations in Conclusion of Law No. 6. The Supervisor shall be notified promptly of any changes in the operation of this project..

DATED this 7th day of January 2009.

WYOMING OIL AND GAS
CONSERVATION COMMISSION

/s/ Mark Watson
Mr. Mark Watson - Examiner

/s/ Lynne Boomgaarden
Ms. Lynne Boomgaarden,
Acting Chairman-Commissioner

/s/ Janie Nelson
Ms. Janie Nelson - Examiner

/s/ Donald B. Basko
Mr. Donald B. Basko,
Commissioner

/s/ Craig Eggerman
Mr. Craig Eggerman - Examiner

/s/ Ronald C. Surdam
Mr. Ronald C. Surdam,
Commissioner

/s/ G. Bruce Williams
Mr. G. Bruce Williams,
Commissioner