

JUN 09 1989

REPLY TO: 6W-5E

Certified Mail #P 105 223 682 - Return Receipt Requested

Mr. C. T. Stilwell
Arco Oil and Gas Company
Post Office Box 1610
Midland, Texas 79702

RECEIVED

JUN 15 1989

OIL CONSERVATION DIV.
SANTA FE

Re. Underground Injection Control Permit
Permit No. 06SNM12P9001 - San Juan County, New Mexico

Dear Mr. Stilwell:

Enclosed is a copy of the final permit referenced above. Please read the entire permit so that you can become familiar with the effective date and the conditions of the permit. Pay special attention to permit condition number I.B.1. which requires that the well pass the mechanical integrity test and that you receive an "Authorization to Inject" from this office prior to any future operation of this well. "Authorization to Inject" will not be granted until you have satisfactorily demonstrated compliance with special permit conditions I.A.1., I.A.2., and I.A.3.

The Regional Administrator will review each issued permit at least once every five (5) years to determine whether it should be modified or terminated.

Please be reminded that the Bureau of Land Management and the New Mexico Oil Conservation Division also require you to obtain their permits prior to commencement of the work described in your EPA application.

To schedule your well for testing or if you have any questions, please contact Ms. Betty West in Dallas at (214) 635-7165.

Sincerely yours,

Oscar Cabral, Jr., P.E.
Chief
Water Supply Branch (6W-5)

Enclosure

cc: with enclosure:
DIA, Gallup, New Mexico
BLM, Farmington, New Mexico
OIL Conservation Division, Santa Fe, New Mexico

ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT

Permit No. 06SMM2P0001

Well No. 3

AUTHORIZATION TO CONVERT A WELL TO
AN INJECTION WELL UNDER THE UIC PROGRAM
NAVAJO NATION

In compliance with the provisions of the Safe Drinking Water Act, (hereafter referred to as "the Act" or "SDWA" as amended (42 U.S.C. 6300f et seq.).

ARCO Oil and Gas Company
Central Division
Post Office Box 1610
Midland, Texas 79702

is authorized to convert a well to a Class II enhanced oil recovery injection well at:

660 feet from the South line and 417 feet from the East line, SE Quarter, Section 32, Township 31N, Range 16W into the injection interval at a depth of 1091 feet to 1233 feet below land surface in the Upper and Lower Gallup Formation in accordance with the construction and operation requirements, injection pressure limits, reporting and monitoring requirements, and other conditions set forth in Parts I and II of this permit and the New Mexico Indian Lands Class II Underground Injection Control Program and Regulations.

Authorization to inject fluids into the well described in this permit, shall be separately granted. Such authorization may be verbally granted by the Chief, UIC Permits and Enforcement Section when the operator has satisfactorily demonstrated compliance with special permit conditions I.A.1., I.A.2., and I.A.3. Any verbal authorization to inject will be followed by a written "Authorization to Inject" from the Director, Water Management Division (WMD).

JUN 09 1989

This permit shall become effective on _____ for conversion and for injection on the date specified in the "Authorization to Inject." Upon authorization to inject, this permit shall remain in effect until the well is plugged and abandoned or the permit is terminated.

Signed this _____ day of _____ JUN 09 1989

Myron G. Knudsen, P.E.
Director
Water Management Division
Environmental Protection Agency
Region 6

Part I. SPECIAL PERMIT CONDITIONS

A. Construction Requirements

1. Surface casing shall be set at 138 feet below land surface and cemented back to the surface. The long string casing shall be set at 1285 feet below land surface and cemented with 150 sacks of cement.
2. The well shall be equipped with standard female fittings with cut-off valves connected to the tubing, the tubing/casing annulus, and the casing/casing annulus so that the injection pressure and annuli pressure may be measured by an EPA representative by attaching a gauge having a standard male fitting.
3. Tubing and packer must be installed. The packer must be run on the tubing and set inside the casing between 1016 and 1086 feet of depth below the land surface.

B. Operating Requirements

1. The permittee shall monitor the tubing, the tubing/casing annulus, and the casing/casing annulus pressures at least once a month. The monitoring results shall be reported to the Regional Administrator (RA) according to the reporting requirements in condition II.L.4. of this permit.
2. Except during well stimulation, injection pressure at the wellhead shall not exceed 900 psig.
3. The permittee is authorized to inject salt water for enhanced oil recovery.
4. Injection volume shall be limited to 15,000 barrels per month.

C. Plugging and Abandonment Requirements

1. After a cessation of operations of two years, the operator shall plug and abandon the well in accordance with the following procedures:
 - (a) Pump sufficient cement, through open ended tubing positioned below the bottom perforation, to cover the top perforation by 50 feet, inside the casing;
 - (b) Perforate approximately 20 feet below the surface casing bottom and squeeze cement so as to provide a plug inside and outside of the casing to the surface;

- (c) Cut casing one foot below ground level, weld a blind flange to casing, and fill hole with dirt.
- 2. Permittee shall notify the RA at least 45 days before plugging and abandonment. Any modifications to the above procedures shall be included in this notice.
- 3. Within 60 days after plugging, a plugging report must be submitted. The report must include:
 - (a) A statement that plugging was completed in accordance with special permit condition I.C.1.; or
 - (b) If actual plugging differed from requirements of special permit condition I.C.1., specify the different procedures used.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI

1445 ROSS AVENUE, SUITE 1200

DALLAS, TEXAS 75202

March 7, 1989

Mr. C.T. Stilwell
Arco Oil and Gas Company
P.O. Box 1610
Midland, Texas 79702

Re: Permit Application #06SNMN2P9001

Well No.: Horseshoe Gallup Unit #1

Location: 660' FSL & 417' FEL, SE/4, Sec. 32, T 31N, R 16W
San Juan County, New Mexico

Dear Mr. Stilwell:

Your application for a permit on the above referenced injection well has been reviewed and deemed complete.

A draft permit (or intent to deny) and statement of basis are being prepared and will be supplied to you. Following our completion of these documents, we will give public notice of your application. A copy of the public notice will be mailed to you and it will be published in newspaper in the affected area.

We appreciate your interest and thoroughness in the permit application. If you have any questions, please contact Mr. Richard Peckham of my staff at (214) 655-7165.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Oscar Cabra, Jr.".

Oscar Cabra, Jr., P.E.
Chief
Water Supply Branch

cc: Bureau of Land Management
Navajo Nation w/enclosures
State of New Mexico w/enclosures



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI

1445 ROSS AVENUE, SUITE 1200

DALLAS, TEXAS 75202

April 26, 1989

REPLY TO: 6W-SE

Certified Mail #P 953 438 175 - Return Receipt Requested

Mr. C. T. Stilwell
ARCO Oil and Gas Company
Central Division
Post Office Box 1610
Midland, Texas 79702

Re: Draft UIC Permit and Statement of Basis
Permit No. 06SNMN2P9001 - San Juan County, New Mexico

Dear Mr. Stilwell:

Enclosed is a public notice, statement of basis and a draft underground injection control (UIC) permit which have been prepared by the Environmental Protection Agency (EPA) under the authority of the Safe Drinking Water Act. Please submit any comments regarding these in writing to the office at the address shown in the notice. The notice will be published in the Farmington Times.

Permits are also required by the Bureau of Land Management (BLM) and the New Mexico Oil Conservation Division. If you have not yet obtained their permits, contact the agencies at the addresses given below at your earliest convenience.

Area Manager
Farmington Resource Area Office
Bureau of Land Management
Caller Service 4140
Farmington, New Mexico 87499
Telephone: (505) 325-4572

New Mexico Oil Conservation Division
New Mexico Energy and Minerals Department
Post Office Box 2088
Santa Fe, New Mexico 87501
Telephone: (505) 827-5802

Authorization to complete the work described in your permit application must be received by both the EPA and BLM prior to commencement of work.

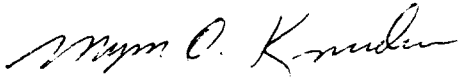
RECEIVED

MAY - 1 1989

**OIL CONSERVATION DIV.
SANTA FE**

If you have any questions, please have your staff contact Ms. Betty West of my staff at (214) 655-7165.

Sincerely yours,

A handwritten signature in cursive script, reading "Myron O. Knudson".

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosures

cc: with enclosures:

BIA, Gallup, New Mexico
BLM, Farmington, New Mexico
NM Oil Conservation Division, Santa Fe, New Mexico
Navajo Nation UIC Program

RECEIVED

ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT

MAY - 1 1989

Permit No. 06SNMN2P9001
Well No. 1

**OIL CONSERVATION DIV.
SANTA FE**

**AUTHORIZATION TO CONVERT A WELL TO
AN INJECTION WELL UNDER THE UIC PROGRAM
NAVAJO NATION**

In compliance with the provisions of the Safe Drinking Water Act, (hereafter referred to as "the Act" or "SDWA") as amended (42 U.S.C. §300f et seq.),

ARCO Oil and Gas Company
Central Division
Post Office Box 1610
Midland, Texas 79702

is authorized to convert a well to a Class II enhanced oil recovery injection well at:

660 feet from the South line and 417 feet from the East line, SE Quarter, Section 32, Township 31N, Range 16W into the injection interval at a depth of 1091 feet to 1233 feet below land surface in the Upper and Lower Gallup Formation in accordance with the construction and operation requirements, injection pressure limits, reporting and monitoring requirements, and other conditions set forth in Parts I and II of this permit and the New Mexico Indian Lands Class II Underground Injection Control Program and Regulations.

Authorization to inject fluids into the well described in this permit, shall be separately granted. Such authorization may be verbally granted by the Chief, UIC Permits and Enforcement Section when the operator has satisfactorily demonstrated compliance with special permit conditions I.A.1., I.A.2., and I.A.3. Any verbal authorization to inject will be followed by a written "Authorization to Inject" from the Director, Water Management Division (WMDD).

This permit shall become effective on _____ for conversion and for injection on the date specified in the "Authorization to Inject." Upon authorization to inject, this permit shall remain in effect until the well is plugged and abandoned or the permit is terminated.

Signed this _____ day of _____.

Myron O. Knudson, P.E.
Director
Water Management Division
Environmental Protection Agency
Region 6

DRAFT

Part I. SPECIAL PERMIT CONDITIONS

A. Construction Requirements

1. Surface casing shall be set at 138 feet below land surface and cemented back to the surface. The long string casing shall be set at 1285 feet below land surface and cemented with 150 sacks of cement.
2. The well shall be equipped with standard female fittings with cut-off valves connected to the tubing, the tubing/casing annulus, and the casing/casing annulus so that the injection pressure and annuli pressure may be measured by an EPA representative by attaching a gauge having a standard male fitting.
3. Tubing and packer must be installed. The packer must be run on the tubing and set inside the casing between 1016 and 1086 feet of depth below the land surface.

B. Operating Requirements

1. The permittee shall monitor the tubing, the tubing/casing annulus, and the casing/casing annulus pressures at least once a month. The monitoring results shall be reported to the Regional Administrator (RA) according to the reporting requirements in condition II.L.4. of this permit.
2. Except during well stimulation, injection pressure at the wellhead shall not exceed 900 psig.
3. The permittee is authorized to inject salt water for enhanced oil recovery.
4. Injection volume shall be limited to 15,000 barrels per month.

C. Plugging and Abandonment Requirements

1. After a cessation of operations of two years, the operator shall plug and abandon the well in accordance with the following procedures:
 - (a) Pump sufficient cement, through open ended tubing positioned below the bottom perforation, to cover the top perforation by 50 feet, inside the casing;
 - (b) Perforate approximately 20 feet below the surface casing bottom and squeeze cement so as to provide a plug inside and outside of the casing to the surface;

DRAFT

- (c) Cut casing one foot below ground level, weld a blind flange to casing, and fill hole with dirt.
- 2. Permittee shall notify the RA at least 45 days before plugging and abandonment. Any modifications to the above procedures shall be included in this notice.
- 3. Within 60 days after plugging, a plugging report must be submitted. The report must include:
 - (a) A statement that plugging was completed in accordance with special permit condition I.C.1.; or
 - (b) If actual plugging differed from requirements of special permit condition I.C.1., specify the different procedures used.

DRAFT

Part II. CONDITIONS APPLICABLE TO ALL PERMITS

A. Confidentiality

Any information except the permittee's name and address and information concerning the existence, absence or level of contaminants in drinking water may be claimed as confidential. Any claim of confidentiality must be asserted at the time of submission. If no claim is made, EPA may make the information available to the public without further notice.

B. Duty to Comply

1. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification.

Compliance with the terms of this grant does not constitute a defense to any action brought under Section 1431 of the Safe Drinking Water Act (SDWA) or any other law for any imminent or substantial endangerment to human health or the environment or for any breach of any other applicable legal duty.

2. The permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in a temporary emergency permit under 40 CFR 144.34.

C. Duty to Halt or Reduce Activity

It shall not be a defense for a permittee, in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Migrate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

E. Proper Operation and Maintenance

1. All injection wells must have and maintain mechanical integrity consistent with 40 CFR 146.8(b)(1) and 147.3010. Mechanical integrity must be demonstrated initially and also any time the tubing is removed from the well, the packer is reset, or a loss of mechanical integrity becomes evident during operation.

Further, the Regional Administrator (RA) may by written notice require the permittee to demonstrate mechanical integrity at any time. The permittee shall notify the EPA Region 6 UIC office of his intent to prove mechanical integrity at least 14 days prior to such demonstration. The permittee shall report the results of the mechanical integrity demonstration within 30 days after completion (unless the demonstration is witnessed by an EPA inspector, in which case the inspector will prepare the report).

2. If the permittee or the RA finds that the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 CFR 146.8 and 147.3010 becomes evident during operation, the operation shall be halted immediately and shall not be resumed until the RA gives approval to recommence injection.
3. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate engineering capability available, adequate funding, operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

F. Permit Actions

1. This permit may be modified, revoked and reissued, or terminated for the following causes (see 40 CFR 144.39 and 144.40):
 - a) There are substantial changes to the facility or activity which occurred after permit issuance that justify revised or additional permit conditions.
 - b) The RA has received information (e.g., from monitoring reports, inspections) which warrants a modified permit.
 - c) The regulations or standards on which the permit was based have changed.
 - d) The RA has received notice of a proposed permit transfer.
 - e) An interested person requests in writing that a permit be modified and the RA determines that cause for modification exists.

- f) Cause exists for termination under 40 CFR 144.40, but the RA determines that permit modification is appropriate.

The modification described in 40 CFR 144.39 must be followed to accomplish the modifications described in item "a" through "f" of this section.

- 2. Minor modifications do not require that the procedure listed in 40 CFR 144.39 be followed. Minor modifications consist of:
 - a) Correcting typographical errors;
 - b) Requiring more frequent monitoring or reporting;
 - c) Changing ownership or operational control (see 40 CFR 144.38, Permit Transfers); or
 - d) Changing quantities or types of injected fluids, provided:
 - (i) The facility can operate within conditions of the permit;
 - (ii) The facility classification would not change.

The filing of a request by the permittee for a permit modification, or a notification of planned change or anticipated noncompliance, does not stay any permit condition.

G. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

H. Duty to Provide Information

The permittee shall furnish to the RA within a reasonable time any information which the RA requests to determine whether cause exists for modifying, revoking and reissuing or terminating this permit. The permittee shall also furnish to the RA, upon request, copies of records required to be kept by this permit.

I. Inspection and Entry

The permittee shall allow EPA representatives upon the presentation of credentials and other documentation to:

- 1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records required by this permit are kept;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

J. Monitoring and Records

1. Samples and measurements taken for the purpose of monitoring shall be representative of the injection activity. The operator shall monitor the injection pressure (psi) and rate (bbl/day) once a month. Reporting of monitoring results shall be in accordance with procedures and at intervals prescribed in condition II.L.4 of this permit.
2. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample measurement, report or application. This period may be extended by request of the RA at any time.

The permittee shall retain records concerning the nature and composition of all injected fluids until three (3) years after the completion of any plugging and abandonment procedures specified under 40 CFR 144.28(c) and 144.28(j)(2). The RA may require the owner or operator to deliver the records to the RA at the conclusion of the retention period.

3. Records of monitoring information shall include:
 - a) The date, exact place, and time of sampling or measurements;
 - b) The individuals who performed the sampling or measurements;
 - c) The date(s) analyses were performed;
 - d) The individual(s) who performed the analyses;
 - e) The analytical techniques or methods used including quality assurance techniques employed to insure the generation of reliable data; and

f) The results of such analyses.

4. The owner/operator shall retain all monitoring records for three (3) years, unless an enforcement action is pending, and then until three (3) years after the enforcement action has been resolved.

K. Signatory Requirements

All applications, reports, or information submitted to the RA shall be signed and certified (see 40 CFR 144.32) by the injection facility owner/operator or his duly authorized representative.

L. Reporting Requirements

1. The owner/operator shall notify the EPA Region 6 UIC office within 30 days of the date on which injection commenced.
2. Planned changes - The permittee shall give advance notice to the RA of any planned changes which may result in noncompliance.
3. Transfers - This permit is not transferable to any person except after notice to the RA.
 - a) Permits may be transferred to another permittee:
 - (1) If the current permittee notifies the RA by certified mail at least 10 days before the proposed transfer date; and
 - (2) If the notice includes a written agreement between the existing and new permittees containing:
 - (i) A specific date for transfer of permit responsibility, coverage and liability; and
 - (ii) Assurance that the new permittee has a surety bond on file with BIA; and
 - (3) If the RA does not respond with a notice to the existing permittee that the permit will be modified.
 - b) If the conditions in paragraph (a) of this section are met, the transfer is effective on the date specified in paragraph (a)(2)(i).

4. Monitoring reports - Monitoring results shall be reported annually on the EPA Annual Disposal/Injection Well Monitoring Report form or an identical format. The report shall specify the types of methods used to generate the monitoring data.
5. Compliance schedules - Reports of compliance or noncompliance with, or any progress report on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each interim date and final date of compliance.
6. Twenty-four hour reporting - The permittee shall report to EPA Region 6 UIC office any noncompliance which may endanger an underground source of drinking water. The report shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times; if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
7. The following shall be reported within 30 days of occurrence:
 - a) Any monitoring reports or other information required under paragraph 6 that is not available within five (5) days.
 - b) Any malfunction of the injection system including any mechanical failure or downhole problem involving well integrity, well workovers, or any noncompliance (40 CFR 144.27).
8. Other noncompliance - The permittee shall report all instances of noncompliance not reported under paragraphs 6 and 7 of this section at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph L.6 of this section.
9. The permittee shall notify the EPA Region 6 UIC office within 30 days of the date injection has terminated.
10. Other information. When the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the RA, the permittee shall promptly submit such facts or information.

M. Additional Conditions

1. The operator of a well shall not allow the movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect human health.
2. The owner/operator shall notify the EPA Region 6 UIC office within 30 days of the date injection has terminated. The well must be plugged within two years after termination of injection. The RA may extend the time to plug, but only if no fluid movement into a USDW will occur, and the operator has presented a viable plan for utilizing the well within a reasonable time.
3. The permittee shall notify the EPA Region 6 UIC office by certified mail at least forty-five (45) days prior to the commencement of plugging operations. The notice must include that information prescribed at 40 CFR 146.10.
4. Plugging and Abandonment - The well shall be plugged in a manner which will not allow movement of fluids either into or between underground sources of drinking water. Placement of cement plugs shall be accomplished by one of the methods described in 40 CFR 146.10 or some other method approved by the RA.

The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or by a comparable method prescribed by the RA, prior to the placement of the cement plug(s).

N. Financial Responsibility

The permittee must demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection well.

O. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

P. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provisions to other circumstances, and the remainder of this permit, shall not be affected thereby.

Q. Explanation of Terms

Terms used in this permit are defined as follows:

"RA" - Regional Administrator, Region 6 EPA

"UIC" - Underground Injection Control

"SDWA"/"the Act" - The Safe Drinking Water Act

"EPA Region 6 - U.S. Environmental Protection Agency (6W-SE)
1445 Ross Avenue
Dallas, Texas 75202-2733
Telephone - (214) 655-7165

"Well Stimulation" - means several processes used to clean the wellbore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

Other references to program - specific terms, acronyms and abbreviations shall mean those terms as defined by the UIC program regulations, 40 CFR 124, 144, 145, 146, 147 and the Safe Drinking Water Act.

STATEMENT OF BASIS

For proposed Underground Injection Control Permit No. 06SNMN2P9001 to convert well # 1 to an enhanced oil recovery injection well.

Issuing office: U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Applicant: ARCO Oil and Gas Company
Central Division
Post Office Box 1610
Midland, Texas 79702

1. As described in the application, the well is located in San Juan County, New Mexico, 660 FSL, 417 FEL, SE/4, Section 32, Township 31N, Range 16W.
2. On the basis of preliminary staff review, the Environmental Protection Agency has made a tentative determination to draft a permit for the conversion of this well as described in the application.
3. The following is an explanation of the derivation of the conditions of the draft permit and the basis for them as required under 40 CFR §124.7:

Area of Review

The area around the proposed injection well or project must be evaluated to ensure that the proposed injection will not cause movement of fluid into a USDW through improperly sealed, completed, or abandoned wells. The permit applicant submitted information on all wells of public record penetrating the injection interval within 1/2 mile of the proposed injection and requested a maximum injection rate of 500 barrels per day (B/D).

There is no USDW in the area, therefore there is no corrective action necessary to protect an underground source of drinking water.

Well Location

The well must be sited so that injection is into a formation which is separated from underground sources of drinking water (USDWs) by a confining zone free of known open faults or fractures within the area of review. The proposed injection interval in the Upper and Lower Gallup Formation is at a depth of 1091 feet to 1233 feet below land surface. A review of available data has shown no evidence of faults or fractures in the confining zone within the area of review.

Construction Requirements

The well must be cased and cemented to prevent fluid movement into or between USDWs. There is no fresh water above the injection zone. Since the surface casing has already been set and cemented at 138 feet below land surface and the long string casing has been set at 1285 feet below the land surface and cemented with 150 sacks of cement, this is adequate in this case.

Operating Requirements

Injection must be through an adequate tubing and packer. The packer must be set within 75 feet of the top of the injection interval. Since the top of the injection interval is 1091 feet, the packer in this well must be set inside the casing between 1016 and 1086 feet of depth below land surface.

Injection pressure at the wellhead shall be limited so that it does not initiate new fractures or propagate existing fractures in the confining zone adjacent to any USDW.

Based on data submitted by the applicant showing the fracture gradient to be between 1.05 and 110 psi/ft in the Gallup Formation in the Horseshoe Gallup Field and the fact there is no USDW present, EPA is permitting the requested maximum pressure of 900 psig.

To assure that USDWs are protected from injection fluids, wells must maintain mechanical integrity. Because there are no underground sources of drinking water or flowing surface water nearby, EPA is waiving the requirement of an initial annulus pressure test as provided for in 40 CFR 144.16(a). The well is still expected to maintain mechanical integrity during the life of the well and the monitoring requirements of special permit condition I.B.1. should provide adequate demonstration of the well's integrity.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

April 26, 1989

REPLY TO: 6W SE

Certified Mail #P 105 324 528 Return Receipt Requested

Farmington Times
Box 450
Farmington, New Mexico 87499-0450

Re: Permit No: 06SNMN2P9001

Dear Sir:

Please publish the enclosed notice of the referenced Underground Injection Control (UIC) draft permit as soon as possible.

Proof of publication and your bill should be sent to:

The Navajo Nation
Attn: Raymond Roessel
Division of Natural Resources
Environmental Protection Administration
UIC Program
Post Office Box 308
Window Rock, Arizona 86515

immediately upon publication. Please call me at (214) 655-7165 or the Navajo UIC office in Window Rock at (602) 729-2637 if you have any questions.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Gus Chavarria", is written over a circular stamp. The signature is fluid and cursive.

Gus Chavarria
Chief

UIC Permits and Enforcement Section (6W-SE)

Enclosure

NEWSPAPER NOTICE

The Environmental Protection Agency (EPA) has received a complete Underground Injection Control (UIC) permit application number 06SNMN2P9001, from ARCO Oil Gas Company, Post Office Box 1610, Midland, Texas 79702, to convert a well to an enhanced oil recovery injection well located in San Juan County, New Mexico, SE Quarter, Section 32, Township 31N, Range 16W. The application requests authorization to inject salt water into the Upper and Lower Gallup Formation at an injection interval depth of 1091 to 1233 feet for enhanced recovery. A maximum of 15,000 barrels/month will be injected at a maximum pressure of 900 psig.

The permit application, supporting data submitted by the applicant, the EPA draft permit and statement of basis are available for public review Monday through Friday from 8:00 a.m. to 4:00 p.m. at the Navajo Nation, Division of Natural Resources, UIC Program Offices, Window Rock, Arizona 86515 or the Environmental Protection Agency, 1445 Ross Avenue, Dallas, TX 75202-2733. Comments on the permit application and draft permit should be submitted to the Dallas office within 30 days of the date of this notice.

Any interested person may request a public hearing on the draft permit. The request must be in writing and must include the requestor's statement of the issues cited for discussion at the hearing. The request for public hearing must also be submitted to the Dallas office. EPA will give at least 30 days notice of the public hearing, if a hearing is to be held.

For more information or to obtain copies of the draft permit, application, or other documents, contact the EPA office at the above address or by telephoning (214) 655-7165.

Billing Instructions:

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