RECEIVED:	REVIEWER:	TYPE:	APP NO:	227	32802
- 1	NEW MEXICO O	ABOVE THIS TABLE FOR OCCIDENTS ION IN IL CONSERVATION & Engineering Bu Is Drive, Santa Fe	DN DIVISION reau –		
	ADMINISTRATI\	E APPLICATION	CHECKLIST		
THIS CHECKLI	ST IS MANDATORY FOR ALL ADM REGULATIONS WHICH REQUIRE			DIVISION RULI	ES AND ,
Applicant: <u>Percussi</u>		iting LLC			r: <u>371755</u>
Well Name: <u>Comet 22</u> Pool: <u>Crow</u> Flats; Wolf					<u>8/30-015-35832</u>
SUBMIT ACCURATE AI 1) TYPE OF APPLICATION	ND COMPLETE INFORM	h apply for [A] ous Dedication	TO PROCESS TH	C7:	F APPLICATION
DHC [II] Injection— WFX 2) NOTIFICATION REQUAL. A. Offset opera B. Royalty, ove C. Application D. Notification E. Notification F. Surface own	ng – Storage – Measu CTB PLC Disposal – Pressure In PMX SWD JIRED TO: Check those ators or lease holders erriding royalty owners requires published no and/or concurrent a and/or concurrent	PC OLS crease - Enhance IPI EOR which apply. s, revenue owners ofice pproval by SLO pproval by BLM	□PPR	Noti App Cor Cor	DR OCD ONLY ice Complete blication ntent mplete or,
administrative approunderstand that no	reby certify that the in oval is accurate and action will be taken a mitted to the Division	complete to the b on this application	est of my know	ledge. I d	also
Note: State	ement must be completed by	an individual with mand	gerial and/or superv	isory capac	ity.
Brian W	lood		8/17 /	18	
Print or Type Name	Z		(505) 466 Phone Number brian@p		West. Com
Signature		e	-mail Address		

Puran1822732802

<u>District I</u>
1625 N. French Drive, Hobbs, NM 88240
<u>District II</u>
811 S. First St., Artesia, NM 88210
<u>District III</u>
1000 Rio Brazos Road, Aztec, NM 87410
<u>District IV</u>
1220 S. St Francis Dr. Santa Fe, NM 87505

E-MAIL ADDRESS:

brian@permitswest.com

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-107-B Revised August 1, 2011

OIL CONSERVATION DIVISION

1220 S. St Francis Drive Santa Fe, New Mexico 87505 Submit the original application to the Santa Fe office with one copy to the appropriate District Office.

APPLICATIO	N FOR SURFACE	COMMINGLING	G (DIVERSE	OWNERSHIP)	
OPERATOR NAME: PER	CUSSION PETROLEUM	OPERATING, LLC			
OPERATOR ADDRESS: 919	MILAM STREET SUITE	2475 HOUSTON, TX	77002		
APPLICATION TYPE:					
☐ Pool Commingling ☐ Lease Comm	ingling Pool and Lease Co	mmingling Doff-Lease	Storage and Measur	rement (Only if not Surfac	e Commingled)
LEASE TYPE: Fee	☐ State ☐ Fede				
Is this an Amendment to existing C Have the Bureau of Land Managen ☐ Yes ☐ No					ingling
		OL COMMINGLIN ts with the following in			
(1) Pool Names and Codes	Gravities / BTU of Non-Commingled Production	Calculated Gravities / BTU of Commingled Production		Calculated Value of Commingled Production	Volumes
		4		-	
		_			
(2) Are any wells producing at top al (3) Has all interest owners been notif (4) Measurement type: Metering (5) Will commingling decrease the vi	ied by certified mail of the program of the production? ☐ Yes	□No If "yes", descri		ing should be approved	
		SE COMMINGLINGS with the following in			
(1) Pool Name and Code. Crow Fla (2) Is all production from same sourc (3) Has all interest owners been notified (4) Measurement type: Metering	ts: Wolfcamp e of supply? ⊠Yes □N	lo .	⊠Yes □N	o	
		LEASE COMMIN			
(1) Complete Sections A and E.	Please attach sheet	s with the following in	ntormation		
(1) Complete Sections A and E.					
	(D) OFF-LEASE ST Please attached she	ORAGE and MEA ets with the following			
(1) Is all production from same source (2) Include proof of notice to all inter					
(E)	ADDITIONAL INFO	PRMATION (for all s with the following in		/pes)	
 A schematic diagram of facility, i A plat with lease boundaries show Lease Names, Lease and Well Nu 	ncluding legal location. ring all well and facility locati			ate lands are involved.	
I hereby certify that the information about SIGNATURE:		best of my knowledge an	d belief.	DATE: Au	gust 13, 2018
	Wood		TELE	PHONE NO.: (505) 46	

Form 3160-5 (June 2015)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED OMB No. 1004-0137 Expires: January 31, 2018

	Expires, January	31, 2018
ease Serial ?	^{Ño.} NMNM95630	

Do not use this t	IOTICES AND REPO form for proposals (Use Form 3160-3 (A	to drill or to re-	enter an		6. If Indian, Allottee or	Tribe	Name
SUBMIT IN	TRIPLICATE - Other instr	uctions on page 2			7. If Unit of CA/Agree	ment,	Name and/or No.
1. Type of Well					NMNM121789		
✓ Oil Well Gas V	Vell Other				8. Well Name and No.	СОМ	ET 22 FEDERAL #1
2. Name of Operator PERCUSSION F	PETROLEUM OPERATIN	G LLC			9. API Well No. 30-015	5-358	32
3a. Address 919 MILAM STREET S HOUSTON TX 77002	UITE 2475	3b. Phone No. (incli (713) 518-1331	ude area code)		Field and Pool or E CROW FLATS: WO	•	•
4. Location of Well (Fnotage, Sec., T.R 660 FSL & 330 FWL, SECTION 22	•	,			11. Country or Parish, S EDDY COUNTY, N		
12. CHE	CK THE APPROPRIATE B	OX(ES) TO INDICA	TE NATURE C	F NOTI	CE, REPORT OR OTH	ER D	ATA
TYPE OF SUBMISSION			TYPE	OF ACT	TION		
Notice of Intent	Acidize Alter Casing	Deepen Hydraulic	Fracturing	_	uction (Start/Resume) unation		Water Shut-OfF Well Integrity
Subsequent Report	Casing Repair	New Cons		_	mplete	V	Other
C C Abandana Nation	Change Plans	Plug and A	=	= `	orarily Abandon		
Final Abandonment Notice 13. Describe Proposed or Completed O	Convert to Injection				r Disposal	l. a1	annovimet, duration there et al.
	Petroleum Operating LLG	C would like to requ					
Cory Walk	irue and correct. Name (Fri	Title	Natural Reso	ource Sp	pecialist		
Signature Cory Wall	<u>K</u>	Date	8/3	/18			
J	THE SPACE	FOR FEDERA	L OR STA	TE OF	ICE USE		
Approved by			Title		D	ate	
Conditions of approval, if any, are attach certify that the applicant holds legal or e which would entitle the applicant to com-	quitable title to those rights		Office		· · · · · · · · · · · · · · · · · · ·		
Title 18 U.S.C Section 1001 and Title 43	U.S.C Section 1212, make	it a crime for any per	son knowingly	and will	fully to make to any dep	artme	ent or agency of the United States

PROCESS DESCRIPTION AND ALLOCATION METHODOLOGY

The production from the Comet 22 Federal 1 well CA121789 NM95630 flows along with the production from the Comet 22 Federal 2 well CA121410 NM95630 to the tank battery facility located on the Comet 22 Federal 2 lease NW/SW, Sec 22, T16S, R28E. These wells and leases have common Federal mineral ownership.

The production from each of these two wells will be processed through the on-lease Comet 22 Federal 2 tank battery facility through individual well separation equipment consisting of a dedicated 2-phase separator and horizontal free-water knockout dedicated to each well that are each equipped with gas, oil, and water meters. There is separate oil and water storage for all commingled, produced liquids which will be proratedly allocated to each individual well based on well test rates.

GAS

Each of the wells initially produce to a dedicated 2-phase separator equipped with an individual electronic gas flow meter that will be designated as the gas sales point and Facility Measurement PoInt for each well. Each individual gas meter will be calibrated and maintained within the current 43 CFR 3175 regulations. Gas samples will be obtained on a regular basis as per the current 43 CFR 3175 regulations. After measurement, the gas will be commingled and will depart the location through a common transportation line.

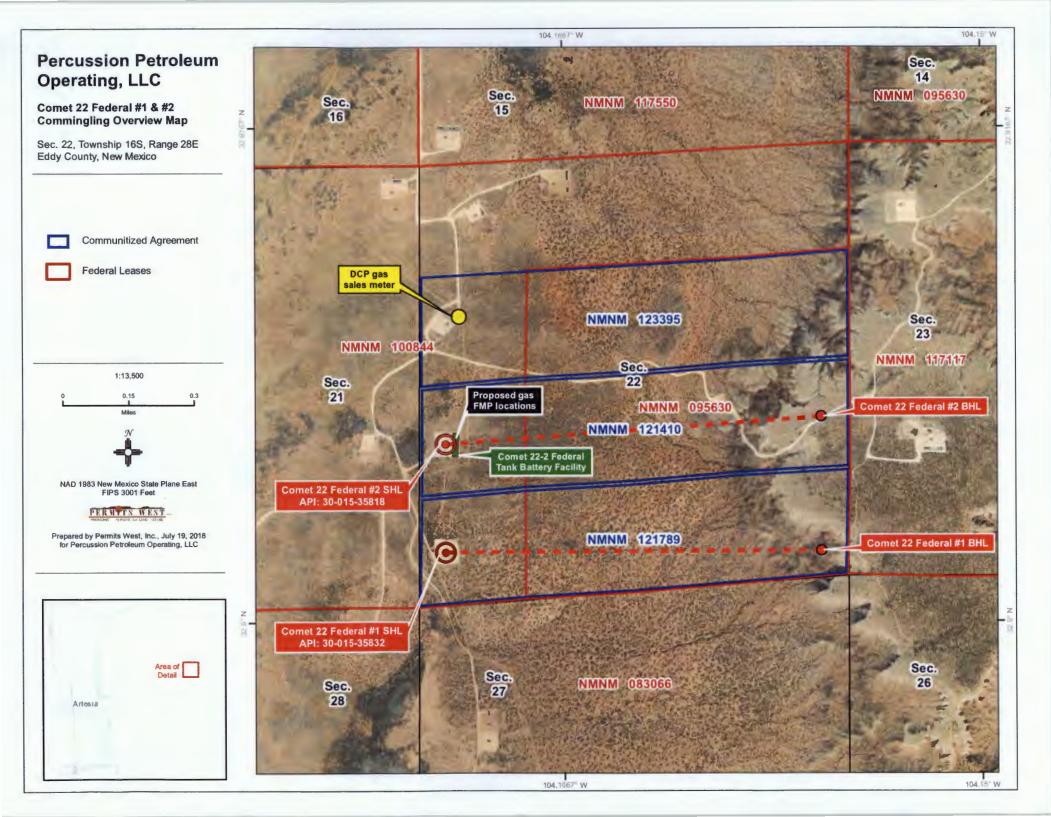
COMMINGLED LIQUIDS

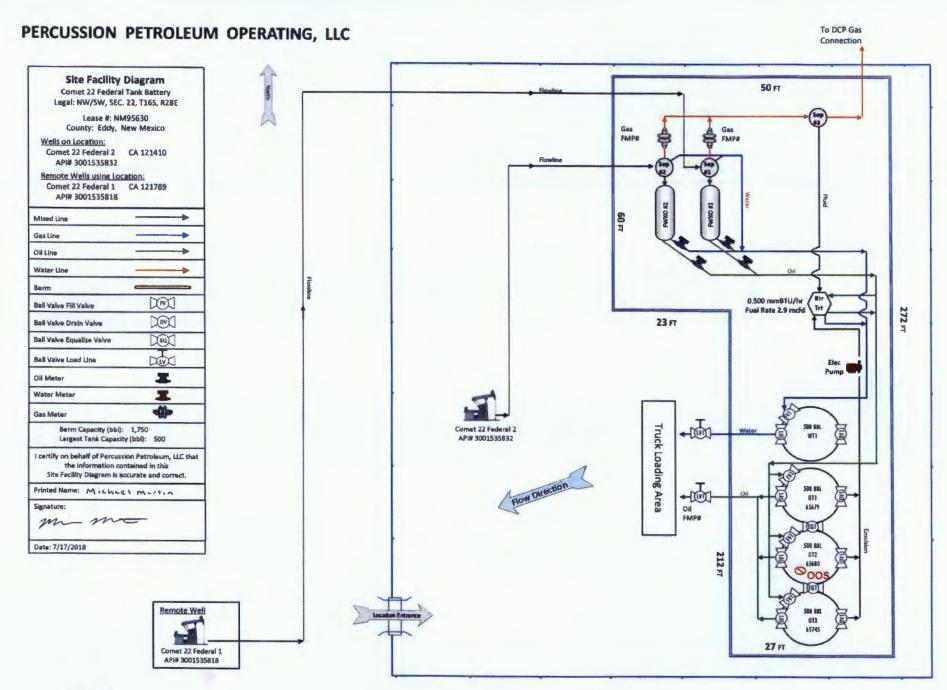
Each of the wells initially produce to a dedicated 2-phase separator where the liquids are then directed to an individually dedicated, horizontal free-water knockout equipped with oil and water metering after separation. All separated liquids are collected on location and stored in sealed tanks. After separation and metering, the produced water is stored in a separate produced water tank and is then transported via truck to a permitted saltwater disposal facility for injection. The total produced water will be allocated back to each producing well on a prorated basis using each individual well's water well test rate.

After separation and metering, the produced oil from each well is then commingled and is directed to a heater treater to obtain a saleable oil product that is then stored in common oil stock tanks. The commingled oil will then be sold from the sealed and strapped oil storage tanks via truck. The common oil load line will be the Facility Measurement Point (FMP) for the commingled oil. The oil sold through the Oil FMP will be allocated back to each producing well on a prorated basis using each individual well's oil well test rate.

FUEL GAS

Offlease, Royalty-Free Beneficial Lease Use for the minimal fuel gas required to operate the oil heater treater (2.9 mcfd) to obtain a saleable oil product is herein requested. The fuel gas usage is estimated based on the engineering formulas provided on Pg 2 of the Site Facility Diagram for the Comet 22 Federal Facility. The source of the fuel gas is the vented gas vapors from the oil production that is too small to measure. The amount of Lease Use for each individual well will be allocated back to each producing well on a prorated basis using each individual well's oil well test rate.





PERCUSSION PETROLEUM OPERATING, LLC

Site Facility Diagram
Comet 22 Federal Tank Battery
Legal: NW/SW, SEC. 22, T165, R28E
Lease #: NM95630
County: Eddy, New Mexico
Wells on Location:
Comet 22 Federal 2
Remote Wells using Location:
Comet 22 Federal 1
Conte

Estimated Fuel Gas Consumption Calculations

Sales Gas BTU Rating: (5) 1,356 mmbtu / cf

	"Annual	Process	Efficiency	Equipment	Fuel
	Cage	Efficiency	Utilization	Fuel Rating	Usage
Equipment	Factor	Factor	Factor	mmBTU / Hr	MCFD
FIRETUBES / HEATERS:	Θ	①	0	0	
Heater Treater Firetube	0.33	0.65	09:0	0.500	2.9

"Annual Usage Factor = Seasonal Usage During 4 Winter Months per Year

***Gas BTU Analysis as of 2/28/2018

Usage Factor - Actual in-field equipment usage per year
Process Efficiency Factor - Inherent energy losses associated with fuel consumption
Efficiency Utilization Factor - Daily Utilization of the equipment in the field
Name Plate Fuel Rating - Manufacturer's equipment rating for heat conveyance

3 – EGBALIZE VALVE

4 -- DRAIN VALVE

Firstube Usage:

1000 ft³ / mcf	
×	
24 hrs / Day	
`	
Equipment Name Plate Fuel Rating (mmBTU)	Gas BTil Contant (mmBTil / ft8
×	L
Efficiency Utilization Factor	7
×	
Process Efficiency Factor	
×	
Annual Usage Factor	

Gas BTU Content (mmBTU / ft³

× 12 / (1) × (1) × (1) × (1)

61

©

PRODUCTION PRASE TANK OPERATION VALVE POSITIONS	OPERATION VAL	/E POSITION	S						
TANK #	10	DT1 - 65680		012	OT2 - 65679		013	OT3 · 65745	
TANK SIZE - Bbh	0 000s	999			909			586	
LOCATION	SEAL INSTALLED	OPEN	CLOSE	SEAL INSTALLED	OPEN	35013	SEAL INSTALLED	NJ40	C1.05£
J — HIT AVIAE	×		×		×			×	
2 – SALES VALVE	×		×	×		X	×		X
3 – EQUALIZE VALVE	×		1	×		×	×		×
4 – DRAÍN VALVE	×		×	×		1	×		×
SALES PHASE TANK OPERATION VALVE POSITIONS	HON VALVE POS	SNOIL							
TANK #	Б	OT1 - 65 68 0		110	012 - 65679		CT0	OT3 - 65745	
TANK SIZE - Bbis	000S	88			284			200	
LOCATION	SEAL INSTALLED	OPEN	CLOSE	SEAL INSTALLED	N340	CLOSE	SEAL INSTALLED	N340	CLOSE
I FILL YALVE	ĸ		×	×		X	X		×
2 - SALES VALVE	x		x		X			×	
3 EQUALIZE VALVE	×		r	×		×	х		×
4 — DRAIH VALVE	X		×	×		*	×		×
DRAIN PHASE TAME OPERATION VALVE POSITIONS	ATION VALVE PO	SITIONS							
TANK #	•	O11 - 65680		012	012 - 65679		£10	013 - 65745	
TANK SIZE - Bbls	Ø	985			909			995	
LOCATION	SEAL INSTALLED	NEW	Z103E	SEAL HISTALLEB	ОРЕИ	350T)	SEAL INSTALLED	OPEN	CLOSE
1 - ALL VALVE	×		×	×		×	×		*
2 - SALES VALVE	×		×	×		X	×		×

DISTRICT I 1625 N. French Dr., Robbs, NM 86240

DISTRICT III

330

3600

DISTRICT II 1301 W. Grand Avenue, Artesia, NM 58210

1000 Rio Brazos Rd., Aztec, NM 87410 DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-102 Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies Fee Lease - 3 Copies

OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

☐ AMENDED REPORT

			WELL LO	CATION	AND ACREA	GE DEDICATI	ON PLAT		
API	Number			Pool Code	AND ACTUBE		Pool Name		 -
			<u> </u>	9710		mw Fla	ts Wolfe		
Property (Code Z <i>G</i>	1		001	Property Nam		•	Well No	ımber
OGRED No		ļ			MET "22" FE			Eleva	Hon
220127		1		C.O.	G. OPERATIN			360	
<u> </u>					Surface Loc				
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	22	16 S	28 E		1980	SOUTH	330	WEST	EDDY
			Bottom	Hole Loc	cation If Diffe	rent From Sur	face	<u> </u>	
UL or lot No. Section Township Range Lot Idn Feet from the North/South line Feet from the East/West line County									
1	22	16 S	28 E		1980	SOUTH	330	EAST	EDDY
Dedicated Acres	Joint o	r Infill Co	nsolidation	Code Ore	der No.				
160	1	l							
NO ALLO	WABLE W					NTIL ALL INTER APPROVED BY		EEN CONSOLIDA	ATED
		OR A	NON-STAIN	DAKU UN	II DAS BEEN	APPROVED B1	THE DIVISION		
	+-	· — — —					I hereby concentrated hereing the best of my this organization tniers or united land including location pursues	OR CERTIFICAT Trify that the inform in is true and complete knowledge and belief n either owns a word ared mineral interest the proposed bottom in it to a contract with a mineral or working proposing agreement ing order hereiofore	tation lete to , and that sing in the note an
	1	SURFACE L LAT-N32*5 LONG-W10 (NAD-	4'21.6" 4"10'16.9"	LAT-N32 LONG-W	OLE LOCATION "54'24.9" 104'09'23.1"		Signature OwwiN5 ** Printed Nam	•	For OG

SURVEYOR CERTIFICATION I hereby certify that the well location shown

4599.6

on this plat was plotted from field notes of actual surveys made by me or under my supervison and that the same is true and correct to the best of my belief.

330'

1980,

2007 Signaty 7977

Certificate No. Gary L. Jones

BASIN SURVEYS

DISTRICT I 1625 N. French Dr., Hobbe, NM 86240 DISTRICT II 1801 W. Grand Avenue, Artenie, NM 88210

DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 67410 DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 57505

State of New Mexico Energy, Minerals and Natural Resources Department Form C-102 Revised October 12, 2005

Submit to Appropriate District Office

State Lease — 4 Copies Fee Lease — 3 Copies

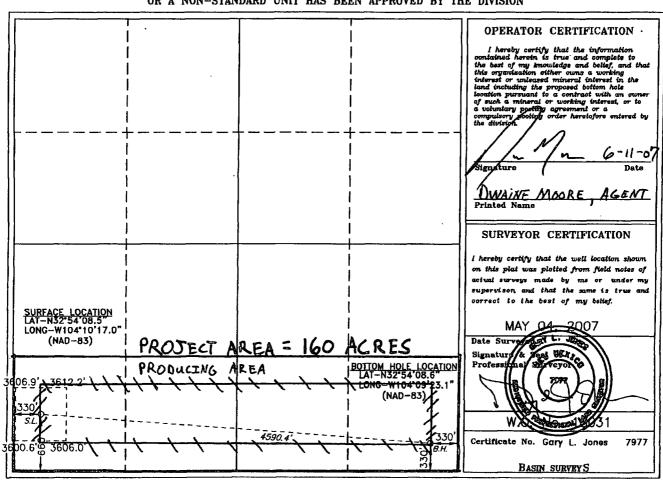
OIL CONSERVATION DIVISION

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

			METE PO	CALION	AND ACION	IGE DEDICALI	OH PLAI		
API	Number			Pool Code		- ,	Pool Name		
			9	17107		row Flat	s: Wolf	Camp	
Property	Code	1			Property Nan	ue		Well No	umber
31.1.3		1		CO	MET "22" FE	EDERAL		1	
ogrib n					Operator Nam	16		Eleva	llon
229/37	7			C.O.	G. OPERATIN	G L.L.C.		360	8'
					Surface Loc	ation			<u>-</u> -
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
М	22	16 S	28 E		660	SOUTH	330	WEST	EDDY
			Bottom	Hole Loc	ation If Diffe	erent From Sur	face	•	
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	22	16 S	28 E		330	SOUTH	330	EAST	EDDY
Dedicated Aores	Joint o	r Infill	Consolidation (Code Ord	ler No.				
160									
NO ALLO	WABLE W					INTIL ALL INTER		EN CONSOLIDA	ATED
	-	OR A	NON-STAN	DARD UN	IT HAS BEEN	APPROVED BY T	THE DIVISION		
				r			–		



Production Summary Report API: 30-015-35832 COMET 22 FEDERAL #001

Year	Pool	Oil(BBLS)	Gas(MCF)	Water(BBLS)	Days P/I
1/1/2018	[97102] CROW FLATS; WOLFCAMP	100	1528	36	24
2/1/2018	[97102] CROW FLATS; WOLFCAMP	0	462	0	2
3/1/2018	[97102] CROW FLATS; WOLFCAMP	0	0	0	0
4/1/2018	[97102] CROW FLATS; WOLFCAMP	215	5032	334	26
5/1/2018	[97102] CROW FLATS; WOLFCAMP	137	3975	155	24
6/1/2018	[97102] CROW FLATS; WOLFCAMP	93	3239	128	19
Cum		107196	666578		

Production Summary Report
API: 30-015-35818
COMET 22 FEDERAL #002

Year	Pool	Oil(BBLS)	Gas(MCF)	Water(BBLS)	Days P/I
1/1/2018	[97102] CROW FLATS; WOLFCAMP	326	1341	109	25
2/1/2018	[97102] CROW FLATS; WOLFCAMP	10	2250	96	28
3/1/2018	[97102] CROW FLATS; WOLFCAMP	137	0	84	26
4/1/2018	[97102] CROW FLATS; WOLFCAMP	159	3873	313	28
5/1/2018	[97102] CROW FLATS; WOLFCAMP	124	2750	114	24
6/1/2018	[97102] CROW FLATS; WOLFCAMP	195	4148	192	30
Cum		98162	445507		



August 03, 2018

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Interest Owners

Re: Request for commingling and off-lease measurement and storage

Comet 22 Federal #1 & Comet 22 Federal #2

Sec. 22, T16S, R28E

API: 30-015-35832 & 30-015-35818

Crow Flats: Wolfcamp Eddy County, NM

Dear Interest Owner:

This letter is to advise you that Percussion Petroleum Operating, LLC, is filing an application with the New Mexico Oil Conservation Division seeking approval for off-lease measurement and storage of oil and gas at the Comet 22 Federal 2 facility from the above mentioned wells. In addition, Percussion Petroleum Operating, LLC, is seeking approval for oil commingling at the Comet 22 Federal 2 facility.

A copy of our submitted application is attached.

Any objections or requests that a hearing should be held regarding this application must be submitted to the New Mexico Oil Conservation Division Santa Fe office within 20 days from the date of this letter.

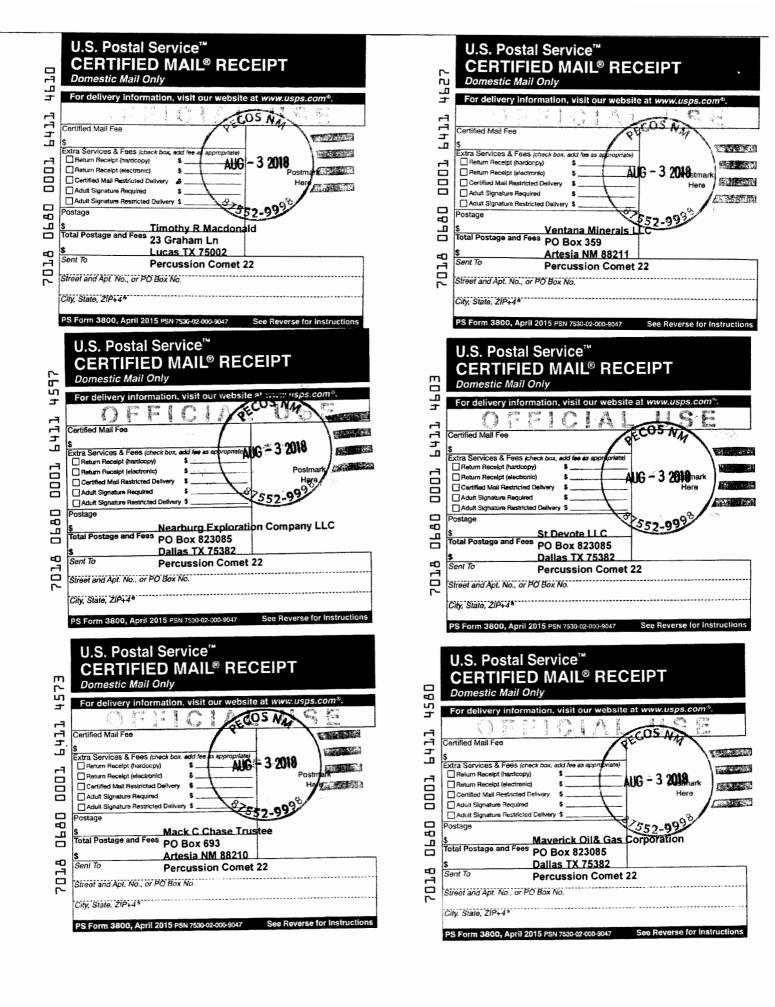
Please contact the undersigned at (505) 466-8120 should you have any questions or need any additional information.

Sincerely,

Brian Wood President

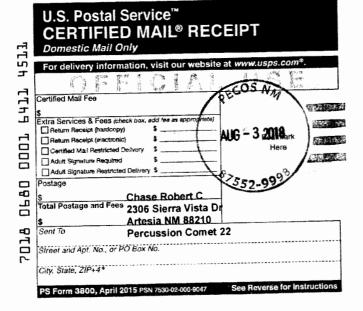
Permits West Inc.

Billad

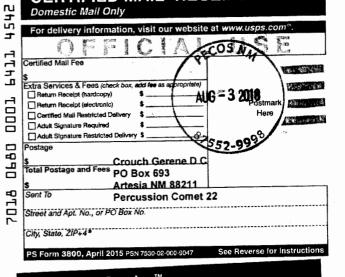






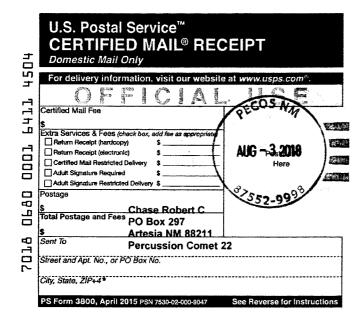












U.S. Postal Service™ **CERTIFIED MAIL® RECEIPT** 4481 Domestic Mail Only For delivery information, visit our website at www.usps.com® (7) 6411 Certified Mail Fee Extra Services & Fees (check box, add fee as Service Services Return Receipt (hardcopy) AUG 3 2018 000 Return Receipt (electronic) Certified Mail Restricted Delivery Adult Signature Required Adult Signature Restricted Delivery \$ 0640 Total Postage and Fees PO Box 1767 Chase Oil Corp Artesia NM 88211 40 **Percussion Comet 22** Street and Apt. No., or PO Box No. City, State, ZIP+4* PS Form 3800, April 2015 PSN 7530-02-000-9047

OIL, WATER, and LEASE USE PRODUCTION VOLUME ALLOCATION - EXAMPLE

COMMINGLED LIQUID PRODUCTION

	OIL Water	
	Production	Production
	(BPD)	(BPD)
TOTAL	20	300

			Oil		Water	
			Oil	Allocated	Water	Allocated
	Oil	Water	Volume	Oil	Volume	Water
	Well Test	Well Test	Allocation	Volume	Allocation	Volume
Well	(Bbls)	(Bbls)	Factor	(Bbls)	Factor	(Bbis)
Comet 22 Federal #1	10.0	140.0	0.455	9.09	0.43750	131.25
Comet 22 Federal #2	12.0	180.0	0.545	10.91	0.56250	168.75
	22.0	320.0	1.000	20.00	1.00000	300.00

Commingled Liquid Production Volume Allocations will be performed on a prorated basis using Oil and Water well test rates

$$Commingled\ Oil\ Volume\ Allocation\ = \left(\frac{Individual\ Well\ Oil\ Test\ Rates}{\sum All\ Well\ Oil\ Test\ Rates}\right)\ x\ \ Total\ Commingled\ Oil\ Production\ Volume$$

$$Commingled \ \textit{Water Volume Allocation} = \left(\frac{\textit{Individual Well Water Test Rate}}{\sum \textit{All Well Water Test Rates}}\right) \ \textit{x} \ \textit{Total Commingled Water Production Volume}$$

REQUEST FOR OFF-LEASE BENEFICIAL USE OF FUEL GAS

Inventory of Common, Off-Lease Equipment Handling Commingled Oil Production

Estimated Fuel Consumption

Heater Treater 0.500 mmBTU Firetube Rating

2.9 Mcfd

3.93 mmBTU/D

OFF-LEASE BENEFICIAL USE EXAMPLE ALLOCATION

		Fuel Volume		Fuel Quality	
Well	Oil Well Test (Bbls)	Oil Volume Allocation Factor	Allocated Lease Use Volume MCFD	Well Gas Sales BTU Factor	Allocated Lease Use mmBTU/D
Comet 22 Federal #1	10.0	0.455	1.32	1.35600	1.79
Comet 22 Federal #2	12.0	0.545	1.58	1.35600	2.14
	22.0	1.000	2.90		3.93

Beneficial Use Fuel Volume Allocations will be performed on a prorated basis using the Oil Well Test. Rate of each well

$$Beneficial\ Use\ Fuel\ Volume\ Allocation\ = \left(\frac{Individual\ Well\ Oil\ Test\ Rate}{\sum All\ Well\ Oil\ Test\ Rates}\right)\ x\ \sum \Box All\ Common\ Equipment\ Fuel\ Usage\ Volume$$

Beneficial Use Fuel Quality Allocations will be performed using a common Heating Value BTU Factor obtained at the POM sales meter distributed volumetrically to each well.

Heating Value Allocation = Individual Well BTU Factor X Beneficial Use Fuel Volume Allocation for Each Well

Allocations will be adjusted according to BTU value and based on the BTU determination frequency as required by 43 CFR 3175

Waiver is Requested for minimal amount of royalty- free, Off-Lease Benficial Use of Fuel Gas for common equipment, fuel consumption handling commingled liquids