

DATE IN 1/13/2014	SUSPENSE	ENGINEER PRG	LOGGED IN 1/17/2014	TYPE SWD	APP NO. PMAM1401747239
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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]**

**[1] TYPE OF APPLICATION - Check Those Which Apply for [A]**

[A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

**[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply**

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[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.**

**[4] 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.

David Stewart  
Print or Type Name

[Signature]  
Signature

SR. Regulatory Advisor 1/19/14  
Title Date


david\_stewart@oxy.com  
e-mail Address

OXY USA Inc.  
Copperhead 13 State SWD #1

SWD  
Oxy  
Copperhead  
State SWD #1  
30-025-Pending

RECEIVED  
JAN 20 2014  
NEW MEXICO  
OIL CONSERVATION DIVISION

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage  
Application qualifies for administrative approval? X Yes No
- II. OPERATOR: OXY USA Inc Copperhead 18 State SWD #1  
ADDRESS: P.O. Box 50250 Midland, TX 79710  
CONTACT PARTY: David Stewart PHONE: 432-685-5717
- 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. Attached
- 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. Attached
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected; Avg-3500BWPD – Max-4000BWPD
  2. Whether the system is open or closed; Closed
  3. Proposed average and maximum injection pressure; Avg-1000psi – Max-1011 psi
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, Bone Spring from OXY operated leases, see attached.
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.). Attached
- \*VIII. 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. Attached
- IX. Describe the proposed stimulation program, if any. To Be Determined
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).  
Logs to be filed after well has been drilled and completed.
- \*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. Attached
- 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. Attached
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form. Attached
- 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: David Stewart TITLE: Sr. Regulatory Advisor  
SIGNATURE:  DATE: 1/2/14  
E-MAIL ADDRESS: david\_stewart@oxy.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.

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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

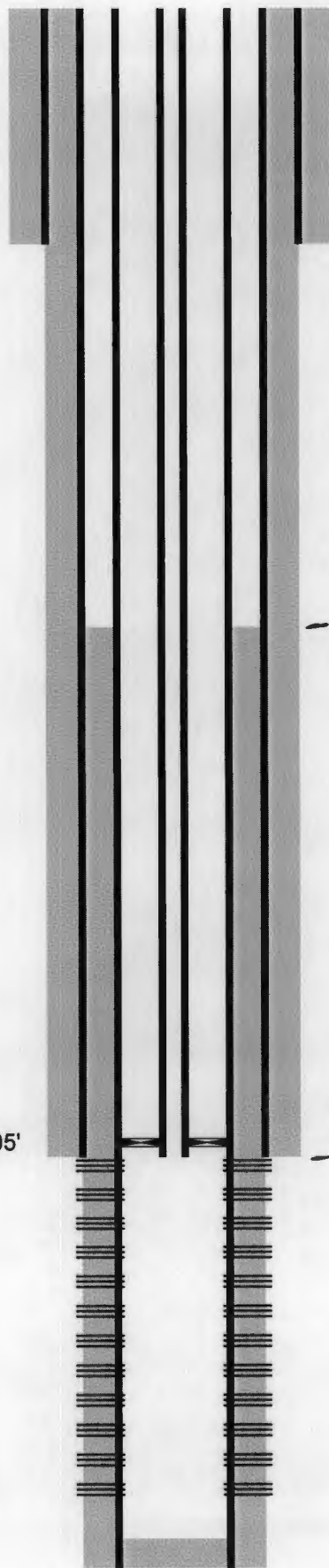
OPERATOR: OXY USA IncWELL NAME & NUMBER: Copperhead 18 State SWD #1

WELL LOCATION: 2310 FNL 2310 FEL G 18 24S 33E  
 FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

**WELLBORE SCHEMATIC****PROPOSED WELL CONSTRUCTION DATA**Surface CasingHole Size: 17-1/2" Casing Size: 13-3/8" @ 1200'Cemented with: 1165 sx. **or** 1879 ft<sup>3</sup>Top of Cement: Surface Method Determined: To Be CircIntermediate CasingHole Size: 12-1/4" Casing Size: 9-5/8" @ 5050'Cemented with: 1870 sx. **or** 3220 ft<sup>3</sup>Top of Cement: Surface Method Determined: To Be CircProduction CasingHole Size: 8-3/4" Casing Size: 7" @ 6759'Cemented with: 420 sx. **or** 741 ft<sup>3</sup>Top of Cement: 4000' Method Determined: CBLTotal Depth: 6759'Injection Interval5055 feet to 6600 feet

(Perforated or Open Hole; indicate which)

OXY USA Inc. - Proposed  
Copperhead 18 State SWD #1  
API No. 30-025-



17-1/2" hole @ 1200'  
13-3/8" csg @ 1200'  
w/ 1165sx-TOC-Surf-Circ

3-1/2" 7.7# Duo-Line tbg w/ AS-1X pkr @ 5005'

12-1/4" hole @ 5050'  
9-5/8" csg @ 5050'  
w/ 1870sx-TOC-Surf-Circ

Perfs @ 5055-6600'

8-3/4" hole @ 6759'  
7" csg @ 6759'  
w/ 420sx-TOC-4000'

TD-6759'

## INJECTION WELL DATA SHEET

Tubing Size: 3-1/2" 7.7# J55 Lining Material: Composite Lining

Type of Packer: Nickel Plated Arrow Set

Packer Setting Depth: 5005'

Other Type of Tubing/Casing Seal (if applicable): N/A

### Additional Data

1. Is this a new well drilled for injection?   X   Yes        No

If no, for what purpose was the well originally drilled? \_\_\_\_\_

\_\_\_\_\_

2. Name of the Injection Formation: Delaware – Bell/Cherry Canyon

3. Name of Field or Pool (if applicable): SWD Delaware

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

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5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Delaware/Bone Springs

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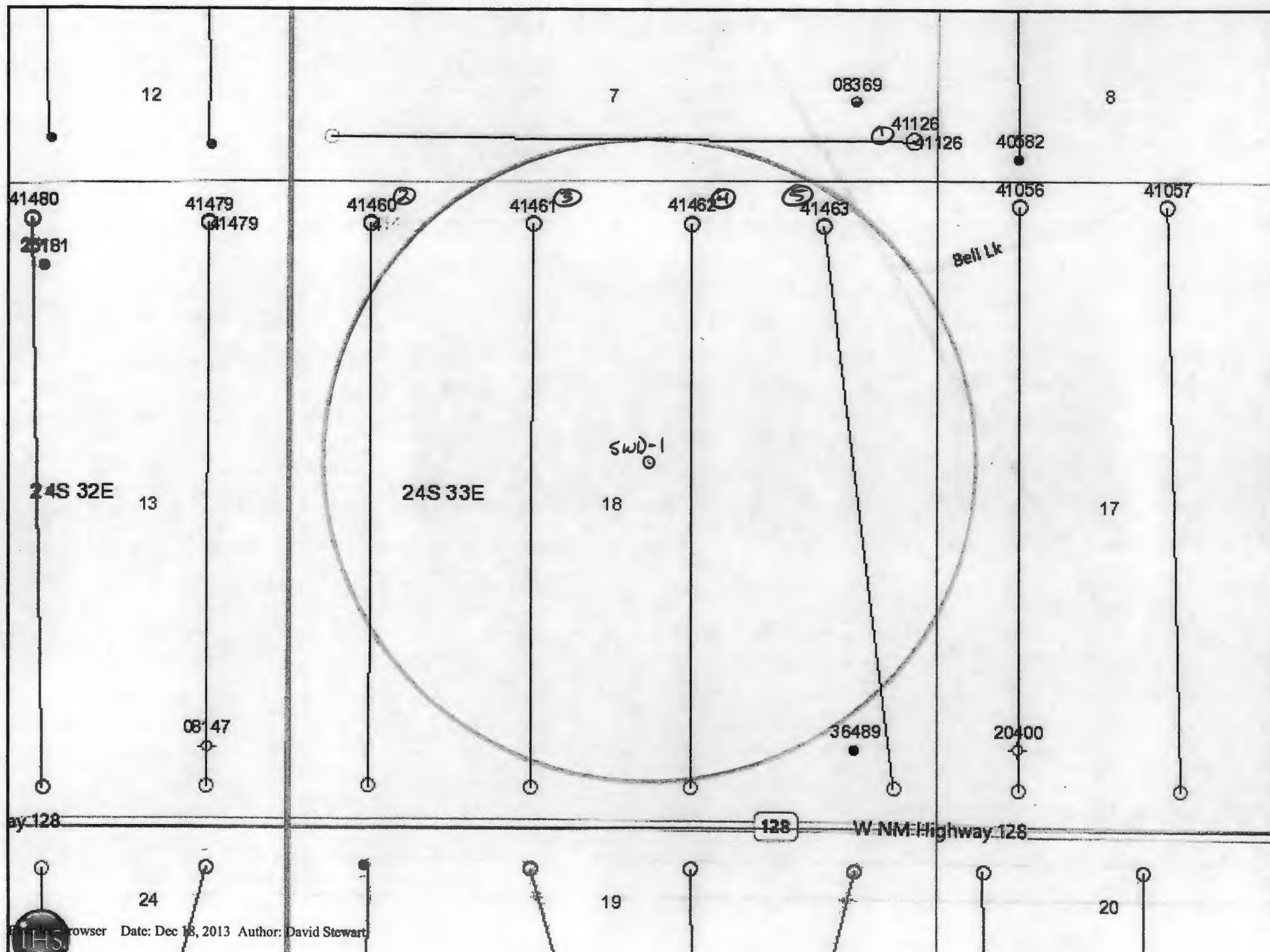
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C-108 - Item VI  
Copperhead 18 State SWD #1  
AREA OF REVIEW

[illegible]

# Copperhead 18 State SWD #1 - 1/2 mile AOR





This is a detailed geological map of the Permian Basin, Texas, showing oil and gas fields, well locations, and geological formations. The map includes labels for fields such as Chevron, Cimarex, LOG, Murchison, Yates, Devon, and MCI. It also shows W. NM Highway 128 and various well numbers and coordinates.

**Geological Formations and Fields:**

- Chevron:** Located in the upper left and lower right sections of the map.
- Cimarex:** Located in the upper middle and lower middle sections of the map.
- LOG:** Located in the upper middle and lower middle sections of the map.
- Murchison:** Located in the upper right and lower right sections of the map.
- Yates:** Located in the lower middle and lower right sections of the map.
- Devon:** Located in the lower middle section of the map.
- MCI:** Located in the lower left section of the map.

**Well Locations and Numbers:**

- Well numbers include: 27213, 08136, 08137, 28896, 40860, 40851, 40879, 40861, 40758, 40792, 40791, 40700, 40793, 40794, 40795, 40796, 40797, 40798, 40799, 40800, 40801, 40802, 40803, 40804, 40805, 40806, 40807, 40808, 40809, 40810, 40811, 40812, 40813, 40814, 40815, 40816, 40817, 40818, 40819, 40820, 40821, 40822, 40823, 40824, 40825, 40826, 40827, 40828, 40829, 40830, 40831, 40832, 40833, 40834, 40835, 40836, 40837, 40838, 40839, 40840, 40841, 40842, 40843, 40844, 40845, 40846, 40847, 40848, 40849, 40850, 40851, 40852, 40853, 40854, 40855, 40856, 40857, 40858, 40859, 40860, 40861, 40862, 40863, 40864, 40865, 40866, 40867, 40868, 40869, 40870, 40871, 40872, 40873, 40874, 40875, 40876, 40877, 40878, 40879, 40880, 40881, 40882, 40883, 40884, 40885, 40886, 40887, 40888, 40889, 40890, 40891, 40892, 40893, 40894, 40895, 40896, 40897, 40898, 40899, 40900, 40901, 40902, 40903, 40904, 40905, 40906, 40907, 40908, 40909, 40910, 40911, 40912, 40913, 40914, 40915, 40916, 40917, 40918, 40919, 40920, 40921, 40922, 40923, 40924, 40925, 40926, 40927, 40928, 40929, 40930, 40931, 40932, 40933, 40934, 40935, 40936, 40937, 40938, 40939, 40940, 40941, 40942, 40943, 40944, 40945, 40946, 40947, 40948, 40949, 40950, 40951, 40952, 40953, 40954, 40955, 40956, 40957, 40958, 40959, 40960, 40961, 40962, 40963, 40964, 40965, 40966, 40967, 40968, 40969, 40970, 40971, 40972, 40973, 40974, 40975, 40976, 40977, 40978, 40979, 40980, 40981, 40982, 40983, 40984, 40985, 40986, 40987, 40988, 40989, 40990, 40991, 40992, 40993, 40994, 40995, 40996, 40997, 40998, 40999, 41000, 41001, 41002, 41003, 41004, 41005, 41006, 41007, 41008, 41009, 41010, 41011, 41012, 41013, 41014, 41015, 41016, 41017, 41018, 41019, 41020, 41021, 41022, 41023, 41024, 41025, 41026, 41027, 41028, 41029, 41030, 41031, 41032, 41033, 41034, 41035, 41036, 41037, 41038, 41039, 41040, 41041, 41042, 41043, 41044, 41045, 41046, 41047, 41048, 41049, 41050, 41051, 41052, 41053, 41054, 41055, 41056, 41057, 41058, 41059, 41060, 41061, 41062, 41063, 41064, 41065, 41066, 41067, 41068, 41069, 41070, 41071, 41072, 41073, 41074, 41075, 41076, 41077, 41078, 41079, 41080, 41081, 41082, 41083, 41084, 41085, 41086, 41087, 41088, 41089, 41090, 41091, 41092, 41093, 41094, 41095, 41096, 41097, 41098, 41099, 41100, 41101, 41102, 41103, 41104, 41105, 41106, 41107, 41108, 41109, 41110, 41111, 41112, 41113, 41114, 41115, 41116, 41117, 41118, 41119, 41120, 41121, 41122, 41123, 41124, 41125, 41126, 41127, 41128, 41129, 41130, 41131, 41132, 41133, 41134, 41135, 41136, 41137, 41138, 41139, 41140, 41141, 41142, 41143, 41144, 41145, 41146, 41147, 41148, 41149, 41150, 41151, 41152, 41153, 41154, 41155, 41156, 41157, 41158, 41159, 41160, 41161, 41162, 41163, 41164, 41165, 41166, 41167, 41168, 41169, 41170, 41171, 41172, 41173, 41174, 41175, 41176, 41177, 41178, 41179, 41180, 41181, 41182, 41183, 41184, 41185, 41186, 41187, 41188, 41189, 41190, 41191, 41192, 41193, 41194, 41195, 41196, 41197, 41198, 41199, 41200, 41201, 41202, 41203, 41204, 41205, 41206, 41207, 41208, 41209, 41210, 41211, 41212, 41213, 41214, 41215, 41216, 41217, 41218, 41219, 41220, 41221, 41222, 41223, 41224, 41225, 41226, 41227, 41228, 41229, 41230, 41231, 41232, 41233, 41234, 41235, 41236, 41237, 41238, 41239, 41240, 41241, 41242, 41243, 41244, 41245, 41246, 41247, 41248, 41249, 41250, 41251, 41252, 41253, 41254, 41255, 41256, 41257, 41258, 41259, 41260, 41261, 41262, 41263, 41264, 41265, 41266, 41267, 41268, 41269, 41270, 41271, 41272, 41273, 41274, 41275, 41276, 41277, 41278, 41279, 41280, 41281, 41282, 41283, 41284, 41285, 41286, 41287, 41288, 41289, 41290, 41291, 41292, 41293, 41294, 41295, 41296, 41297, 41298, 41299, 41300, 41301, 41302, 41303, 41304, 41305, 41306, 41307, 41308, 41309, 41310, 41311, 41312, 4131

VII. 4) Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; Second Bone Spring analysis

## MITCHELL ANALYTICAL LABORATORY

2638 Faudree  
Odessa, Texas 79765-8538  
561-5579

Company: **Nalco Company**

Well Number: Mogan Fee #1H	Sample Temp: 70
Lease: OXY	Date Sampled: 4/25/2013
Location:	Sampled by: Leo Sandmann
Date Run: 5/1/2013	Employee #: GR
Lab Ref #: 13-may-n69844	Analyzed by:

Resistivity = 0.0426 ohm meter @ 76°F

### Dissolved Gases

		Mg/L	Eq. Wt.	MEq/L
Hydrogen Sulfide (H2S)		.00	16.00	.00
Carbon Dioxide (CO2)	<b>NOT ANALYZED</b>			
Dissolved Oxygen (O2)	<b>NOT ANALYZED</b>			

### Cations

Calcium (Ca++)		1,294.44	20.10	64.40
Magnesium (Mg++)		1,820.24	12.20	149.20
Sodium (Na+)		80,389.50	23.00	3,495.20
Barium (Ba++)	<b>NOT ANALYZED</b>			
Manganese (Mn+)		3.34	27.50	.12
Strontium (Sr++)	<b>NOT ANALYZED</b>			

### Anions

Hydroxyl (OH-)		.00	17.00	.00
Carbonate (CO3=)		.00	30.00	.00
BiCarbonate (HCO3-)		12.22	61.10	.20
Sulfate (SO4=)		3,500.00	48.80	71.72
Chloride (Cl-)		129,141.90	35.50	3,637.80
Total Iron (Fe)		14.96	18.60	.80
Total Dissolved Solids		216,176.60		
Total Hardness as CaCO3		10,699.08		
Conductivity MICROMHOS/CM		235,000		

pH 6.300	Specific Gravity 60/60 F.	1.150
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CaSO4 Solubility @ 80 F. 103.18MEq/L, CaSO4 scale is unlikely

### CaCO3 Scale Index

70.0	-1.408	100.0	-.938	130.0	-.008
80.0	-1.288	110.0	-.588	140.0	-.008
90.0	-.938	120.0	-.588	150.0	.522

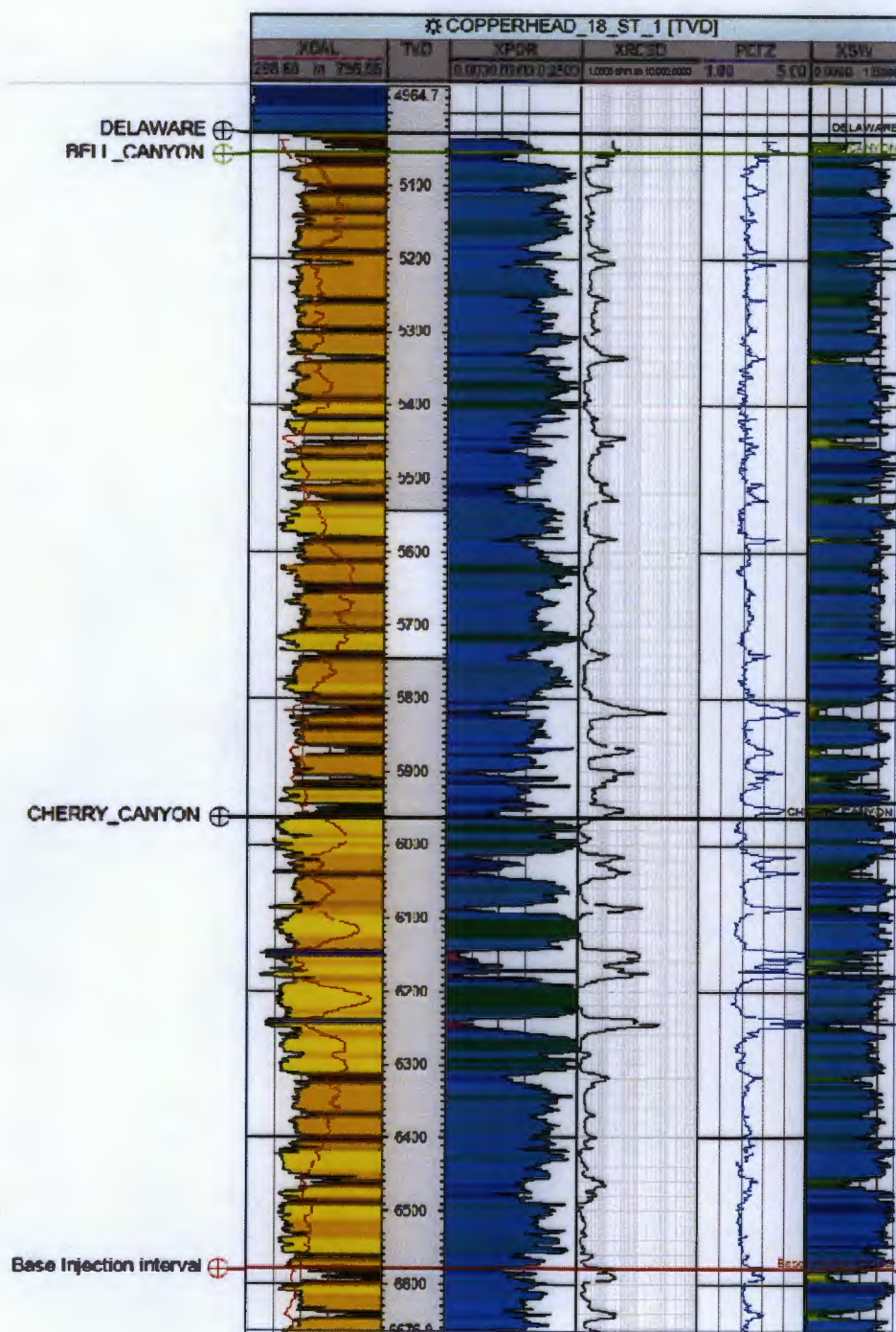
*Nalco Company*

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

General Information About: Sample 6747			
CORRAL DRAW AQH FEDERAL			
API	3001529396	Sample Number	
Unit/Section/ Township/Range	L / 13 / 24S / 29E	Field	LIVINGSTON RIDGE
County	Eddy	Formation	B SPG
State	NM	Depth	
Lat/Long	32.21635 , -103.94508	Sample Source	
TDS (mg/L)		Water Type	
Sample Date (MM/DD/YYYY)	12/27/2000 12:00:00 AM	Analysis Date (MM/DD/YYYY)	
Remarks/Description			
Cation Information (mg/L)		Anion Information (mg/L)	
Potassium (K)		Sulfate (SO)	190
Sodium (Na)		Chloride (Cl)	164963
Calcium (Ca)	25552	Carbonate (CO <sub>3</sub> )	
Magnesium (Mg)	4471	Bicarbonate (HCO <sub>3</sub> )	73
Barium (Ba)	0	Hydroxide (OH)	
Manganese (Mn)		Hydrogen Sulfide (H <sub>2</sub> S)	0
Strontium (Sr)		Carbon Dioxide (CO <sub>2</sub> )	
Iron (Fe)	175	Oxygen (O)	

VIII. 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

Formation	Top MD (ft)
Rustler	1177
Salt Top	1536
Salt Base	4810
Delaware Top	5016
Bell Canyon	5043
Cherry Canyon	5936
Brushy Canyon	7301



Bell Canyon POR

12-26%

Cherry Canyon POR

15-29%

### Tops

Formation	Top MD (ft)
Rustler	1177
Salt Top	1536
Salt Base	4810
Delaware Top	5016
Bell Canyon	5043
Cherry Canyon	5936
Brushy Canyon	7301

### Sw

Estimate the water saturation percentage over the proposed disposal interval or otherwise say why it is not productive.

Sw=70%-90%

No uphole potential (no oil shows on mudlog).  
No oil shows in offset mudlogs.

Injection Interval 5,055'- 6,579' MD

Sw=70%-90%

No uphole potential (no oil shows on mudlog).

No oil shows in offset mudlogs.

Lithologic description for injection targets in Bell Canyon- Top 5,043'

Light gray to gray-green, clean, very fine-grained, massive-bedded, sub-angular, quartz sandstone, containing some layers of interlaminated shaly siltstone, and black shale up to one inch thick. Porosity ranges from 10 to 30 percent, averaging 22 percent with permeability ranging from 10-40 md.

Lithologic description for injection targets in Cherry Canyon – Top 5,936'

Fine to very fine grained, well-sorted, subrounded to subangular, arkosic and subarkosic sandstones; siltstones; dark organic siltstones; and limestones. Calcite cementation is common. Permeability ranges from 10-30 md. Porosity ranges from 15-25%.

IX. Describe the proposed stimulation program, if any.

Sand fracture treatment in the Bell Canyon and Upper Cherry Canyon

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

Logs will be filed after the well has been drilled and completed.

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.

**I have examined the available geologic and engineering data for the Copperhead 18#1 SWD well and find no evidence of open faults or other hydrologic connection between the disposal zone and any underground sources of drinking water.**



Cyd Ruiz-Santiago

Item XI - 1

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**From:** Cervantes, Armando  
**Sent:** Thursday, January 09, 2014 6:16 AM  
**To:** Stewart, David; Balaji, Prithi  
**Subject:** FW: Windmills for SWD Permits - Part 1

David,  
The water samples are for both wells from the same water station on the north side of hwy 128 across from Copperhead 20 St # 44.  
I didn't see any other windmills or water stations near a 1 mile radius of the wells.

Thanks,  
Armando Cervantes  
Production Tech III

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**From:** Stewart, David  
**Sent:** Wednesday, January 08, 2014 4:38 PM  
**To:** Balaji, Prithi; Cervantes, Armando  
**Subject:** RE: Windmills for SWD Permits - Part 1

Armando did you happen to find the water wells that showed up on the attached NMOSE information, copy attached?  
Also I'm guessing that the water sample we got for the Copperhead State #1 was for a windmill located in section 18.  
Were you not able to get one for the Copperhead 20 St #44? I appreciate the help.

Thanks, David S.  
Wk - 432-685-5717  
Cell - 432-634-5688  
Fax - 432-685-5742

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**From:** Baeza,Anthony [<mailto:Anthony.Baeza@CHAMP-TECH.com>]  
**Sent:** Tuesday, December 10, 2013 9:33 AM  
**To:** Cervantes, Armando; Balaji, Prithi  
**Cc:** Stewart, David  
**Subject:** RE: Windmills for SWD Permits - Part 1

Armando,

Attached are the complete water analysis you requested. If you need anything else, please let me know.

Regards,

**Anthony Baeza**  
Sales Representative

**INALCO Champion An Ecolab Company**  
T 575 390 6532 E [Anthony.Baeza@champ-tech.com](mailto:Anthony.Baeza@champ-tech.com)

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**From:** Cervantes, Armando  
**Sent:** Monday, October 21, 2013 7:57 AM  
**To:** Balaji, Prithi; Shaver, Stanley  
**Cc:** Stewart, David  
**Subject:** Windmills for SWD Permits - Part 1

Prithi,  
Here is the information on the fresh water wells around the Copperhead and the Foxglove.

Copperhead St # 1 ( Sec - 18, T24S R33E ) @ 1.2 miles from water station.  
Copperhead - 20 St # 44 ( Sec20 T24S R33E ) @ .2 miles from water station.  
Water Station,  
ELEV: 3607 FT.  
N 32° 12.647'  
W 103° 35.178'

Any questions give me a call.

Thanks,  
Armando Cervantes  
PFA - Lea-County  
575-441-4024

Item XI - 2

# MITCHELL ANALYTICAL LABORATORY

2638 Faudree  
Odessa, Texas 79765-8538  
561-5579

Company: **Nalco Company**

Well Number: Copper Head St. 1 - Windm. 11  
Lease: OXY  
Location: Sec 18 T24S R33E  
Date Run: 11/20/2013  
Lab Ref #: 13-nov-n73019

Sample Temp: 70  
Date Sampled: 11/14/2013  
Sampled by: Anthony Baeza  
Employee #:   
Analyzed by: GR

## Dissolved Gases

		Mg/L	Eq. Wt.	MEq/L
Hydrogen Sulfide	(H <sub>2</sub> S)	.00	16.00	.00
Carbon Dioxide	(CO <sub>2</sub> )	<b>NOT ANALYZED</b>		
Dissolved Oxygen	(O <sub>2</sub> )	<b>NOT ANALYZED</b>		

## Cations

		Mg/L	Eq. Wt.	MEq/L
Calcium	(Ca++)	31.76	20.10	1.58
Magnesium	(Mg++)	23.91	12.20	1.96
Sodium	(Na+)	118.08	23.00	5.13
Barium	(Ba++)	<b>NOT ANALYZED</b>		
Manganese	(Mn+)	.02	27.50	.00
Strontium	(Sr++)	<b>NOT ANALYZED</b>		

## Anions

		Mg/L	Eq. Wt.	MEq/L
Hydroxyl	(OH-)	.00	17.00	.00
Carbonate	(CO <sub>3</sub> =)	96.00	30.00	3.20
BiCarbonate	(HCO <sub>3</sub> -)	97.76	61.10	1.60
Sulfate	(SO <sub>4</sub> =)	90.00	48.80	1.84
Chloride	(Cl-)	72.08	35.50	2.03
Total Iron	(Fe)	0	18.60	.00
Total Dissolved Solids		529.61		
Total Hardness as CaCO <sub>3</sub>		177.43		
Conductivity MICROMHOS/CM		941		

pH 8.590 Specific Gravity 60/60 F. 1.000

CaSO<sub>4</sub> Solubility @ 80 F. 19.86MEq/L, CaSO<sub>4</sub> scale is unlikely

## CaCO<sub>3</sub> Scale Index

70.0	.206	100.0	.556	130.0	1.066
80.0	.336	110.0	.796	140.0	1.066
90.0	.556	120.0	.796	150.0	1.296

Nalco Company

Item XI - 3



## New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,  
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	Sub-basin	County	Q	Q	Q	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
<u>C 02431</u>			LE	4	4	4	17	24S	33E	633175	3564728*	525	415	110
<u>C 02432</u>			LE	4	4	4	17	24S	33E	633175	3564728*	640	415	225
<u>C 03565</u> <b>POD3</b>			LE		3	4	08	24S	33E	632763	3566546	1333		

- Dewey Lake

55-1227

Rusler

→ +1227 to 1533

Average Depth to Water: 787 feet

Minimum Depth: 415 feet

Maximum Depth: 1533 feet

IPC  
Exploratory  
wells / 9  
permitted -  
no production  
Potash  
explor.

Record Count: 3

PLSS Search:

Section(s): 7, 8, 17, 18, 19, Township: 24S Range: 33E  
20

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/8/14 1:32 PM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER

Page 1 of 1

C 3679 - See 14/24S/33E

100 ft Sandstone (Red) 565' to 665'; 20 gpm; Static WL: 405'



## New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,  
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	Code	Sub-basin	County	Q	Q	Q	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
<u>C 01932</u>			C	ED	3	1	12	24S	32E	628633	3567188*	492		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 1

PLSS Search:

Section(s): 12, 13, 24 Township: 24S Range: 32E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/8/14 1:36 PM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER



**C-108 Service List  
OXY USA Inc  
Copperhead 18 State SWD #1  
API No. 30-025-**

New Mexico Oil Conservation Division  
1625 N. French Dr.  
Hobbs, NM 88240

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

**Surface Owner**


State Land Office  
P.O. Box 1148  
Santa Fe, NM 87504

**Offset Operators within 1/2 mile**

COG Production LLC  
600 W. Illinois  
Midland, TX 79701

OXY USA Inc.  
P.O. Box 50250  
Midland, TX 79710

Copies of this application were mailed to the following individuals, companies and organizations on or before 11/2/14.

  
\_\_\_\_\_  
David Stewart  
OXY USA Inc.

## SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

NMOC  
1625 N. French Dr.  
Hobbs, NM 88240

2. Article Number

(Transfer from service label)

7011 3500 0002 4988 1966

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

## COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ YesIf YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail☐ Express Mail☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

## SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

NMOC  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

2. Article Number

(Transfer from service label)

7011 3500 0002 4988 1973

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

## COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ YesIf YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail☐ Express Mail☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

## SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

State Land Office  
P.O. Box 1143  
Santa Fe, NM 87504

2. Article Number

(Transfer from service label)

7011 3500 0002 4988 1980

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

## COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ YesIf YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail☐ Express Mail☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ C.O.D.

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

COG Production LLC  
600 W. Illinois  
Midland, TX 79701

2. Article Number

(Transfer from service label)

7011 3500 0002 4988 1997

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

## COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? ☐ YesIf YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail☐ Express Mail☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

## **Notice Of Application For Fluid Disposal**

### **Applicant:**

OXY USA Inc.  
P.O. Box 50250  
Midland, TX 79710  
ATTN: David Stewart  
432-685-5717

### **Purpose – Well:**

Disposal of Produced Water Into A Zone Non Productive of Oil & Gas  
Copperhead 18 State SWD #1  
2310 FNL 2310 FEL SWNW(G) Sec 18 T24S R33E  
Lea County, NM

### **Formation:**

Delaware – Bell/Cherry Canyon  
5055-6600'  
Maximum Injection Rate – 4000 BWPD  
Maximum Injection Pressure – 1011 psi

**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 of this application.**

***This notice was submitted to the newspaper 1/9/14 for publication and the notice and affidavit of publication will be sent after it has been received.***

**Affidavit of Publication**

State of New Mexico,  
County of Eddy, ss.

Kathy McCarroll, being first duly sworn,  
on oath says:

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

January 14 2014

That the cost of publication is \$50.75 and that payment thereof has been made and will be assessed as court costs.

Kathy McCarroll

Subscribed and sworn to before me this

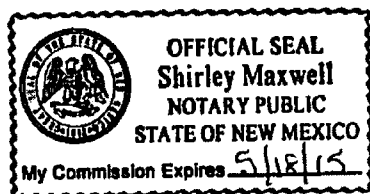
15th day of January, 2014

Shirley Maxwell

My commission Expires

May 18, 2015

Notary Public



January 14, 2014

Notice Of Application For  
Fluid Disposal

Applicant:  
OXY USA Inc.  
P.O. Box 50250  
Midland, TX 79710  
ATTN: David Stewart  
432-685-5717

Purpose - Well:  
Disposal of Produced Wa-  
ter into A Zone Non Pro-  
ductive of Oil & Gas  
Copperhead 18 State SWD  
#1  
2310 FNL 2310 FEL  
SWNW(G) Sec 18 T24S  
R33E  
Lee County, NM

Formation:  
Delaware - Bell/Cherry  
Canyon  
5055-6500'  
Maximum Injection Rate -  
4000 BWPD  
Maximum Injection Pres-  
sure - 1011 psi

Interested parties must  
file objections or re-  
quests for hearing with  
the Oil Conservation Divi-  
sion, 1220 South St.  
Francis Dr., Santa Fe,  
New Mexico 87505 with-  
in 15 days of this applica-  
tion.

## Goetze, Phillip, EMNRD

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**From:** Jones, William <wjones@slo.state.nm.us>  
**Sent:** Tuesday, January 14, 2014 5:30 PM  
**To:** Goetze, Phillip, EMNRD  
**Cc:** Holm, Anchor E.; Warnell, Terry G.; Martinez, Pete  
**Subject:** OXY's proposed Copperhead 18 State SWD #1 30-025- Vertical to be spud in G/18/24S/33E

Hey Phillip,  
Hope all is well. If someone else is reviewing this one, please pass on?

Just reviewing SWD's sent to the State Land Office today and noticed this one from OXY.

I am in favor of this SWD as a way to handle the proposed Bone Spring water.  
However, would be nice if OXY could be careful about the extreme upper Delaware as there is a producing well a little over ½ mile away to the northwest (30-025-25181).  
That well produces from around 5000 feet deep. The proposed perms for disposal are 5055 to 6600 feet, so the upper ones may be an issue. I don't know the structure or whether structure is important out here. Sometimes not.

If OXY drills and mudlogs/elogs the proposed SWD well, they should be able to determine if there is an issue.

Or you could ask them to stay a hundred or so feet below the top of the Delaware? Hopefully the deeper formation would be a bit higher in water saturation.  
I used to do that sort of thing, and David Stewart is very amenable to suggestions like that. If you don't intervene early, the momentum in drilling operations is hard to change sometimes.

Anyway, that is my only concern.

Thanks a bunch,

Will

**William V. Jones, P.E.**  
**Oil, Gas, and Minerals Division**  
*New Mexico State Land Office*  
505 827 6628 office 4739 fax  
[www.nmstatelands.org](http://www.nmstatelands.org)  
[wjones@slo.state.nm.us](mailto:wjones@slo.state.nm.us)

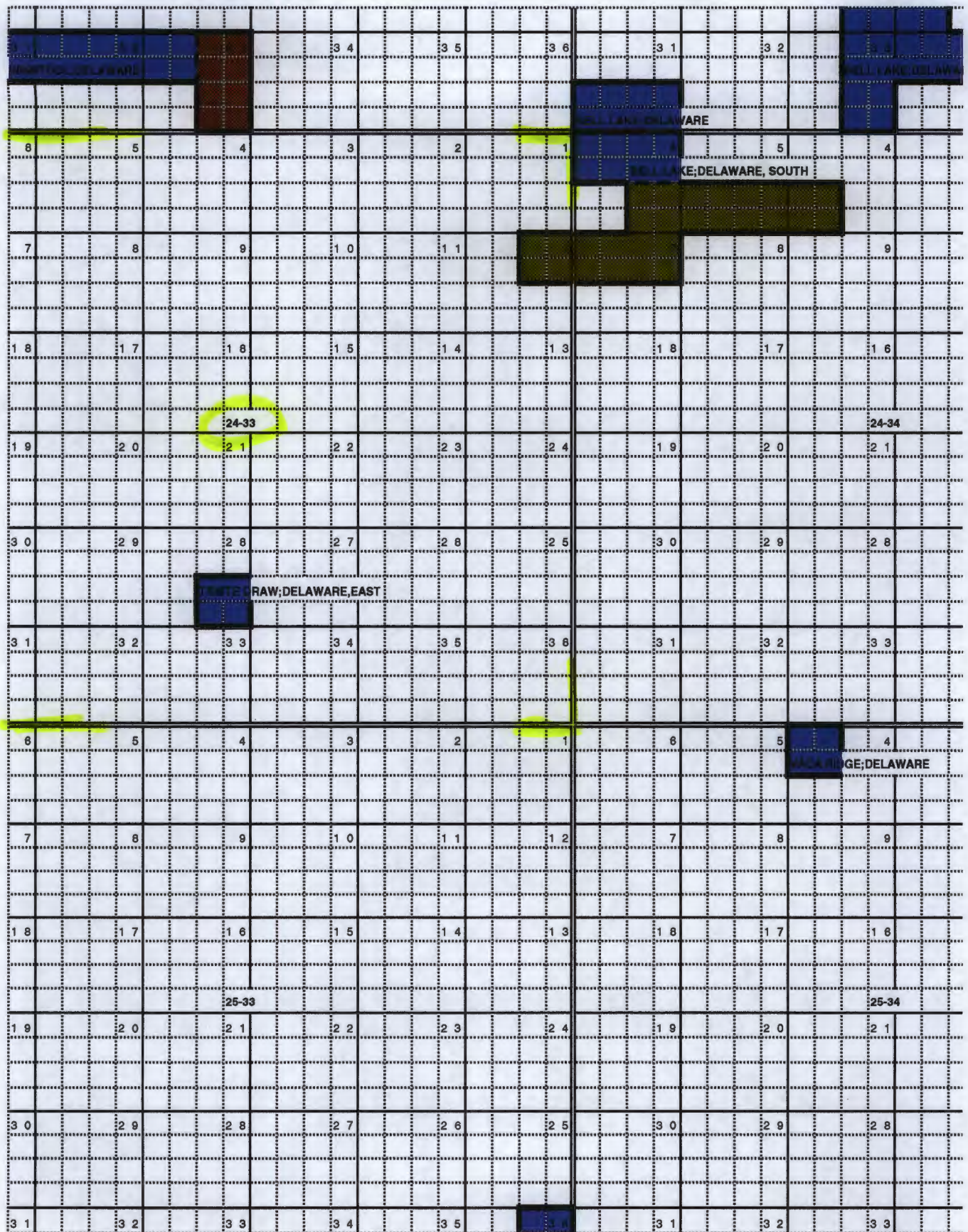
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For more information please visit <http://www.symanteccloud.com>

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Copperhead 18 State SWD #1 - 1 of 2





# Copperhead 18 State SWD #1 - 2 of 2

30-025-28755 TA(?) - Active  
[5/Sec 14/24S/32E]

Delaware Mbr = 4869'

Ramsey: 4916'

Perfed: 4916' - 4921'

<280 / 0 Mcf/

24S/32E

30-025-28755  
Double X - 30-025-25181

BS - Sec 1 / Unit P - 30-025-41582

Del - Sec 1 / Unit P - 30-025-24411

Triple X - No producers

[Below TOD - Top/47' BOP/52'  
perfed interval [5']

T 24 S

30-025-25181 Active

Logs: Lamar - 4902'

Ramsey - 4997'

Perfed: 5004' to 5023'

Current: 30 days / 1/1/2014

24 BO / 45 Mcf / 169 BW

[Below TOD - Top/102' BOP/121'  
Perfed [19']

30-025-24411 P&A'd - 1994

Logs: Delaware Lime - 4932'

Delaware Sand - 4982'

Perfed: 4986' to 5000'

IP - 127 BO / 55 Mcf / 31 BW

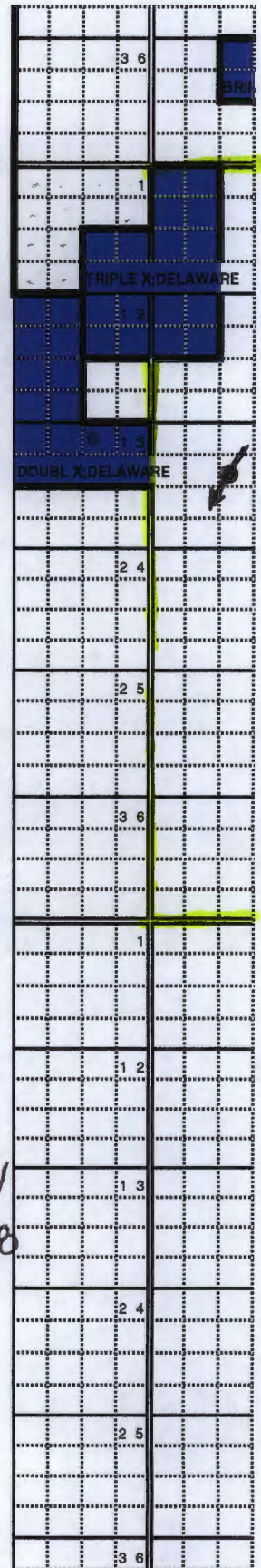
[Below TOD - Top/54' BOP/68'  
Perfed [4']

In Double X: Unit C / Sec. 14 / 24S/32E

30-025-08148

R-7715 / Now SWD in Delaware but lost authority - Fail MIT 12/10/2008

Previous Injection Interval: 4956-4970





**C-108 Review Checklist:** Received 01/17/14 Add. Request: — Reply Date: — Suspended: — [Ver 12]

PERMIT TYPE: WFX / PMX / (SWD) Number: 1467 Permit Date: 03/17/14 Legacy Permits/Orders: None

Well No. 1 Well Name(s): Copperhead 18 State SWD [PMM/1401747239]

API: 30-0 25 - Pending Spud Date: TBD New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 2310 FNL / 2310 FEL Lot — or Unit G Sec 18 Tsp 24S Rge 33E County Lea

General Location: N of (128) south of Bell Lake Sink Pool: Delaware / Bell Canyon & Cherry Canyon Pool No: — [Existing Canyon excluded]

BLM 100K Map: 301 Operator: OXY USA Inc. OGRID: 14696 Contact: David Stewart

COMPLIANCE RULE 5.9: Inactive Wells: 9 Total Wells: 1839 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Date: March 10 OK

WELL FILE REVIEWED ☐ Current Status: NA - no API / no well file

WELL DIAGRAMS: NEW: Proposed ☒ or RE-ENTER: Before Conv. ☐ After Conv. ☐ Logs in Imaging: Request CBL / no log write proposed

Planned Rehab Work to Well: NA - new well

Well Construction Details:		Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned <input type="checkbox"/> or Existing <input checked="" type="checkbox"/> Conductor					
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Surface		17 1/2 / 13 3/8	0 to 1200	1165	Cir. to Surf
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Intern/Prod		12 1/4 / 9 5/8	0 to 5050	1870	Cir. to Surf
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> Prod/Intern		8 3/4 / 7	0 to 6759	420	TOC 4000 / Calc *
Planned <input type="checkbox"/> or Existing <input type="checkbox"/> Liner/Prod					
Planned <input checked="" type="checkbox"/> or Existing <input type="checkbox"/> OH / PERB		7	5055-6600 <u>54</u> Inj Length <u>1515</u>		
Completion/Operation Details:					
Injection Stratigraphic Units:		Depths (ft)	Injection or Confining Units	Tops?	Drilled TD <u>6759</u> PBSD <u>—</u>
Adjacent Unit: Litho. Struc. Por.					NEW TD <u>—</u> NEW PBSD <u>—</u>
Confining Unit: Litho. Struc. Por.		+39	Del. / Lamar	5016	NEW Open Hole <input type="checkbox"/> or NEW Perfs <input checked="" type="checkbox"/>
Proposed Inj Interval TOP:		5055	Del. Bell Canyon	5043	Tubing Size <u>3 1/2</u> in. Inter Coated? <u>Yes</u>
Proposed Inj Interval BOTTOM:		6600	Cherry Canyon	5926	Proposed Packer Depth <u>5005</u> ft
Confining Unit: Litho. Struc. Por.		+701	Del. Bone Spring	7201	Min. Packer Depth <u>4955</u> (100-ft. limit)
Adjacent Unit: Litho. Struc. Por.					Proposed Max. Surface Press. <u>1011</u> psi
AOR: Hydrologic and Geologic Information					Admin. Inj. Press. <u>1011</u> (0.2 psi per ft)
POTASH: R-111-PK <u>Noticed?</u> <u>NA</u> BLM Sec Ord <u>NA</u> WIPP <u>NA</u> <u>Noticed?</u> <u>NA</u> SALADO: T: <u>1530</u> B: <u>4810</u> CLIFF HOUSE <u>NA</u>					
FRESH WATER: Aquifer <u>Delaware</u> Max Depth <u>4748</u> (500 ft) U-Mile Wells? <u>0</u> FW Analysis <u>Yes</u> HYDRO AFFIRM STAT By <u>Qualified Person</u> <input checked="" type="checkbox"/>					
Disposal Fluid: Formation Source(s) <u>Bone Spring Producers</u> Analysis? <u>Yes</u> On Lease <input type="checkbox"/> Operator Only <input checked="" type="checkbox"/> or Commercial <input type="checkbox"/>					
Disposal Interval: Inject Rate (Avg/Max BWPD): <u>3500/4000</u> 2nd BS <u>SWD</u> Protectable Waters? <u>Yes</u> CAPITAN REEF: thru <input type="checkbox"/> adj <input type="checkbox"/> NA <input checked="" type="checkbox"/>					
HC Potential: Producing Interval? <u>NA</u> Formerly Producing <u>Cherry</u> Method: Logs/DST/P&A/Other <u>UNK</u> 2-Mile Radius Pool Map <input checked="" type="checkbox"/>					
AOR Wells: 1/2-M Radius Map? <u>Yes</u> Well List? <u>Yes</u> Total No. Wells Penetrating Interval: <u>1 (4 proposed)</u> Horizontals? <u>Yes</u>					
Penetrating Wells: No. Active Wells <u>1</u> Num Repairs? <u>0</u> on which well(s)? <u>— all horizontals to be</u> Diagrams? <u>NA</u>					
Penetrating Wells: No. P&A Wells <u>0</u> Num Repairs? <u>0</u> on which well(s)? <u>Bone Spring Comp - all casing TOC to surface</u> Diagrams? <u>—</u>					
NOTICE: Newspaper Date <u>01/14/2014</u> Mineral Owner <u>SLO</u> Surface Owner <u>SLO</u> N. Date <u>1/9/14</u>					
RULE 26.7(A): Identified Tracts? <u>Yes</u> Affected Persons: <u>COG/OXY</u> N. Date <u>1/9/14</u>					

Permit Conditions: Issues: Unknown HC potential by Delaware especially below top /

Add Permit Cond: reduce interval by 100' / CBL for TOC \*  
Talk with D. Stewart about top 100' / talked with Geologist / Prod. Eng