CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: Marathon Oil Company Well: Indian Basin Fed 'C' No. 1

Contact: R.P. Bierenbaum / Harold Garrard Title: Prod. Mgr. / Eng. Phone: 915-652-1626

DATE IN 10-4-95 RELEASE DATE 10-18-95 DATE OUT 11-1-95

Proposed Injection Application is for: ___ **WATERFLOOD** ___ Expansion ___ Initial

Original Order: R- ______ ___ Secondary Recovery ___ Pressure Maintenance

SENSITIVE AREAS X **SALT WATER DISPOSAL** ___ Commercial Well

___ WIPP ___ Capitan Reef

Data is complete for proposed well(s)? ___ Additional Data Req'd ______

AREA of REVIEW WELLS

0 Total # of AOR N/A # of Plugged Wells

N/A Tabulation Complete N/A Schematics of P & A's

N/A Cement Tops Adequate N/A AOR Repair Required

INJECTION FORMATION

Injection Formation(s) Siluro-Devonian Compatible Analysis yes

Source of Water or Injectate Upper Penn/Morrow

PROOF of NOTICE

yes Copy of Legal Notice yes Information Printed Correctly

yes Correct Operators yes Copies of Certified Mail Receipts

___ Objection Received ___ Set to Hearing ______ Date

NOTES: Wait to discuss w/ J. Sexton & T. Gum on extended interval of Bare 4½" pipe – options – new & existing options

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL? ?

COMMUNICATION WITH CONTACT PERSON:

1st Contact:	___ Telephoned	___ Letter	______ Date	Nature of Discussion ______
2nd Contact:	___ Telephoned	___ Letter	______ Date	Nature of Discussion ______
3rd Contact:	___ Telephoned	___ Letter	______ Date	Nature of Discussion ______

SWD 10-18-95

Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, TX 79702-0552
Telephone 915/682-1626

September 27, 1995

Oil Conservation Division
State of New Mexico
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Re: Application for Authorization to Inject

Gentlemen,

Enclosed please find an "Application for Authorization to Inject" submitted for your review and approval. Marathon Oil Company desires to convert Indian Basin Federal "C" Well No. 1 to a salt water disposal well in the Indian Basin Field, Eddy County, New Mexico.

Should you have any questions concerning this application, please contact Harold Garrard at (915) 682-1626.

Thank you for your consideration.

Sincerely,

R.A. Biernbaum
Project Manager
Indian Basin Asset Team

Enclosures

G:\HEG\WORD6\083

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

OIL CONSERVATION DIVISION

Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no

II. Operator: Marathon Oil Company

Address: P.O. Box 552 Midland, TX 79702-0552

Contact party: R.A. Biernbaum Phone: (915) 682-1626

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: R.A. Biernbaum R.A. Biernbaum Title Manager, IBAT

Signature: _____ Date: 9/26/95

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108

Part III

Well Data

See attached well data sheet for Indian Basin Federal "C" Well No. 1

Part V

Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

See attached map.

Part VI

Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

There are no wells within the "area of review" (one-half mile radius) which penetrate the proposed disposal interval.

Part VII

See attachment.

Part VIII

See attachment.

Part IX

Describe the proposed stimulation program, if any.

The proposed injection well will be completed open hole. The proposed open hole interval will be stimulated using 15% HCl acid (± 6000 gallons).

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108

Part X

Attach appropriate logging and test data on the well.

Forms C-103 and C-105, along with an inclination report and logs were filed on this well.

Part XI

Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

There are no fresh water wells within a one mile radius of the proposed injection well.

Part XII

Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Marathon Oil Company, as Operator of the proposed injection well, has reviewed and examined available geologic and engineering data and finds no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

R.A. Biernbaum

Part XIII

Proof of notification

See attachments

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108
(Part VII)

Proposed Operations

1. Proposed average and maximum daily rate and volume of fluids to be injected.

Fluid:	Produced Water	
Average Rate:	7,500	BPD
Maximum Rate:	15,000	BPD

2. Whether the system is open or closed.

The proposed disposal system will be a closed system. Produced water will be gathered to a central location and will be pumped to the proposed injection well. The facility will be closed to "third-party" dispoal operators.

3. Proposed average and maximum injection pressure.

Average Pressure:	1000	psi
Maximum Pressure:	2200	psi

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water.

The source of the injection fluid will be produced water from offsetting leases.

Formations: Upper Penn
Morrow

See attached water analysis for each of the above zones.

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108
(Part VII)

Proposed Operations - continued

5. ***If injection is for disposal purpose into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.)***

Marathon Oil Company ran a DST test on North Indian Basin Well No. 1 (Section 9, T-21-S, R-23-E, Eddy County New Mexico) in 1963. The DST tested the interval 10,009 ft to 10,100 ft. Based on the DST, the following analysis was reported:

Specific Gravity	1.109	
pH	6.8	
Resistivity	.285	@ 94^{O} F
Chlorides (Cl)	11,000	
Sulfates (SO4)	1500	
Alkalinity (HCO3)	610	
Calcium (Ca)	1080	
Magnesium (Mg)	775	
Iron (Fe)	20	
Sodium (Na)	5359	
Sulfides (H2S)	negl.	

UPPER PENN

CARLSBAD LABORATORIES, INC.
3312 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

Oil Co. : Marathon Oil Company
Lease : Indian Hills State Com
Well No.: 6
Job No.: 9407010

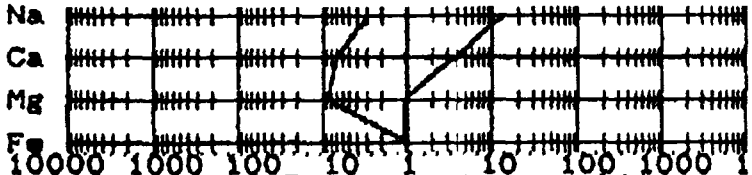
Sample Loc. : Seperator Sight Glass
Date Sampled : 08-July-1994
Attention : Noel Garza
Analysis No. : 07010-1

ANALYSIS

			MG/L	EQ. WT.	*MEQ/L
1.	pH		7.350		
2.	Specific Gravity 60/60 F.		1.003		
3.	$CaCO_3$ Saturation Index	@ 80 F.	+0.248		
		@ 140 F.	+0.948		
	Dissolved Gasses				
4.	Hydrogen Sulfide		64.8		
5.	Carbon Dioxide		Not Determined		
6.	Dissolved Oxygen		Not Determined		
	Cations				
7.	Calcium (Ca^{++})		140	/ 20.1 =	6.97
8.	Magnesium (Mg^{++})		109	/ 12.2 =	8.93
9.	Sodium (Na^{+})	(Calculated)	67	/ 23.0 =	2.91
10.	Barium (Ba^{++})		Not Determined		
	Anions				
11.	Hydroxyl (OH^{-})		0	/ 17.0 =	0.00
12.	Carbonate ($CO_3^{=}$)		0	/ 30.0 =	0.00
13.	Bicarbonate (HCO_3^{-})		244	/ 61.1 =	3.99
14.	Sulfate ($SO_4^{=}$)		43	/ 48.8 =	0.88
15.	Chloride (Cl^{-})		496	/ 35.5 =	13.97
16.	Total Dissolved Solids		1,098		
17.	Total Iron (Fe)		0	/ 18.2 =	0.02
18.	Total Hardness As $CaCO_3$		801		
19.	Resistivity @ 75 F. (Calculated)		4.997 /cm.		

LOGARITHMIC WATER PATTERN

*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 2,259 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	EQ. WT.	X *meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	3.99	324
$CaSO_4$	68.07	0.88	60
$CaCl_2$	55.50	2.09	116
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCL_2$	47.62	8.93	425
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	2.95	172

Analyst

Remarks and Comments:

MORROW

CAPROCK LABORATORIES, INC.
3912 Bankhead Hwy.
Midland, Texas 79701
(915) 689-7252
FAX # (915) 689-0130

WATER ANALYSIS REPORT

SAMPLE

Oil Co. : Marathon Oil Company
Lease : Winston Federal
Well No.:
Job No.: 9407010

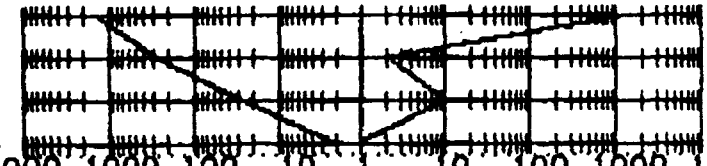
Sample Loc. : Seperator Sight Glass
Date Sampled : 08-July-1994
Attention : Noel Garza
Analysis No. : 07010-2

ANALYSIS

				MG/L	EQ. WT.	*MEQ/L
1.	pH			6.550		
2.	Specific Gravity 60/60 F.			1.009		
3.	$CaCO_3$ Saturation Index		@ 80 F.	-0.303		
			@ 140 F.	+0.617		
	Dissolved Gasses					
4.	Hydrogen Sulfide			10.8		
5.	Carbon Dioxide			Not Determined		
6.	Dissolved Oxygen			Not Determined		
	Cations					
7.	Calcium	(Ca^{++})		5,451	/ 20.1 =	271.19
8.	Magnesium	(Mg^{++})		340	/ 12.2 =	27.87
9.	Sodium	(Na^{+})	(Calculated)	32,955	/ 23.0 =	1,432.83
10.	Barium	(Ba^{++})		Not Determined		
	Anions					
11.	Hydroxyl	(OH^{-})		0	/ 17.0 =	0.00
12.	Carbonate	(CO_3^{--})		0	/ 30.0 =	0.00
13.	Bicarbonate	(HCO_3^{-})		134	/ 61.1 =	2.19
14.	Sulfate	(SO_4^{--})		540	/ 48.8 =	11.07
15.	Chloride	(Cl^{-})		60,978	/ 35.5 =	1,717.72
16.	Total Dissolved Solids			100,399		
17.	Total Iron (Fe)			38	/ 18.2 =	2.08
18.	Total Hardness As $CaCO_3$			15,013		
19.	Resistivity @ 75 F. (Calculated)			0.092 /cm.		

LOGARITHMIC WATER PATTERN

*meq/L.



*Milli Equivalents per Liter

Calculated Calcium Sulfate solubility in this brine is 2,539 mg/L. at 90 F.

PROBABLE MINERAL COMPOSITION

COMPOUND	Eq. Wt. X	*meq/L =	mg/L.
$Ca(HCO_3)_2$	81.04	2.19	178
$CaSO_4$	68.07	11.07	753
$CaCl_2$	55.50	257.94	14,315
$Mg(HCO_3)_2$	73.17	0.00	0
$MgSO_4$	60.19	0.00	0
$MgCL_2$	47.62	27.87	1,327
$NaHCO_3$	84.00	0.00	0
$NaSO_4$	71.03	0.00	0
NaCl	58.46	1,431.91	83,710

Analyst

Remarks and Comments:

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108
(Part VIII)

Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

Injection Zone

Geological Name: Siluro - Devonian

Lithology: Dolomite / Limestone

Thickness: ± 1000 ft

Depth: 10,000 ft

Drinking Water - Overlying

Geological Name: Alluvian

Depth to bottom: 50 ft (?)

Geological Name: Lower Queen

Depth to bottom: 900 ft

Above data based upon publication: *Geology and Ground Water Resources of Eddy County, New Mexico.*

Drinking Water - Underlying

None

Indian Basin Federal "C" Well No. 1
Proposed Injection Well
Attachments to C-108
(Part XIII)

Offset Operators

Marathon Oil Company is the Operator of all leases within one-half mile of the proposed injection well.

Surface Owners

1. United States of America
Bureau of Land Management
Carlsbad Resource Area
P.O. Box 1778
Carlsbad, New Mexico 88221

Affidavit of Publication

№ 16698

State of New Mexico,
County of Eddy, ss.

Amy McKay,

being first duly sworn, on oath says:

That she is Business Manager of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

July 25, 1995
, 19
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, 19

That the cost of publication is $18.69, and that payment thereof has been made and will be assessed as court costs.

Amy McKay

Subscribed and sworn to before me this 26th day of July, 1995

Donna Crump

My commission expires 08/01/98

Notary Public

July 25, 1995

PROPOSED INJECTION WELL

Marathon Oil Company, as Operator, proposes to deepen and convert the ~~Indian Basin~~ **Federal "C" Well No.1** to water disposal service. The location of the well is 1650' FNL and 1650' FWL, Section 35, Township 21 South, Range 23 East, Eddy County New Mexico. The zone to be injected is the Siluro-Devonian from 10,000 ft to 11,000 ft with a maximum injection rate of 15,000 BWPD, and a maximum injection pressure of 2200 psig. Any interested party with objection or request of hearing should notify the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within fifteen (15) days of this notice. Any questions should be directed to R.A. Biernbaum of Marathon Oil Company at P.O. Box 552, Midland, Texas 79702 or telephone (915) 682-1626.

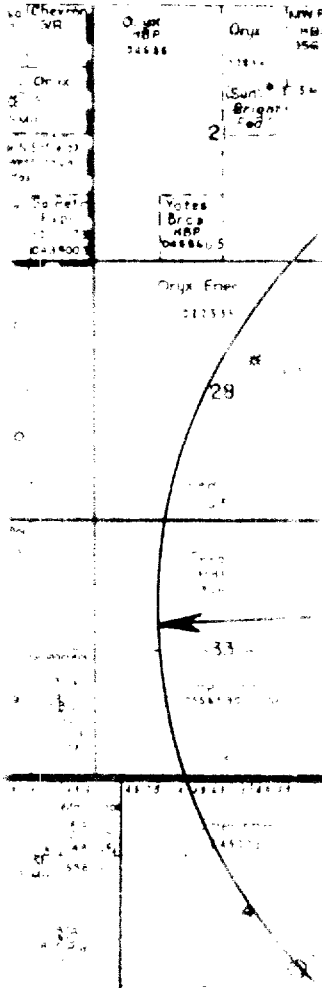
PARTS V AND VI

Marathon Oil Company

oposed Injection Wel

ederal "C" Well No. 1

Section 35
1-S, R-23-E, N M P M
ly County, New Mexic



Mid-Continent Region
Production United States

Marathon Oil Company

P.O. Box 552
Midland, TX 79702-0552
Telephone 915/682-1626

September 28, 1995

Oil Conservation Division
State of New Mexico
P.O. Box 2088
Santa Fe, New Mexico 87501

Re: Application for Authorization to Inject - Notification of Surface Owner

Gentlemen,

This document serves as proof that a copy of "Application for Authorization to Inject" for Indian Basin Federal "C" Well No. 1, was submitted to the Bureau of Land Management, Carlsbad Resource Area, on September 28, 1995.

Well Location
Indian Basin Federal "C" Well No. 1
1650' FNL & 1650' FWL
Section 25, T-21-S, R-23-E, N.M.P.M.
Eddy County, New Mexico

Sincerely,

H.E. Garrard
Advanced Production Engineer
Indian Basin Asset Team

Received By: Nancy Painter
Date: 9/28/95

United States Department of the Interior
Bureau of Land Management
Carlsbad Resource Area

Marathon Oil Company
Mid-Continent Region
Midland, Texas
(915) 682-1626

TO: David Catanach
COMPANY: Oil Conservation Division
LOCATION: Santa Fe, NM
FAX NO.: 505-827-8177

FROM: Harold Garrard
Indian Basin Asset Team
Midland, Texas
Fax: (915) 687-8431

TOTAL PAGES (INCLUDING COVER PAGE): 4
INCOMPLETE OR PROBLEMS CALL: (915) 687-8448

David -

Marathon's Proposal for testing schedule ... Federal "C" Well No. 1 - SWD Permit.

Please let us know if you have any questions.

Thanks!

Harold
915-687-8448
3.29.96