UICI - 8 - 4

WDW-4 PERMITS, RENEWALS, & MODS (1 of 4)

2017

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD

Sent: Friday, August 30, 2019 9:57 AM **To:** Combs, Robert; Griswold, Jim, EMNRD

Cc: Denton, Scott; Holder, Mike; Dade, Lewis (Randy)

Subject: RE: GW-028 permit question

Robert,

Approved.

The New Mexico Oil Conservation Division (OCD) will updated the permit administrative records for GW-28, UICI-8-1 (WDW-1), UICI-8-2 (WDW-2), UICI-8-3 (WDW-3) and UICI-8-4 (WDW-4).

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Pb. (505) 476, 2400

Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Combs, Robert <Robert.Combs@HollyFrontier.com>

Sent: Friday, June 28, 2019 1:54 PM

To: Griswold, Jim, EMNRD < Jim.Griswold@state.nm.us>

Cc: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us>; Denton, Scott < Scott.Denton@HollyFrontier.com>; Holder,

Mike < Michael. Holder@hollyfrontier.com >; Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com >

Subject: [EXT] GW-028 permit question

Jim,

Thanks for the call earlier today. Per our conversation, we're nearing the end of the quarter, and a question arose about the GW-028 permit, specifically regarding sampling of RO reject. In 4.B., the sampling and analysis requirements say 'The Permittee shall characterize the discharge fluids..." As you are aware, this discharge ended in January of 2019 when the Secondary RO unit and WDW-4 became operational. Fluids from the RO units are no longer discharged to the farm fields, the fluid is instead discharged (and sampled) according to the WDW permit requirements. Upon this review, Navajo believes that sampling of the RO reject is no longer required and will no longer submit any samples for analysis for this stream.

We would like to request a permit modification to modify Section 4 of the Permit to simply state that discharge of RO reject to the land ceased in January 2019 and it is now managed via the four (4) permitted UIC well requirements. This would capture that the conditions of Section 4 were fulfilled and that the reject is now subject to the requirements of the UIC permits.

The UIC permits require quarterly sampling for the constituents specified in Section 2.A, specifically, those listed in NMAC 20.6.2.3103A, B, & C. Therefore, we would like to concurrently modify the UIC well permits to add constituents not already covered by the UIC well sampling program.

If you would like to discuss, please give us a call.

Thanks, Robert

Robert Combs

Environmental Specialist The HollyFrontier Companies P.O. Box 159 Artesia, NM 88211-0159 office: 575-746-5382

cell: 575-308-2718 fax: 575-746-5451

Robert.Combs@hollyfrontier.com

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD

Sent: Thursday, October 25, 2018 8:40 AM

To: Denton, Scott (Scott.Denton@HollyFrontier.com); Combs, Robert

(Robert.Combs@hollyfrontier.com); 'Dade, Lewis (Randy)'

Cc: Griswold, Jim, EMNRD; Goetze, Phillip, EMNRD

Subject: UICI-008 Class I (NH) WDW-4 (API# 30-015-44677) Wells HollyFrontier Navajo Refining

Company, LLC: NAD83 Coordinates Revision

Gentlemen:

Good morning. I am writing to announce a correction to the above subject <u>WDW-4</u> (UICI-8-4) discharge permit coordinates from 32.81581 -104.25003 to <u>32.816088 -104.24987</u>.

I have revised the permit record (see WDW-4 link above) on 10/24/2018 to reflect the highlighted coordinates above. I cannot explain the discrepancy with the current OCD Online, old RBDMS and OCD GIS coordinates. I also observe in OCD GIS when zooming in extremely large scale, the coordinates reflect a point that is still not exactly matching the OCD WDW-4 GIS NAD83 well coordinates, but they are close.

This correction will be placed in the administrative record today. I apologize for any inconvenience this may have caused you.

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

Cash Remittance Report (CRR)

Appendix 8-14 revised 11/27/01

Energy, Minerals & Natural Resources Department CASH REMITTANCE REPORT (CRR)

Location Name (1)

Location Code (2) 0740

OCD - Environment

Today's Date:	01	0.5	_(3)	20 18
	MONTH	DAY	$- \odot$	YEAR

Collection Period: ____ /___ /___ through ____ /___ 4

Cost Center 5	Revenue Code 5	Receipt Amount	Collected Amount ®
0140		4500.00	

Total	=======	\$ 4500.00	9 \$	10

Over/Short Amount \$ 11

CRR I	Deposit A	Amount			9

Print Name: Lorraine DeVargas (13)

Print Name: Signature: (13)

White and Yellow copy to Accounts Receivable-ASD. Pink copy retained at CRR submitting location. Distribution:

Official Use Only Date Received: _____ Completed by the Accounts Receivable

Amount Received:

Verified by: State Treasurer Deposit Number: __

Deposit Date:

EMNRDCRR Revised 4/01

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of C	heck No. 100035 72	288 dated 12/20/2017
or cash received on01/05/26		
from Holly Frontie		
for Discharge Punit 4	1DW-4	
Submitted by: Carl Chare	22	Date: 01/05/2018
Submitted to ASD by: Lorra	ine Delargas	Date: 01/05/2018
Received in ASD by:		Date:
Filing Fee	New Facility:	Renewal:
Modification	Other * Disch	large permit
Organization Code 521.07	Applicable I	FY <u>118</u>
To be deposited in the Water Qual	ity Management Fund.	
Full Payment	or Annual	Increment

DATE WA	ALK-	NAME ON CHECK	THE RESERVE OF THE PROPERTY OF THE PROPERTY OF THE PARTY	CHECK/MONEY ORDER#	PROGRAM ACCOUNT CODE	AMOUNT OF CHECK	DATE DEPOSITED	DEPOSITED BY:
01/05/18	X	Holly Frontuk	12/20/17	1000357288		4500.00		
	•		. ,				,	
						*		
							-	=
TOTAL						4500.00		
			REVENU	IE TRANSMITTA	AL SHEET			
		Description	Fund	Dept.	Share Acct	Sub Acct	Amount	
		Liquid Waste	34000	Z3200	496402			
		Water Recreation Facilities	40000	Z8501	496402			
		Food Permit Fees	99100	Z2600	496402			
		OTHER	34100	232900		232902900	P	



RECEIVED OCD

January 2, 2018

2018 JAN -5 P 4: 17

Oil Conservation Division New Mexico Energy, Minerals & Natural Resources Department 1220 South St. Francis Drive Santa Fe, NM 87505

Certified Mail / Return Receipt 7014 3490 0000 6269 7219

RE: Discharge Permit Fee for WDW-4; Class 1 Non-Hazardous Injection Water Quality Management Fund Hollyfrontier Navajo Refinery Co. LLC

Dear Sirs:

HollyFrontier Navajo Refining LLC has enclosed a check for \$4500.00 made payable to the Water Quality Management Fund. This check is for WDW-4 Discharge Permit Fee and is numbered 1000357288.

If you have any questions regarding this renewal application, please contact Randy Dade at (575) 746-5281 or Scott Denton at (575) 746-5487, or by email at Scott.Denton@HollyFrontier.com

Sincerely,

Scott M. Denton

Environmental Manager

Enclosures: Attachment 1: Check # 1000357288

Env. Files: Injection Wells, Permit Applications, WDW-4, Subm', 2018-01-02 Discharge Permit Application Fee

State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

Ken McQueen Cabinet Secretary

Matthias Sayer Deputy Cabinet Secretary David R. Catanach, Division Director Oil Conservation Division



DECEMBER 14, 2017

Mr. Randy Dade HollyFrontier Navajo Refining, LLC 501 East Main Artesia, New Mexico 88210

Re: Approval of Discharge Permit WDW-4 (UICI-8-4) for Class I (Non-hazardous) Waste Injection Wells HollyFrontier Navajo Refining, LLC, Eddy County, New Mexico

Dear Mr. Dade:

The discharge permit (UICI-8-4) for the HollyFrontier Navajo Refining, LLC (Navajo) Class I Non-hazardous Waste Injection Well:

WDW-4 UICI-8-4 is located approximately 8.5 miles east-southeast of Artesia on Hwy-285 and Hwy-82 on the north side of Hwy-82. UL: N, Section 23 Township 17 South, Range 27 East, 1,215 FSL 2,445 FWL, Lat. 32.81609, Long. -104.24987, NMPM, Eddy County, New Mexico.

OCD hereby approves the new discharge permit pursuant to 20.6.2.3109A NMAC. Please note 20.6.2.3109G NMAC, which provides for possible future amendment of the permits. Please be advised that approval of this discharge permit does not relieve HollyFrontier Navajo Refining, LLC of liability if operations result in pollution of surface water, ground water, or the environment.

This discharge permit will **expire** on **December 14, 2022**. Navajo should submit discharge permit renewal applications in ample time before this date. Note that under 20.6.2.3106F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires, and is in compliance with the approved discharge permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit renewal application for the Navajo's Class I Non-Hazardous Waste Injection Well is subject to 20.6.2.3114 NMAC. Every billable facility submitting a discharge permit application is assessed a non-refundable filing fee of \$100.00. OCD has already received the required \$100.00 filing fees for this Class I non-hazardous waste injection well. OCD now requires a \$4,500.00 discharge permit fee for the Class I non-hazardous waste injection well check made payable in the amount of \$4,500 to the "Water Quality Management Fund."

If you have any questions, please contact Carl Chavez of my staff at (505) 476-3490 or email: CarlJ.Chavez@state,nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this new discharge permit review.

December 14, 2017 Page 2

Sincerely,

David R. Catanach

Director

DRC/cc

Attachments: Discharge Permit and Fact Sheet

Jim Griswold, OCD- Environmental Bureau Chief OCD Artesia District Office xc:

Scott Denton, HollyFrontier Navajo Refining, LLC

HollyFrontier Navajo Refining LLC 2828 N. Harwood St., Suite 1300 Dallas TX 75201-1507

WATER QUALITY MANAGEMENT FUND OIL CONSERVATION DIV 1220 S SAINT FRANCIS DR SANTA FE NM 87505-4225
 Check Date
 12/20/2017

 Check Amount
 \$ 4,500.00

 Vendor No
 5111809

 Payment Document
 2000146419

 Company Code
 1020

Invoice Date	Invoice Number	Description		Invoice	Amount	Discount Amount	Net	Amount
12/14/2017	121417	DISCHARGE I	PERMIT FEE FOR WDW-	1	4,500.00	0.00	4	4,500.00
Payment (Check number	Date		Currency sp			nt amount

I PLEASE FOLD ON PERFORATION AND DETACH HERE I

VERIFY THE AUTHENTICITY OF THIS MULTI-TONE SECURITY DOCUMENT. CHECK BACKGROUND AREA CHANGES COLOR GRADUALLY FROM TOP TO BOTTOM.

HollyFrontier Navajo Refining LLC 2828 N. Harwood St., Suite 1300 Dallas TX 75201-1507 64-1278/611 **1000357288** 12/20/2017

PAY EXACTLY

*********4,500.00*USD

VOID AFTER 180 DAYS

*** FOUR THOUSAND FIVE HUNDRED and 00 /100 USD***

TO THE ORDER OF

PAY

WATER QUALITY MANAGEMENT FUND OIL CONSERVATION DIV 1220 S SAINT FRANCIS DR SANTA FE NM 87505-4225

AUTHORIZED SIGNATURE

Bank of America N.A.

16

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD

Sent: Friday, December 15, 2017 11:52 AM

To: 'Dade, Lewis (Randy)'

Cc: Denton, Scott (Scott.Denton@HollyFrontier.com); Combs, Robert

(Robert.Combs@hollyfrontier.com); Brancard, Bill, EMNRD; Griswold, Jim, EMNRD

Subject: HollyFrontier Navajo Refining LLC, WDW-4 Discharge Permit Issuance

Attachments: WDW-4 DP Approved 12-14-2017.pdf

Randy, et al.:

Good morning. Please find attached the above subject document.

A hard copy was placed in the U.S. Mail today.

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

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State of New Mexico Energy, Minerals and Natural Resources Department

Susana Martinez Governor

Ken McQueen Cabinet Secretary

Matthias Sayer Deputy Cabinet Secretary **David R. Catanach, Division Director**Oil Conservation Division



DECEMBER 14, 2017

Mr. Randy Dade HollyFrontier Navajo Refining, LLC 501 East Main Artesia, New Mexico 88210

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Dear Mr. Dade:

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WDW-4 UICI-8-4 is located approximately 8.5 miles east-southeast of Artesia on Hwy-285 and Hwy-82 on the north side of Hwy-82. UL: N, Section 23 Township 17 South, Range 27 East, 1,215 FSL 2,445 FWL, Lat. 32.81609, Long. -104.24987, NMPM, Eddy County, New Mexico.

OCD hereby approves the new discharge permit pursuant to 20.6.2.3109A NMAC. Please note 20.6.2.3109G NMAC, which provides for possible future amendment of the permits. Please be advised that approval of this discharge permit does not relieve HollyFrontier Navajo Refining, LLC of liability if operations result in pollution of surface water, ground water, or the environment.

This discharge permit will **expire** on **December 14, 2022**. Navajo should submit discharge permit renewal applications in ample time before this date. Note that under 20.6.2.3106F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires, and is in compliance with the approved discharge permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

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If you have any questions, please contact Carl Chavez of my staff at (505) 476-3490 or email: CarlJ.Chavez@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this new discharge permit review.

December 14, 2017

Page 2

Sincerely,

David R. Catanach

Director

DRC/cc

Attachments: Discharge Permit and Fact Sheet

xc: Jim Griswold, OCD- Environmental Bureau Chief

OCD Artesia District Office

Scott Denton, HollyFrontier Navajo Refining, LLC

NEW DISCHARGE PERMIT

FOR CLASS I NON-HAZIARDOUS WILL WITH THE TOTAL STREET OF THE TOTAL

HollyFrontier Navajo Refining, LLC Unit N of Section 23 Township 17 South, Range 27 East, NMPM

December 14, 2017

HollyFrontier Navajo Refining, LLC of 501 East Main Street in Artesia, New Mexico 88210 (the Permittee) is permitted to continue operation of Underground Injection Control (UIC) Class I non-hazardous waste disposal well WDW-4 described in applications filed in this regard by the Permittee or modifications and in accordance with (a) the terms of this Permit, (b) the rules governing underground injection 20.6.2.5000 NMAC, and (c) all other applicable provisions of the Water Quality Act and the rules promulgated under the Act. The Permittee is responsible for insuring any oil and gas operations located within the area of the disposal well do not interfere with the proper authorized operation of the well. Certain changes to the operations described will require a modification to this permit including any necessary changes to the amount of financial assurance. The Oil Conservation Division (OCD) of the Energy, Minerals, and Natural Resources Department will determine if any changes constitute a discharge permit modification under 20.6.2.7 P NMAC.

1. GENERAL PROVISIONS

1.A. Permittee and Permitted Facility. The Director of the OCD renews Discharge Permit UICI-8-4 for operation of UIC Class I non-hazardous waste injection well Waste Disposal Well No. 4 (WDW-4 with API # (TBD)) located 1,215 feet from the Southern section line and 2,445 feet from the Western section line of Section 23 in Township 17 South, Range 27 East NMPM; Eddy County, New Mexico (Latitude 32.81609 degrees, Longitude -104.24987 degrees).

The Permittee is permitted to dispose of only non-hazardous (RCRA exempt and RCRA non-exempt non-hazardous) oil field waste fluids into WDW-4. This permit also covers the wastewater conveyance pipeline emanating from the Permittee's refinery situated in Artesia approximately 8.5 miles West to the location of WDW-4. Groundwater that may be affected by a release near the wellsite resides at an approximate depth of 50 - 100 feet below ground surface having a total dissolved solids concentration of approximately 2,200 ppm.

1.B. Scope of Permit. This discharge permit for an injection well is issued pursuant to the Water Quality Act (Chapter 74, Article 6 NMSA 1978) and regulations promulgated by the Water Quality Control Commission (WQCC). OCD has been granted the authority by statute and delegation from the WQCC to administer the Act as it applies to UIC Class I non-hazardous waste injection wells associated with the oil and gas industry. The Act and regulations protect groundwater and surface water of the State of New Mexico by providing that unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge such that it may move directly or indirectly into groundwater.

This permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or waste other than exempt or non-hazardous oil field fluids into WDW-4 including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, and wash-down water. The Permittee may not dispose of any industrial waste fluid that is not oil field waste that is generated at its refinery. The New Mexico Environment Department permits the management of fluids that are not generated in the oil field. This permit does not convey any property rights of any sort or any exclusive privilege to the Permittee and does not authorize any injury to property or persons, any invasion of other private rights, or any infringement of state, federal, or local laws, rules, or regulations.

1.C. Permittee Commitments. The Permittee shall ensure all operations are consistent with the terms and conditions of this permit and in conformance with all pertinent regulations under the Water Quality Act so that neither a hazard to public health nor undue risk to property will result; so that no discharge will cause or may cause any stream standard to be violated; so that no discharge of any water contaminant will result in a hazard to public health;

UICI-8-4 Injection Well WDW-4 Permit December 14, 2017 Page 2 of 8

and so that the technical criteria and performance standards for Class I non-hazardous waste injection wells are met. Furthermore, the Permittee shall abide by all commitments submitted in its permit application of April 6, 2017 including any attachments and/or amendments all of which are hereby incorporated into this Permit by reference.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the WQCC standards specified in 20.6.2.3101 or 3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). The Permittee shall not inject waste fluids into groundwater containing 10,000 parts per million or less total dissolved solids (TDS).

- **1.D. Definitions.** Terms not specifically defined in this permit shall have the same meanings as those in the Water Quality Act or the regulations adopted pursuant to the Act, as the context requires.
- **1.E.** Fees. Every facility that submits a discharge permit application for initial approval shall pay the filing and permit fees specified in 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee shall submit the \$4,500.00 permit fee for a Class I injection well to OCD by check made payable to "Water Quality Management Fund" no later than thirty days after the date that this permit is issued.
- **1.F.** Effective Date, Expiration, Renewal Conditions, and Penalties for Operating Without a Permit: This permit is effective immediately until the permit is terminated or expires. This permit will expire **December 14, 2022.** If the Permittee submits a subsequent application for renewal no later than 120 days before this permit expires and is in compliance with the permit, then the existing permit will not expire until OCD has approved or disapproved the application. A permit continued under this provision remains fully effective and enforceable. Operating with an expired permit may subject the Permittee to civil and/or criminal penalties (Sections 74-6-10.1 and 10.2 NMSA 1978).
- **1.G. Modifications and Termination:** The Permittee shall notify the OCD of any facility expansion, any injection pressure increase above the limit specified in permit condition 3.B, or process modification that would result in any significant modification in the discharge of water contaminants (20.6.2.3107C NMAC). The OCD may require the Permittee to submit a permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978 and 20.6.2.3109E and 20.6.2.5101I NMAC.

If data submitted pursuant to any monitoring requirements specified in this permit or other information available to the OCD indicate 20.6.2 NMAC is or may be violated, the OCD may require modification or terminate this permit for the following causes:

- Noncompliance by Permittee with any condition of this permit,
- The Permittee's failure in the application or during the review process to fully disclose all relevant facts, or the Permittee's misrepresentation of any relevant facts,
- A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by permit modification or termination,
- Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards,
- · Violation of any applicable state or federal effluent regulations or limitations, or
- Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.
- **1.H. Transfer of Permit.** The transfer provisions of 20.6.2.3111 NMAC do not apply to a permit for a Class I non-hazardous waste injection well. The Permittee may request to transfer its permit if the OCD receives written notice 30 days prior to the transfer date and the OCD does not object. OCD may require modifications to the permit as a condition of transfer and will require demonstration of adequate financial responsibility by the transferee.

The written notice shall be signed by both the Permittee and transferee, include an acknowledgment by the transferee that they will be responsible for compliance with the permit upon taking possession of the facility, set a specific date for transfer of the permit, and include information related to the transferee's financial responsibility as required by 20.6.2.5210B(17) NMAC.

1.I. Compliance and Enforcement. If the Permittee violates any condition of this permit, OCD may issue a compliance order requiring compliance immediately or within a specified time period, or assess a civil penalty, or both (74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a permit or in violation of a condition of a permit; making any false material statement, representation, certification or omission of material fact in an application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a discharge permit issued pursuant to a state or federal law or regulation (74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS

2.A. Quarterly Monitoring Requirements. The Permittee shall properly conduct operations at its facility by injecting only RCRA exempt and RCRA non-hazardous, non-exempt oil field waste fluids. Injected waste fluids shall not exhibit the characteristics of ignitability, reactivity, corrosivity, or toxicity under 40 CFR 261 Subpart "C" 261.21 – 261.24 (July 1, 1992), at the point of injection into WDW-4 based upon analytic laboratory testing and/or monitoring. Pursuant to 20.6.2.5207B, the Permittee shall provide analyses of the injected fluids at least quarterly to yield data representative of their toxicity characteristic.

The Permittee shall also analyze the injected fluids quarterly for the following characteristics:

- pH as determined by Method 9040
- Eh
- Specific conductance
- Specific gravity
- Temperature
- Concentrations of major dissolved cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, bromide, total dissolved solids, and cation/anion balance using the methods specified in 40 CFR 136.3
- RCRA Characteristics for ignitability (ASTM Methods), corrosivity (SW-846), and reactivity (determined through Permittee's application of knowledge or generating process)

The Permittee shall also analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List below to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(b)).

QUARTERLY MONITORING LIST			
EPA Hazardous Waste No.	Contaminant	SW-846 Method	Regulatory Level (mg/l)
D004	Arsenic	1311	5.0
D005	Barium	1311	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	1311	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0

D022	Chloroform	8021B 8260B	6.0
D007	Chromium	1311	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D027	1,4-Dichlorobenzene	8021B	7.5
D021	1,4-Dictiloroperizerie	8121	7.5
		8260B	
		8270D	
D028	1,2-Dichloroethane	8021B	0.5
D020	1,2 Biomoroculario	8260B	0.0
D029	1,1-Dichloroethylene	8021B	0.7
D020	1,1 Biomorocutyiene	8260B	0.1
D030	2,4-Dinitrotoluene	8091	0.13
2000	2,1 Billia dia dia dia dia dia dia dia dia dia d	8270D	0.10
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B	0.5
2000	T TOXIGOTHOT OF GLICATION	8121	0.0
		8260B	
D034	Hexachloroethane	8121	3.0
D008	Lead	1311	5.0
D009	Mercury	7470A	0.2
		7471B	
D035	Methyl ethyl ketone	8015B	200.0
		8260B	
D036	Nitrobenzene	8091	2.0
		8270D	
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B	5.0
		8270D	
D010	Selenium	1311	1.0
D011	Silver	1311	5.0
D039	Tetrachloroethylene	8260B	0.7
D040	Trichloroethylene	8021B	0.5
		8260B	
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A	2.0
	·	8270D	
D043	Vinyl chloride	8021B	0.2
	,	8260B	

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol concentration is used. If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level. If dissolved metals, EPA Method 1311 TCLP is required with the exception of total mercury.

- **2.B. Groundwater Monitoring Wells.** At least one groundwater monitoring well shall be installed in proximity of and hydrogeologically downgradient from WDW-4. The monitoring well(s) shall be screened into the uppermost water-bearing unit using 15 feet of well screen with the top of the screened interval positioned 5 feet above the water table. The Permittee shall propose a monitoring frequency with analytic and monitoring parameters to detect potential groundwater contamination.
- **2.C. Contingency Plan.** The Permittee shall implement the contingency plans included in its application to cope with failure of a system.

UICI-8-4 Injection Well WDW-4 Permit December 14, 2017 Page 5 of 8

2.D. Closure. Within 30-days of permit issuance, the Permittee shall submit for OCD's approval, a closure plan with third-party cost estimate for plugging and abandonment of WDW-4, surface restoration in the area of the well, and proper abandonment of the wastewater conveyance pipeline. The plan should include a completed form C-103 for plugging and abandonment of the injection well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC. OCD may require the Permittee to revise or update the closure plan. The obligation to implement the closure plan as well as the requirements of the plan survives the termination or expiration of this permit.

At least 30 days prior to the date the Permittee proposes to close or discontinue operation of WDW-4, the Permittee shall notify OCD. The following information shall be provided in the pre-closure notification:

- Name and location of the facility
- Name and address of Permittee
- Contact person with telephone number
- Type of well
- Year of well construction
- Well construction details
- Type of discharge including average flow in gallons per day
- Proposed well closure activities
- Proposed date of well closure
- **2.E. Record Keeping.** The Permittee shall maintain records of all inspections required by this permit at its facility office for a minimum of five years and shall make those records available for inspection by OCD.
- **2.F. Release Reporting.** The Permittee shall comply with the following pursuant to 20.6.2.1203 NMAC if a release occurs of oil or other water contaminant in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property. The Permittee shall report to OCD any unauthorized releases of water contaminants in accordance with any additional commitments made in its approved contingency plan.

As soon as possible after learning of such a release, but no more than 24 hours thereafter, the Permittee shall verbally notify OCD and provide the following:

- The name, address, and phone number of the person in charge of the facility, as well as of the owner/Permittee of the facility
- The name and location of the facility
- The date, time, location, duration, and volume of the release
- The cause of the release
- A description of the release, including its probable chemical constituents
- Any actions taken to mitigate immediate damage from the release

Within 15 days after the Permittee has discovered a release, the Permittee shall provide written notification (may use Form C-141) to OCD verifying the prior oral notification and providing any appropriate additions or corrections to the information previously provided.

Corrective actions shall be undertaken with oversight by the OCD.

2.G. Other Requirements.

The Permittee shall allow any authorized representative of the OCD to:

- Enter the premises at reasonable times
- Inspect and copy records required by this permit
- Inspect any treatment works, monitoring, or analytical equipment
- Sample effluent

Use Permittee's monitoring systems and wells to collect samples

The Permittee shall provide OCD with at least five working days' advance notice of any environmental sampling to be performed pursuant to this permit, or any well subsurface work such as mechanical integrity testing, well plugging, or decommissioning of any equipment.

The Permittee shall supply the Division with a copy of the mud log over the permitted disposal interval and the estimated in-situ water salinity based on open-hole logs. The Permittee may substitute the calculated salinity with laboratory analyses (that includes an analysis for total dissolved solids) of the formation fluid from the permitted disposal interval. If significant hydrocarbon shows occur while drilling, the Permittee shall notify the Division's Artesia District Office and the Permittee shall be required to receive written permission prior to commencing injection.

The Permittee shall ensure all environmental sampling and laboratory testing meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure all samples are analyzed by an accredited by the National Environmental Laboratory Accreditation Conference (NELAC). The Permittee shall submit summary data tables, laboratory reports, and laboratory quality assurance/quality control and data quality objectives documentation OCD.

- **2.H. Financial Assurance.** Pursuant to 20.6.2.5210B(17) NMAC, the Permittee will provide financial assurance to the OCD in an acceptable form and in an amount representative of the estimated total cost provided in the closure plan (section 2.D. above) for plugging of the injection well, surface restoration, and abandonment of the wastewater conveyance pipeline. The Permittee shall review the financial assurance any time the closure plan is revised. OCD may require additional financial assurance to ensure funding is available to plug the well or for any required corrective actions.
- **2.I. Reporting.** The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD no later than 45 days following the end of each calendar quarter. The quarterly reports shall include:
 - Physical, chemical and other relevant characteristics of injected fluids (see Condition 2.A)
 - Monthly average, maximum and minimum values for injection pressure, flow rate, injected volume, and annular pressure
 - Groundwater monitoring well information from Condition 2.B
 - Continuous monitoring charts and information from Permit Condition 3.C

The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD by **March 31**st of the following year. The annual reports shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well (WDW-4), Name of Permittee, permit number, API number of well, date of report, and person submitting report
- Summary of injection well operations for the year including descriptions and reasons for any remedial work on the well with a copy of form C-103(s)
- Brief explanation describing deviations from the normal operation
- Monthly injection volume, including the cumulative total which should be carried over each year
- Maximum and average injection pressures
- Copies of the quarterly chemical analyses and all quality assurance and data quality objective information
- Summary tables providing historic laboratory data for quarterly waste fluid samples
- Mechanical integrity test data
- Fall-off testing data
- Summary with interpretation of mechanical integrity tests, fall-off tests, Bradenhead tests, etc., with conclusions and recommendations
- Reports of any leaks or spills (include any C-141 forms)
- Area of Review (AOR) summary with any new wells penetrating the injection zone within a 1-mile radius of WDW-4

3. OPERATIONS

3.A. Operating Requirements. The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure the maximum injection pressure at the wellhead does not initiate new fractures or propagate existing fractures in either the injection or confining zones, or cause the movement of injection or formation fluids into groundwater having 10,000 ppm or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that WDW-4 is discharging or suspects that it is discharging fluids into a zone other than the permitted injection zone specified in Permit Condition 3.B, then the Permittee shall cease operations until proper repairs are made, notify the OCD within 24 hours, and shall not resume injection until the Permittee has received approval from the OCD.

The annulus between the injection tubing and the long string of injection casing shall be filled with a fluid approved and at an annulus pressure both approved by the OCD.

3.B. Injection Operations. The Permittee shall inject only RCRA exempt or non-hazardous, non-exempt oil field waste fluids into the subsurface formations residing from approximately 10,400 feet to 10,900 feet below ground surface (bgs) at WDW-4. The surface casing is set with a maximum depth of 1,500 feet bgs. The protection casing is set to a maximum depth of 10,400 feet bgs. The injection tubing is set with the injection packer at a depth of approximately 10,400 feet bgs with open hole to approximately 11,000 feet bgs. The Permittee shall ensure the injected fluids enter only the specified injection interval and do not escape into other formations.

The Permittee shall ensure the injection pressure on WDW-4 as measured at the surface shall not exceed a gauge pressure of 2,080 pounds per square inch and equip the well with a pressure limiting device. The Permittee shall inspect the device daily and shall report any pressure exceedances within 24 hours of detection to OCD.

OCD may authorize an increase in the maximum surface injection pressure if the Permittee demonstrates higher pressure will not result in migration of the injected fluid from the designated injection interval by means of a valid step-rate test preferably run in coordination with a fall-off test. Any increase in injection pressure shall not exceed the formation parting pressure. Any step rate testing shall be pre-approved by OCD.

- **3.C.** Continuous Monitoring Device. The Permittee shall continue to use a continuous monitoring device in advance of injection that records on an hourly basis the injection pressure, injection rate, totalized injection volume, and annular pressure between the injection tubing and the production casing. If the device requires chart changing, the Permittee shall utilize a procedure that depressurizes and properly re-aligns the pens on the chart scale during changing to prevent anomalous noise.
- **3.D. Mechanical Integrity.** A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which OCD considers to be significant at maximum operating temperature and pressure, and no detectable conduit for fluid movement out of the injection zone through the well bore, or vertical channels adjacent to the well bore, which the OCD considers to be significant. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for WDW-4 at least once every five years or more frequently as the OCD may require for good cause during the life of the well. The Permittee shall also complete an MIT after all well workovers, including when it pulls the tubing or reseats the packer. The Permittee shall request MIT pre-approval from OCD using form C-103 (Sundry Notices and Reports on Wells). The Permittee shall notify OCD five working days prior to conducting any MIT to allow the opportunity to witness.

The Permittee shall conduct the MIT by applying a pressure of at least 500 psig to the casing/tubing annulus from surface to the injection packer for at least 30 minutes. The MIT passes if there is a less than a 10% change in the final test pressure compared to the starting pressure. When conducting and evaluating an MIT, the Permittee shall apply methods and standards generally accepted in the oil and gas industry and follow OCD's 2004 *Underground Injection Control Program Manual* guidance. The Permittee shall submit the results to OCD within 30 days of completion. If any remedial work or any other workover operations are necessary, the Permittee shall comply with Permit Condition 3.F.

UICI-8-4 Injection Well WDW-4 Permit December 14, 2017 Page 8 of 8

If the MIT indicates failure, the Permittee shall immediately shut-in the well, investigate, and notify the OCD within 24 hours. The Permittee shall not resume injection operations until approved by OCD.

The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts an MIT.

The OCD may consider the use of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed alternative and all technical data supporting its use. The OCD may approve the request if it will reliably demonstrate the integrity of the well.

- **3.E. Fall-Off Testing.** The Permittee shall undertake fall-off testing on at least an annual basis. The Permittee shall submit an initial form C-103 sundry notice to OCD for pre-approval and comply with OCD's 2007 *UIC Class I Well Fall-Off Test Guidance* for conducting and for reporting the test. Any report should be submitted to OCD within 60 days of test completion and include historic fall-off test results to evaluate injection zone characteristics over time.
- **3.F. Well Workovers.** The Permittee shall provide notice to and shall obtain approval from the OCD prior to commencement of any remedial work or any other workover operations and allow OCD the opportunity to witness the operation. The Permittee shall request approval from OCD using form C-103 (Sundry Notices and Reports on Wells). After completing remedial work, pressure tests, or any other workover operations, the Permittee shall run an MIT in accordance with Permit Condition 3.D to verify that the remedial work has successfully repaired any problems.
- **3.H.** Area of Review. The Permittee shall report to OCD within 72 hours of discovery of any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from WDW-4. Any un-cemented wells within the injection interval shall also be identified by the Permittee and reported to OCD.

4. CLASS V WELLS

Leach fields and other waste disposal systems that inject fluid into or above an underground source of drinking water are considered UIC Class V injection wells. This permit does not authorize the use of any Class V injection well for the disposal of industrial waste and the Permittee shall close any such well that injects industrial wastes or a mixture of industrial and domestic waste within 90 calendar days of the issuance of this permit. The Permittee shall document the closure of any such Class V wells in its Annual Report. Class V wells, including wells used only for the injection of domestic wastes, are typically permitted by the New Mexico Environment Department.

FACT SHEET

New Mexico Oil Conservation Division Class I Nonhazardous
Underground Injection Control Draft Discharge Permit # UICI-8-4
County of Eddy
HollyFrontier Navajo Refining, LLC

Location:

HollyFrontier Navajo Refining, LLC (Navajo)

UL: N, Section 23, Township 17 South, Range 27 East NMPM

(Lat. 32.81609, Long. -104.24987)

Directions: The Waste Disposal Well No. 4 (WDW-4) - API No. 30-015-44677 is located approximately 8.5 miles east-southeast of the intersection of Hwy 285 and Hwy-82 on the north side of Hwy 82 (~ 325 ft. N of Hwy-82).

Discharge Contact:

Mr. Scott Denton
Environmental Manager
HollyFrontier Navajo Refining, LLC
501 East Main, Artesia, NM 88210
Telephone: (575) 746, 5487

Telephone: (575) 746-5487

Email: Scott.Denton@HollyFrontier.com

Regulatory Contact:

Mr. Carl Chavez, Environmental Engineer

New Mexico Oil Conservation Division, Energy, Minerals & Natural Resources Department

1220 South St. Francis Drive

Santa Fe, NM 87505 Telephone: (505) 476-3490

Fax: (505) 476-3462 (include name and mail code from above)

Email: CarlJ.Chavez@state.nm.us

I. Purpose of the Fact Sheet

Pursuant to the Underground Injection Control (UIC) regulations in Title 40 of the Code of Federal Regulations (CFR), §124.8, and State §20.6.2 et <u>seq.</u> NMAC, the purpose of this fact sheet is to briefly describe the principal facts and the considerations that went into preparing the draft discharge permit. To meet these objectives, this fact sheet contains background information on the discharge permit process, a description of the facility, a brief discussion of the discharge permit conditions, and the reasons for these discharge permit conditions.

II. Discharge permit Process

Application and Review Period

The New Mexico Oil Conservation Division Director has authority to issue discharge permits for underground injection activities under Federal 40 CFR §144.31, and State §20.6.2 et seq. NMAC. Navajo Refining, LLC (Navajo) is applying for a new Underground Injection Control (UIC) discharge permit # UICI-8-4 to continue injecting into one (1) Class I injection well known as Gaines Well No. 4 (WDW-4). The well is used to dispose of industrial non-hazardous fluids produced from the Artesia Refinery in Artesia, NM. Wastewater from the process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated groundwater are pumped via subsurface pipeline from the refinery approximately 10.5 miles E-SE through a filtration unit before disposal or injection down WDW-4. In February 2017, OCD received a discharge permit application for the continued operation of WDW-4 from Navajo. OCD requested. and Navajo provided, supplemental information in February 2017. After completing a thorough technical review of all submitted information, OCD has determined that the information provided by Navajo is now sufficient to complete a UIC discharge permit. Accordingly, OCD has completed a draft Class I non-hazardous UIC discharge permit that would authorize the continuation of injection for another 5-year period. The draft discharge permit contains operation, maintenance, monitoring, reporting, closure and well abandonment requirements.

Based on OCD's review of the operational standards, monitoring requirements, existing geologic setting, and the operational history of the facility over the prior ten (5) year discharge permitted period, OCD believes the activities allowed under the proposed draft discharge permit are protective of Underground Sources of Drinking Water (USDWs) as required under the Safe Drinking Water Act.

Public Participation

The public has thirty (30) days to review and comment on the Class I UIC draft discharge permit (40 CFR §124.10). The draft discharge permit and this fact sheet are available at the following location:

The draft discharge permit, this fact sheet, and the discharge permit application are available at the following location:

New Mexico Oil Conservation Division

1220 South St. Francis Drive

Santa Fe, New Mexico 87505 Telephone: (505) 476-3441 or

E-mail: CarlJ.Chavez@state.nm.us

OCD Website: http://www.emnrd.state.nm.us/OCD/env-draftpublicetc.html

The public comment period begins on September 10, 2017 and ends on October 10, 2017. During this period, all written comments on the draft discharge permit can be sent, faxed, or e-mailed to Carl Chavez (see the contact information listed on the first page of this fact sheet), who is also available by phone for any questions regarding the draft discharge permit.

All persons, including the applicant, who object to any condition of the draft discharge permit or OCD's decision to prepare a draft discharge permit must raise all reasonably ascertainable issues and submit all reasonable arguments supporting their position by the close of the comment period (40 CFR §124.13). A public hearing may be held only if there is a significant degree of public interest in the draft discharge permit (40 CFR §§124.11 and 124.12).

Final Decision-Making Process

After the close of the public comment period, OCD will review and consider all comments relevant to the new UIC discharge permit and application. If public comments are received, OCD will send a response to comments to the applicant and each person who has submitted written comments or requested notice of the final discharge permit decision, OCD will also post the response to comments document on its website. The response to comments will contain: a response to all significant comments on the draft discharge permit; OCD's final discharge permitting decision; any discharge permit conditions that are changed and the reasons for the changes; and procedures for appealing the decision. The final decision shall be to either issue or deny the discharge permit. The final decision shall become effective no sooner than thirty (30) days after the service of the notice of decision or final discharge permit is posted and no appeal has been received. Within thirty (30) days after the final discharge permit decision has been issued, any person who filed comments on the draft discharge permit, participated in any Public Hearing on this matter, or takes issue with any changes in the draft discharge permit, may appeal to the Water Quality Control Commission to review any condition of the discharge permit decision. Commenters are referred to 40 CFR §124.19 for procedural requirements of the appeal process. If no comments request a change in the draft discharge permit, the discharge permit shall become effective immediately upon issuance (40 CFR §124.15).

III. Description of the Facility

Navajo operates a refinery wastewater treatment plant in Artesia, New Mexico. The County disposes of the concentrated brine (saline) waste product from the reverse osmosis treatment process at the plant via a Class I non-hazardous injection well operating at a distance of approximately 10.5 miles E-SE of the plant. The well is discharge permitted by OCD under a UIC discharge permit, and the injection well has been previously operating under the existing UIC discharge permit. The well was converted from a former gas well in 2000.

The Navajo injection well facility is located approximately 8.5 miles east-southeast of the refinery wastewater treatment plant. The injection fluid is piped via an eight-inch pipeline

from the treatment plant to the injection well. The wastewater or injection fluid is generated from the process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated groundwater are pumped via subsurface pipeline from the refinery approximately 10.5 miles E-SE through a series of filtration units before disposal or injection down WDW-4. The units generate a high Total Dissolved Solids-TDS concentrate that is sent to the injection well.

The injection well application was submitted for a new discharge permit. The daily flow rate to the injection well is to be determined. The well is permitted to inject at a maximum of 2,080 psi. The high TDS wastewater effluent is injected into the Devonian Formation in the injection interval from 7,924 feet to 8,476 feet (depth below ground level).

IV. Brief Summary of Specific Discharge Permit Conditions

In order to protect public health and the environment, OCD is proposing the following conditions for operation, monitoring and reporting, plugging and abandonment, and financial responsibility in the Draft Class I UIC Discharge Permit:

Well Operation (Section 2 of the Draft Discharge permit)

The discharge permit restricts Navajo from injecting any hazardous waste into the injection well. The maximum allowable injectate volume and pressure limitations are already set based on the results of testing under the existing discharge permit. The draft discharge permit requires mechanical integrity testing every 5-years or after well workovers, and pressure transient testing annually to ensure protection of underground sources of drinking water. Navajo must demonstrate mechanical integrity by means of an annular pressure test in the tubing/casing annulus, an evaluation of cement integrity in the casing/borehole annulus and sufficient results from temperature logs and radioactive tracer testing. Under the discharge permit, the permittee is required to provide OCD (for its approval) with Sundries to describe the proposed procedures to conduct the various well tests. The permittee is also responsible for measuring and monitoring formation pressure data annually to ensure that pressure buildup is limited to the AOR. The discharge permit also requires that Navajo operate their injection well in such a manner as to not initiate or propagate fractures in the injection formation or the confining zone (aquitard).

Monitoring, Record Keeping, and Reporting (Section 2 of the Draft Discharge permit)

Navajo is required to continuously monitor injection rate, total injection volume, injection pressure, annular pressure, and injection fluid temperature. Navajo is required to sample the injectate on a quarterly basis to determine the quantities/values of the following: Inorganics (i.e., Major Anions and Cations); Solids (i.e., Total Dissolved Solids); General and Physical Parameters (i.e., pH, Conductivity, Hardness, Specific Gravity, Alkalinity and Viscosity); Metals; and Organics.

All sampling analyses must be performed at a certified laboratory. Navajo is required to maintain all operational and monitoring records, and to submit quarterly and annual summary reports to OCD.

Well Plugging and Abandonment (Section 2.D of the Draft Discharge permit)

Upon determination that the injection well regulated by this discharge permit is to be permanently abandoned, Navajo is required to abandon the injection well according to the Plugging and Abandonment Plans in 2.C of the draft discharge permit. OCD reserves the right to change the manner in which a well will be plugged if the well is modified during its discharge permitted life or if the well is not consistent with OCD requirements for construction or mechanical integrity.

Financial Responsibility (Section 2.H and 5.B of the Draft Discharge permit)

The Permittee shall maintain a bond (non-expiring) or arrange for other financial assurance for WDW-4 in the amount of \$95,000 to guarantee closure.

The financial responsibility mechanism and amount shall be reviewed and updated periodically, upon request of OCD. OCD may require the permittee to change to an alternate method of demonstrating financial responsibility.

Duration of Discharge permit (Section 1.F of the Draft Discharge permit)

OCD proposes to issue the discharge permit and the authorization to inject for a period of up to five (5) years with a renewal option unless terminated under the conditions set forth in Section 1.F of the draft discharge permit.



NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

(UICI-8-4) HollyFrontier Navajo Refining, LLC, Randy Dade, Environmental Specialist, 501 E. Main Street, Artesia, New Mexico 88210, at mental Specialist, 501 E. Main Street, Artesia, New Mexico 88210, at plection Control (UIC) Class I (Non-Hazardous) Injection Control (UIC) Class I (Non-Hazardous) Injection Well Discharge Permit for Waste Disposal Well No. 4- WDW-4 (API# to be determined) located 1,215 FSL, 2,445 FWL (SE/4, SW/4), in Section 23, Township 17 South, Range 27 East, (Lat/Long.: 32.81581/104. 25003), NMPM, Eddy County, New Mexico The Injection well will be located approximately 8.5 miles east-southeast of the intersection of Hwy 285 and Hwy-82 on the north side of Hwy 82. Oil field exempt and non-exempt non-hazardous wastewater will be disposed into the undifferentiated Silurian-Devonian Formation into the open-hole injection interval from 10,400 to 10,900 ft. below ground level (bgl) at a maximum surface injection pressure (MSIP) of approximately 2,080 pounds per square inch gauge-psig. The injection rate will not exceed 500 gallons per minute-gpm. Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil in remove safety. generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, reverse cosmosis reject water, and stormwater collected from process areas of the refinery. The injection fluid is estimated to contain approximately 3,000 ppm total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of about 50 – 100 ft. bgl with a TDS concentration of approximately 2,200 ppm. The water quality of the undifferentiated Silurian-Devonian Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently unknown, but believed to exceed 10,000 ppm. Formation is currently u

CCD has determined that the application is administratively complete and has prepared a draft permit. CCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p. m., Monday through Friday, or may also be viewed at the OCD web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the OCD at the address given above. Prior to ruling on any proposed discharger permit or major modification, the Director shall allow a period of at the address discharger which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit renewal based on information in the permit application and information submitted at the hear-

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 10th day of September 2017.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

David R. Catanach, Director Journal: September 10, 2017

AVIT OF PUBLICATION

NEW MEXICO

SS

Notice is hereby given that pursuant to New Mexico Water Quality.
Control Commission Regulations (20.6.2.3108 NMAC), the following discharge permit application has been submitted to the Director of the New Mexico Oil Conservation Division ("OCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3441:

within the manning of Soction 2 Observed Conservation Drives and Conservation Drives on the Co zales , the undersigned, on oath states that she is an authorized Representative of within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that

> scribed before me, a Notary Public, in and Bernalillo and State of New Mexico this 2017

OFFICIAL SEAL Sandra B. Gutierrez **NOTARY PUBLIC** STATE OF NEW MEXIC

Chavez, Carl J, EMNRD

From: Estes, Bob, DCA

Sent: Wednesday, September 27, 2017 3:15 PM

To: Chavez, Carl J, EMNRD

Subject: Holley Frontier permit renewels WDW-1. WDW-2, WDW-3, and new permit WDW-4

OFFICIAL RESPONSE OF THE NEW MEXICO STATE HISTORIC PRESERVATION OFFICER (SHPO)

Dear Mr. Chavez,

On behalf of the SHPO I have completed a review of the documentation for the aforementioned Holley Frontier permits applications.

Our records show that the locations of the wells have been surveyed cultural and there are no cultural resources listed on the National Register or State Register within or near the proposed permit area and no known cemeteries or burial grounds.

Land status for the injection well locations belong primarily to the Bureau of Land Management, Carlsbad Field Office, whereas one location WDW-1 is on split estate. The BLM may require additional surveys and or avoidance of any eligible archaeological sites and an archaeological monitor to ensure that eligible sites are not affected.

However, based on the existing information the SHPO has no concerns that the permits will affect properties eligible for listing in the National Register of Historic Places.

If you have any questions or comments, please feel free to call me directly at 5505-827-4225 or email me.

Sincerely,

Bob Estes Ph.D. HPD Staff Archaeologist

Affidavit of Publication

State of New Mexico
County of Eddy

Danny Scott

being duly sworn sayes that she is the

Publisher

of the Artesia Daily Press, a daily newspaper of General circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said
Artesia Daily Press, a daily newspaper duly qualified
for that purpose within the meaning of Chapter 167 of
the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same

lav	as	follows:
lay	as	luliuws.

First Publication
Second Publication
Third Publication
Fourth Publication
Fifth Publication
Sixth Publication
Seventh Publication

Subscribed and sworn before me this

12th

day of

September

2017



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Notary Public, Eddy County, New Mexico

Copy of Publication:

Legal Notice

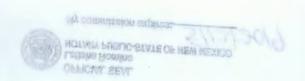
NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3108 NMAC), the following discharge permit application has been submitted to the Director of the New Mexico Oil Conservation Division ("OCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3441:

(UICI-8-4) HollyFrontier Navajo Refining, LLC, Randy Dade, Environmental Specialist, 501 E. Main Street, Artesia, New Mexico 88210, at (575) 746-5281 has submitted an application for an Underground Injection Control (UIC) Class I (Non-Hazardous) Injection Well Discharge Permit for Waste Disposal Well No. 4- WDW-4 (API# to be determined) located 1,215 FSL, 2,445 FWL (SE/4, SW/4), in Section 23, Township 17 South, Range 27 East, (Lat./Long.: 32.81581/104.25003), NMPM, Eddy County, New Mexico The injection well will be located approximately 8.5 miles east-southeast of the intersection of Hwy 285 and Hwy-82 on the north side of Hwy 82. Oil field exempt and non-exempt non-hazardous wastewater will be disposed into the undifferentiated Silurian-Devonian Formation into the open-hole injection interval from 10,400 to 10,900 ft. below ground level (bgl) at a maximum surface injection pressure (MSIP) of approximately 2,080 pounds per square inch gauge- psig. The injection rate will not exceed 500 gallons per minute- gpm. Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, reverse osmosis reject water, and stormwater collected from process areas of the refinery. The injection fluid is estimated to contain approximately 3,000 ppm total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of about 50 - 100 ft. bgl with a TDS concentration of approximately 2,200 ppm. The water quality of the undifferentiated Silurian-Devonian Formation is currently unknown, but believed to exceed 10,000 ppm. Formation testing will be conducted during the installation of WDW-4 to obtain site-specific data relating to the chemical, physical and radiological characteristics from the injection zone. The discharge permit addresses well construction, operation, monitoring, associated surface units or infrastructure, financial assurance, and provides a contingency plan in the event of accidental spills, leaks and other accidental discharges to protect fresh water.

OCD has determined that the application is administratively complete and has prepared a draft permit. OCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD web site http://www.emnrd.state.nm.us/ocd/.



draft permit may contact the OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit renewal based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 10th day of September 2017.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

SEAL David R. Catanach, Director

Published in the Artesia Daily Press, Artesia, N.M., Sept. 10, 2017 Legal No. 24408.

PEIAI

2017 SEP 14

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD

Sent: Wednesday, September 6, 2017 11:13 AM

To: Sandoval, Alexandra J., DGF; Wunder, Matthew, DGF; Shije, Suzette, IAD;

'ddapr@nmda.nmsu.edu'; 'adunn@slo.state.nm.us'; 'James_Amos@blm.gov'; 'psisneros@nmaq.gov'; 'r@rthicksconsult.com'; 'sric.chris@earthlink.net';

'nmparks@state.nm.us'; Blaine, Tom, OSE; 'marieg@nmoga.org'; Fetner, William,

NMENV; 'lazarus@glorietageo.com'; 'perry@glorietageo.com'; Majure, Allison, NMENV; 'cjoyner@fs.fed.us'; Kieling, John, NMENV; 'bsg@garbhall.com'; Hunter, Michelle, NMENV; 'claudette.horn@pnm.com'; 'ekendrick@montand.com'; 'pam@ipanm.org'; Brown, Maxey G, EMNRD; Bayliss, Randolph, EMNRD; Bratcher, Mike, EMNRD; Perrin, Charlie, EMNRD; Jones, William V, EMNRD; Kelly, Jonathan, EMNRD; Powell, Brandon, EMNRD; Jones, William V, EMNRD; Wojahn, Beth, EMNRD; Sanchez, Daniel J., EMNRD;

Griswold, Jim, EMNRD; Goetze, Phillip, EMNRD; Podany, Raymond, EMNRD

Cc: Denton, Scott (Scott.Denton@HollyFrontier.com); Combs, Robert

(Robert.Combs@hollyfrontier.com); 'Dade, Lewis (Randy)'; Tulk, Laura, EMNRD;

DeVargas, Lorraine, EMNRD

Subject: Discharge Permit Renewal (UICI-8) HollyFrontier Navajo Refining, LLC Class I (Non-

hazardous) WDW 1 (API# 30-015-27592), WDW-2 (API# 30-015-20894), WDW-3 (API#

30-015-26575) & WDW-4 (API# to be determined) in Eddy County

Ladies and Gentlemen:

Please find below the New Mexico Oil Conservation Division (OCD) Public Notice (30-day public comment period begins Sunday, September 10, 2017) in accordance with New Mexico Water Quality Control Commission Regulations (20.6.2.3108 NMAC) and Discharge Permits for the above subject Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Wells.

Discharge Permit Renewals WDW-1 (UICI-8-1), WDW-2 (UICI-8-2), and WDW-3 (UICI-8-3) HollyFrontier Navajo Refining LLC Waste Disposal Wells (4/11/17):

The Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Wells (WDW-1 API#: 30-015-27592; WDW-2 API#: 30-015-20894; and WDW-3 API#: 30-015-26575) are located in Eddy County. WDW-1 is located approximately 11 miles east-southeast of Artesia on Hwy-82 from Hwy-285 and about 1 mile south of Hilltop Road. WDW-2 is located approximately 10.5 miles east-southeast of Artesia on Hwy-82 from Hwy-285 and about 3.3 miles south of Hilltop Road. WDW-3 is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy 82 or approximately 2.75 miles S of Hwy 82 and CR-225.

Not Administratively Complete (2/24/2017)

Administrative Completeness (4/11/2017)

Description (4/11/2017)

Application (2/8/2017)

Application Supplement (2/8/2017)

Application Addendum (3/22/2017)

WDW-1 Discharge Permit (9/6/2017)

WDW-2 Discharge Permit (9/6/2017)

WDW-3 Discharge Permit (9/6/2017)

Public Notice (9/10/2017)

Discharge Permit New WDW-4 (UICI-8-4) HollyFrontier Navajo Refining LLC Waste Disposal Well (7/26/17):

The Underground Injection Control (UIC) Class I (Non-hazardous) Disposal Well (WDW-4) is located in at UL: N, Section 23, Township 17 South, Range 27 East (Lat./Long.: 32.81581/104.25003), NMPM, Eddy County. WDW-4 is located approximately 8.5 miles S-SE of the intersection of Hwy 285 and Hwy 82 on the North side of Hwy 82.

Not Administratively Complete (5/9/2017) Administrative Completeness (7/26/2017)

Description (7/26/2017)

<u>Application</u> (4/6/2017)

Discharge Permit (9/6/2017)

Public Notice (9/10/2017)

The OCD Website for public notices is at http://www.emnrd.state.nm.us/OCD/env-draftpublicetc.html (see "Draft Permits and Public Notices" section).

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia, New Mexico, Mr. Randy Dade at (507) 746-5281 hereby gives public notice on its application to the New Mexico Oil Conservation Division (OCD) for a discharge permit to inject treated non-hazardous waste water effluent from the Refinery's onsite wastewater treatment plant routed via pipeline into a new Class I (non-hazardous) injection well, WDW-4.

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104.250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of Hwy 285 and Hwy 82 on the north side of Hwy

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refinery. The injected refinery wastewater quality is approximately

3,000 mg/L total dissolved solids (TDS).

Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated to be 2,080 pounds per square inch gauge (psig). Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that ground-water in the area may be encountered at approximately 100 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Comments and inquiries on regulations should be directed

Director

New Mexico Oil Conservation Division

1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this

notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director

determines that there is significant public interest.

If no public hearing is held, the Director will approve or

disapprove the proposed permit based

on information available, including all comments received. If a public hearing is held, the Director will approve or

disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor:

New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservación Division Depto.Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto:

Laura Tulk, 575-748-1283).

Public Notice WDW-4 Aug 9, 2017 ARTESIA DAILY Press

6 - The Artesia (NM) Daily Press - August 9, 2017

AVISO PUBLICO ESTADO DE NUEVO MÉXICO DEPARTAMENTO DE ENERGÍA, MINERALES Y RECURSO NATURALES

DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO En conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, 501 E. Main Street, Artesia, Nuevo México y el Sr. Randy Dade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Petróleo de Nuevo México (OCD) para la renovación de un permiso de descarga de petróleo exento y de aguas de residuo no peligrosas y no exentas, provenientes de la planta de tratamiento de aguas de la refinería en Artesia. El efluente de aguas de residuo será dirigido vía ductos al pozo de inyección de efluentes no peligrosos. El pozo se lista a continuación:

El pozo propuesta está localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur, Rango 27 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 está localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285

y Hwy 82.

La generación de aguas residuales de la refinería proviene del tratamiento de aguas resultantes del proceso de petróleo crudo; del agua usada para enfriamiento y calentamiento; del agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WDW-4 va a ocurrirá entre a proximalmente 10,400 a 10,900 pies (profundidad de registro). La velocidad de inyección en WDW-4 se determinará en base a la presión de inyección de superficie máxima admisible. La presión máxima de inyección en WDW-4 está estimado de 2,080 psig.

Las aguas residuales contendrán un total de solidos disueltos (TDS) de aproximadamente 3,400 partes por millón (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 miligramos per litro (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un rango de profundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente

1,500 a 2,200 ppm.

Por Favor envien los comentarios y las preguntas a: DirectorNew Mexico Oil Conservation Division 1220 South St. Francis Drive

Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y

del pozo.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México Petróleo, 1220 South St. Francis Drive, Santa Petróleo, 1220 South St. Francis Drive, Santa Petróleo, 1220 South St. Franci

co (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por las cuales debe celebrarse una audiencia. Se celebrará una audiencia si el Director

determina que existe un interés público significativo. Si no tendrán una reunión pública, el Director aprobará o

desaprobará el permiso descarga sobre la

información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada en la reunión pública. Page 8 - The Artesia (NM) Daily Press - August 9, 2017

Chavez, Carl J, EMNRD

From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 6:45 PM

To:Chavez, Carl J, EMNRDSubject:Re: WDW-4 Public Notice

I will leave them for 30 days.

Sent from my iPhone

On Aug 18, 2017, at 5:26 PM, Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us> wrote:

Randy:

Hi. Signs must be up for at least 30 days.

OCD notices that you did not provide photos of the two locations where the signs are placed.

You said one sign was posted at the refinery? Navajo needs to provide proof or verification that the signs are posted. I believe your e-mail today show a sign posted at the Public Library. What about the sign posted at the refinery?

Per WQCC Regs:

Applicant posts synopsis of the public notice at least 2 x 3 feet in size, in English and Spanish, at a place conspicuous to the public, approved by the department, at or near the facility for 30 days and one additional notice at a place conspicuous to the public located off the site, in a form and place approved by the department.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD < CarlJ.Chavez@state.nm.us; Denton, Scott

<Scott.Denton@HollyFrontier.com>; Combs, Robert <Robert.Combs@HollyFrontier.com>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: RE: WDW-4 Public Notice

Carl,

Here are the pictures of WDW-4 Public Notice posted at the Artesia Public Library. I will leave them posted for 10 days if that is ok. Let me know if there is anything else you need. Thanks, Randy

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]

Sent: Wednesday, August 16, 2017 7:27 AM

To: Dade, Lewis (Randy)

Subject: RE: WDW-4 Public Notice

Randy:

Good morning. The New Mexico Oil Conservation Division (OCD) is in receipt of HollyFrontier's newspaper public notice. However, the photos of the signs at location with the description of the locations is not provided.

Could you please submit by COB on Friday, August 18, 2017 to complete the proof of public notice for the new well discharge permit. There are previous examples in the WDW files of past HollyFrontier verification of public notice submittals, which are model documents for your information.

Thank you.

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < CarlJ.Chavez@state.nm.us; Griswold, Jim, EMNRD

 $<\!\!\underline{Jim.Griswold@state.nm.us}\!\!>; Denton, Scott <\!\!\underline{Scott.Denton@HollyFrontier.com}\!\!>; Graciela Moore$

(<u>Graciela.Moore@wsp.com</u>) < <u>Graciela.Moore@wsp.com</u>>; Holder, Mike

< Michael.Holder@hollyfrontier.com; Combs, Robert < Robert.Combs@HollyFrontier.com>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: WDW-4 Public Notice

Carl,

Please find attached the Public Notice for WDW-4 that was printed in the Artesia Daily Press on Aug. 9th, 2017. The Public Notice was in English on page 6 and in Spanish on page 8. If there are any questions, please feel free to contact me.

Thanks, Randy.

<image001.jpg>

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CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless

From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD; Denton, Scott; Combs, Robert

Cc: Dade, Lewis (Randy)
Subject: RE: WDW-4 Public Notice

Attachments: IMG_0642.jpg; IMG_0643.jpg; IMG_0644.jpg; IMG_0646.jpg

Carl,

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Subject: RE: WDW-4 Public Notice

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Thank you.

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Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us >; Griswold, Jim, EMNRD < Jim.Griswold@state.nm.us >; Denton, Scott < Scott.Denton@HollyFrontier.com >; Graciela Moore (Graciela.Moore@wsp.com) < Graciela.Moore@wsp.com >; Holder, Mike < Michael.Holder@hollyfrontier.com >; Combs, Robert < Robert.Combs@HollyFrontier.com >

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com >

Subject: WDW-4 Public Notice

Carl,

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Thanks, Randy.

Dade, Lewis (RANDY)

HF Navajo Ref LLC Environmental Specialist IV Environmental - Artesia (575) 746-5281 Work (575) 703-4735 Mobile Lewis.Dade@HollyFrontier.com 501 E. MAIN ARTESIA, NM. 88210

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement. CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

PUBLIC .. JTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia, New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil New Mexico O

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104.250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refinery. The injected refinery wastewater quality is approximately 3,000 mg/L total dissolved solids (TDS).

Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated to be 2,080 pounds per square inch gauge (psig).

Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that ground water in the area may be encountered at approximately 100 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Comments and inquiries on regulations should be directed to:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to rulng on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Request fro a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

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Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerales y Recursos Naturales de Nuevo México). Oil Conservación Division (Depto. Conservación Del Petróleo), 1220 South St. Frances Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

AVISO PUBLICO

DEPARTMENTO DE ENERGÍA, MENERALES Y RECURSO NATURALES DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

Conformidad con los requisitos de las regulaciones de la Comisión de Control e Calidad del Agua de Nuevo México D.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo México y el Sr. Randade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Petroleo de Nuevo léxico (OCD) para la renovación de un permiso de descarga de petróleo exento y de aguas de residuo no peligrosa no exentas, provenientes de la planta de tratamiento de aguas de la refinería en Artesia. El efluente de aguas de esiduo será dirigido vía ductos al pozo de inyección de efluentes no peligrosos. El pozo se lista a continuación:

I pozo propuesta está localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur, Rango 25 ste, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 está localizado aproximadamente 8.5 millas al E-SE de la intersección entre I-285 y Hwy 82.

La generación de aguas residuales de la refinería proviene del tratamiento de aguas resultantes del proceso de petrólectrudo; del agua usada en la extracción de sales del crudo, y agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WDW-4 va a ocurrirá entre a proximalmente 10,400 a 10,900 pies (profundidad de registro). La velocidad de inyessión en WDW-4 se determinará en base a la presión de inyección de superficie máxima admisible. La presión máxima de inyección en WDW-4 está estimado de 2,080 psig.

Las aguas residuales contendrán un total de solidos disueltos (TDS) de aproximadamente 3,400 partes por millón (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 miligramos per litro (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un rango de profundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente 1,500 a 2,200 ppm.

Por Favor envien los comentarios y las preguntas a:

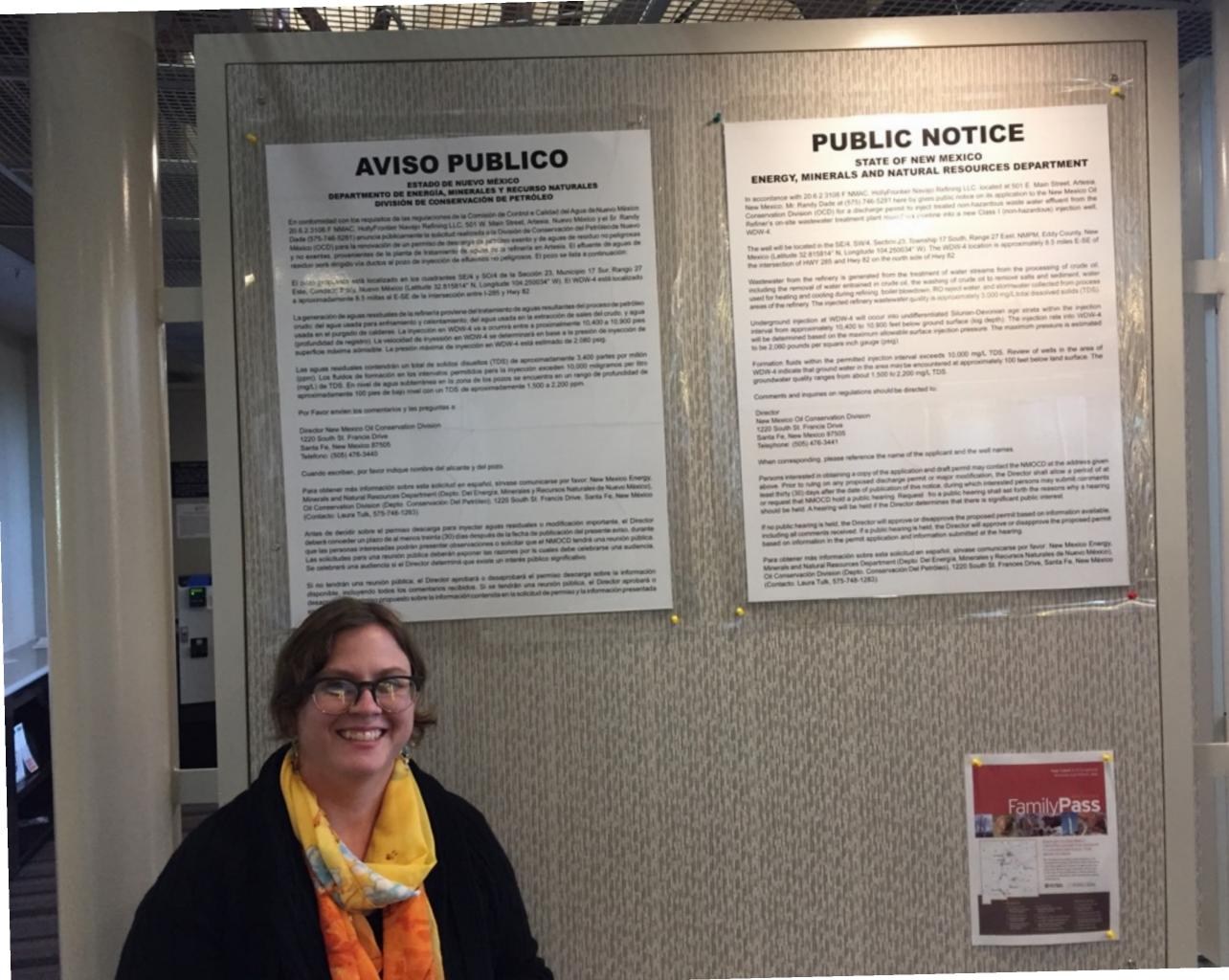
Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y del pozo.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por ls cuales debe celebrarse una audiencia. Se celebrará una audiencia si el Director determina que existe un interés público significativo.

Si no tendrán una reunión pública, el Director aprobará o desaprobará el permiso descarga sobre la información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada desaprobará el permiso pública.



AVISO PUBLICO

ESTADO DE NUEVO MÉXICO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

En conformidad con los requisitos de las regulaciones de la Comisión de Corerol e Calidad del Agua de Numo México. 20.6 2.3108.F NMAC. HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo Miniro val or Parroy Dade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Conservación del 2000. México (OCD) para la renovación de un permiso de descarga de peticleo exento y de ague. y no exentas, provenientes de la planta de tratamiento de aguas de la refineria en Anesa de Januario de de la planta de tratamiento de aguas de la refineria en Anesa de Januario de Januario de la planta de la refineria en Anesa de Januario de Jan residuo será dirigido via ductos al pozo de inyección de efluentes no peligrosos. El pozo se licta a continuación

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Por Favor envien los comentarios y las preguntas a:

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Cuando escriban, por favor indique nombre del alicante y del pozo

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor. New Mexico Energy, Minerals and Natural Resources Department (Depto, Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto, Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Laura Tulk, 575-748-1283).

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PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3106 F MANC, HollyFrontier Navago Rathing LLC, located at 501 E. Man Street, America, New Mexico, Mr. Randy Dade at 67% 746-6381 here by greet justic notice on its application to the New Mexico Ol Conservation Durkson (OCOC) for a discharge permit to right braised non-hazardons waste water effluent han the Australian America and America and Australian America and Australian America and America and Australian America and Australian America and Australian America and America Refiner's on-site wastewater treatment plant routed we oppoint into a new Class I (non-reportant, repolars well.

The well will be located in the SEIR, SWIA, Section 23, Township 17 South, Range 27 East, Native Easty-County, Natural County and Mexico (Latitude 12 815814" N. Longitude 104 250034" W). The IRCIDIA i location is approximately 8.5 miles 6-66 of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of orate sit. including the removal of water entrained in crude oil, the washing of crude oil to remove salts and address, water used for heating and cooling during refining, bother broadown, RO reject water, and stormwater collected from present areas of the refinery. The injected refinery wastewater quality is approximately 2,000 mpt, total desolved wilds (TDE)

Underground injection at WDIN-4 will occur into undifferentiated Sturian-Devinian age stata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (bg stepti). The injection rate into W0844 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated. to be 2,080 pounds per square inch gauge (psg).

Formation fluids within the permitted injection interval exceeds 10.000 mg/l, TOS. Review of wells in the zero of WDW-4 indicate that ground water in the zero may be encountered at approximately 102 feet below lend surface. The groundwater quality ranges from about 1.500 to 2.200 mg/l, TOS.

Comments and inquiries on regulations should be directed to

New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NACCO at the astities git above. Prior to sain occurring a supply the features and participated to the terror shall allow a prior of all above. Prior to sain go any proposed discharge permit or major modification. The Director shall allow a prior of all least thirty (SI) days after the date of publication of this notice, during which interested precisions may shall committee or request that NACCO hold a public hearing. Request to a public hearing shall set built be reacted shall set built be reacted as the public vision of the public

If no public hearing is held, the Deador will approve or disapprove the processor permit based on information available, including all commercia received. If a public hearing's held, the Deador will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para oblaner más información sobre esta solicitud en español, sinese conuncane por lavor tese blasco (nergo Minerals and Natural Resources Department (Depts De-Torrigo, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Marco (Depts Conservación De-Perciso), 1223 South St. Frances Crine, Santa Fa, New Mineral Contacto: Laura Tulk, 575-745-1263)



From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Monday, August 21, 2017 4:47 PM

To:Chavez, Carl J, EMNRDCc:Dade, Lewis (Randy)Subject:WDW-4 Public Notice

Attachments: IMG_0654.jpg; IMG_0656.jpg

Carl,

Please find attached proof of Public Notice at the main office of Hollyfrontier, 501 E main. These will remain in place as will the public notice at the Artesia Public Library for 30 days. Sorry for not attaching these on Friday.

Thanks, Randy

Dade, Lewis (RANDY)

HF Navajo Ref LLC Environmental Specialist IV Environmental - Artesia (575) 746-5281 Work (575) 703-4735 Mobile Lewis.Dade@HollyFrontier.com 501 E. MAIN ARTESIA, NM. 88210

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② 282°W (T) ② 32°50'34"N, 104°23'25"W ±16.4ft ▲ 3343ft

PUBLIC NOTICE

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia,
New Merrico, Mr. Randy Dade at (575) 740, 5204 New Mexico, Mr. Randy Dade at (575) 746-5281here by gives public notice on its application to the New Mexico Oil Conservation Division (OCD) for a discharge permit to inject treated non-hazardous waste water effluent from the Refiner's on-site wastewater treatment plant routed via pipeline into a new Class I (non-hazardous) injection well,

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refinery. The injected refinery wastewater quality is approximately 3,000 mg/L total dissolved solids (TDS).

Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated

Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that ground water in the area may be encountered at approximately 100 feet below land surface. The Comments and inquiries on regulations should be directed to:

New Mexico Oil Conservation Division

1220 South St. Francis Drive

Santa Fe, New Mexico 87505

Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons inferested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given major modification, the Director shall allow a period of other

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments. above. Prior to rulng on any proposed discharge permit or major modification, the Director shall allow a period of any proposed discharge permit or major modification, the Director shall allow a period of any public hearing. Requests fro a public hearing shall set forth the reasons why a hearing shall set forth the reasons why a hearing shall set forth the reasons who are reasons who a hearing shall set f least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments should be held. A hearing will be held if the Director determines that there is significant public interest. If no public hearing is held.

Including all comments received, the Director determines that there is significant public interest.

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From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 6:45 PM

To:Chavez, Carl J, EMNRDSubject:Re: WDW-4 Public Notice

I will leave them for 30 days.

Sent from my iPhone

On Aug 18, 2017, at 5:26 PM, Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us> wrote:

Randy:

Hi. Signs must be up for at least 30 days.

OCD notices that you did not provide photos of the two locations where the signs are placed.

You said one sign was posted at the refinery? Navajo needs to provide proof or verification that the signs are posted. I believe your e-mail today show a sign posted at the Public Library. What about the sign posted at the refinery?

Per WQCC Regs:

Applicant posts synopsis of the public notice at least 2 x 3 feet in size, in English and Spanish, at a place conspicuous to the public, approved by the department, at or near the facility for 30 days and one additional notice at a place conspicuous to the public located off the site, in a form and place approved by the department.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us>; Denton, Scott

<Scott.Denton@HollyFrontier.com>; Combs, Robert <Robert.Combs@HollyFrontier.com>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: RE: WDW-4 Public Notice

Carl,

Here are the pictures of WDW-4 Public Notice posted at the Artesia Public Library. I will leave them posted for 10 days if that is ok. Let me know if there is anything else you need. Thanks, Randy

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]

Sent: Wednesday, August 16, 2017 7:27 AM

To: Dade, Lewis (Randy)

Subject: RE: WDW-4 Public Notice

Randy:

Good morning. The New Mexico Oil Conservation Division (OCD) is in receipt of HollyFrontier's newspaper public notice. However, the photos of the signs at location with the description of the locations is not provided.

Could you please submit by COB on Friday, August 18, 2017 to complete the proof of public notice for the new well discharge permit. There are previous examples in the WDW files of past HollyFrontier verification of public notice submittals, which are model documents for your information.

Thank you.

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < CarlJ.Chavez@state.nm.us; Griswold, Jim, EMNRD

 $<\!\!\underline{Jim.Griswold@state.nm.us}\!\!>; Denton, Scott <\!\!\underline{Scott.Denton@HollyFrontier.com}\!\!>; Graciela Moore$

(<u>Graciela.Moore@wsp.com</u>) < <u>Graciela.Moore@wsp.com</u>>; Holder, Mike

< <u>Michael.Holder@hollyfrontier.com</u>>; Combs, Robert < <u>Robert.Combs@HollyFrontier.com</u>>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: WDW-4 Public Notice

Carl,

Please find attached the Public Notice for WDW-4 that was printed in the Artesia Daily Press on Aug. 9^{th} , 2017. The Public Notice was in English on page 6 and in Spanish on page 8. If there are any questions, please feel free to contact me.

Thanks, Randy.

<image001.jpg>

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From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD; Denton, Scott; Combs, Robert

Cc: Dade, Lewis (Randy)
Subject: RE: WDW-4 Public Notice

Attachments: IMG_0642.jpg; IMG_0643.jpg; IMG_0644.jpg; IMG_0646.jpg

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Subject: RE: WDW-4 Public Notice

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Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us >; Griswold, Jim, EMNRD < Jim.Griswold@state.nm.us >; Denton, Scott < Scott.Denton@HollyFrontier.com >; Graciela Moore (Graciela.Moore@wsp.com) < Graciela.Moore@wsp.com >; Holder, Mike < Michael.Holder@hollyfrontier.com >; Combs, Robert < Robert.Combs@HollyFrontier.com >

Cc: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Subject: WDW-4 Public Notice

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Thanks, Randy.

Dade, Lewis (RANDY)

HF Navajo Ref LLC Environmental Specialist IV Environmental - Artesia (575) 746-5281 Work (575) 703-4735 Mobile Lewis.Dade@HollyFrontier.com 501 E. MAIN ARTESIA, NM. 88210

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AVISO PUBLICO

DEPARTMENTO DE ENERGÍA, MINERALES Y RECURSO NATURALES DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

n conformidad con los requisitos de las regulaciones de la Comisión de Control e Calidad del Agua de Nuevo México 0.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo México y el Sr. Randidade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Petroleo de Nuevo México (OCD) para la renovación de un permiso de descarga de petróleo exento y de aguas de residuo no peligrosa no exentas, provenientes de la planta de tratamiento de aguas de la refinería en Artesia. El efluente de aguas de esiduo será dirigido vía ductos al pozo de inyección de efluentes no peligrosos. El pozo se lista a continuación:

El pozo propuesta está localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur, Rango 23 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 está localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285 y Hwy 82.

La generación de aguas residuales de la refinería proviene del tratamiento de aguas resultantes del proceso de petrólectros, del agua usada en la extracción de sales del crudo, y agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WDW-4 va a ocurrirá entre a proximalmente 10,400 a 10,900 pies (profundidad de registro). La velocidad de inyección en WDW-4 se determinará en base a la presión de inyección de superficie máxima admisible. La presión máxima de inyección en WDW-4 está estimado de 2,080 psig.

Las aguas residuales contendrán un total de solidos disueltos (TDS) de aproximadamente 3,400 partes por millór (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 miligramos per litro (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un rango de profundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente 1,500 a 2,200 ppm.

Por Favor envien los comentarios y las preguntas a:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y del pozo.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor. New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por ls cuales debe celebrarse una audiencia. Se celebrará una audiencia si el Director determina que existe un interés público significativo.

Si no tendrán una reunión pública, el Director aprobará o desaprobará el permiso descarga sobre la información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada de seunión pública.

PUBLIC .. JTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia, New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil Conservation Division (OCD) for a discharge permit to inject treated non-hazardous waste water effluent from the Refiner's on-site wastewater treatment plant routed via pipeline into a new Class I (non-hazardous) injection well, WDW-4.

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104.250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to carnove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refinery. The injected refinery wastewater quality is approximately 3,000 mg/L total dissolved solids (TDS).

Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated to be 2,080 pounds per square inch gauge (psig).

Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that ground water in the area may be encountered at approximately 100 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Comments and inquiries on regulations should be directed to:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to rulng on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Request fro a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the Director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservación Division (Depto. Conservación Del Petróleo), 1220 South St. Frances Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).



AVISO PUBLICO

ESTADO DE NUEVO MÉXICO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

En conformidad con los requisitos de las regulaciones de la Comisión de Corerol e Calidad del Agua de Numo México. 20.6 2.3108.F NMAC. HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo Miniro val or Parroy Dade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Conservación del 2000. México (OCD) para la renovación de un permiso de descarga de peticleo exento y de ague. y no exentas, provenientes de la planta de tratamiento de aguas de la refineria en Anesa de Januario de de la planta de tratamiento de aguas de la refineria en Anesa de Januario de Januario de la planta de la refineria en Anesa de Januario de Jan residuo será dirigido via ductos al pozo de inyección de efluentes no peligrosos. El pozo se licta a continuación

El pozo propuesta està localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur. Rango 27 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 està localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285 y Hwy 82.

La generación de aguas residuales de tarreficiería provier e del traterisento de aguas resultantes del proceso de petroleo crudo; del agua usada para enframiento y calentamiento: del agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WOW-4 va a pourros entre a proximalmente 10,400 a 10,900 pes (profundidad de registro). La velocidad de inyession en WDW-4 se determinaré en base a la presón de inyección de superficie máxima admisible. La presión máxima de inyección en WOW-4 esta estimado de 2,000 psig.

Las aguas residuales contendrán un total de solidos disuellos (TDS) de aproximadamente 3.400 partes por millón (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 milgranos per las (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un ranço de protundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente 1,500 a 2,200 por.

Por Favor envien los comentarios y las preguntas a:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y del pozo

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor. New Mexico Energy, Minerals and Natural Resources Department (Depto, Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto, Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por la cuales debe celebrarse una audencia Se celebrará una audiencia si el Director determina que existe un interés público significativo.

Si no tendrán una reunión pública, el Director aprobará o desaprobará el permiso descarga sobre la información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada en la reunión pública.

PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3106 F MANC, HollyFrontier Navago Rathing U.C. located at 501 E. Man Street, America New Mexico, Mr. Randy Dade at 67% 746-6381 here by greet Judic notice on its application to the New Mexico Ol Conservation Division (OCOC) for a discharge permit to right brased non-hazardons sentle water efficient has the Authorities of the Americans of Americans and American State of the American State o Refiner's on-site wastewater treatment plant routed we oppoint into a new Class I (non-reportant, repolars well.

The well will be located in the SEIR, SWIA, Section 23, Township 17 South, Range 27 East, Native Easty-County, Natural County and Mexico (Latitude 12 815814" N. Longitude 104 250034" W). The IRCIDIA i location is approximately 8.5 miles 6-66 of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of orate sit. including the removal of water entrained in crude oil, the washing of crude oil to remove salts and address, water used for heating and cooling during refining, bother broadown, RO reject water, and stormwater collected from present areas of the refinery. The injected refinery wastewater quality is approximately 2,000 mpt, total desolved wilds (TDE)

Underground injection at WDIN-4 will occur into undifferentiated Sturian-Devinian age stata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (bg stepti). The injection rate into W0844 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated. to be 2,080 pounds per square inch gauge (psg).

Formation fluids within the permitted injection interval exceeds 10.000 mg/l, TOS. Review of wells in the zero of WDW-4 indicate that ground water in the zero may be encountered at approximately 102 feet below lend surface. The groundwater quality ranges from about 1.500 to 2.200 mg/l, TOS.

Comments and inquiries on regulations should be directed to

New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NACCO at the astities git above. Prior to sain occurring a supply the features and participated to the terror shall allow a prior of all above. Prior to sain go any proposed discharge permit or major modification. The Director shall allow a prior of all least thirty (SI) days after the date of publication of this notice, during which interested precisions may shall committee or request that NACCO hold a public hearing. Request to a public hearing shall set built be reacted shall set built be reacted as the public vision of the public

If no public hearing is held, the Deador will approve or disapprove the processor permit based on information available, including all commercia received. If a public hearing's held, the Deador will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para oblaner más información sobre esta solicitud en español, sinese conuncane por lavor tese blasco (nergo Minerals and Natural Resources Department (Depts De-Torrigo, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Marco (Depts Conservación De-Perciso), 1223 South St. Frances Crine, Santa Fa, New Mineral Contacto: Laura Tulk, 575-745-1263)



From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 6:45 PM

To:Chavez, Carl J, EMNRDSubject:Re: WDW-4 Public Notice

I will leave them for 30 days.

Sent from my iPhone

On Aug 18, 2017, at 5:26 PM, Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us> wrote:

Randy:

Hi. Signs must be up for at least 30 days.

OCD notices that you did not provide photos of the two locations where the signs are placed.

You said one sign was posted at the refinery? Navajo needs to provide proof or verification that the signs are posted. I believe your e-mail today show a sign posted at the Public Library. What about the sign posted at the refinery?

Per WQCC Regs:

Applicant posts synopsis of the public notice at least 2 x 3 feet in size, in English and Spanish, at a place conspicuous to the public, approved by the department, at or near the facility for 30 days and one additional notice at a place conspicuous to the public located off the site, in a form and place approved by the department.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099) New Mexico Oil Conservation Division Energy Minerals and Natural Resources Department 1220 South St Francis Drive Santa Fe, New Mexico 87505 Ph. (505) 476-3490

E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us>; Denton, Scott

<Scott.Denton@HollyFrontier.com>; Combs, Robert <Robert.Combs@HollyFrontier.com>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: RE: WDW-4 Public Notice

Carl,

Here are the pictures of WDW-4 Public Notice posted at the Artesia Public Library. I will leave them posted for 10 days if that is ok. Let me know if there is anything else you need. Thanks, Randy

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]

Sent: Wednesday, August 16, 2017 7:27 AM

To: Dade, Lewis (Randy)

Subject: RE: WDW-4 Public Notice

Randy:

Good morning. The New Mexico Oil Conservation Division (OCD) is in receipt of HollyFrontier's newspaper public notice. However, the photos of the signs at location with the description of the locations is not provided.

Could you please submit by COB on Friday, August 18, 2017 to complete the proof of public notice for the new well discharge permit. There are previous examples in the WDW files of past HollyFrontier verification of public notice submittals, which are model documents for your information.

Thank you.

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < CarlJ.Chavez@state.nm.us; Griswold, Jim, EMNRD

 $<\!\!\underline{Jim.Griswold@state.nm.us}\!\!>; Denton, Scott <\!\!\underline{Scott.Denton@HollyFrontier.com}\!\!>; Graciela Moore$

(<u>Graciela.Moore@wsp.com</u>) < <u>Graciela.Moore@wsp.com</u>>; Holder, Mike

< <u>Michael.Holder@hollyfrontier.com</u>>; Combs, Robert < <u>Robert.Combs@HollyFrontier.com</u>>

Cc: Dade, Lewis (Randy) < Lewis. Dade@HollyFrontier.com>

Subject: WDW-4 Public Notice

Carl,

Please find attached the Public Notice for WDW-4 that was printed in the Artesia Daily Press on Aug. 9^{th} , 2017. The Public Notice was in English on page 6 and in Spanish on page 8. If there are any questions, please feel free to contact me.

Thanks, Randy.

<image001.jpg>

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged and confidential. If you received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

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From: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Sent: Friday, August 18, 2017 2:10 PM

To: Chavez, Carl J, EMNRD; Denton, Scott; Combs, Robert

Cc: Dade, Lewis (Randy)
Subject: RE: WDW-4 Public Notice

Attachments: IMG_0642.jpg; IMG_0643.jpg; IMG_0644.jpg; IMG_0646.jpg

Carl,

Here are the pictures of WDW-4 Public Notice posted at the Artesia Public Library. I will leave them posted for 10 daysif that is ok. Let me know if there is anything else you need. Thanks, Randy

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Sent: Wednesday, August 16, 2017 7:27 AM

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Subject: RE: WDW-4 Public Notice

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Thank you.

From: Dade, Lewis (Randy) [mailto:Lewis.Dade@HollyFrontier.com]

Sent: Thursday, August 10, 2017 7:17 AM

To: Chavez, Carl J, EMNRD < Carl J. Chavez@state.nm.us >; Griswold, Jim, EMNRD < Jim.Griswold@state.nm.us >; Denton, Scott < Scott.Denton@HollyFrontier.com >; Graciela Moore (Graciela.Moore@wsp.com) < Graciela.Moore@wsp.com >; Holder, Mike < Michael.Holder@hollyfrontier.com >; Combs, Robert < Robert.Combs@HollyFrontier.com >

Cc: Dade, Lewis (Randy) < Lewis.Dade@HollyFrontier.com>

Subject: WDW-4 Public Notice

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Thanks, Randy.

Dade, Lewis (RANDY)

HF Navajo Ref LLC Environmental Specialist IV Environmental - Artesia (575) 746-5281 Work (575) 703-4735 Mobile Lewis.Dade@HollyFrontier.com 501 E. MAIN ARTESIA, NM. 88210

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AVISO PUBLICO

DEPARTMENTO DE ENERGÍA, MINERALES Y RECURSO NATURALES DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

n conformidad con los requisitos de las regulaciones de la Comisión de Control e Calidad del Agua de Nuevo México 0.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo México y el Sr. Randidade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Petroleo de Nuevo México (OCD) para la renovación de un permiso de descarga de petróleo exento y de aguas de residuo no peligrosa no exentas, provenientes de la planta de tratamiento de aguas de la refinería en Artesia. El efluente de aguas de esiduo será dirigido vía ductos al pozo de inyección de efluentes no peligrosos. El pozo se lista a continuación:

El pozo propuesta está localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur, Rango 23 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 está localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285 y Hwy 82.

La generación de aguas residuales de la refinería proviene del tratamiento de aguas resultantes del proceso de petrólectros, del agua usada en la extracción de sales del crudo, y agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WDW-4 va a ocurrirá entre a proximalmente 10,400 a 10,900 pies (profundidad de registro). La velocidad de inyección en WDW-4 se determinará en base a la presión de inyección de superficie máxima admisible. La presión máxima de inyección en WDW-4 está estimado de 2,080 psig.

Las aguas residuales contendrán un total de solidos disueltos (TDS) de aproximadamente 3,400 partes por millór (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 miligramos per litro (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un rango de profundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente 1,500 a 2,200 ppm.

Por Favor envien los comentarios y las preguntas a:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y del pozo.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor. New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por ls cuales debe celebrarse una audiencia. Se celebrará una audiencia si el Director determina que existe un interés público significativo.

Si no tendrán una reunión pública, el Director aprobará o desaprobará el permiso descarga sobre la información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada de seunión pública.

PUBLIC .. JTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia, New Mexico, Mr. Randy Dade at (575) 746-5281 here by gives public notice on its application to the New Mexico Oil Conservation Division (OCD) for a discharge permit to inject treated non-hazardous waste water effluent from the Refiner's on-site wastewater treatment plant routed via pipeline into a new Class I (non-hazardous) injection well, WDW-4.

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104.250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to carnove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refinery. The injected refinery wastewater quality is approximately 3,000 mg/L total dissolved solids (TDS).

Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated to be 2,080 pounds per square inch gauge (psig).

Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that ground water in the area may be encountered at approximately 100 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Comments and inquiries on regulations should be directed to:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to rulng on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Request fro a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the Director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservación Division (Depto. Conservación Del Petróleo), 1220 South St. Frances Drive, Santa Fe, New México (Contacto: Laura Tulk, 575-748-1283).



AVISO PUBLICO

ESTADO DE NUEVO MÉXICO DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

En conformidad con los requisitos de las regulaciones de la Comisión de Corerol e Calidad del Agua de Numo México. 20.6 2.3108.F NMAC. HollyFrontier Navajo Refining LLC, 501 W. Main Street, Artesia, Nuevo Miniro val or Parroy Dade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Conservación del 2000. México (OCD) para la renovación de un permiso de descarga de peticleo exento y de ague. y no exentas, provenientes de la planta de tratamiento de aguas de la refineria en Anesa de Januario de de la planta de tratamiento de aguas de la refineria en Anesa de Januario de Januario de la planta de la refineria en Anesa de Januario de Jan residuo será dirigido via ductos al pozo de inyección de efluentes no peligrosos. El pozo se licta a continuación

El pozo propuesta està localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur. Rango 27 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 està localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285 y Hwy 82.

La generación de aguas residuales de tarreficiería provier e del traterisento de aguas resultantes del proceso de petroleo crudo; del agua usada para enframiento y calentamiento: del agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WOW-4 va a pourros entre a proximalmente 10,400 a 10,900 pes (profundidad de registro). La velocidad de inyession en WDW-4 se determinaré en base a la presón de inyección de superficie máxima admisible. La presión máxima de inyección en WOW-4 esta estimado de 2,000 psig.

Las aguas residuales contendrán un total de solidos disuellos (TDS) de aproximadamente 3.400 partes por millón (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 milgranos per las (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un ranço de protundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente 1,500 a 2,200 por.

Por Favor envien los comentarios y las preguntas a:

Director New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y del pozo

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor. New Mexico Energy, Minerals and Natural Resources Department (Depto, Del Energia, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto, Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por la cuales debe celebrarse una audencia Se celebrará una audiencia si el Director determina que existe un interés público significativo.

Si no tendrán una reunión pública, el Director aprobará o desaprobará el permiso descarga sobre la información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada en la reunión pública.

PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

In accordance with 20.6.2.3106 F MANC, HollyFrontier Navago Rathing U.C. located at 501 E. Man Street, America New Mexico, Mr. Randy Dade at 67% 746-6381 here by greet Judic notice on its application to the New Mexico Ol Conservation Division (OCOC) for a discharge permit to right brased non-hazardons sentle water efficient has the Authorities of the Americans of Americans and American State of the American State o Refiner's on-site wastewater treatment plant routed we oppoint into a new Class I (non-reportant, repolars well.

The well will be located in the SEIR, SWIA, Section 23, Township 17 South, Range 27 East, Native Easty-County, Natural County and Mexico (Latitude 12 815814" N. Longitude 104 250034" W). The IRCIDIA i location is approximately 8.5 miles 6-66 of the intersection of HWY 285 and Hwy 82 on the north side of Hwy 82.

Wastewater from the refinery is generated from the treatment of water streams from the processing of orate sit. including the removal of water entrained in crude oil, the washing of crude oil to remove salts and address, water used for heating and cooling during refining, bother broadown, RO reject water, and stormwater collected from present areas of the refinery. The injected refinery wastewater quality is approximately 2,000 mpt, total desolved wilds (TDE)

Underground injection at WDIN-4 will occur into undifferentiated Sturian-Devinian age stata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (bg stepti). The injection rate into W0844 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated. to be 2,080 pounds per square inch gauge (psg).

Formation fluids within the permitted injection interval exceeds 10.000 mg/l, TOS. Review of wells in the zero of WDW-4 indicate that ground water in the zero may be encountered at approximately 102 feet below lend surface. The groundwater quality ranges from about 1.500 to 2.200 mg/l, TOS.

Comments and inquiries on regulations should be directed to

New Mexico Oil Conservation Division 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NACCO at the astities git above. Prior to sain occurring a supply the features and participated to the terror shall allow a prior of all above. Prior to sain go any proposed discharge permit or major modification. The Director shall allow a prior of all least thirty (SI) days after the date of publication of this notice, during which interested precisions may shall committee or request that NACCO hold a public hearing. Request to a public hearing shall set built be reacted shall be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Deador will approve or disapprove the processor permit based on information available, including all commercia received. If a public hearing's held, the Deador will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para oblaner más información sobre esta solicitud en español, sinese conuncane por lavor tese blasco (nergo Minerals and Natural Resources Department (Depts De-Torrigo, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Energia, Minerals a Recurso Naturals de Marco Marco (Depts Conservación De-Perciso), 1223 South St. Frances Crine, Santa Fa, New Mineral Contacto: Laura Tulk, 575-745-1263)



onsulton a manual PUBLIC NOTICE STATE OF NEW MEXICO **ENERGY, MINERALS AND NATURAL RESOURCES** DEPARTMENT OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, located at 501 E. Main Street, Artesia, New Mexico, Mr. Randy Dade at (507) 746-5281 hereby gives public notice on its application to the New Mexico Oil Conservation Division (OCD) for a discharge permit to inject treated non-hazardous waste water effluent from the Refinery's onsite wastewater treatment plant routed via pipeline into a new Class I (non-hazardous) injection well, WDW-4.

The well will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East, NMPM, Eddy County, New Mexico (Latitude 32.815814° N, Longitude 104.250034° W). The WDW-4 location is approximately 8.5 miles E-SE of the intersection of Hwy 285 and Hwy 82 on the north side of Hwy

Wastewater from the refinery is generated from the treatment of water streams from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, RO reject water, and stormwater collected from process areas of the refin-

ery. The injected refinery wastewater quality is approximately 3,000 mg/L total dissolved solids (TDS).
Underground injection at WDW-4 will occur into undifferentiated Silurian-Devonian age strata within the injection interval from approximately 10,400 to 10,900 feet below ground surface (log depth). The injection rate into WDW-4 will be determined based on the maximum allowable surface injection pressure. The maximum pressure is estimated to be 2,080 pounds per square inch gauge (psig). Formation fluids within the permitted injection interval exceeds 10,000 mg/L TDS. Review of wells in the area of WDW-4 indicate that groundwater in the area may be encountered at approximately 100 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Comments and inquiries on regulations should be directed

Director

New Mexico Oil Conservation Division

1220 South St. Francis Drive Santa Fe, New Mexico 87505 Telephone: (505) 476-3441

When corresponding, please reference the name of the applicant and the well names.

Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this

even danch assisting

notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a

hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or

disapprove the proposed permit based

on information available, including all comments received. If a public hearing is held, the Director will approve or

disapprove the proposed permit based on information in the permit application and information submitted at the hearing. Para obtener más información sobre esta solicitud en

español, sírvase comunicarse por favor:

New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservación Division (Depto.Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto:

Laura Tulk, 575-748-1283).

Public Notice WDW-4 Aug 9, 2017 ARTESIA DAILY Press

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AVISO PÚBLICO
ESTADO DE NUEVO MÉXICO
DEPARTAMENTO DE ENERGÍA, MINERALES Y RECURSO NATURALES
DIVISIÓN DE CONSERVACIÓN DE PETRÓLEO

En conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, HollyFrontier Navajo Refining LLC, 501 E. Main Street, Artesia, Nuevo México y el Sr. Randy Dade (575-746-5281) anuncia públicamente la solicitud realizada a la División de Conservación del Petróleo de Nuevo México (OCD) para la renovación de un permiso de descarga de petróleo exento y de aguas de residuo no peligrosas y no exentas, provenientes de la planta de tratamiento de aguas de la refinería en Artesia. El efluente de aguas de residuo será dirigido vía ductos al pozo de inyección de efluentes no peligrosos. El pozo se lista a continuación:

El pozo propuesta está localizado en los cuadrantes SE/4 y SO/4 de la Sección 23, Municipio 17 Sur, Rango 27 Este, Condado Eddy, Nuevo México (Latitude 32.815814° N, Longitude 104.250034° W). El WDW-4 está localizado a aproximadamente 8.5 millas al E-SE de la intersección entre I-285

y Hwy 82.

La generación de aguas residuales de la refinería proviene del tratamiento de aguas resultantes del proceso de petróleo crudo; del agua usada para enfriamiento y calentamiento; del agua usada en la extracción de sales del crudo, y agua usada en el purgado de calderas. La inyección en WDW-4 va a ocurrirá entre a proximalmente 10,400 a 10,900 pies (profundidad de registro). La velocidad de inyección en WDW-4 se determinará en base a la presión de inyección de superficie máxima admisible. La presión máxima de inyección en WDW-4 está estimado de 2,080 psig.

Las aguas residuales contendrán un total de solidos disueltos (TDS) de aproximadamente 3,400 partes por millón (ppm). Los fluidos de formación en los intervalos permitidos para la inyección exceden 10,000 miligramos per litro (mg/L) de TDS. En nivel de agua subterránea en la zona de los pozos se encuentra en un rango de profundidad de aproximadamente 100 pies de bajo nivel con un TDS de aproximadamente

1,500 a 2,200 ppm.

Por Favor envien los comentarios y las preguntas a: DirectorNew Mexico Oil Conservation Division 1220 South St. Francis Drive

Santa Fe, New Mexico 87505 Telefono: (505) 476-3440

Cuando escriban, por favor indique nombre del alicante y

del pozo.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México

co (Contacto: Laura Tulk, 575-748-1283).

Antes de decidir sobre el permiso descarga para inyectar aguas residuales o modificación importante, el Director deberá conceder un plazo de al menos treinta (30) días después de la fecha de publicación del presente aviso, durante que las personas interesadas podrán presentar observaciones o solicitar que el NMOCD tendrá una reunión pública. Las solicitudes para una reunión pública deberán exponer las razones por las cuales debe celebrarse una audiencia. Se celebrará una audiencia si el Director

determina que existe un interés público significativo. Si no tendrán una reunión pública, el Director aprobará o

desaprobará el permiso descarga sobre la

información disponible, incluyendo todos los comentarios recibidos. Si se tendrán una reunión pública, el Director aprobará o desaprobará el permiso propuesto sobre la información contenida en la solicitud de permiso y la información presentada en la reunión pública.

Page 8 - The Artesia (NM) Daily Press - August 9, 2017



PERMIT APPLICATION FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL WDW-4 (PROPOSED)

HollyFrontier Navajo Refining LLC Artesia, NM

WSP | PB Project No. 50904E

MARCH 2017

Prepared By:

PB Energy Storage Services, Inc. WSP | Parsons Brinckerhoff 16200 Park Row, Suite 200 Houston, Texas 77084

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE **Application Acronyms:** [NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication] [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling] [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement] [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion] [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase] [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response] TYPE OF APPLICATION - Check Those Which Apply for [A] [1] Location - Spacing Unit - Simultaneous Dedication [A]☐ NSL ☐ NSP ☐ SD Check One Only for [B] or [C] [B] Commingling - Storage - Measurement ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM [C]Injection - Disposal - Pressure Increase - Enhanced Oil Recovery WFX PMX SWD PPR EOR PPR [D] Other: Specify Class I – Non-Hazardous [2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or

Does Not Apply [A] Working, Royalty or Overriding Royalty Interest Owners Offset Operators, Leaseholders or Surface Owner [B] [C] Application is One Which Requires Published Legal Notice [D]Notification and/or Concurrent Approval by BLM or SLO U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office [E] For all of the above, Proof of Notification or Publication is Attached, and/or, [F] Waivers are Attached [3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE. CERTIFICATION: I hereby certify that the information submitted with this application for administrative approval is accurate and complete to the best of my knowledge. I also understand that no action will be taken on this application until the required information and notifications are submitted to the Division. Note: Statement must be completed by an individual with managerial and/or supervisory capacity. Title 3/30/2017

Com e-mail Address

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INTRODUCTION

HollyFrontier Navajo Refining LLC (Navajo), located in Artesia, New Mexico, is applying to permit new Class I Nonhazardous Waste Disposal Well No. 4 (WDW-4) to be located approximately eight and one half (8-1/2) miles to the east-southeast of Navajo's Artesia refinery.

Navajo's Artesia refinery is located at 501 East Main Street in Artesia, Eddy County, New Mexico. The new WDW-4 will be the fourth Class I nonhazardous waste injection well operated by Navajo. The three existing injection wells are designated WDW-1, WDW-2 and WDW-3. All three of the existing wells are permitted to inject nonhazardous waste water into a subsurface Injection Zone consisting of the lower portion of the Wolfcamp Formation and the underlying Cisco and Canyon Formations. The depth and thickness of the permitted Injection Zone at the three existing Navajo injection wells are as follows:

WDW-1: 7,450 to 9,016 ft KB
WDW-2: 7,270 to 8,894 ft KB
WDW-3: 7,303 to 8,894 ft KB

WDW-4 will be permitted to inject nonhazardous waste water into a subsurface Injection Zone consisting of undifferentiated Silurian-Devonian age strata. The depth and thickness of the Silurian-Devonian Injection Zone into which WDW-4 is to be installed is expected to be approximately 10,400 to 10,900 feet below land surface. The actual depth and thickness of the Injection Zone will be determined when the well is drilled and completed.

Information concerning the locations of oil and gas wells and freshwater wells within the regulatory 1-mile radius area of review (AOR) surrounding the planned WDW-4 location were obtained from New Mexico Oil Conservation Division (OCD) and New Mexico Water Rights Reporting System, respectively. No corrective action is needed for any of the artificial penetrations that penetrate the Injection Zone within the 1-mile radius AOR.

The regional and local geology have been evaluated, and no problems have been identified that will cause adverse effects as a result of the planned injection operations at WDW-4.

Reservoir characteristics of the Silurian-Devonian Age Injection Zone indicate the reservoir has sufficient properties to accommodate the planned injection rate, volume and pressure from WDW-4. Based on information gathered from the existing Navajo injection well system which has been operating for an extended period of time, there are no adverse reactions identified between the waste stream and the planned well components of construction or with the Silurian-Devonian age Injection Zone matrix and formation fluid.

WDW-4 will be constructed and operated to meet or exceed the construction and operating standards set forth in 20.6.2.2505 NMAC. A procedure to permanently plug and abandon the well has been included per the requirements of 20.6.2.5209 NMAC.

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I.	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage Application qualifies for administrative approval? Yes No						
II.	OPERATOR: HollyFrontier Navajo Refining LLC						
	ADDRESS: 501 East Main, Artesia, NM 88210						
	CONTACT PARTY: Randy Dade PHONE: (575) 746-5281						
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 X 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:						
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, 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.	I. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic 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 sources 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 sources 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: Lews R. Dade TITLE: Enu. Specialist DATE: 3/30/2017						
*	E-MAIL ADDRESS: Lows . Dade Cholly Fronter . com If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:						

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 the 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, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, 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.

INJECTION WELL DATA SHEET

OPERATOR: Facility: HollyFrontier Navajo Refining LLC, 501 East Main, Artesia, New Mexico 88210;

Contact: Randy Dade, Environmental Specialist, (575) 746-5281, Lewis.Dade@HollyFrontier.com

WELL NAME & NUMBER: WDW-4

TD ~11,000'

WELL LOCATION: 1000 feet from the south line and 2,500 feet from the east line of SE/4, SW/4

UNIT LETTER

SECTION

17 South TOWNSHIP 27 East RANGE

WELL CONCEDUCTION DAT

Base of USDW @ +/- 500 BELOW GROUND DETAILS (feet below Ground Level) 1. Conductor Pipe - 20", 129.33 lb/ft (0.625" wall), API 5LX-56, plain-end, beveled conductor set in 24" augered hole at 80' and cemented to the surface with redi-mix. 2. Surface Casing - 133, 54.5 lb/ft, K-55, ST&C, set at 1,500' in a 171/2" hole and cemented to the surface. 3. Annulus Fluid - injection tubing and protection casing annulus filled with 250 bbl of brine water containing a corrosion inhibitor, a bactericide and an oxygen scavenger. 4. Protection Casing - 95, 47 lb/ft, N-80, LT&C set in a 121/4" hole at 10,400' with a DV Tool at 5,800' and cemented to the surface in two stages as follows: Stage I (5,600' - 10,400') Stage II (Surface - 5,800') 5. Injection Tubing - 7", 26 lb/ft, K-55, LT&C set in packer at approximately 10,300'. 6. Injection Packer - 7" x 9\frac{5}{8}" set at approximately 10,300'. Final depth determined by Openhole Log. 7. Open Hole - 8½" to 11,000' Top of Confining Zone ~9900' Top of Injection Zone ~10,400' Base of Injection Zone ~10,900'

FOOTAGE LOCATION

WELLBORE SCHEMATIC

<u>WELL CONSTRUCTION DATA</u>					
Surface Casing					
Hole Size: <u>20-inches</u>	Casing Size: 13-3/8-inch				
Cemented with: sx.	<i>or</i> ft ³				
Top of Cement: surface	Method Determined:				
Intermediate	Casing				
Hole Size: 12.25-inches	Casing Size: 9-5/8-inch				
Cemented with: sx.	<i>or</i> ft ³				
Top of Cement: surface Production C	Method Determined:				
Hole Size: <u>8.75-inches</u>	Casing Size: 7-inch				
Cemented with: sx.	<i>or</i> ft ³				
Top of Cement: surface	Method Determined:				
Total Depth: <u>~11,000 feet</u>					
<u>Injection Interval</u>					
	to				
(Open-He	ole)				

INJECTION WELL DATA SHEET

Tub	ping Size: _7-inchLining Material: steel construction					
Тур	pe of Packer: 9-5/8" X 7" retrievable injection packer					
Pac	eker Setting Depth: _~10,300 feet					
Oth	ner Type of Tubing/Casing Seal (if applicable):					
	Additional Data					
1.	Is this a new well drilled for injection?XYesNo					
	If no, for what purpose was the well originally drilled?					
2.	Name of the Injection Formation: <u>Silurian-Devonian</u>					
3.	Name of Field or Pool (if applicable):					
4.	Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. No					
5.	Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Queen, Grayburg and San Andres (approximately 2,500 feet) and Morrow (approximately 9,500 feet)					

1.0 Underground Well Control Well Class

Waste Disposal Well No. 4 (WDW-4) will be classified as a Class I Nonhazardous Waste Injection Well.

2.0 Operator

The operator information for WDW-4 is provided below:

Facility Address

HollyFrontier Navajo Refining LLC 501 East Main Artesia, New Mexico 88210 (575) 748-3310

Contact Person

Randy Dade, Environmental Specialist (575) 746-5281
Lewis.Dade@hollyfrontier.com

3.0 Location

WDW-4 will be located in the SE/4, SW/4, Section 23, Township 17 South, Range 27 East (approximately 1000 feet from the south line and 2,500 feet from the west line of Section 23).

A topographic map showing the location of the Navajo's Artesia refinery and the location where WDW-4 will be installed is provided as Figure 1. An enlarged version of the topographic map showing the planned location of WDW-4 is provided as Figure 2.



4.0 Landowner

The parcel of land where WDW-4 will be located is owned by the following:

U.S. Department of the Interior Bureau of Land Management 620 Greene Street Carlsbad, New Mexico 88220 (575) 887-6544

The parcel of land where WDW-4 will be located is surrounded by additional land owned by the Federal Bureau of Land Management, as shown on the map included in Appendix A.

5.0 Facility Description

WDW-4 will be located approximately eight and one half (8.5) miles southeast of Navajo's Artesia refinery, the largest refinery in the State of New Mexico. Drawing 1 presents an aerial photograph of the refinery's location with respect to the planned WDW-4, identifying pertinent features between the two sites. The injection well facility will be located on a 2.5 acre tract of Federally-owned land. The well location will be surrounded by a security fence that encloses the well, injection pumps, filters and piping, wellhead annulus measurement system (WAMS) on a contained concrete pad, a well control system that provides real-time, continuous monitoring of key operating parameters (pressure, flow rate, etc.) to the Refinery Control Room responsible for well operations and a power panel. The pumps and filters will be located on a separate, contained concrete pad from the wellhead. There will be no buildings or tanks, other than a 250-gallon glycol tank, associated with the WAMS unit.

6.0 Proposed Discharge Plan (see 20.6.2.3106C NMAC)

This permit application is for a new Class I nonhazardous waste injection well. Those portions of 20.6.2.3106C that are relevant to underground injection, especially 20.6.2.3103C (8), are addressed within Section 7.0 of this document.

- 6(a) is addressed in 7(f)
- 6(b) is addressed in 7(a)
- 6(c) is addressed in 7(d)



- 6(d) is addressed in 7(e)
- 6(e) measurement of flow is a flow meter at the wellhead with information transmitted electronically to the refinery control room.
- 6(f) is addressed in 7(e)
- 6(g) is addressed in 7(e)

7.0 Information for Class I Nonhazardous Waste Injection Well and Class III Brine Wells (20.6.2.5210 NMAC)

The following sections present the information required in Subsection B of Section 20.6.2.5210 NMAC.

7 (a) Area of Review

The WDW-4 Area of Review (AOR) consists of the area within a 1-mile radius surrounding the planned well location as shown on Drawing 2. All potential sources of information relevant to the location of non-freshwater artificial penetrations (oil and gas wells, exploratory tests, disposal wells, etc.) and freshwater wells within the AOR were reviewed.

Non-Freshwater Wells in Area of Review

The locations of non-freshwater artificial penetrations (oil and gas wells, exploratory tests, disposal wells, etc.) within the 1-mile radius AOR surrounding WDW-4 are identified in Drawing 2. A total of 91 non-freshwater artificial penetrations are present in the 1-mile radius AOR as shown on the map. Each artificial penetration is identified by a Map ID number. Table 1 presents a tabulation of the 91 non-freshwater artificial penetrations in the WDW-4 AOR. Only one (1) of the 91 non-freshwater artificial penetrations identified within the AOR (Map ID No. 5) was advanced to a depth to penetrate the top of the planned WDW-4 Silurian-Devonian age Injection Zone. The well record is included as Attachment 1.

Freshwater Wells in Area of Review

Based upon information obtained from records maintained by the New Mexico Water Rights Reporting System, there are 2 freshwater wells within the 1-mile radius AOR surrounding the planned WDW-4 (Table 2).



Drawing 3 presents a topographic map depicting the 1-mile radius AOR and the locations of the 2 water wells listed on Table 2. The map contains surface bodies of water, mines (surface and subsurface), quarries, springs, and other surface features, including roads and residences. There are no subsurface faults in the AOR known to have surface expression; therefore, no surface fault traces have been included on this map.

7 (b) Data Tabulation

Table 1 presents a tabulation of the 91 non-freshwater artificial penetrations in the 1-mile radius AOR surrounding the planned location of WDW-4. Only one (1) of the 91 non-freshwater artificial penetrations identified within the AOR (Map ID No. 5) were advanced to a depth deep enough to penetrate the top of the planned WDW-4 Injection Zone.

7 (c) Corrective Action

Corrective action is not required. The one (1) artificial penetration identified within the AOR that was advanced to a depth to penetrate the top of the planned WDW-4 Injection Zone (Map ID No. 5) was constructed properly and was plugged and abandoned properly. A copy of the OCD well file for this artificial penetration is provided in Attachment 1 of this application.

7 (d) Maps and Cross-Sections

The base of the Underground Source of Drinking Water (USDW), groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), is projected to occur at a depth of approximately 450 to 500 feet below ground level (BGL) in the area of WDW-4 location which is situated at an elevation of approximately 3,565 feet above mean sea level. Figure 3 presents a generalized hydrogeologic cross-section for the local area. Figure 4 presents a published map indicating the direction of shallow groundwater movement in the local area.

The top of the WDW-4 Injection Zone is separated from the base of the USDW by several thousand feet of low permeability carbonates, siltstones and shale as depicted on the geologic cross-sections presented on Drawings 5 and 6. Drawing 4 is a cross-section index map.



7 (e) Geology

WDW-4 will be located in Eddy County, New Mexico on the Northwest Shelf of the larger Permian Basin as shown on Figure 5. Figure 6 is stratigraphic column presenting the geologic formations relevant to the planned underground injection operations. WDW-4 will be located on the northern flank, close to the crest of the Artesia-Vacuum anticline (also referred to as the Vacuum Arch), which trends east to west across the area as shown Figure 7. Figure 8 is a published regional structural map of the top of the undifferentiated Silurian-Devonian age strata.

As depicted on the two geologic cross-sections presented on Drawings 5 and 6, the subsurface geology in the area where WDW-4 will be located is rather simplistic. As presented on Drawings 7 and 8, structural dip of all geologic formations is about 125 feet/mile to the southeast away from the Vacuum Arch depicted on Figure 7.

Injection Zone

The Injection Zone into which WDW-4 will be injecting is undifferentiated Silurian-Devonian age strata composed of shallow water carbonates, dolostone and/or limestones. This strata includes the Lower Devonian Thirtyone equivalent, Lower Devonian to Upper Silurian Wristen Group and Lower Silurian to Upper Ordovician Fusselman Formation (Figure 6). The top of the zone will be near the base of the Upper Devonian Woodford Shale and is expected to be encountered at depths of approximately 10,400 feet BGL at the point of injection. The thickness of the Injection Zone will be approximately 600 feet in total, which includes the main target of approximately 500 feet plus approximately 100 feet at the bottom required for full log data acquisition. Depths and thicknesses will be finalized upon evaluation of open-hole logs.

The top of the Silurian-Devonian Injection Zone is over 1,000 feet below the base of the Injection Zone into which the three existing injection wells (WDW-1, WDW-2, and WDW-3; Figure 4) operated by Navajo are injecting. The three existing injection wells are injecting into the lower portion of the Permian age Wolfcamp Formation and the underlying Pennsylvanian age Cisco and Canyon Formations that are encountered at depths of 7,270 to 9,016 feet KB.



Drawing 7 presents a structure contour map of the WDW-4 Injection Zone. Most artificial penetrations drilled deep enough to encounter the Devonian were not advanced to a sufficient depth to fully ascertain the thickness of the Silurian-Devonian; therefore, an isopach map of the Injection Zone could not be constructed. However, the thickness of the Injection Zone is expected to remain fairly consistent throughout the Eddy County area. The zone is anticipated to be approximately 500 feet thick as depicted on the two geologic cross-sections presented on Drawings 5 and 6.

A three-dimensional seismic survey (3D), approximately 3-miles by 3-miles, was obtained by Navajo and given to Geolex for evaluation and interpretation. The survey area (Drawing 2 and Drawing 4) is in Township 17 South, Range 27 East and covers all of Sections 22, 23, 26 and 27, with partial coverage of bordering sections (13, 14, 15, 16, 21, 24, 25, 28, 33, 34, 35 and 36). Geolex created a seismic inversion volume from the 3D to help provide indications of relative porosity. There are only two wells within the seismic survey that reached the top of the Devonian: Berry Federal #29 (API: 30-015-00472) and Trigg Federal B #1 (API: 30-015-20159). A third well, Federal 'DH' #1 well (API: 30-015-24857), which is not inside the 3D Survey area, was used to calibrate the deeper section of the 3D seismic inversion. The well is located approximately 2 miles south of the southern edge of the 3D Survey and was the closest well with Sonic and Density well log data covering the entire Silurian-Devonian injection interval. The seismic inversion volume was used to pick the well location, which targets an area indicating relatively higher porosity, possibly due to karsting. A karst model is suggested by Geolex, to enhance porosity and connectedness (see Geolex report in Appendix B-1).

Confining Zone

The Confining Zone overlying the WDW-4 Injection Zone is composed of the upper Devonian Woodford Formation and the overlying undifferentiated Mississippian strata. The Woodford Formation consists of low permeability shale and the undifferentiated Mississippian age strata are low permeability carbonates. Both formations are laterally continuous throughout the region as depicted on the two geologic cross-sections presented on Drawings 5 and 6.

Drawing 8 presents a structure contour map of the WDW-4 Confining Zone and Drawing 9 presents an isopach map of the WDW-4 Confining Zone.



Faulting

No evidence has been found of subsurface faulting within and immediately surrounding the 1-mile AOR radius surrounding the planned location of WDW-4 that would provide hydraulic connection between the WDW-4 Injection Zone and the shallow USDW. The nearest documented subsurface fault is the "K-M" fault located approximately 15 miles to the northwest, well outside the geologic study area for WDW-4.

Seismicity

The southeastern portion of New Mexico is historically an area of low seismicity with naturally occurring earthquakes being rare and of low magnitude. WDW-4 will be located in one of the areas recognized as having the lowest level of seismic risk in the continental United States (Figure 9).

The potential for earthquakes to occur in the vicinity of the planned WDW-4 well site is minimal. Appendix B-2 presents a listing of all recorded seismic events within 200 miles of the planned WDW-4 well site for the period from 1973 through 2012.

The planned injection operations do not have the potential to cause any seismic activity which could alter the confining capability of the subsurface Injection Zone and overlying Confining Zone.

Surface Geology and Flooding Potential

The surface geology of the local area is shown on Figure 10. The Pecos River, located about three miles east of Artesia is the only surface water body in the area of the planned WDW-4 well site. Local annual rainfall is approximately 13.5 inches. As indicated on the topographic map on Figure 2, the land surface elevation of approximately 3,565 ft msl at the planned well location is higher than the 100-year flood elevation of approximately 3,400 ft msl in Logan Draw; therefore the potential for flooding at the planned WDW-4 well site is minimal.

7 (f) Proposed Operating Parameters

Source and Description of Injection Fluid

The fluid to be injected into WDW-4 is the same waste stream that is currently injected into the three existing Navajo injection wells, WDW-1, WDW-2 and



WDW-3. This waste stream is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process at Navajo's Artesia refinery; e.g., process units, cooling towers, etc. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated groundwater, and general wash waters are blended to form the waste stream that will be injected into WDW-4. This injectate is consistent with the authorized waste stream injected into WDW-1, WDW-2 and WDW-3. Table 3A and Appendix C present data characterizing the injection fluid.

Navajo anticipates the addition of another waste stream to the existing waste stream being injected into the three existing injection wells and the planned WDW-4. The new waste stream will originate from a reverse osmosis (RO) unit to be constructed within the refinery. Table 3B and Appendix C present data characterizing the planned new waste stream from the RO unit.

Average and Maximum Daily Flow Rate and Volume

The estimated average injection rate into WDW-4 is 150 gpm (216,000 gallons per day) and the maximum instantaneous injection rate into WDW-4 will be 500 gpm.

Average and Maximum Surface Injection Pressure

The estimated average injection pressure is approximately 1,000 pounds per square inch gauge (psig) and the estimated maximum surface injection pressure is 2,080 psig (see Maximum Allowable Surface Injection Pressure Calculation below).

Maximum Allowable Surface Injection Pressure (MASIP) Calculation

The maximum operating injection wellhead pressure (MASIP) will not exceed 2,080 psi or 0.2 psi per foot of depth to the top of the Injection Interval at 10,400 feet, as required by the OCD Proposed Rule 21.B(7), dated October 6, 1997.

The depth to the top of injection interval in WDW-4 is expected to be approximately 10,400 feet. The maximum allowable surface injection pressure is calculated as follows:

10,400 feet x 0.2 psi/ft = 2,080 psi



The actual depth to the top of the WDW-4 injection interval will be determined when the well is being drilled and completed. The MASIP will be revised at that time to correspond to the actual top of the Silurian-Devonian age injection interval.

7 (g) Formation Testing Program

Formation testing will be conducted during the installation of WDW-4 to obtain site-specific data relating to the chemical, physical and radiological characteristics of the Silurian-Devonian age Injection Zone.

7 (h) Fluids and Pressure

The following are calculations of the predicted pressure changes over the initial 5-year permit life for WDW-4 and over the expected 30-year life of the well due to emplacement of the permitted maximum volume into the Silurian-Devonian Injection Zone at the average injection rate of 150 gpm.

The interface between injected waste and the formation brine (the waste front) will expand radially away from the WDW-4 wellbore. As fluid is injected, the Injection Zone will continue to pressurize due to the resistance of fluid movement and the compression of the fluid and rock matrix.

Future Cone of Influence and Waste Plume Front

The predicted pressure rise during the initial 5-year permit time frame and the projected 30-year life of WDW-4 were calculated using the software program PredictW. The equations used in the program are presented in Appendix D-1.

The maximum lateral spread of the waste front was determined using the equations published by Warner and Lehr.



<u>Calculated Cone of Influence (5-Years)</u>

The projected cone of influence within the Injection Zone at the end of the initial 5-year permit period is presented on Drawing 10. The cone of influence is based on emplacement of the permitted maximum volume at the average injection rate of 150 gpm. The cone of influence calculations are included in Appendix D-4 (output from PredictW).

Calculated Cone of Influence (30-Years)

The projected cone of influence within the Injection Zone at the end of the projected 30-year life of the well is presented on Drawing 11. The cone of influence is based on emplacement of the permitted maximum volume at the average permitted injection rate of 150 gpm. The cone of influence calculations are included in Appendix D-4 (output from PredictW).

The cone of influence is defined as the area with increased Injection Zone pressure caused by injection of wastes that would be sufficient to cause vertical fluid movement through any wellbore or other conduits into a USDW. This demonstration shows that the conservative worst-case cone of influence of the injection operations is smaller than the regulatory 1-mile radius AOR in which artificial penetrations were investigated.

In the worst case, an undocumented abandoned well is imagined to be open to both the Injection Zone and the base of the USDW. In addition, the well is filled to within 100 feet of the ground surface with formation brine from the Injection Zone and fresh water from the base of the USDW. The cone of influence can be calculated by comparing the hydraulic heads of the Injection Zone and the lowermost USDW. It is only where the Injection Zone head is above the USDW head that fluid movement from the Injection Zone into the USDW could occur. This worst-case model of the potential effect of injection on the USDW is conservative. No wells within the 1-mile radius AOR surrounding WDW-4 are open to both the Injection Zone and the USDW.

Because of the limited amount of information available in the records for wells drilled into the Silurian-Devonian aged Formations, the estimated initial pressure for WDW-4 was extrapolated from the initial pressure measured in Navajo's injection well WDW-2. Additionally, the reservoir parameters from the WDW-2 permit renewal were used to calculate pressure buildup and plume migration for WDW-4.



Once WDW-4 is drilled, the cone of influence and plume migration results will be recalculated using the reservoir parameters determined from the drilling and testing of WDW-4.

The following calculations are based on an average total dissolved solids (TDS) content of 25,000 parts per million (ppm) which corresponds to a specific gravity of approximately 1.02.

The pre-injection pressure, P_i, at the top of the Injection Zone in Navajo's WDW-2 at 7,570 feet BGL was measured on June 5, 1999. The pre-injection pressure was 2,845 pounds per square inch absolute (psia).

The pre-injection pressure, P_i, at the top of the WDW-4 Injection Zone at 10,200 feet BGL is calculated to be 4,095 psia as follows:

```
P_{i(10,400 \text{ feet})} = P_{i(7,570 \text{ feet})} + (10,400 \text{ feet} - 7,570 \text{ feet})(0.433 \text{ psi/ft})(1.02)
= 2,845 psia + 1,250 psi
= 4,095 psia
```

The hydraulic head of the lowermost USDW is estimated to be 100 feet BGL. This estimate is reasonably conservative, as it is based on a static water level measurement of 81 feet. The base of the USDW is at approximately 450 to 500 feet.

The critical pressure, P_c at 10,400 feet BGL that would be necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW at 100 feet BGL is 4,546 psia, and is calculated as follows:

```
P<sub>c</sub> = (Top of Injection Zone - Base of USDW) (0.433 psi/ft)(specific gravity) + (Base of USDW - Head of USDW) (0.433 psi/ft)
= (10,400 feet - 500 feet) (0.433 psi/ft) (1.02) + (500 feet - 100 feet) (0.433 psi/ft)
= 4,546 psia
```

The critical increase in reservoir pressure, ΔP_c , above the native pressure that is necessary to raise the hydrostatic head of the WDW-4 Injection Zone to the head of the lowermost USDW is 451 psi, and is calculated as follows:

$$\Delta P_c = P_c - P_i$$

= 4,546 psia – 4,095 psia
= 451 psi



An increase in reservoir pressure greater than 451 psi would be sufficient to raise the head of the Injection Zone above the head of the lowermost USDW. The Cone of Influence is the area around the injection well within which the increase in reservoir pressure caused by injection is greater than 451 psi.

The gridded pressure increases created with PredictW were contoured using Surfer, a commercial contouring software package. The contour plots of the predicted pressure increase in the Injection Zone (Drawings 10 and 11) were generated using the average injection rate of 150 gpm over the initial 5-year permit time frame and the 30-year expected life of the well.

Conservative values for reservoir thickness and permeability were used to overestimate the predicted increase in reservoir pressure. The porosity was assumed to be 8.5 percent. The reservoir was assumed to have a consistent thickness of 75 feet. The permeability of the reservoir was assumed to be 32 millidarcies (md).

Using a low kh yields a predicted pressure increase that is greater than expected and a cone of influence that is larger than expected.

The viscosity of the formation fluid with TDS concentration of 25,000 ppm at 130 °F is 0.57 cp (Appendix D-2). The compressibility of the pore volume of the formation is c_r , is 5.5 x 10 ⁻⁶ psi ⁻¹. The compressibility of the formation fluid is c_w , is 2.9 x 10 ⁻⁶ psi ⁻¹. The total compressibility ($c_t = c_r + c_w$) is 8.4 x 10 ⁻⁶ psi ⁻¹ (Appendix D-3).

WDW-4 was modeled as injecting for a 5-year period at a continuous rate of 150 gpm.

The 451-psi pressure-increase contour, which defines the outline of the worst-case Cone of Influence, is located less than 2.5 miles from WDW-4 as shown on Drawing 10. An improperly abandoned wellbore or other conduit filled with formation fluid that is located farther than 2.5 miles from the WDW-4 location would not transmit sufficient pressure from the Injection Zone to move fluids into the USDW. Navajo researched public and private sources of information about wells within the 1-mile radius AOR. Information is presented in Section 7(b) that demonstrates that each of the artificial penetrations that penetrate into the Injection Zone is properly constructed to prevent migration of fluids into the USDW. The output from PredictW is presented in Appendix D-4.



Modeled Plume Front Migration (5-Years)

The lithologic character of the Injection Zone, with the resulting hydrodynamic characteristics, is expected to be horizontally uniform. Given the anticipated homogeneity of the Injection Zone, plume geometry during the active injection phase is expected to be cylindrical. The plume radius is determined from the following equations published by Warner and Lehr. The radius of the concentrated plume is determined from the following:

$$r_{C} \ = \ \sqrt{\frac{0.1337 V}{0.80 \, \pi \, \phi \, h}}$$

where:

r_C = radius of the concentrated plume, feet

0.1337 = factor to convert gallons to cubic feet

V = total injected volume, gallons

0.80 = factor to compensate for immovable connate water

h = thickness of the injection reservoir, feet

The radius of the dispersed plume is determined from:

$$r_D = 2.3 \sqrt{C_D r_C} + r_C$$

where:

 r_D = radius of the dispersed plume, feet

2.3 = constant

c_D = coefficient of dispersion; for sandstone = 3, for limestone = 65

r_C = concentrated plume radius, feet

Plume Front Following 5-Year Injection Period

Approximately 500 feet of formation is anticipated to exist in the Injection Zone at the location of WDW-4. For a conservative estimate of the injection plume size, the plume radius is calculated on the basis of all flow emplaced in a 75-foot thick interval with 8.5% porosity. Assuming a continuous injection rate of 150 gpm over a 5-year injection period, the volume of fluid injected into WDW-4 is 394,470,000 gallons. Using the total volume of fluid injected and the following equation, the



radius of the concentrated plume will be approximately 1,814 feet at the end of the initial 5-year permit period.

$$r_{\rm C} = \sqrt{\frac{0.1337 (394,470,000)}{0.80 \pi (0.085)(75)}}$$

=1,814 feet

The radius of the dispersed plume from WDW-4 on at the end of the initial 5-year injection period is calculated to be 2,604 feet as follows:

$$r_D = 2.3 \sqrt{(65)(1,814)} + 1,814$$

= 2,604 feet

The plume radius calculations for WDW-4 are presented in Appendix D-5. Drawing 12 presents the projected plume radius following the initial 5-year injection period.

Plume Front Following 30-Year Injection Period

Assuming a continuous maximum injection rate of 150 gpm over a 30-year life of the injection well, the volume of fluid injected into WDW-4 is 2,366,820,000 gallons. The radius of the concentrated plume will be approximately 4,444 feet at the end of the 30-year life of the well.

$$r_{C} = \sqrt{\frac{0.1337(2,366,820000)}{0.80 \pi (0.085)(75)}}$$
= 4,444 feet

The radius of the dispersed plume from WDW-4 on at the end of the projected 30-year well life is calculated to be 5,680 feet as follows:

$$r_D = 2.3 \sqrt{(65)(4,444)} + 4,444$$

= 5.680 feet

The plume radius calculations for WDW-4 are presented in Appendix D-5. Drawing 13 presents the projected plume radius following the projected 30-year life of the well.



7 (i) Stimulation Program

The need for any type of stimulation program will be determined after the well has been drilled and tested. Should the results of the injectivity testing program performed after the well has been constructed indicate stimulation is necessary to achieve the desired injection rate, Form C-103 will be completed and submitted describing the planned stimulation program. The most likely stimulation would be an acid fracture of the dolomite Injection Interval.

7 (j) Injection Procedure

Injection into WDW-4 will occur on a continuous basis. The injection fluid will be routed from the refinery process areas via pipeline to the injection well. Figure 11 presents the pre-injection facilities for WDW-4.

Predicted Injection Rates and Volumes

The estimated average injection rate is 150 gpm which is equal to 216,000 gallons per day or 78,840,000 gallons per year or 394,416,000 gallons into the Injection Zone over the initial 5-year permit time frame and 2,366,496,000 gallons over the projected 30-year life of the well.

7 (k) Drawings

Figure 11 presents a schematic of the pre-injection surface facilities. Figure 12 presents a diagram of the below ground portions of WDW-4. Figure 13 presents a diagram of the WDW-4 wellhead.

7 (I) Construction

WDW-4 will be drilled and installed utilizing typical oil field well installation procedures. The well has been conservatively designed to meet more stringent hazardous waste injection well standards. Appendix E includes a description of the procedures for drilling and construction of WDW-4. Appendix F includes a description of the procedures for testing WDW-4 following installation.

Figure 12 presents a diagram of the below ground portions of WDW-4. Figure 13 presents a diagram of the WDW-4 wellhead. Pressure gauges to be used to indicate the pressure on the injection tubing and on the tubing-casing annulus are depicted on the wellhead.



Open-Hole Logging and Coring Program

Open-hole electric logs will be run from the base of conductor pipe to the total depth of the drilled borehole advanced for well construction. Conventional cores will be collected from the Injection Zone and Confining Zone. Table 4 summarizes the WDW-4 open-hole logging and coring program.

Casing and Cementing Program

Table 5 summarizes the WDW-4 casing program and design factors. Table 6 provides a summary of the WDW-4 cementing program. Figure 12 presents a proposed diagram of the below ground portions of WDW-4.

Cased-Hole Logging Program

Cased-hole electric logs will be run following the installation of the surface casing and protection casing. Table 7 summarizes the WDW-4 cased-hole logging program.

Injection Tubing, Packer and Annular Fluid

Figure 12 provides a schematic of the proposed below ground construction details for WDW-4. The injection tubing, packer and annular fluid proposed for use in the well are depicted on the schematic.

Depth to Injection Zone

The WDW-4 Injection Zone is expected to be encountered approximately 10,400 to 10,900 feet BGL. The actual Injection Interval (open-hole) will be selected within the Injection Zone based on evaluation of open-hole logs run in the borehole prior to casing installation.

Pressures and Other Stresses That May Cause Well Failure

There are no known subsurface pressures or stresses that may cause failure of WDW-4.

Hole Size

The borehole advanced for WDW-4 is projected to be 13-3/8 inches in diameter.



Well Casing Information

Figure 12 and Appendix E include information about the planned WDW-4 well casing. Tables 5 and 6 provide an overview of the casing and cementing information.

Cement Information

Table 6, Figure 12 and Appendix E include information about the WDW-4 cementing program.

Rate, Temperature and Volume of Injected Fluid

Average and Maximum Daily Flow Rate and Volume

The average injection rate for WDW-4 will be approximately 150 gpm and the maximum instantaneous injection rate for the well is 500 gpm.

Temperature

The temperature of the injected fluid is within average ambient temperature ranges.

Volume of Injected Fluid

The following are expected injection volumes based on an average injection rate of 150 gpm:

Daily maximum injection volume: 216,000 gallons
 Annual maximum injection volume: 78,840,000 gallons
 5-Year permit life injection volume: 394,416,000 gallons
 30-Year well life injection volume: 2,366,496,000 gallons

<u>Chemical and Physical Characteristics of Injected Fluid</u>

The fluid to be injected into WDW-4 is the same waste stream that is currently injected into the three existing Navajo injection wells WDW-1, WDW-2 and WDW-3. This waste stream is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated groundwater, and general wash waters are blended to form the fluid injected into WDW-4. Table 3A and Appendix C present data characterizing the injection fluid.



Navajo anticipates the addition of another waste stream to the existing waste stream being injected into the three existing injection wells and the planned WDW-4. The new waste stream will originate from a reverse osmosis (RO) unit to be constructed within the refinery. Table 3B and Appendix C present data characterizing the planned new waste stream from the RO unit.

Chemical and Physical Characteristics of Formation Fluid

Formation testing will be conducted during the construction of WDW-4 to obtain site-specific data relating to the chemical, physical and radiological characteristics of the formation fluids contained within the Injection Zone.

The formation fluid contained in the Injection Zone is compatible with the well construction components and the injected fluid. Formation fluid information pertinent to the reservoir calculations is included in Appendix D.

Chemical and Physical Characteristics of the Injection Zone

The Injection Zone is Silurian-Devonian age carbonates (dolostones and limestones).

Chemical and Physical Characteristics of the Confining Zone

The Confining Zone is low permeability shale of the Woodford Formation and low permeability limestone of Mississippian age.

<u>Depth, Thickness and Chemical Characteristics of Penetrated Formations</u> Containing Ground Water

The base of the USDW, groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), occurs at the base of the Tansill Formation. The Tansill Formation and the underlying Yates Formation comprise the Three Twins Member of the Chalk Bluff Formation known in outcrops in the region (Hendrickson and Jones, 1952), and listed as a freshwater-producing interval. Figure 3 presents a hydrostratigraphic cross-section for the local area. Figure 4 presents a potentiometric surface map indicating the direction of groundwater movement in the freshwater aquifers.

The base of the USDW occurs at the following approximate depths in Navajo's three existing injection wells. The base of the USDW in WDW-4 is expected to be at a similar depth.



- WDW-1: approximately 493 feet KB (3,200 feet above mean sea level)
- WDW-2: approximately 473 feet KB (3,150 feet above mean sea level)
- WDW-3: approximately 420 feet KB (3,150 feet above mean sea level)

The top of the WDW-4 Injection Zone is separated from the base of the USDW by several thousand feet of lower permeability carbonates, siltstones and shales.

7 (m) Contingency Plans

WDW-4 will be equipped with a high-level shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well will be equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well will be equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered, the following procedures will be implemented.

- Immediately cease injection operations;
- Immediately investigate the cause of the alarm or shutdown;
- Take all necessary steps to determine the presence or absence of a leak;
- Provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service until the mechanical integrity of the well is restored to the satisfaction of OCD and the agency approves resumption of injection operations.



7 (n) MIT Monitoring Plans (20.6.2.5207 NMAC)

Navajo will implement a MIT monitoring program that satisfies all applicable requirements of Section 20.6.2.5207.NMAC.

- The mechanical integrity of WDW-4 will be demonstrated on an annual basis.
- Continuous monitoring devices will be used to provide a record of injection pressure, flow rate, flow volume, and annular pressure.

The results of these monitoring activities will be reported to OCD as required by regulation.

7 (o) Additional Monitoring Plans for Class I Non-Hazardous Waste Injection Wells (20.6.2.5207B NMAC)

Appendix G includes an Injected Fluids Monitoring Plan that describes the procedures to be carried out on a quarterly basis to obtain a detailed chemical and physical analysis of a representative sample of the injected fluid, including the quality assurance procedures. The plan will be updated as necessary.

The plan includes the following elements:

- The parameters for which the injected fluid will be analyzed and the rationale for the selection of these parameters;
- The test methods that will be used to test for these parameters;
- The sampling method that will be used to obtain a representative sample of the injected fluid being analyzed;
- Field sampling documentation methodologies;
- The commercial laboratory who performs the analysis; and
- Method of reporting analytical results to OCD.

7 (p) Additional Monitoring Plans for Class III Wells (20.6.2.5207C NMAC)

This section is Not Applicable; WDW-4 is not a Class III well.

7 (q) Financial Assurance

Appendix H includes a well closure plan for WDW-4. Figure 14 presents a schematic of the plugged and abandoned well. The estimated cost to plug and abandon WDW-4 is presented in the table below. This cost estimate has been



prepared to reflect the estimated costs that would be incurred by Navajo to abandon the well in accordance with the procedures in Appendix H.

Description of Service	Estimated Cost		
Wireline (BHP, RTS, PFOT, Perforate)	35,000		
Rental Tools	5,000		
Pumping Service	20,000		
Cementing Service	30,000		
Excavating	2,500		
Mud/Brine	7,500		
Frac Tanks	2,500		
Vacuum Trucks	2,500		
Welder	2,500		
Miscellaneous	2,500		
SUBTOTAL	110,000		
Field Supervision, Project Management,			
Procurement	30,000		
Total Estimated Cost	\$140,000		

Appendix I includes a copy of the financial assurance instrument that Navajo has established to provide the appropriate monies for plugging and abandoning WDW-4, any groundwater restoration that may be necessary, and any post-operational monitoring that may be required.

7 (r) Logging and Testing Data

Open-hole electric logs will be run from the base of conductor pipe to the total depth of the drilled borehole advanced for well installation. Conventional cores will be collected from the Injection Zone and Confining Zone. Table 4 summarizes the WDW-4 open-hole logging and coring program. Appendix E provides more specific information about the well installation program including the planned open-hole logging and testing program.



7 (s) Mechanical Integrity Data (20.6.2.5204 NMAC)

Mechanical Integrity Testing (MIT) will be conducted on WDW-4 as part of the well completion activities described in Appendix F and in accordance with applicable regulatory requirements throughout the life of the well.

7 (t) Maximum Pressure and Flow Rate

The maximum injection rate and the calculated maximum surface injection pressure at WDW-4 are as follows:

- Maximum Instantaneous Injection Rate: 500 gpm (average rate: 150 gpm)
- Maximum Surface Injection Pressure: 2,080 psi

7 (u) Formation Testing Program Data

The following open-hole formation testing will be performed during the drilling of WDW-4:

- Collect conventional cores from Confining Zone and Injection Zone
- Run suite of open-hole electric logs from base of conductor pipe to total drilled depth

The following cased-hole formation testing will be performed during the completion of WDW-4:

Injectivity test

Appendices E and F provide more specific information about the planned formation testing program.

7 (v) Compatibility

The fluid to be injected into WDW-4 is the same waste stream that is currently injected into the three existing Navajo injection wells WDW-1, WDW-2 and WDW-3. This waste stream is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated groundwater, and



general wash waters are blended to form the fluid injected into WDW-4. Table 3A and Appendix C present data characterizing the injection fluid.

Navajo anticipates the addition of another waste stream to the current waste stream being injected into the three existing injection wells and the planned WDW-4. The new waste stream will originate from a reverse osmosis (RO) unit to be constructed within the Artesia refinery. Table 3B and Appendix C present data characterizing the planned new waste stream from the RO unit.

The three existing injection wells are constructed of carbon steel and have shown no detrimental effects from the current waste stream or the Injection Zone formation fluids. The planned WDW-4 will be constructed of similar materials of construction.

Neither of the waste streams characterized in Tables 3A and 3B are corrosive in nature. As indicated below, the new RO reject waste stream to be added into the current waste stream already being directed to the three existing injection wells is less corrosive (lower salinity) than the current waste stream. Therefore there are no concerns about any compatibility problems between the waste stream and the materials of construction.

	Current Waste Stream	RO Reject Waste Stream			
TDS (mg/L)	5,000	3,000			
Chloride (mg/L)	650	250			
Sulfate (mg/L)	3,000	1,500			

The current waste stream has not demonstrated any incompatibilities with the Injection Zone formation fluid. There are no concerns about waste stream compatibility with the formation fluids in the Silurian-Devonian Injection Zone.

7 (w) Area of Review Corrective Actions

No corrective action plan is required. Only one (1) of the 91 penetrations were advanced to a depth to encounter the top of the planned WDW-4 Injection Zone, and both were properly constructed and one was plugged and abandoned properly.



8.0 Modification(s)

This application does not include any proposed modifications to existing discharge processes.

9.0 Inspection/Maintenance and Reporting

Navajo performs daily visual inspections of their injection wells and the pipeline and performs required maintenance (PM) activities as scheduled to ensure safe operation of the wells.

Navajo performs routine reporting in accordance with the requirements of 20.6.2.5208.A NMAC for Class I nonhazardous waste injection wells.

10.0 Contingency Plans

Navajo has an Integrated Contingency Plan detailing responses to spills of all types, reporting spills/releases, mitigation and corrective actions, clean up and disposal as applicable. Injection well WDW-4 will be equipped with a high-pressure shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well will be equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well will be equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered at the wellhead, electronic signals are sent to the Control Room at the refinery notifying of the shutdown and the cause of the alarm or shutdown will be immediately investigated.

Operators will immediately cease injection operations at the wellhead and divert flow to another well, notify Maintenance and Environmental to take all necessary steps to determine the presence or absence of a leak, and Environmental will provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service



until the mechanical integrity is restored to the satisfaction of OCD and the agency approves resumption of injection operations.

11.0 Other Information

No additional information is required to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use.

12.0 Filing Fee

A check in the amount of \$100, made payable to Water Quality Management Fund, accompanies this permit application document.

13.0 Draft Public Notice

20.6.2.3108.C requires that Navajo provide notice in accordance with 20.6.2.3108.F within thirty (30) days of OCD deeming the permit application to be administratively complete. Appendix J includes a DRAFT copy of the public notice that will be published following receipt of written notification from OCD that this discharge permit renewal application has been deemed administratively complete.

Navajo understands the requirement to submit to OCD within 15 days of completion of public notice requirements stipulated Subsection C of 20.6.2.3108 NMAC proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

14.0 Certification

The required certification language is included at the end of the completed OCD Discharge Permit Application Form in the front of this permit renewal application. The appropriate Artesia refinery authority has signed the form.



15.0 References

Hendrickson, G.E., and Jones, R.S. *Geology and ground-water resources of Eddy County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources. Ground-water Report 3.



TABLE 1 NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-4 AREA OF REVIEW HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

Map ID	API	Twp-Rng-Sec	Footage	Lease Name	Well Num	Current Operator	Status and Type	Plug Date	Drill Date	Depth (ft)
1	3001500454	17S 27E 14	330 FSL 330 FWL CONGRESS SECTION	FED	1	JOHNSON BOB	D&A-O		1959-05-15	437
2	3001500458	17S 27E 15	330 FSL 330 FEL CONGRESS SECTION	HIGHTOWER	1	BREWER DRLG CO	D&A		1948-08-17	1740
3	3001500470	17S 27E 22	2310 FNL 990 FEL CONGRESS SECTION	BERRY	1	CARSON & KELLY	D&A-O		1939-09-05	525
4	3001500471	17S 27E 23	660 FNL 990 FWL CONGRESS SECTION	BERRY	1	BRAINARD FRED	D&A-G		1936-11-09	2300
5	3001500472	17S 27E 23 C SE NW	1980 FNL 1980 FWL CONGRESS SECTION	BERRY	29	ALAMO PERMIAN RES	ABD-GW	30-Jan-2013	1965-01-28	10427
6	3001500473	17S 27E 23	2310 FSL 2310 FEL CONGRESS SECTION	BERRY	5	BERRY W H	D&A-G		1939-11-11	595
7	3001500474	17S 27E 23	330 FSL 990 FWL CONGRESS SECTION	BERRY	6	BERRY W H	D&A		1939-12-01	650
8	3001500475	17S 27E 23	330 FSL 330 FEL CONGRESS SECTION	BERRY	7	BERRY W H	D&A-O		1939-12-18	520
9	3001500519	17S 27E 25	2310 FNL 990 FWL CONGRESS SECTION	J TRAVIS	3	JOHNSTON R J	D&A-OG		1941-06-02	540
10	3001500579	17S 27E 26	210 FNL 210 FEL CONGRESS SECTION	HARBOLD PERMIT	1	JONES CL	D&A		1939-05-16	522
11	3001500580	17S 27E 26	990 FNL 990 FEL CONGRESS SECTION	HARBOLD-FEDERAL	6	HAYNES OWEN	OIL		1951-08-10	633
12	3001500581	17S 27E 26	330 FNL 330 FWL CONGRESS SECTION	FEDERAL 242-A	1	HONDO OIL & GAS CO	D&A-O		1961-10-29	640
13	3001500582	17S 27E 26	990 FNL 990 FWL CONGRESS SECTION	HB TRAVIS	1	JOHNSTON R J	TA-O		1939-07-24	561
14	3001500583	17S 27E 26	1675 FNL 990 FWL CONGRESS SECTION	DB ANDERSON FEDERAL	1	JOHNSTON R J	TA		1952-03-03	460
15	3001500584	17S 27E 26	2310 FNL 2310 FWL CONGRESS SECTION	CUCCA-BARRENTOS	1	JOHNSTON R J	D&A-O		1940-10-21	730
16	3001500585	17S 27E 26	2310 FNL 990 FEL CONGRESS SECTION	HARBOLD	14	HAYNES OWEN	D&A	21-Feb-1985	1958-01-23	502
17	3001500586	17S 27E 26	2310 FNL 330 FEL CONGRESS SECTION	HARBOLD	15	HAYNES OWEN	TA	6-Jan-1965	1958-06-04	270
18	3001500587	17S 27E 26	2310 FSL 990 FEL CONGRESS SECTION	HARBOLD	1	JOHNSTON R J	D&A-OG		1940-05-08	555
19	3001500588	17S 27E 26	1650 FSL 990 FEL CONGRESS SECTION	HARBOLD	10	HAYNES OWEN	TA-G	2-Apr-1958	1953-07-13	491
20	3001500589	17S 27E 26	1946 FSL 650 FWL CONGRESS SECTION	FEDERAL 242	1	CHASE GEORGE A	D&AW		1963-10-31	1120
21	3001500594	17S 27E 26	990 FSL 2310 FEL CONGRESS SECTION	TRIGG-FEDERAL	1	S D X RESOURCES INC	ABD-OW		1951-09-24	415
22	3001500686	17S 27E 26	1650 FNL 990 FWL CONGRESS SECTION	TRAVIS	2	PRE-ONGARD WELL OPERAT	D&A-OG	27-Mar-2002	1940-01-15	621
23	3001501237	17S 27E 27	650 FNL 330 FEL CONGRESS SECTION	BROOKS A	1	PRE-ONGARD WELL OPERAT	D&A-O		1942-03-10	620
24	3001521443	17S 27E 22	660 FSL 1980 FEL CONGRESS SECTION	BERRY FEDERAL	2	PRE-ONGARD WELL OPERAT	D&A-G	15-Jan-1975	1974-12-05	9650
25	3001521511	17S 27E 23 N2 SW SE	700 FSL 1980 FEL CONGRESS SECTION	BERRY	30	ALAMO PERMIAN RES	GAS-WO	30-Nov-2012	1979-03-12	2210
26	3001521569	17S 27E 22	1980 FNL 1980 FEL CONGRESS SECTION	BERRY	31	PRE-ONGARD WELL OPERAT	J&A	15-Oct-1975	1975-09-10	200
27	3001521668	17S 27E 22	1968 FNL 1980 FEL CONGRESS SECTION	BERRY	31X	S D X RESOURCES INC	TA	20-Jun-2000	1975-10-29	2210
28	3001529281	17S 27E 23	660 FSL 1650 FWL CONGRESS SECTION	OXY VIKING FEDERAL	1	OXY USA WTP LP	GAS		1996-12-28	9650
29	3001529936	17S 27E 27 NE NE	330 FNL 840 FEL CONGRESS SECTION	EAGLE `27` FEDERAL	1	LIME ROCK RES IIA LP	OIL		1998-10-15	2700
30	3001529937	17S 27E 27 NW NE	330 FNL 2310 FEL CONGRESS SECTION	EAGLE `27B` FEDERAL	3	LIME ROCK RES IIA LP	OIL		1998-01-22	2750
31	3001530181	17S 27E 26 N2 SW NW	1650 FNL 660 FWL CONGRESS SECTION	OXY CHARLEMAGNE FEDERAL	1	OXY USA WTP LP	GAS		1998-06-23	9660
32	3001530386	17S 27E 23 E2 NW NE	660 FNL 1650 FEL CONGRESS SECTION	OXY WODEN FEDERAL	1	OXY U S A INC	D&A	6-Aug-1999	1999-07-15	9630
32	3001530386	17S 27E 23 E2 NW NE	660 FNL 1650 FEL CONGRESS SECTION	WODEN FEDERAL	1	S D X RESOURCES INC	CANCEL			9800
33	3001530532	17S 27E 22 SW NE	1650 FNL 1650 FEL CONGRESS SECTION	MARALO FEDERAL	2	MURCHISON O&G INC	GAS		1998-12-19	9650
34	3001530795	17S 27E 22 S2 NE SE	1830 FSL 660 FEL CONGRESS SECTION	MARALO FEDERAL	4	MURCHISON O&G INC	ABD-GW	27-Feb-2007	1999-12-10	9720
35	3001530882	17S 27E 26 NE SE	1980 FSL 660 FEL CONGRESS SECTION	OXY HARVESTER FEDERAL	1	OXY USA WTP LP	GAS		2000-03-07	9820
36	3001530908	17S 27E 23 C NW NW	660 FNL 660 FWL CONGRESS SECTION	OXY ROSENKAVLIER FEDERAL	1	OXY USA WTP LP	GAS		2000-02-05	9800
37	3001530956	17S 27E 26 NE NW NE	530 FNL 1650 FEL CONGRESS SECTION	TRIGG FEDERAL	1	VANGUARD OPRTNG LLC	OIL-WO		2002-08-27	3600
38	3001531113	17S 27E 23 NE SW NE	1650 FNL 1650 FEL CONGRESS SECTION	BERRY FEDERAL	34	HANSON ENERGY	ABD-OW	18-Jan-2008	2000-05-09	3075

TABLE 1 NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-4 AREA OF REVIEW HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

Map ID	API	Twp-Rng-Sec	Footage	Lease Name	Well Num	Current Operator	Status and Type	Plug Date	Drill Date	Depth (ft)
39	3001531193	17S 27E 26 SW SW NE	2310 FNL 1650 FEL CONGRESS SECTION	TRIGG FEDERAL	2	LIME ROCK RES A LP	OIL-WO	5-Oct-2010	2002-11-19	3690
39	3001531193	17S 27E 26 SW SW NE	2310 FNL 1650 FEL CONGRESS SECTION	TRIGG FEDERAL	2	LIME ROCK RES A LP	ABD-OW	5-Oct-2010	2000-08-28	3690
40	3001532614	17S 27E 27 S2 NW NE	1260 FNL 1980 FEL CONGRESS SECTION	HONDO FEDERAL GAS COM	3	CONCHO EXPLORATION	D&A	13-Jun-2003	2003-05-17	9670
41	3001536875	17S 27E 26 C NE SW	1980 FSL 1980 FWL CONGRESS SECTION	OXY COMMODORE FEDERAL	1	OXY USA WTP LP	AB-LOC			10525
42	3001539462	17S 27E 25 NW SW	2235 FSL 330 FWL CONGRESS SECTION	FIR FEDERAL	4	COG OPERATING LLC	OIL		2011-12-11	4750
43	3001521047	17S 27E 26 C NW SW	1980 FSL 660 FWL CONGRESS SECTION	ARCO FEDERAL GAS	1	COG OPERATING LLC	GAS		1973-12-31	9740
44	3001539763	17S 27E 25 SE NW	1650 FNL 1410 FWL CONGRESS SECTION	DOGWOOD FEDERAL	3	COG OPERATING LLC	OIL		2012-04-06	4766
45	3001540804	17S 27E 25 SW NW	2130 FNL 330 FWL CONGRESS SECTION	MATTHEWS `25` FEDERAL	1	LIME ROCK RES IIA LP	OIL-WO		2016-05-25	4717
45	3001540804	17S 27E 25 SW NW	2130 FNL 330 FWL CONGRESS SECTION	MATTHEWS `25` FEDERAL	1	LIME ROCK RES IIA LP	OIL		2012-11-08	4717
46	3001541261	17S 27E 23 SE	1150 FSL 1150 FEL CONGRESS SECTION	YESO VIKING FEDERAL	9	OXY USA WTP LP	OIL		2013-12-19	4520
47	3001541339	17S 27E 23 SW	2230 FSL 360 FWL CONGRESS SECTION	YESO VIKING FEDERAL	2	OXY USA WTP LP	OIL		2013-11-06	4505
48	3001541340	17S 27E 23 SW	2240 FSL 1680 FWL CONGRESS SECTION	YESO VIKING FEDERAL	3	OXY USA WTP LP	OIL		2013-07-22	4534
49	3001541341	17S 27E 23 SE	2210 FSL 2180 FEL CONGRESS SECTION	YESO VIKING FEDERAL	4	OXY USA WTP LP	OIL		2013-07-30	4507
50	3001541342	17S 27E 23 SW	950 FSL 330 FWL CONGRESS SECTION	YESO VIKING FEDERAL	6	OXY USA WTP LP	OIL		2013-11-28	4525
51	3001541425	17S 27E 23 SW	380 FSL 2240 FWL CONGRESS SECTION	YESO VIKING FEDERAL	7	OXY USA WTP LP	OIL		2013-12-27	4525
52	3001541468	17S 27E 23 SE	1045 FSL 2160 FEL CONGRESS SECTION	YESO VIKING FEDERAL	8	OXY USA WTP LP	OIL		2014-01-04	4520
53	3001541698	17S 27E 25 NW NW	985 FNL 330 FWL CONGRESS SECTION	MATTHEWS `25` FEDERAL	3	LIME ROCK RES IIA LP	AT-TD		2017-01-18	4500
54	3001541699	17S 27E 25 NW NW	370 FNL 985 FWL CONGRESS SECTION	MATTHEWS `25` FEDERAL	4	LIME ROCK RES IIA LP	PERMIT			4850
55	3001541721	17S 27E 25	2180 FNL 1115 FWL CONGRESS SECTION	MATTHEWS `25` FEDERAL	2	LIME ROCK RES IIA LP	OIL-WO		2015-04-30	4969
56	3001541853	17S 27E 23 SW	240 FSL 210 FWL CONGRESS SECTION	YESO VIKING FEDERAL	26	OXY USA WTP LP	AB-LOC			
57	3001541854	17S 27E 23	2555 FSL 890 FWL CONGRESS SECTION	YESO VIKING FEDERAL	19	OXY USA WTP LP	AB-LOC			
58	3001541870	17S 27E 23	1755 FSL 900 FWL CONGRESS SECTION	YESO VIKING FEDERAL	10	OXY USA WTP LP	AB-LOC			
59	3001541871	17S 27E 23	1435 FSL 2261 FWL CONGRESS SECTION	YESO VIKING FEDERAL	11	OXY USA WTP LP	AB-LOC			
60	3001541872	17S 27E 23	1720 FSL 1650 FEL CONGRESS SECTION	YESO VIKING FEDERAL	12	OXY USA WTP LP	AB-LOC			
61	3001541873	17S 27E 23 SE	2480 FSL 451 FEL CONGRESS SECTION	YESO VIKING FEDERAL	13	OXY USA WTP LP	AB-LOC			
62	3001541874	17S 27E 23	1017 FSL 2040 FEL CONGRESS SECTION	YESO VIKING FEDERAL	16	OXY USA WTP LP	AB-LOC			
63	3001541875	17S 27E 23	1202 FSL 903 FEL CONGRESS SECTION	YESO VIKING FEDERAL	17	OXY USA WTP LP	AB-LOC			
64	3001541876	17S 27E 23	2080 FSL 360 FWL CONGRESS SECTION	YESO VIKING FEDERAL	18	OXY USA WTP LP	AB-LOC			
65	3001541877	17S 27E 23	1670 FSL 1680 FWL CONGRESS SECTION	YESO VIKING FEDERAL	20	OXY USA WTP LP	AB-LOC			
66	3001541878	17S 27E 23	2200 FSL 2240 FWL CONGRESS SECTION	YESO VIKING FEDERAL	21	OXY USA WTP LP	AB-LOC			
67	3001541879	17S 27E 23	1670 FSL 2130 FEL CONGRESS SECTION	YESO VIKING FEDERAL	22	OXY USA WTP LP	AB-LOC			
68	3001541880	17S 27E 23 SE	2210 FSL 1680 FEL CONGRESS SECTION	YESO VIKING FEDERAL	23	OXY USA WTP LP	AB-LOC			
69	3001541881	17S 27E 23	2409 FSL 876 FEL CONGRESS SECTION	YESO VIKING FEDERAL	24	OXY USA WTP LP	AB-LOC			
70	3001541882	17S 27E 23	1670 FSL 710 FEL CONGRESS SECTION	YESO VIKING FEDERAL	25	OXY USA WTP LP	AB-LOC			
71	3001541883	17S 27E 23 SW	380 FSL 1640 FWL CONGRESS SECTION	YESO VIKING FEDERAL	28	OXY USA WTP LP	AB-LOC			
72	3001541884	17S 27E 23 SE	25 FSL 2327 FEL CONGRESS SECTION	YESO VIKING FEDERAL	30	OXY USA WTP LP	AB-LOC			
73	3001541885	17S 27E 23	978 FSL 1920 FEL CONGRESS SECTION	YESO VIKING FEDERAL	31	OXY USA WTP LP	AB-LOC			
74	3001541997	17S 27E 23	360 FSL 770 FWL CONGRESS SECTION	YESO VIKING FEDERAL	14	OXY USA WTP LP	AB-LOC			
75	3001541998	17S 27E 23	714 FSL 1277 FWL CONGRESS SECTION	YESO VIKING FEDERAL	15	OXY USA WTP LP	AB-LOC			
76	3001541999	17S 27E 23 SW	850 FSL 860 FWL CONGRESS SECTION	YESO VIKING FEDERAL	27	OXY USA WTP LP	AB-LOC			

TABLE 1 NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-4 AREA OF REVIEW HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

Map ID	API	Twp-Rng-Sec	Footage	Lease Name	Well Num	Current Operator	Status and Type	Plug Date	Drill Date	Depth (ft)
77	3001542301	17S 27E 26 SE	1720 FSL 920 FEL CONGRESS SECTION	EAGLE `26` I FEDERAL	7	LIME ROCK RES IIA LP	AB-LOC			
78	3001500453	17S 27E 14	330 FSL 330 FEL CONGRESS SECTION	HUMBLE	1	COCKBURN BARNEY	D&A-O	25-May-1955	1948-12-31	550
79	3001531179	17S 27E 24 NE SW NW	1650 FNL 870 FWL CONGRESS SECTION	BERRY `A` FEDERAL	36	S D X RESOURCES INC	AB-LOC			
80	3001500483	17S 27E 24	1650 FNL 990 FWL CONGRESS SECTION	BERRY /A/	27	ALAMO PERMIAN RES	D&A - Gas	13-Dec-2011	1974-07-01	1200
81	3001500497	17S 27E 24	2310 FSL 1650 FWL CONGRESS SECTION	BERRY	22	ALAMO PERMIAN RES	D&A - Oil	9-Jun-2012	1955-12-01	2192
82	3001500499	17S 27E 24	2310 FSL 1920 FWL CONGRESS SECTION	BERRY-FEDERAL	19	PRE-ONGARD WELL OPERAT	ABD-OW	5-Oct-1984	1941-10-17	477
83	3001525154	17S 27E 24	1650 FSL 2040 FWL CONGRESS SECTION	BERRY `A`	WI-33	ALAMO PERMIAN RES	W-INJ		1985-04-02	626
84	3001500498	17S 27E 24	1650 FSL 2310 FWL CONGRESS SECTION	BERRY-FEDERAL	11	ALAMO PERMIAN RES	D&A - Oil	5-Dec-2012	1941-01-28	482
85	3001531743	17S 27E 24 NW SE SW	1010 FSL 1650 FWL CONGRESS SECTION	OXY CHOPSTICKS FEDERAL	2	OXY USA WTP LP	GAS		2001-06-04	9800
86	3001501532	17S 27E 24	660 FSL 1980 FWL CONGRESS SECTION	BERRY	1	FLINT & BERRY	D&A-O		1936-02-22	490
87	3001500500	17S 27E 24	250 FSL 2390 FWL CONGRESS SECTION	MCCLAY	1	PRE-ONGARD WELL OPERAT	D&A-OG		1927-07-17	2000
88	3001532694	17S 27E 25 NW NE NW	503 FNL 1800 FWL CONGRESS SECTION	REDBUD FEDERAL	1	COG OPERATING LLC	OIL-WO		10-Apr-2003	7130
89	3001533980	17S 27E 23 S2 NE SE	1830 FSL 660 FEL CONGRESS SECTION	OXY VIKING FEDERAL	2	OXY USA WTP LP	AB-LOC			
90	3001541852	17S 27E 23 SW	432 FSL 2100 FWL CONGRESS SECTION	YESO VIKING FEDERAL	29	OXY USA WTP LP	AB-LOC			
91	3001541260	17S 27E 23 SW	1670 FSL 860 FEL CONGRESS SECTION	YESO VIKING FEDERAL	5	OXY USA WTP LP	OIL		2013-12-09	4500

TABLE 2 FRESHWATER WELLS IN WDW-4 AREA OF REVIEW HOLLYFRONTIER NAVAJO REFINING LLC WASTE DISPOSAL WELL NO. 4 ARTESIA, NEW MEXICO

WR File Nbr	Use	Owner	County	Depth (ft)	Date	Sec	Tws	Rng	Easting	Northing
RA 04554	Other	LOWE DRILLING COMPANY	Eddy	220	2/19/1962	23	17S	27E	569,859	3,631,947
RA 04561	Other	LOWE DRILLING COMPANY	Eddy	250	unknown	26	17S	27E	570,871	3,630,142

NOTES:

Source: New Mexico Office of the State Engineer (http://gisdata-ose.opendata.arcgis.com/datasets)

Datum: NAD83

TABLE 3A INJECTION FLUID CHARACTERATION HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

Mar-14		
MISC		
ANALYTE	RESULT	UNIT
Bicarbonate (As CaCO3)	270	mg/L CaCO3
Bromide	1.6	mg/L
Carbonate (As CaCO3)	< 2.0	mg/L CaCO3
Chloride	410	mg/L
Fluoride	5.5	mg/L
Ignitability	>200	°F
Nitrogen, Nitrate (As N)	< 1.0	mg/L
Nitrogen, Nitrite (As N)	< 1.0	mg/L
рН	7.45	pH Units
Phosphorus, Orthophosphate (As P)	< 5.0	mg/L
Reactive Cyanide	< 1.00	mg/Kg
Reactive Sulfide	5.1	mg/Kg
Specific Conductance	7000	μmhos/cm
Specific Gravity	1.006	
Sulfate	3900	mg/L
Total Alkalinity (as CaCO3)	270	mg/L CaCO3
Total Dissolved Solids	6180	mg/L

Jun-14		
ANALYTE	RESULT	UNIT
Bicarbonate (As CaCO3)	290	mg/L CaCO3
Bromide	0.72	mg/L
Carbonate (As CaCO3)	< 2.0	mg/L CaCO3
Chloride	290	mg/L
Cyanide, Reactive	< 1.00	mg/L
Fluoride	28	mg/L
Ignitability	>200	°F
Nitrogen, Nitrate (As N)	< 0.50	mg/L
Nitrogen, Nitrite (As N)	1.5	mg/L
рН	7.91	pH units
Phosphorus, Orthophosphate (As P)	< 2.5	mg/L
Reactive Sulfide	< 1.0	mg/L
Specific Conductance	6000	μmhos/cm
Specific Gravity	1.003	
Sulfate	2600	mg/L
Total Alkalinity (as CaCO3)	290	mg/L CaCO3
Total Dissolved Solids	4440	mg/L

Aromide Carbonate (As CaCO3)	Sep-14					
Bicarbonate (As CaCO3) 120 mg/L CaCO. Bromide < 0.50 mg/ Carbonate (As CaCO3) < 2.0 mg/L CaCO. Chloride 350 mg/ Cyanide, Reactive < 1.00 mg/ Fluoride 7.0 mg/ gnitability >200 ° Nitrogen, Nitrate (As N) < 0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) < 10 mg/ Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cm Specific Gravity 1.001 Sulfate 2500 mg/						
Aromide Carbonate (As CaCO3)	ANALYTE	RESULT	UNIT			
Carbonate (As CaCO3) Carbonate (As CaCO3) Chloride Cyanide, Reactive Cluoride Cyanide, Reactive Cluoride To mg/caco gnitability Nitrogen, Nitrate (As N) Nitrogen, Nitrite (As N) OH Chosphorus, Orthophosphate (As P) Reactive Sulfide Specific Conductance Specific Gravity Sulfate Command Caco Specific Gravity Command Command	Bicarbonate (As CaCO3)	120	mg/L CaCO3			
Chloride 350 mg/ Cyanide, Reactive <1.00 mg/ Fluoride 7.0 mg/ gnitability >200 ° Nitrogen, Nitrate (As N) <0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) <10 mg/ Reactive Sulfide <1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Bromide	< 0.50	mg/L			
Cyanide, Reactive <1.00 mg/ Fluoride 7.0 mg/ gnitability >200 ° Nitrogen, Nitrate (As N) <0.50 mg/ Nitrogen, Nitrite (As N) <0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) <10 mg/ Reactive Sulfide <1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Carbonate (As CaCO3)	< 2.0	mg/L CaCO3			
Fluoride 7.0 mg/ gnitability >200 ° Nitrogen, Nitrate (As N) <0.50 mg/ Nitrogen, Nitrite (As N) <0.50 mg/ Nitrogen, Nitrite (As N) <0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) <10 mg/ Reactive Sulfide <1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Chloride	350	mg/L			
gnitability >200 ° Nitrogen, Nitrate (As N) <0.50 mg/ Nitrogen, Nitrite (As N) <0.50 mg/ Nitrogen, Nitrite (As N) <0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) <10 mg/ Reactive Sulfide <1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Cyanide, Reactive	< 1.00	mg/L			
Nitrogen, Nitrate (As N) < 0.50 mg/ Nitrogen, Nitrite (As N) < 0.50 mg/ Nitrogen, Nitrite (As N) < 0.50 mg/ OH 6.61 pH Unit Phosphorus, Orthophosphate (As P) < 10 mg/ Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Fluoride	7.0	mg/L			
Nitrogen, Nitrite (As N) < 0.50 mg/ oH 6.61 pH Unit Phosphorus, Orthophosphate (As P) < 10 mg/ Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	gnitability	>200	°F			
DH 6.61 pH Unit Phosphorus, Orthophosphate (As P) < 10 mg/ Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Nitrogen, Nitrate (As N)	< 0.50	mg/L			
Phosphorus, Orthophosphate (As P) < 10 mg/ Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Nitrogen, Nitrite (As N)	< 0.50	mg/L			
Reactive Sulfide < 1.0 mg/ Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	H	6.61	pH Units			
Specific Conductance 5400 µmhos/cn Specific Gravity 1.001 Sulfate 2500 mg/	Phosphorus, Orthophosphate (As P)	< 10	mg/L			
Specific Gravity 1.001 Sulfate 2500 mg/	Reactive Sulfide	< 1.0	mg/L			
Sulfate 2500 mg/	Specific Conductance	5400	μmhos/cm			
5,	Specific Gravity	1.001				
Total Alkalinity (as CaCO3) 120 mg/L CaCO	Sulfate	2500	mg/L			
	Total Alkalinity (as CaCO3)	120	mg/L CaCO3			
Fotal Dissolved Solids 4700 mg/	Total Dissolved Solids	4700	mg/L			

lum 4.4

	Mar-14		
Arsenic	<0.10	mg/L	A
Barium	<0.010	mg/L	Ва
Cadmium	< 0.010	mg/L	Ca
Chromium	<0.010	mg/L	CI
_ead	< 0.010	mg/L	Le
Mercury	<0.020	mg/L	M
Selenium	< 0.010	mg/L	Se
Silver	< 0.010	mg/L	Si

TCLP METALS

Jun-14						
Arsenic	< 5.0	mg/L				
Barium	< 100	mg/L				
Cadmium	< 1.0	mg/L				
Chromium	< 5.0	mg/L				
Lead	< 5.0	mg/L				
Mercury	< 0.020	mg/L				
Selenium	< 1.0	mg/L				
Silver	< 5.0	mg/L				

Sep-14						
Arsenic	< 5.0	mg/L				
Barium	< 100	mg/L				
Cadmium	< 1.0	mg/L				
Chromium	< 5.0	mg/L				
Lead	< 5.0	mg/L				
Mercury	< 0.020	mg/L				
Selenium	< 1.0	mg/L				
Silver	< 5.0	mg/L				

TOTAL METALS

Aluminum	2.3	mg/L
Antimony	< 0.050	mg/L
Arsenic	< 0.020	mg/L
Barium	0.049	mg/L
Beryllium	< 0.0030	mg/L
Cadmium	< 0.0020	mg/L
Calcium	93	mg/L
Chromium	< 0.0060	mg/L
Cobalt	< 0.0060	mg/L
Copper	0.0092	mg/L
Iron	3.3	mg/L
Lead	< 0.0050	mg/L
Magnesium	30	mg/L
Manganese	0.12	mg/L
Mercury	< 0.00020	mg/L
Nickel	0.016	mg/L
Potassium	37	mg/L
Selenium	0.13	mg/L
Silver	< 0.0050	mg/L
Sodium	1400	mg/L
Thallium	< 0.050	mg/L
Vanadium	< 0.050	mg/L
Zinc	0.15	mg/L

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Aluminum	1.2	mg/L
Antimony	< 0.050	mg/L
Arsenic	0.027	mg/L
Barium	< 0.020	mg/L
Beryllium	< 0.0030	mg/L
Cadmium	< 0.0020	mg/L
Calcium	27	mg/L
Chromium	< 0.0060	mg/L
Cobalt	< 0.0060	mg/L
Copper	< 0.0060	mg/L
Iron	0.21	mg/L
Lead	< 0.0050	mg/L
Magnesium	9.2	mg/L
Manganese	0.032	mg/L
Mercury	< 0.00020	mg/L
Nickel	< 0.010	mg/L
Potassium	69	mg/L
Selenium	0.069	mg/L
Silver	< 0.0050	mg/L
Sodium	1200	mg/L
Thallium	< 0.050	mg/L
Vanadium	< 0.050	mg/L
Zinc	< 0.020	mg/L

Aluminum	0.18	mg/L
Antimony	< 0.050	mg/L
Arsenic	0.061	mg/L
Barium	0.022	mg/L
Beryllium	< 0.0030	mg/L
Cadmium	< 0.0020	mg/L
Calcium	80	mg/L
Chromium	< 0.0060	mg/L
Cobalt	< 0.0060	mg/L
Copper	< 0.0060	mg/L
Iron	0.50	mg/L
Lead	< 0.0050	mg/L
Magnesium	28	mg/L
Manganese	0.21	mg/L
Mercury	< 0.00020	mg/L
Nickel	0.012	mg/L
Potassium	58	mg/L
Selenium	< 0.050	mg/L
Silica	9.8	mg/L
Silver	< 0.0050	mg/L
Thallium	< 0.050	mg/L
Titanium	< 0.0050	mg/L

TABLE 3A INJECTION FLUID CHARACTERATION HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

MARCH 2014 SEMI-VOLATILES AND VOLATILES

SEIVII VOEKIILES KIID VOEKIILE	
1,1,1,2-Tetrachloroethane	< 0.50
1,1,1-Trichloroethane	< 0.50
1,1,2,2-Tetrachloroethane	< 0.50
1,1,2-Trichloroethane	< 0.50
1,1-Biphenyl	< 1.0
1,1-Dichloroethane	< 0.50
1,1-Dichloroethene	< 0.50
1,1-Dichloropropene	< 0.50
1,2,3-Trichlorobenzene	< 0.50
1,2,3-Trichloropropane	< 0.50
1,2,4,5-Tetrachlorobenzene	< 10
1,2,4-Trichlorobenzene	< 0.50
1,2,4-Trimethylbenzene	< 0.50
1,2-Dibromo-3-chloropropane	< 0.50
1,2-Dibromoethane (EDB)	< 0.50
1,2-Dichlorobenzene	< 0.50
1,2-Dichloroethane (EDC)	< 0.50
1,2-Dichloropropane	< 0.50
1,3,5-Trimethylbenzene	< 0.50
1,3-Dichlorobenzene	< 0.50
1,3-Dichloropropane	< 0.50
1,4-Dichlorobenzene	< 0.50
1,4-Dioxane	< 20
1-Methylnaphthalene	< 10
2,2-Dichloropropane	< 0.50
2,3,4,6-Tetrachlorophenol	< 10
2,4,5-Trichlorophenol	< 10
2,4,6-Trichlorophenol	< 10
2,4-Dichlorophenol	< 10
2,4-Dimethylphenol	< 10
2,4-Dinitrophenol	< 10
2,4-Dinitrotoluene	< 10
2-Chloroethyl vinyl ether	< 1.0
2-Chloronaphthalene	< 10
2-Chlorophenol	< 10
2-Chlorotoluene	< 0.50
2-Hexanone	< 0.50
2-Methylnaphthalene	< 10
2-Methylphenol	< 10
2-Nitroaniline	< 10
2-Nitrophenol	< 10
3,3´-Dichlorobenzidine	< 10

3-Nitroaniline	< 10
4,6-Dinitro-2-methylphenol	< 10
4-Bromophenyl phenyl ether	< 10
4-Chloro-3-methylphenol	< 5.0
4-Chloroaniline	< 10
4-Chlorophenyl phenyl ether	< 10
4-Chlorotoluene	< 0.50
4-Isopropyltoluene	< 0.50
4-Nitroaniline	< 10
4-Nitrophenol	< 10
Acenaphthene	< 10
Acenaphthylene	< 10
Acetone	42
Acetonitrile	< 10
Acetophenone	< 10
Acrolein	< 10
Acrylonitrile	< 10
Allyl chloride	< 0.50
Anthracene	< 10
Benz(a)anthracene	< 1.0
Benzene	0.63
Benzo(a)pyrene	< 1.0
Benzo(b)fluoranthene	< 1.0
Benzo(g,h,i)perylene	< 1.0
Benzo(k)fluoranthene	< 1.0
Bis(2-chloroethoxy)methane	< 10
Bis(2-chloroethyl)ether	< 10
Bis(2-chloroisopropyl)ether	< 10
Bis(2-ethylhexyl)phthalate	< 5.0
Bromobenzene	< 0.50
Bromochloromethane	< 0.50
Bromodichloromethane	< 0.50
Bromoform	< 0.50
Bromomethane	< 0.50
Butyl benzyl phthalate	< 10
Caprolactam	< 0.10
Carbazole	< 10
Carbon disulfide	5.6
Carbon Tetrachloride	< 0.50
Chlorobenzene	< 0.50
Chloroethane	< 0.50
Chloroform	0.64

Chloromethane	< 0.50
Chloroprene	< 0.50
Chrysene	< 0.10
is-1,2-DCE	< 0.50
cis-1,3-Dichloropropene	< 0.50
Cyclohexane	1.6
Dibenz(a,h)anthracene	< 1.0
Dibenzofuran	< 10
Dibromochloromethane	< 0.50
Dibromomethane	< 0.50
Dichlorodifluoromethane	< 0.50
Diethyl ether	< 0.50
Diethyl phthalate	< 10
Diisopropyl ether	< 0.50
Dimethyl phthalate	< 10
Di-n-butyl phthalate	< 10
Di-n-octyl phthalate	< 10
pichlorohydrin	< 5.0
Ethyl acetate	< 0.50
Ethyl methacrylate	< 0.50
Ethyl tert-butyl ether	< 0.50
Ethylbenzene	< 0.50
luoranthene	< 10
luorene	< 10
reon-113	< 0.50
Hexachlorobenzene	< 1.0
Hexachlorobutadiene	< 10
Hexachlorocyclopentadiene	< 10
Hexachloroethane	< 10
ndeno(1,2,3-cd)pyrene	< 1.0
odomethane	< 0.50
sobutanol	< 20
sophorone	< 10
sopropyl acetate	< 0.50
sopropylbenzene	< 0.50
Methacrylonitrile	< 0.50
Methyl acetate	< 0.50
Methyl ethyl ketone	5.6
Methyl isobutyl ketone	< 2.5
Methyl methacrylate	< 0.50
Methyl methacrylate	< 0.50
Methyl tert-butyl ether (MTBE	< 10

Methylcyclohexane	1.2
Methylene Chloride	< 2.5
mp-Xylenes	< 1.0
n-Amyl acetate	< 0.50
Naphthalene	< 10
n-Butylbenzene	< 0.50
n-Hexane	< 0.50
Nitrobenzene	< 5.0
N-Nitroso-di-n-butylamine	< 1.0
N-Nitrosodi-n-propylamine	< 10
N-Nitrosodiphenylamine	< 2.0
n-Propylbenzene	< 0.50
o-Toluidine	< 1.0
o-Xylene	< 0.50
Pentachloroethane	< 5.0
Pentachlorophenol	< 10
Phenanthrene	< 10
Phenol	< 5.0
p-isopropyltoluene	< 0.50
Propionitrile	< 0.50
Pyrene	< 10
Pyridine	< 1.0
sec-Butylbenzene	< 0.50
Styrene	< 0.50
tert-Amyl methyl ether	< 0.50
tert-Butyl alcohol	< 20
tert-Butylbenzene	< 0.50
Tetrachloroethene (PCE)	< 0.50
Tetrahydrofuran	< 0.50
Toluene	< 0.50
trans-1,2-DCE	< 0.50
trans-1,3-Dichloropropene	< 0.50
trans-1,4-Dichloro-2-butene	< 0.50
Trichloroethene (TCE)	< 0.50
Trichlorofluoromethane	< 0.50
Vinyl acetate	< 0.50
Vinyl chloride	< 0.50

All parameters reported in µg/L

TABLE 3A JUNE 2014 INJECTION FLUID CHARACTERATION HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

JUNE 2014 SEMI-VOLATILES AND VOLATILES

SEIVII-VULATILES AND VULATIL	.E3
1,1,1,2-Tetrachloroethane	< 0.50
1,1,1,2-Tetrachloroethane	< 0.50
1,1,1-Trichloroethane	< 0.50
1,1,2,2-Tetrachloroethane	< 0.50
1,1,2-Trichloroethane	< 0.50
1,1-Biphenyl	< 0.10
1,1-Dichloroethane	< 0.50
1,1-Dichloroethene	< 0.50
1,1-Dichloropropene	< 0.50
1,2,3-Trichlorobenzene	< 0.50
1,2,3-Trichloropropane	< 0.50
1,2,4,5-Tetrachlorobenzene	< 10
1,2,4-Trichlorobenzene	< 0.50
1,2,4-Trimethylbenzene	< 0.50
1,2-Dibromo-3-chloropropane	< 0.50
1,2-Dibromoethane (EDB)	< 0.50
1,2-Dichlorobenzene	< 0.50
1,2-Dichloroethane (EDC)	< 0.50
1,2-Dichloropropane	< 0.50
1,3-Dichlorobenzene	< 0.50
1,3-Dichloropropane	< 0.50
1,4-Dichlorobenzene	< 0.50
1,4-Dioxane	< 20
1-Methylnaphthalene	< 10
2,2-Dichloropropane	< 0.50
2,3,4,6-Tetrachlorophenol	< 10
2,4,5-Trichlorophenol	< 10
2,4,6-Trichlorophenol	< 10
2,4-Dichlorophenol	< 10
2,4-Dimethylphenol	< 10
2,4-Dinitrophenol	< 10
2,4-Dinitrotoluene	< 10
2-Chloroethyl vinyl ether	< 2.5
2-Chloronaphthalene	< 10
2-Chlorophenol	< 10
2-Chlorotoluene	< 0.50
2-Hexanone	< 0.50
2-Methylnaphthalene	< 10

3,3'-Dichlorobenzidine < 10 3-Nitroaniline < 10 4,6-Dinitro-2-methylphenol < 10 4-Bromophenyl phenyl ether < 10 4-Chloro-3-methylphenol < 5.0 4-Chloroaniline < 10 4-Chlorophenyl phenyl ether < 10 2-Methylphenol < 10 2-Nitroaniline < 10 4-Chlorotoluene < 0.50 4-Nitroaniline < 10 4-Nitrophenol < 10 Acenaphthene < 10 Acenaphthylene < 10 Acetone 15 Acetonitrile < 2.5 Acetophenone < 10 Acrolein < 2.5
4,6-Dinitro-2-methylphenol < 10
4-Bromophenyl phenyl ether < 10
4-Chloro-3-methylphenol < 5.0
4-Chloroaniline < 10
4-Chlorophenyl phenyl ether < 10
2-Methylphenol < 10
2-Nitroaniline < 10
2-Nitrophenol < 10
4-Chlorotoluene< 0.50
4-Nitroaniline < 10
4-Nitrophenol < 10
Acenaphthene< 10Acenaphthylene< 10
Acenaphthylene< 10Acetone15Acetonitrile< 2.5
Acetone 15 Acetonitrile < 2.5 Acetophenone < 10
Acetonitrile < 2.5 Acetophenone < 10
Acetophenone < 10
·
Acrolein < 2.5
Acrylonitrile < 10
Allyl chloride < 0.50
Anthracene < 10
Atrazine < 0.10
Benz(a)anthracene < 0.10
Benzaldehyde < 0.10
Benzene 0.64
Benzo(a)pyrene < 0.10
Benzo(b)fluoranthene < 0.10
Benzo(g,h,i)perylene < 10
Benzo(k)fluoranthene < 0.10
Bis(2-chloroethoxy)methane < 10
Bis(2-chloroethyl)ether < 10
Bis(2-chloroisopropyl)ether < 10
Bis(2-ethylhexyl)phthalate < 5.0
Bromobenzene < 0.50
Bromochloromethane < 0.50
Bromodichloromethane < 0.50
Bromoform < 0.50

Bromomethane	< 0.50
Butyl benzyl phthalate	< 10
Caprolactam	< 0.10
Carbazole	< 10
Carbon disulfide	< 0.50
Carbon Tetrachloride	< 0.50
Chlorobenzene	< 0.50
Chloroethane	< 0.50
Chloroform	< 0.50
Chloromethane	< 0.50
Chloroprene	< 0.50
Chrysene	< 0.10
cis-1,2-DCE	< 0.50
cis-1,3-Dichloropropene	< 0.50
Cyclohexane	< 2.5
Cyclohexane	< 0.50
Dibenz(a,h)anthracene	< 0.10
Dibenzofuran	< 10
Dibromochloromethane	< 0.50
Dibromomethane	< 0.50
Dichlorodifluoromethane	< 0.50
Diethyl ether	< 0.50
Diethyl phthalate	< 10
Diisopropyl ether	< 0.50
Dimethyl phthalate	< 10
Di-n-butyl phthalate	< 10
Di-n-octyl phthalate	< 10
Epichlorohydrin	< 5.0
Ethyl acetate	< 0.50
Ethyl methacrylate	< 2.5
Ethyl tert-butyl ether	< 0.50
Ethylbenzene	< 0.50
Fluoranthene	< 10
Fluorene	< 10
Freon-113	< 0.50
Hexachlorobenzene	< 1.0
Hexachlorobutadiene	< 10
Hexachlorocyclopentadiene	< 10

Hexachloroethane	< 10
Indeno(1,2,3-cd)pyrene	< 0.10
Iodomethane	< 0.50
Isobutanol	< 50
Isophorone	< 10
Isopropyl acetate	< 0.50
Isopropylbenzene	< 0.50
Methacrylonitrile	< 2.5
Methyl acetate	< 0.50
Methyl ethyl ketone	< 2.5
Methyl isobutyl ketone	< 2.5
Methyl methacrylate	< 2.5
Methyl tert-butyl ether (MTBE)	< 10
Methylcyclohexane	< 1.0
Methylene Chloride	< 2.5
mp-Xylenes	< 1.0
n-Amyl acetate	< 0.50
Naphthalene	< 10
n-Butylbenzene	< 0.50
n-Hexane	< 0.50
Nitrobenzene	< 5.0
N-Nitroso-di-n-butylamine	< 0.10
N-Nitrosodi-n-propylamine	< 10
N-Nitrosodiphenylamine	< 2.0
n-Propylbenzene	< 0.50
o-Toluidine	< 0.10
o-Xylene	< 0.50
Pentachloroethane	< 5.0
Pentachlorophenol	< 10
Phenanthrene	< 10
Phenol	< 5.0
p-isopropyltoluene	< 0.50
Propionitrile	< 2.5
Pyrene	< 10
Pyridine	< 0.10
sec-Butylbenzene	< 0.50
Styrene	< 0.50

tert-Butyl alcohol	< 10
tert-Butylbenzene	< 0.50
Tetrachloroethene (PCE)	< 0.50
Tetrahydrofuran	< 0.50
Toluene	< 0.50
trans-1,2-DCE	< 0.50
trans-1,3-Dichloropropene	< 0.50
trans-1,4-Dichloro-2-butene	< 0.50
Trichloroethene (TCE)	< 0.50
Trichlorofluoromethane	< 0.50
Vinyl acetate	< 0.50
Vinyl acetate	< 0.50
Vinyl chloride	< 0.50

All parameters measured in µg/l

TABLE 3A SEPTEMBER 2014 INJECTION FLUID CHARACTERATION HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

SEPTEMBER 2014 SEMI-VOLATILES AND VOLATILES

1,1,1,2-Tetrachloroethane	< 0.50
1,1,1-Trichloroethane	< 0.50
1,1,2,2-Tetrachloroethane	< 0.50
1,1,2-Trichloroethane	< 0.50
1,1-Biphenyl	< 5.0
1,1-Dichloroethane	< 0.50
1,1-Dichloropropene	< 0.50
1,2,3-Trichlorobenzene	< 0.50
1,2,3-Trichloropropane	< 0.50
1,2,4,5-Tetrachlorobenzene	< 10
1,2,4-Trichlorobenzene	< 0.50
1,2,4-Trimethylbenzene	< 0.50
1,2-Dibromo-3-chloropropane	< 0.50
1,2-Dibromoethane (EDB)	< 0.50
1,2-Dichlorobenzene	< 0.50
1,2-Dichloroethane (EDC)	< 0.50
1,2-Dichloropropane	< 0.50
1,3,5-Trimethylbenzene	< 0.50
1,3-Dichlorobenzene	< 0.50
1,3-Dichloropropane	< 0.50
1,4-Dichlorobenzene	< 0.50
1,4-Dioxane	< 20
1-Methylnaphthalene	< 10
2,2-Dichloropropane	< 0.50
2,3,4,6-Tetrachlorophenol	< 10
2,4,5-Trichlorophenol	< 10
2,4,6-Trichlorophenol	< 10
2,4-Dichlorophenol	< 10
2,4-Dimethylphenol	< 10
2,4-Dinitrophenol	< 10
2,4-Dinitrotoluene	< 10
2,6-Dinitrotoluene	< 10
2-Chloroethyl vinyl ether	< 0.50
2-Chloronaphthalene	< 10
2-Chlorophenol	< 10
2-Chlorotoluene	< 0.50
2-Hexanone	< 0.50
2-Methylnaphthalene	< 10
2-Methylphenol	< 10

-
< 10
< 10
< 10
< 10
< 10
< 10
< 5.0
< 10
< 10
< 0.50
< 0.50
< 0.50
< 10
< 10
< 10
< 10
18
73
< 10
< 0.50
< 10
< 0.50
< 10
< 5.0
< 0.10
< 5.0
< 0.50
< 0.10
< 0.10
< 10
< 0.10
< 10
< 10
< 10
< 5.0
< 0.50
< 0.50
< 0.50
< 0.50

Bromomethane	< 0.50
Butyl benzyl phthalate	< 10
Caprolactam	< 5.0
Carbazole	< 10
Carbon disulfide	0.56
Carbon Tetrachloride	< 0.50
Chlorobenzene	< 0.50
Chloroethane	< 0.50
Chloroform	< 0.50
Chloromethane	< 0.50
Chloroprene	< 0.50
Chrysene	< 0.10
cis-1,2-DCE	< 0.50
cis-1,3-Dichloropropene	< 0.50
Cyclohexane	< 0.50
Dibenz(a,h)anthracene	< 0.10
Dibenzofuran	< 10
Dibromochloromethane	< 0.50
Dibromomethane	< 0.50
Dichlorodifluoromethane	< 0.50
Diethyl ether	< 0.50
Diethyl phthalate	< 10
Diisopropyl ether	< 0.50
Dimethyl phthalate	< 10
Di-n-butyl phthalate	< 10
Di-n-octyl phthalate	< 10
Epichlorohydrin	< 5.0
Ethyl acetate	< 0.50
Ethyl methacrylate	< 0.50
Ethyl tert-butyl ether	< 0.50
Ethylbenzene	< 0.50
Fluoranthene	< 10
Fluorene	< 10
Freon-113	< 0.50
Hexachlorobenzene	< 1.0
Hexachlorobutadiene	< 10
Hexachlorocyclopentadiene	< 10
Hexachloroethane	< 10
Indeno(1.2.3-cd)pyrene	< 5.0

Iodomethane	< 0.50
Isobutanol	< 50
Isophorone	< 10
Isopropyl acetate	< 0.50
Isopropylbenzene	< 0.50
Methacrylonitrile	< 0.50
Methyl acetate	< 0.50
Methyl ethyl ketone	< 2.5
Methyl isobutyl ketone	< 2.5
Methyl methacrylate	< 0.50
Methyl tert-butyl ether (MTBE)	< 10
Methylcyclohexane	< 1.0
Methylene Chloride	< 2.5
mp-Xylenes	< 1.0
n-Amyl acetate	< 0.50
Naphthalene	< 10
n-Butylbenzene	< 0.50
n-Hexane	< 0.50
Nitrobenzene	< 10
N-Nitroso-di-n-butylamine	< 5.0
N-Nitrosodi-n-propylamine	< 10
N-Nitrosodiphenylamine	< 2.0
n-Propylbenzene	< 0.50
o-Toluidine	< 5.0
o-Xylene	< 0.50
Pentachloroethane	< 5.0
Pentachlorophenol	< 10
Phenanthrene	< 10
Phenol	< 5.0
p-isopropyltoluene	< 0.50
Propionitrile	0.97
Pyrene	< 10
Pyridine	< 5.0
sec-Butylbenzene	< 0.50
Styrene	< 0.50
tert-Amyl methyl ether	< 0.50
tert-Butyl alcohol	23
tert-Butylbenzene	< 0.50
Tetrachloroethene (PCE)	< 0.50

Tetrahydrofuran	< 0.50
Toluene	< 0.50
trans-1,2-DCE	< 0.50
trans-1,3-Dichloropropene	< 0.50
trans-1,4-Dichloro-2-butene	< 0.50
Trichloroethene (TCE)	< 0.50
Trichlorofluoromethane	< 0.50
Vinyl acetate	< 0.50
Vinyl chloride	< 0.50
Xylenes, Total	< 1.0

All parameters measured in µg/L

TABLE 3B INJECTION FLUID CHARACTERIZATION DATA RO REJECT HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO JUNE 2014

Miscellaneous			
Total Cyanide (mg/L)	<0.010		
Chloride (mg/L)	36.0		
Fluoride (mg/L)	2.3		
Sulfate (mg/L)	1,200		
Nitrite (mg/L)	<0.10		
Nitrate (mg/L)	1.2		
pH (S.U.)	7.92		
TDS (mg/L)	2,460		
Radionuclides			
Radium-226 (pCi/L)	0.667		
Radium-226+/- (pCi/L)	0.599		
Radium-228 (pCi/L)	-0.136		
Radium-228 +/- (pCi/L)	0.352		
PCBs			
Aroclor 1016 (ug/L)	<1.0		
Aroclor 1221 (ug/L)	<1.0		
Aroclor 1232 (ug/L)	<1.0		
Aroclor 1242 (ug/L)	<1.0		
Aroclor 1248 (ug/L)	<1.0		
Aroclor 1254 (ug/L)	<1.0		
Aroclor 1260 (ug/L)	<1.0		
TPH Ranges			
TPH-DRO (mg/L)	<1.0		
TPH-ORO (mg/L)	<5.0		
TPH-GRO (mg/L)	<0.050		

Metals (Total)	
Arsenic	0.0036
Barium	0.054
Cadmium	<0.001
Calcium	470
Chromium	<0.001
Iron	<0.010
Lead	<0.001
Manganese	<0.001
Nickel	<0.001
Potassium	1.2
Selenium	<0.010
Sodium	39.0
Vanadium	0.0075

Semivolatiles	
1,1-Biphenyl	<0.50
1-Methylnaphthalene	<0.50
2-Methylnaphthalene	<0.50
Benz(a)pyrene	<0.50
Naphthalene	<0.50
Phenol	<0.50
Phenol	<0.50

Metals (Dissolved)	
Aluminum	<0.010
Arsenic	0.0012
Barium	0.045
Boron	<0.10
Cadmium	<0.001
Calcium	460
Chromium	0.0016
Cobalt	<0.001
Iron	<0.10
Lead	<0.001
Manganese	0.0013
Mercury	<0.0002
Molybdenum	0.0084
Nickel	0.0013
Potassium	1.4
Selenium	0.0076
Silver	<0.001
Sodium	39.0
Uranium	0.0034
Vanadium	0.0077
Zinc	0.21

Volatiles	
1,1,1-Trichloroethane	<0.50
1,1,1,2-Tetrachloroethane	<0.50
1,1,2,2-Tetrachloroethane	<0.50
1,1,2-Trichloroethane	<0.50
1,2-Dibromomethane	<0.50
1,1-Dichloroethane	<0.50
1,1-Dichloroethene	<0.50
1,2-Dichloroethane	<0.50
1,2-Dichloropropane	<0.50
1,2,4-Trimethylbenzene	<0.50
1,3,5-Trimethylbenzene	<0.50
2-Butanone	<5.0
2-Hexanone	<2.5
Acetone	<2.5
Benzene	<0.50
Bromodichloromethane	<0.50
Bromoform	<0.50
Bromomethane	<0.50
Carbon disulfide	<0.50
Carbon tetrachloride	<0.50
Chlorobenzene	<0.50
Chloroethane	<0.50
Chloroform	<0.50
Chloromethane	<0.50
cis-1,2-DCE	<0.50

Volatiles	
cis-1,3-Dichloropropene	< 0.50
Dibromochloromethane	< 0.50
Isopropylbenzene	< 0.50
Methylene chloride	< 0.50
Methyl isobutyl ketone	<2.5
MTBE	< 0.50
Naphthalene	< 0.50
n-Butylbenzene	< 0.50
n-Propylbenzene	< 0.50
p-isopropyltoluene	< 0.50
sec-Butylbenzene	< 0.50
Styrene	< 0.50
Tetrachloroethene	< 0.50
Toluene	< 0.50
trans-1,2-DCE	< 0.50
trans-1,3-Dichloropropene	< 0.50
Trichloroethene	< 0.50
Vinyl chloride	<0.50
mp-Xylenes	<0.50
o-Xylenes	<0.50

mg/L	Milligrams per liter.
pCi/L	Picocurries per liter.
ug/L	Micrograms per liter
S.U.	Standard Units.
<	Less than.

All concentrations reported in milligrams per liter (mg/L).

TABLE 4 OPEN-HOLE LOGGING AND CORING PROGRAM

HOLLYFRONTIER NAVAJO REFINING LLC WASTE DISPOSAL WELL NO. 4 ARTESIA, NEW MEXICO

Interval	Open Hole Log Description
Surface Borehole	Gamma Ray/Induction Resistivity/Spontaneous Potential/Formation Density/ Compensated Neutron/Caliper/
(80' – 1,500')	Four Arm Caliper
Protection Borehole	Gamma Ray/Laterolog Resistivity/Formation Density/ Compensated Neutron/Caliper/Sonic/Mineralogy(~100' over cored interval)
(1,500' – 10,400')	Four Arm Caliper
Injection Borehole (10,400' –	Gamma Ray/Laterolog Resistivity/Formation Density/ Compensated Neutron/Caliper/Sonic/Borehole Image/Mineralogy
11,000')	Four Arm Caliper
Interval	Coring Description
Confining Zone (9,700' – 10,200')	4" Diameter x 30' Long Conventional Core
Injection Interval (10,200' – 10,700')	4" Diameter x 60' Long Conventional Core

TABLE 5

WELL TUBULAR INFORMATION HOLLYFRONTIER NAVAJO REFINING LLC WASTE DISPOSAL WELL NO. 4 ARTESIA, NEW MEXICO

Ref	Section	Outside Diameter (in)	Depth Interval (feet BGL)	Material	Collapse Resistance (psi)	Internal Yield (psi)	Tensile Strength (lbs)	Body Yield (lbs)	Max. External Press (psi)	Max. Internal Press (psi)	Maximum Tensile Load (lbs)	Safety Factor Collapse	Safety Factor Burst	Safety Factor Tension
	Conductor	20	0 - 80	129.33 ppf; 0.625" wall, Welded	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Surface Casing	13¾	0 - 1500	54.5 ppf, K-55, ST&C	1,130	2,730	547,000	853,000	624	1,000	81,750	1.81	2.73	6.69
2	Protection	9%	0 - 10,400	47 ppf, N-80, LT&C	4,760	6,870	905,000	1,086,000	3,894	1,500	488,800	1.22	4.58	1.85
3	Injection Tubing	7	0 - 10,300	26 ppf, K-55, LT&C	4,320	4,980	401,000	415,000	2,057	2,348	267,800	2.10	2.12	1.50

References:

- 1. Maximum external pressure after cementing 16.4 ppg cement with fresh water inside. Assumed gradient equal to 8.0 ppg (16.4-8.4). Maximum internal pressure during pressure test at 1000 psi excluding external pressure.
- 2. Maximum external pressure after cementing 15.6 ppg cement with fresh water inside. Assumed gradient equal to 7.2 (15.6-8.4) ppg. Maximum internal pressure during pressure test at 1500 psi excluding external pressure.
- 3. Maximum external pressure pressure during APT assumes 10 ppg water in 7" x 9%" annulus with 1200 psi surface test pressure and 8.4 ppg fluid inside tubing. Maximum internal pressure = Hydrostatic pressure inside 7" tubing (9 ppg*0.052*10300') + Maximum Permitted Surface Injection Pressure (2080) Minimum Expected Annulus Pressure (8.5*0.052*10300).

TABLE 6

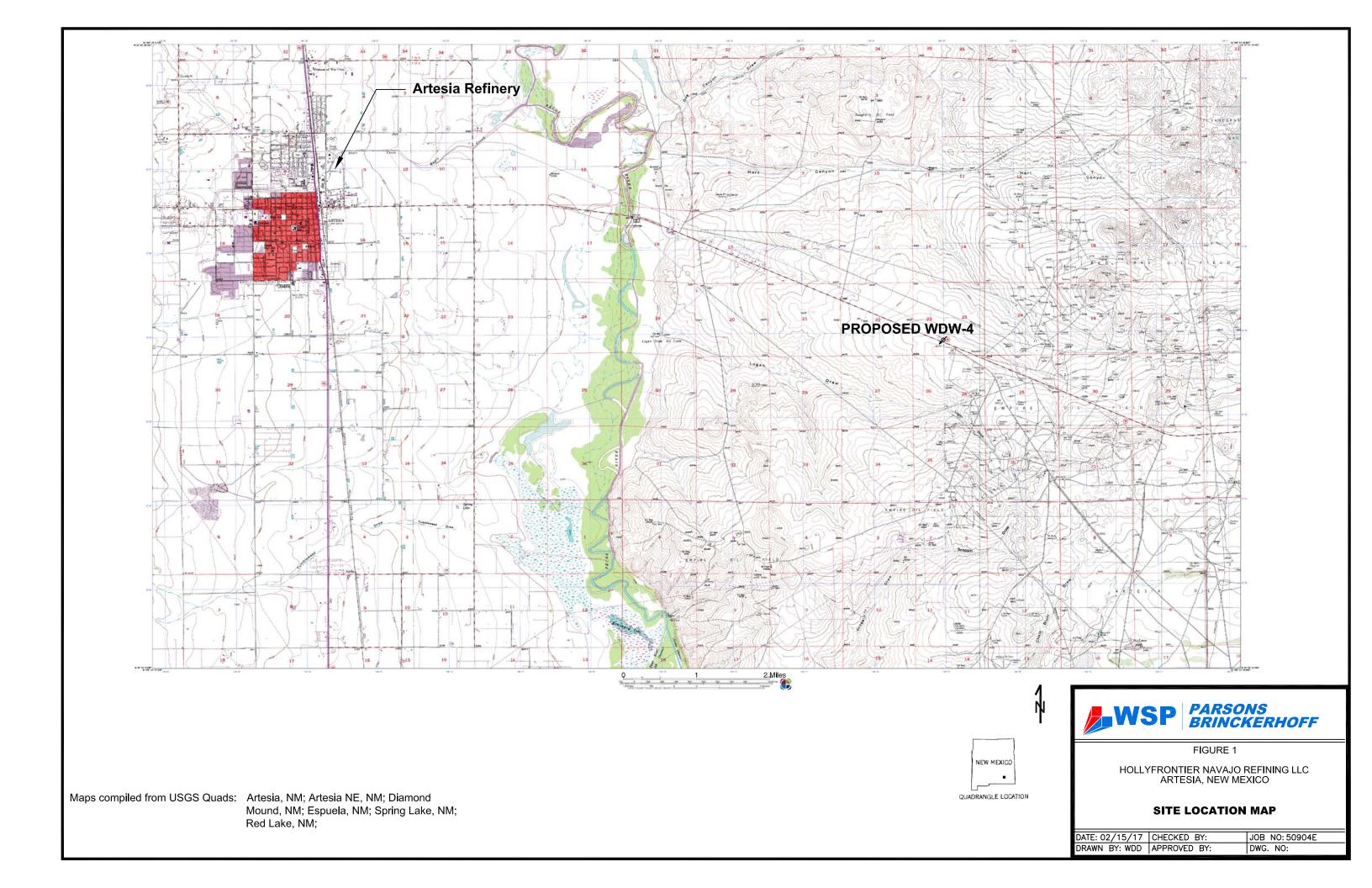
WELL CASING AND CEMENTING PROGRAM HOLLYFRONTIER NAVAJO REFINING LLC WASTE DISPOSAL WELL NO. 4 ARTESIA, NEW MEXICO

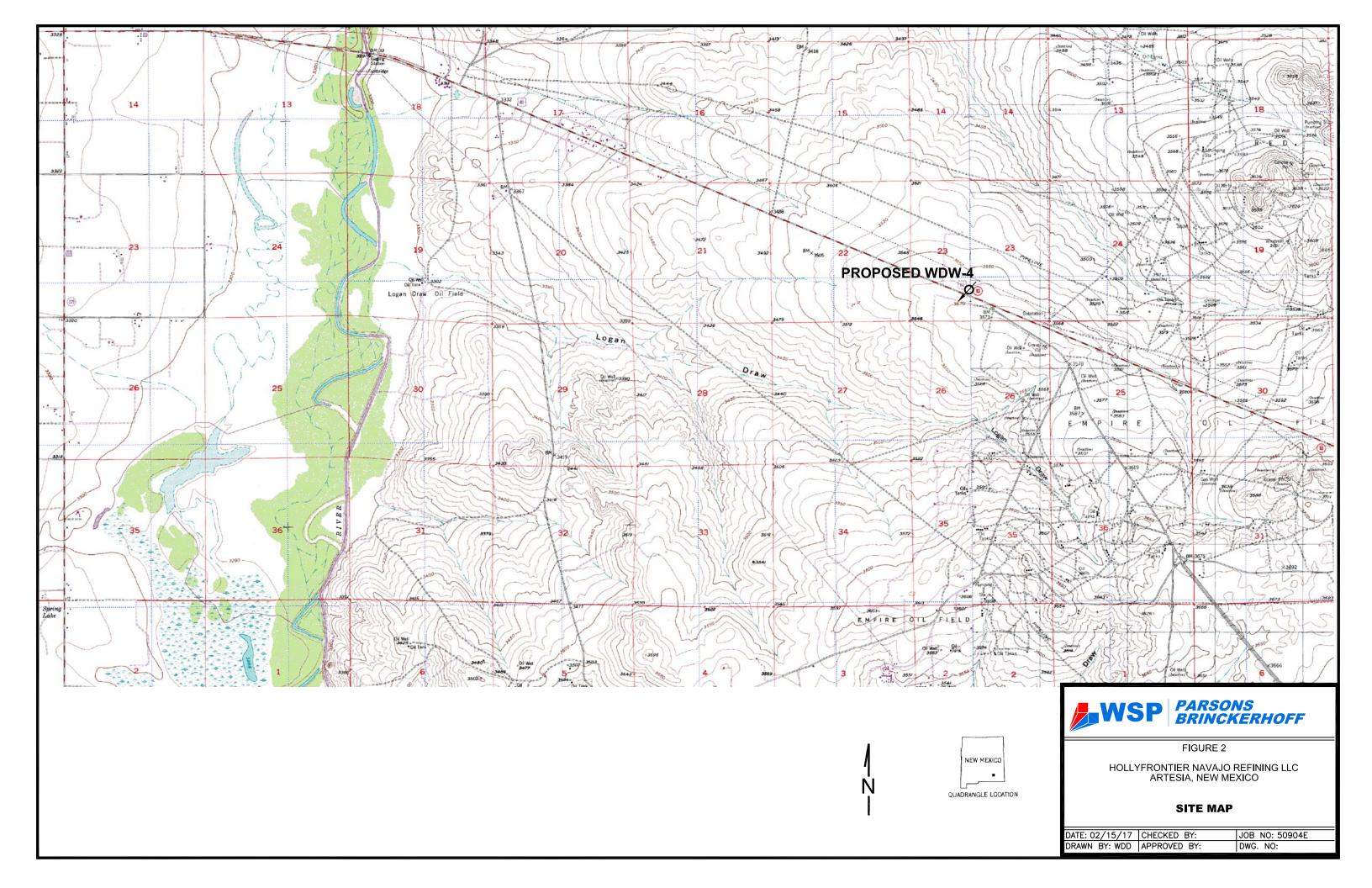
Cemented	Cemente	d Interval		Hole	Casing		Cement V	olumes		Estin	nated Cem	ent Requirements
Casing	Тор	Bottom	Borehole	Size	OD	Subtotal	Exce	ess	Total	Slurry	Volume	Description
Description	(ft BGL)	(ft BGL)	Type	(in)	(in)	(ft ³)	Factor	(ft³)	(ft ³)	Type	(ft³)	
Surface Casing	0	80	Conductor Pipe	18.750	13.375	75.3	0%	0.0	75.3			
(0 - 1,500')	80	1,300	Open Hole	17.500	13.375	847.5	20%	169.5	1016.9	Lead	1092	Lightweight Class A
13%", 54.5#,	1,300	1,500	Open Hole	17.500	13.375	138.9	20%	27.8	166.7			
K-55, ST&C	1,455	1,500	Shoe-Track	12.615		39.1	0%	0.0	39.1	Tail	206	Class A
Protection Casing: Stage II	0	1,500	Surface Casing	12.615	9.625	544.0	0%	0.0	544.0			
(0 - 5,800')	1,500	5,400	Open Hole	12.250	9.625	1221.4	20%	244.3	1465.7	Lead	2010	Lightweight Class H
9%", 47#, N-80, LT&C	5,400	5,800	Open Hole	12.250	9.625	125.3	20%	25.1	150.3	Tail	150	Class H
Protection Casing: Stage I	5,800	10,000	Open Hole	12.250	9.625	1315.4	20%	263.1	1578.5	Lead	1578	Lightweight Class H
(5,800 - 10,400')	10,000	10,400	Open Hole	12.250	9.625	125.3	20%	25.1	150.3			
9%", 47#, N-80, LT&C	10,355	10,400	Shoe-Track	9.681		23.0	0%	0.0	23.0	Tail	173	Class H

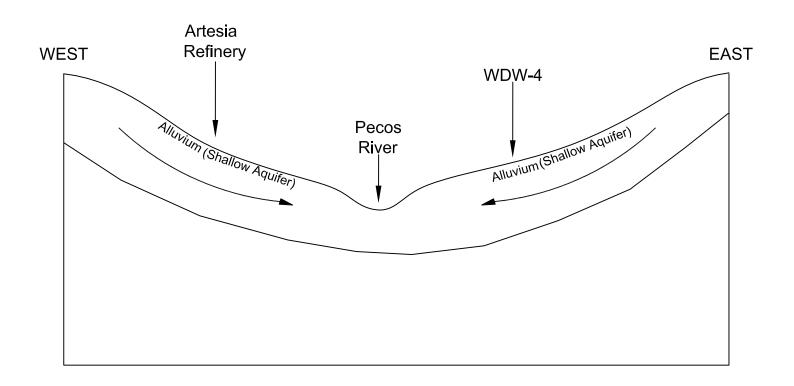
TABLE 7

CASED HOLE LOGGING PROGRAM HOLLYFRONTIER NAVAJO REFINING LLC WASTE DISPOSAL WELL NO. 4 ARTESIA, NEW MEXICO

Interval	Log Description				
13%" Surface Casing (Surface – 1500')	Cement Bond /Variable Density/Gamma Ray Log				
95/8" Protection Casing (Surface – 10,400')	Cement Bond /Variable Density/Gamma Ray Log, Casing Inspection Log				
7" Injection Tubing & 95/8" Protection Casing (Surface – 10,400')	Temperature Survey, Bottomhole Pressure, Pressure Falloff Test, Radioactive Tracer Survey				







NOT TO SCALE



FIGURE 3

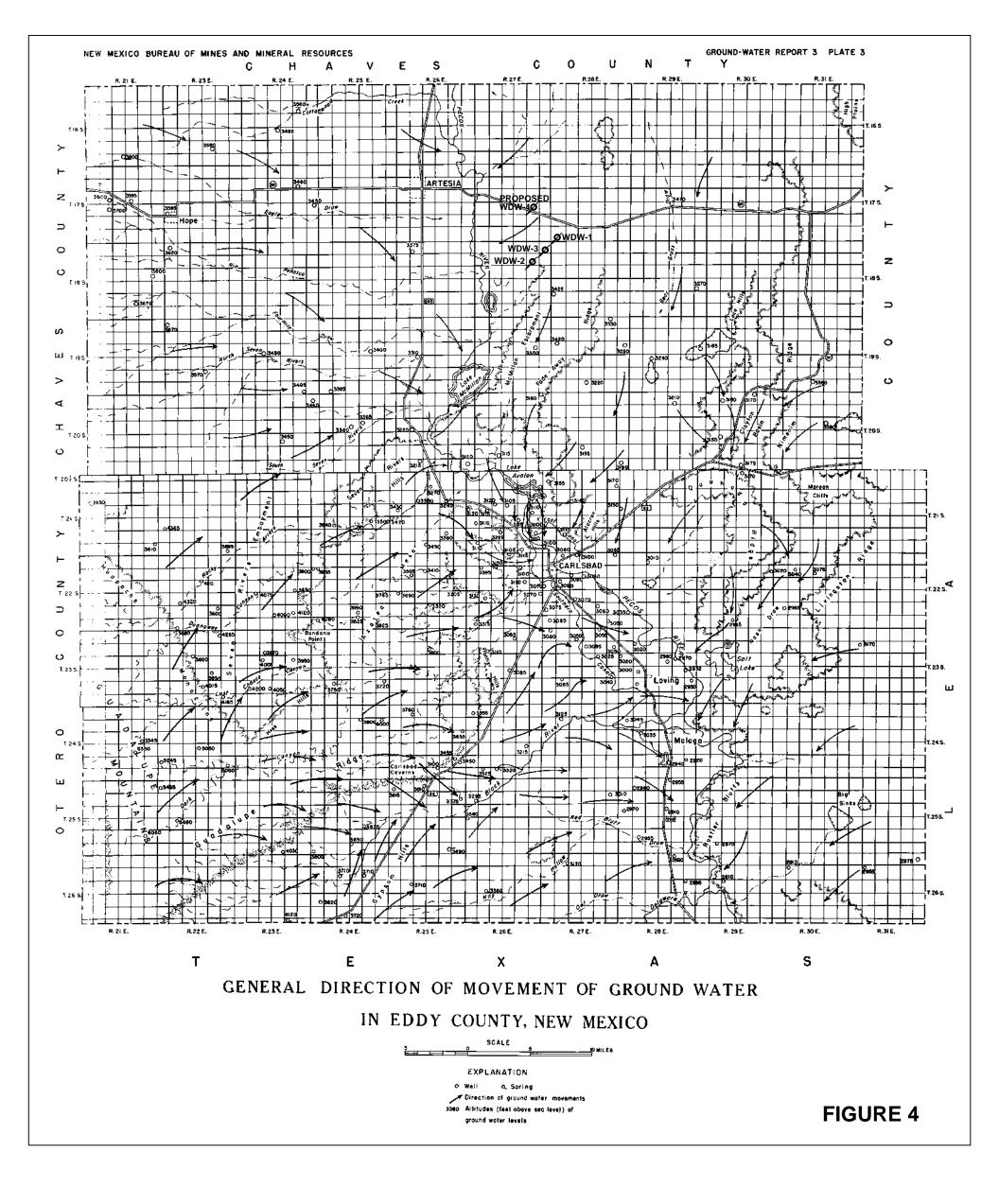
HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

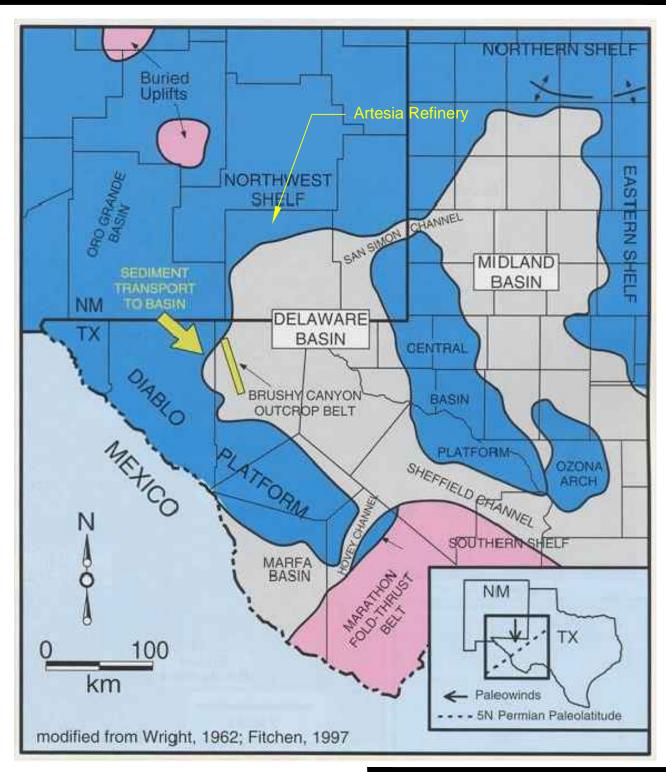
GENERALIZED HYDROGEOLOGIC CROSS-SECTION

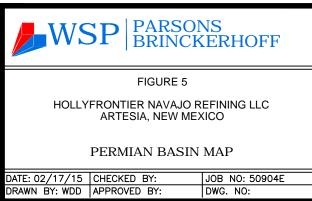
DATE: 02/17/15	CHECKED BY:	JOB NO:50904E
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

EXPLANATION

Direction of Groundwater Movement



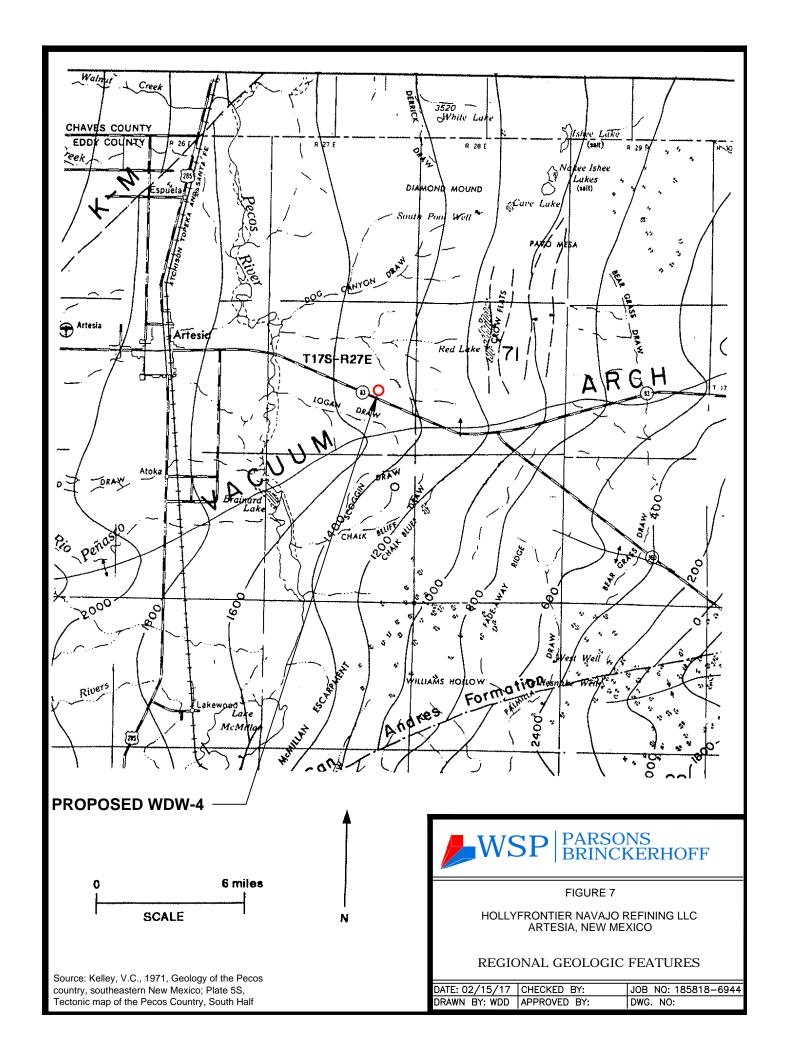


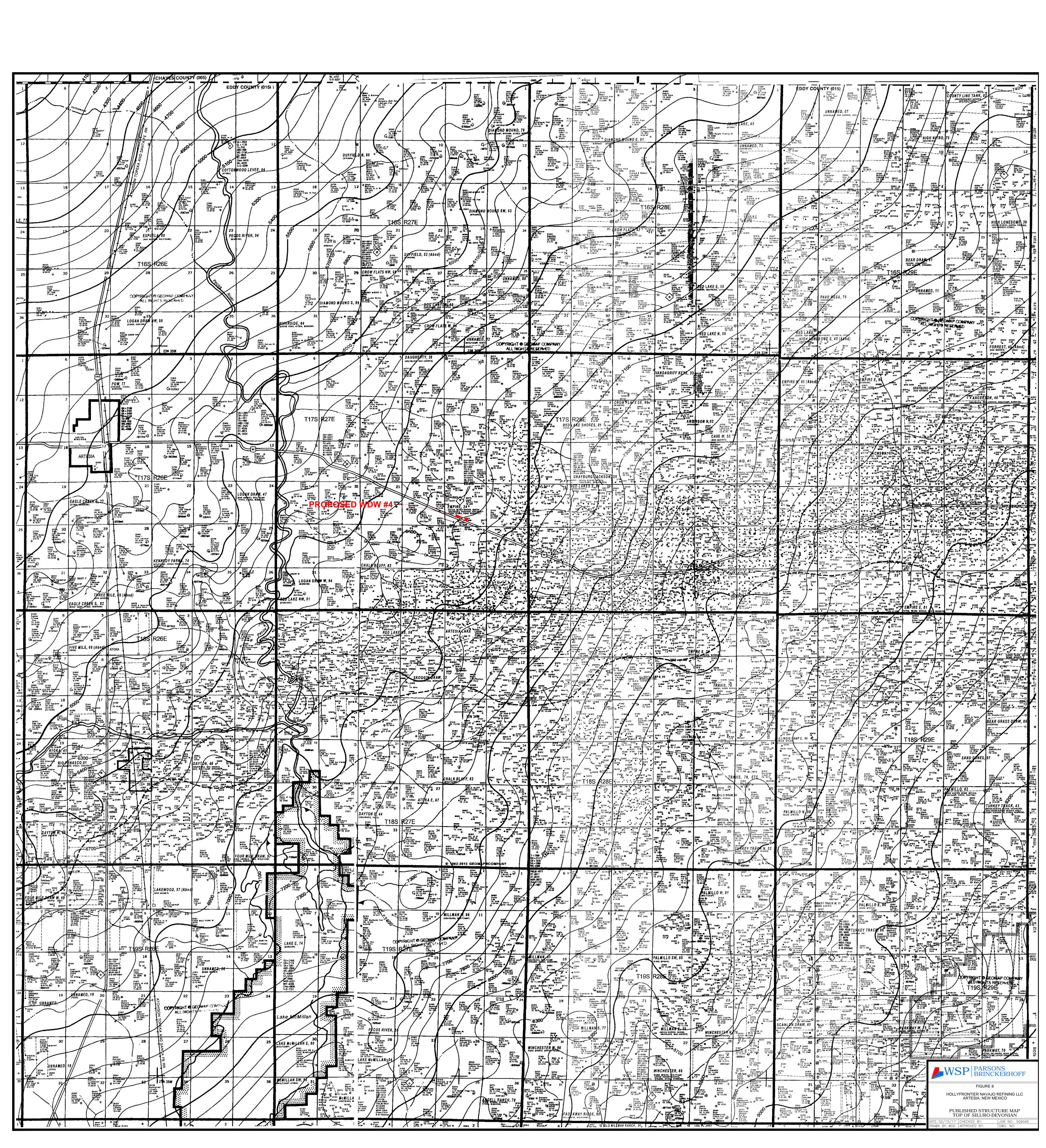


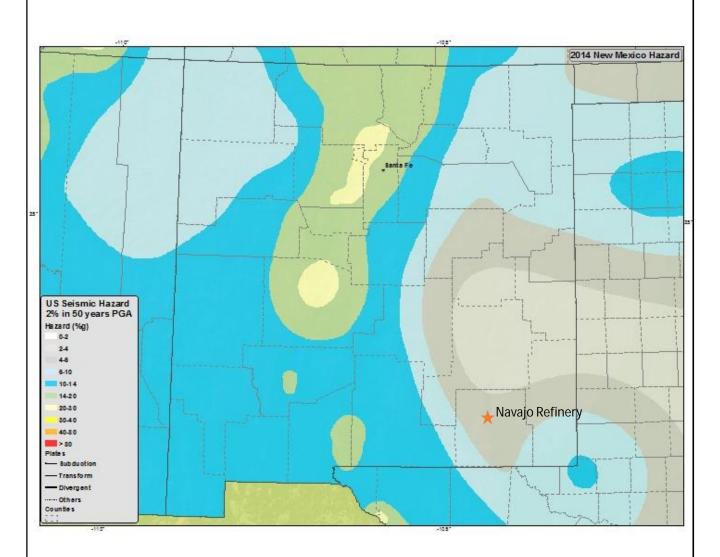
RTHW	EST SHE	_F,	CENTRAI	L BASIN PLATFOR	
A	ge		Strata	Oil Plays	
Triassic			hinle		
masons		Santa Rosa Dewey Lake			
	Ochoan	Rustler			
			alado Tansill		
_		Artesia Group	Yates Seven Rivers		
<u>.</u>	Guadalupian		Queen	Artesia Platform Sandstone	
Ε	Ouadalupiaii	Art	Grayburg	Upper San Andres and Grayburg Platform - Artesia Vacuum Trend	
Permian		San Andres		Upper San Andres and Grayburg Platform - Central Basin Platform Trend Northwest Shelf San Andres Platform Carbonate	
			Glorieta		
	Leonardian	Yeso	Paddock Blinebry	Leonard Restricted	
		ž	Tubb	Platform Carbonate	
			Drinkard Abo	Abo Platform Carbonate	
Wolfcampia		-	7,000		
	rteneamplan	Hueco ("Wolfcamp")		Wolfcamp Platform Carbonate	
ian	Virgilian		Cisco	Northwest Shelf Upper Pennsylvanian	
Pennsylvanian	Missourian		Canyon	Carbonate	
sylv	Des Moinesian	Strawn		Northwest Shelf Strawn Patch Reef	
enn	Atokan	Atoka			
P	Morrowan	Morrow			
Miss.		undivided			
	Upper		Woodford		
Dev.	Middle				
	Lower	Thirtyone		Devonian Thirtyone Deepwater Chert	
0:1	Upper		Wristen	Wristen Buildups and Platform Carbonate	
Sil.	Middle				
	Lower		Fusselman	Fusselman Shallow Platform Carbonate	
Ord.	Upper		Montoya		
Oru.	Middle		Simpson	Simpson Cratonic Sandstone	
Lower		Ellenburger		Ellenburger Karst-Modified Restricted Ramp Carbonate	
Cambrian		Bliss			
Cambrian		igneous, metamorphics			
Precambrian			anics		

STRATIGRAPHIC COLUMN

Source: Broadhead, et al., 2004. Play Analysis of Major Oil Reservoirs in the New Mexico Part of the Permian Basin: Enhanced Production Through Advanced Technologies. New Mexico Bureau of Geology and Mineral Resources. Open File Report 479.







Source: USGS, 2017. Information by Region – New Mexico; 2014 Seismic

Hazard Map. Earthquake Hazards Program.

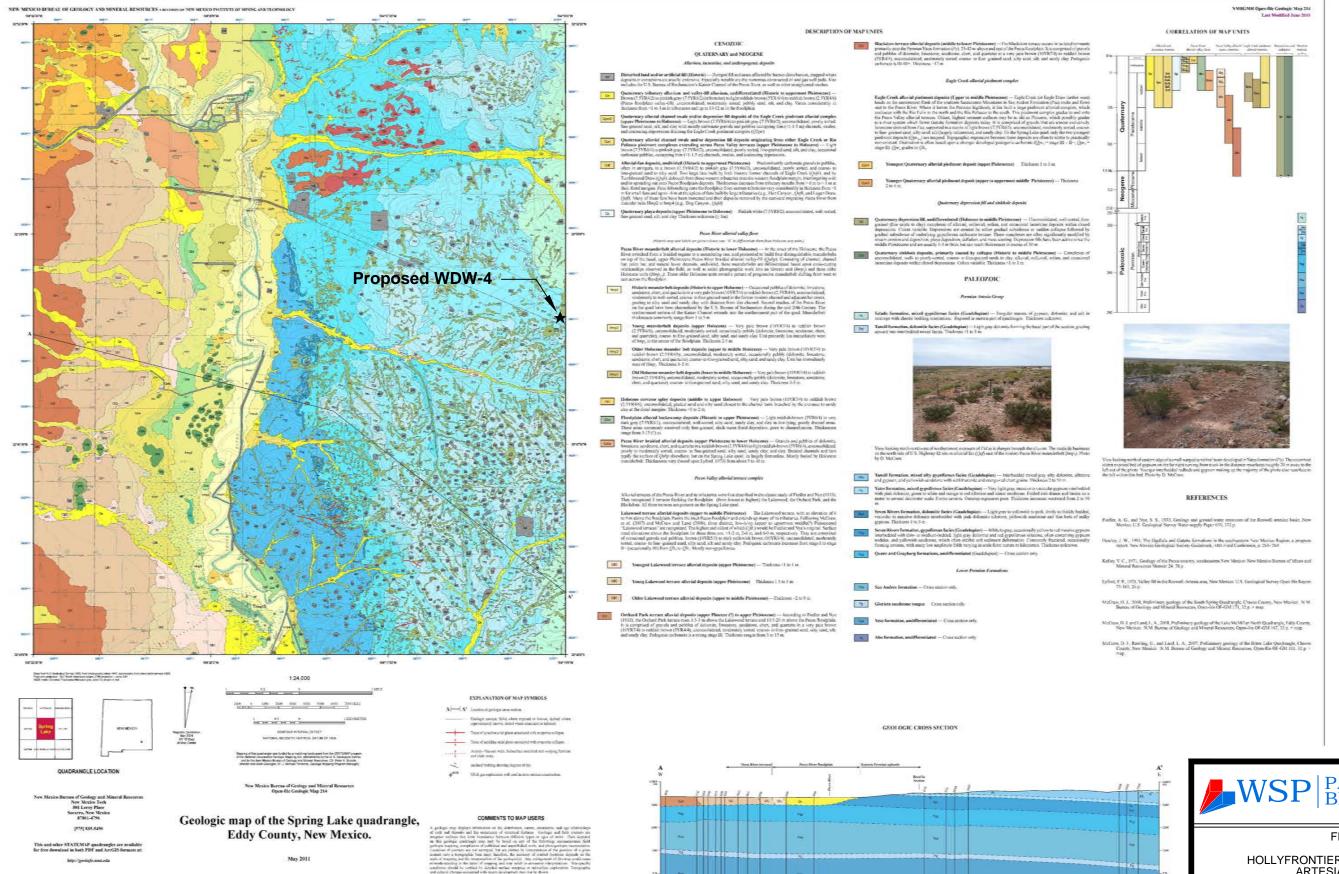
https://earthquake.usgs.gov/earthquakes/byregion/newmexico-haz.php



FIGURE 9
HOLLYFRONTIER NAVAJO REFINING LLC
ARTESIA, NEW MEXICO

SEISMIC RISK MAP

DATED: 1/16/2017	APPROVED BY:	JOB NO. 50904D
DRAWN BY: GEM	CHECKED BY:	SCALE: N/A



David J. McCraw, Lewis A. Land, and Shannon Williams New Meson Bureau of Geology and Mosenii Resources, NO Lenus Place, Socures, NM 8780.



FIGURE 10

HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

SURFACE GEOLOGIC MAP

DATE: 02/15/17 | CHECKED BY: JOB NO: 50904E DRAWN BY: WDD APPROVED BY: DWG. NO:

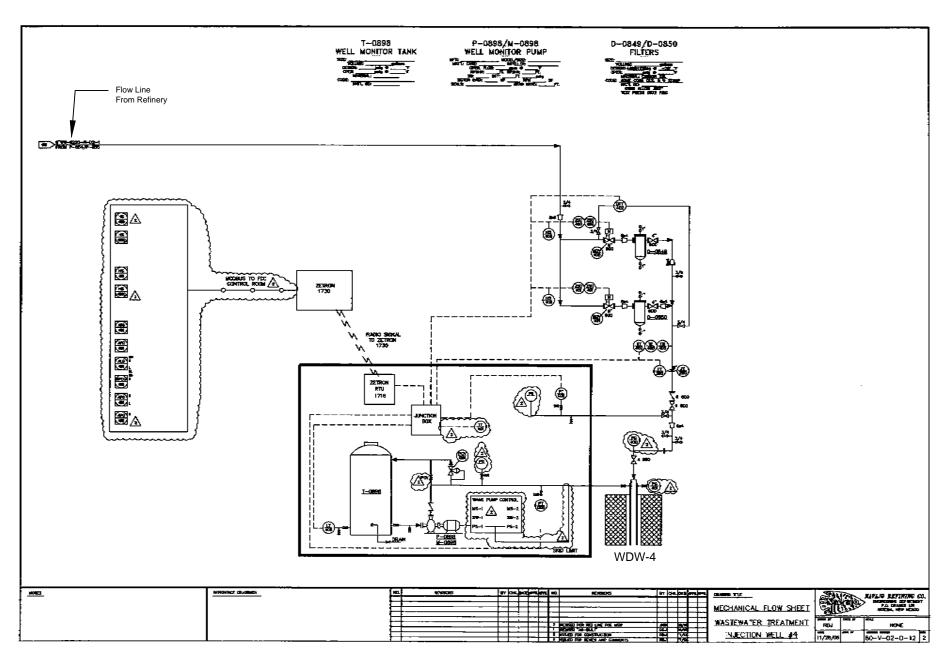
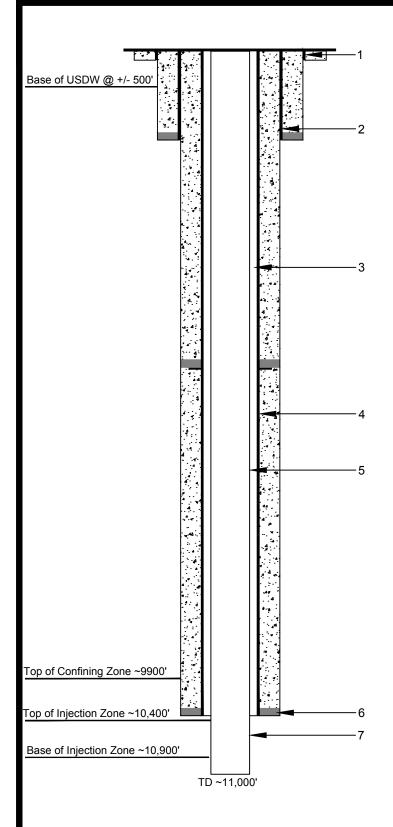


FIGURE 11
PRE-INJECTION SURFACE FACILITIES
HOLLYFRONTIER NAVAJO REFINING LLC
ARTESIA, NEW MEXICO



BELOW GROUND DETAILS

(feet below Ground Level)

- Conductor Pipe 20", 129.33 lb/ft (0.625" wall), API 5LX-56, plain-end, beveled conductor set in 24" augered hole at 80' and cemented to the surface with redi-mix.
- 2. Surface Casing $13\frac{3}{8}$ ", 54.5 lb/ft, K-55, ST&C, set at 1,500' in a $17\frac{1}{2}$ " hole and cemented to the surface.
- Annulus Fluid injection tubing and protection casing annulus filled with 250 bbl of brine water containing a corrosion inhibitor, a bactericide and an oxygen scavenger.
- 4. Protection Casing 95", 47 lb/ft, N-80, LT&C set in a 12¼" hole at 10,400' with a DV Tool at 5,800' and cemented to the surface in two stages as follows: Stage I (5,600' 10,400')
 Stage II (Surface 5,800')
- 5. <u>Injection Tubing</u> 7", 26 lb/ft, K-55, LT&C set in packer at approximately 10,300'.
- 6. <u>Injection Packer</u> 7" x $9\frac{5}{8}$ " set at approximately 10,300'. Final depth determined by Openhole Log.
- 7. Open Hole $8\frac{1}{2}$ " to 11,000'



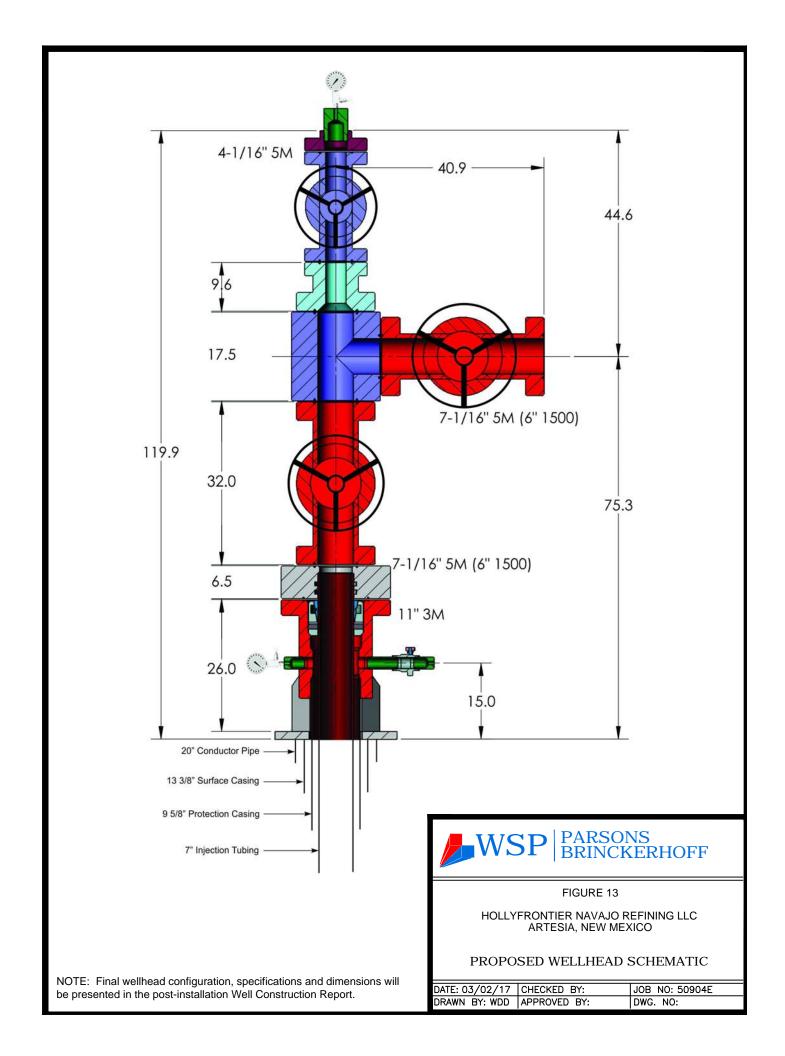
FIGURE 12

HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

PROPOSED BELOW GROUND WELL SCHEMATIC

NOTE: Final below ground well depths, configuration, specifications and volumes will be presented in the post-installation Well Construction Report.

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Base of USDW @ +/- 500 Top of Confining Zone ~9900' Top of Injection Zone ~10,400' Base of Injection Zone ~10,900' TD ~11,000'

BELOW GROUND DETAILS

(feet below Ground Level)

- Conductor Pipe 20", 129.33 lb/ft (0.625" wall), API 5LX-56, plain-end, beveled conductor set in 24" augered hole at 80' and cemented to the surface with 3 yd³ of redi-mix.
- Surface Casing 13³/₈", 54.5 lb/ft, K-55, ST&C, set at 1,500' in a 17½" hole and cemented to the surface with 1,092 ft³ of lightweight Class A lead cement followed by 206 ft³ of Class A tail cement.
- 3. Protection Casing $9\frac{5}{8}$ ", 47 lb/ft, N-80, LT&C set in a 12½" hole at 10,400' with a DV Tool at 5,800' and cemented to the surface in two stages as follows: Stage I (5,600' 10,400') Stage II (Surface 5,800')
- 4. Open Hole Silurian-Devonian Injection Interval 10,400' 11,000'.

Plugging and Abandonment

- A. Inscribed Steel Plate Cover All casings cut-off 3j' below the surface and a $\frac{1}{2}$ " steel plate inscribed with operator name, well API no. and P&A Date welded over the 13 $\frac{3}{8}$ " surface casing.
- B. <u>Cement Plug</u> Class A cement (1.18 ft³/ sack) spotted in balanced plugs from 9,950' 3'.
- C. <u>Cement Plug Above Retainer</u> 100-foot Class A (1.18 ft³/ sack) cement plug spotted above cement retainer 9,950' 10,050'.
- D. Cement Retainer set in $9\frac{5}{8}$ " casing at 10,250'.
- E. <u>Cement Plug Below Retainer</u> 250 sacks of Class A (1.18 ft³/ sack) cement pumped below cement retainer from 10,250' - 10,400' and across open-hole from 10,400' - 11,000'.



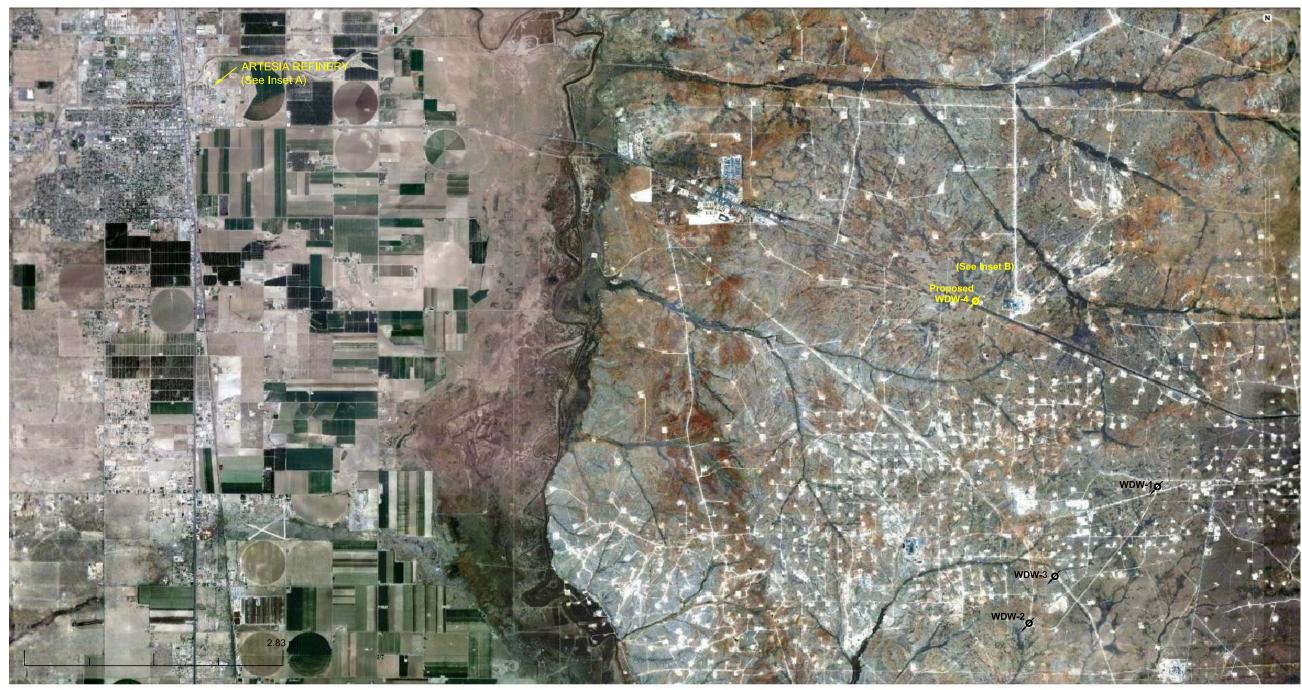
FIGURE 14

HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

PROPOSED PLUG AND ABANDONED WELL SCHEMATIC

DATE: 03/02/17 CHECKED BY: JOB NO: 50904E
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NOTE: Final below ground well depths, configuration, specifications and volumes will be presented in the post-installation Well Construction Report.



INSET A



INSET B





DRAWING 1

HOLLYFRONTIER NAVAJO REFINING LLC ARTESIA, NEW MEXICO

FACILITY MAP

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