Additional Information

Revised APD 11/11/20

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised July 18, 2013

☒AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
SOLARIS WATER MIDSTREAM, LLC 701 TRADEWINDS BLVD., SUITE C MIDLAND, TX 79706	371643
	3. API Number 30-015-TBD

4. Property Code	5. Property Name	6. Well No.
	McCrae SWD	1

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
A	33	19S	28E		275	N	1000	E	EDDY

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County

9. Pool Information

Pool Name	Pool Code
SWD; Devonian-Silurian	97869

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
N	SWD	R	P	3359’
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	14294’	Silurian-Devonian	TBD	11/15/2020

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
62.5’	1.25 miles	>1 mile

☒**We will be using a closed-loop system in lieu of lined pits**

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	26”	20”	94#	656’	1266 sks	Surface
Intermediate	17.5”	13.375”	54.5#	2660’	1821 sks	Surface
Intermediate	12.25”	9.625”	40#	0’-2760’	Stage 2: 755 sks	Surface
Intermediate	12.25”	9.625”	40#	2760’-8814	Stage 1: 1333 sks	DV Tool @ 2760’
Liner	8.75”	7.625”	39#	12094’-8614’	336 sks	8614’
Open Hole	6.5”	N/A	N/A	12094’-14294’	N/A	N/A
Tubing		5.5” & 5”	17# & 15#	12059’	N/A	N/A

Casing/Cement Program: Additional Comments

See attached schematic.
DV tool in 9.625” casing string @ 2760’.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydraulic/Blinds, Pipe, Annular	10000 psi blinds/pipe, 5000 psi annular	5000 psi blinds/pipe, 5000 psi annular	TBD - Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.** Signature: Gary E Fisher		OIL CONSERVATION DIVISION	
		Approved By:	
Printed name: Gary E Fisher		Title:	
Title: Consulting Engineer		Approved Date:	Expiration Date:
E-mail Address: gfisher@popmidstream.com			
Date: 11-10-2020	Phone: 817-606-7630	Conditions of Approval Attached	

WELLBORE SCHEMATIC

Solaris Water Midstream LLC
McCrae SWD #1
275' FNL, 1000' FEL
Sec. 33, T19S, R28E, Eddy Co. NM
Lat 32.623682° N, Lon 104.176094° W
GL 3359', RKB 3389'

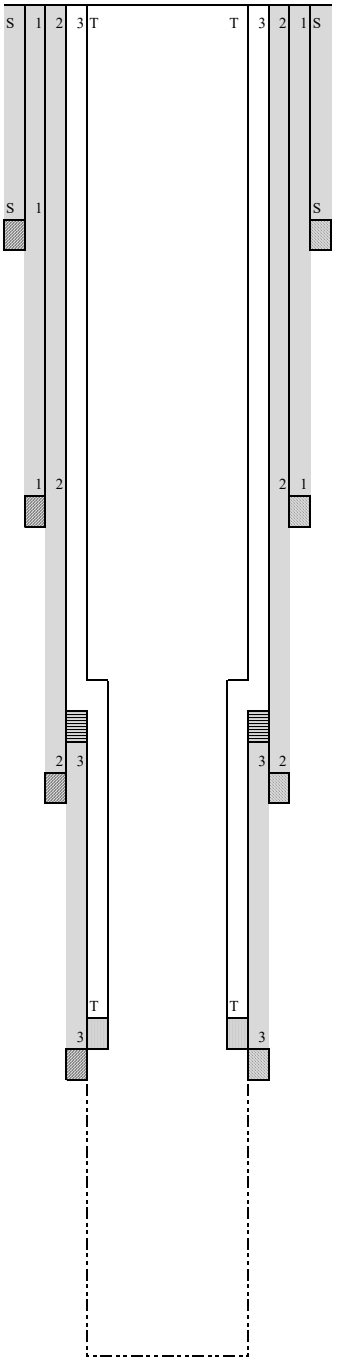
Surface - (Conventional)
Hole Size: 26"
Casing: 20" - 94# J-55 BTC Casing
Depth Top: Surface
Depth Btm: 656'
Cement: 1266 sks - Class C + Additives (100% Excess)
Cement Top: Surface - (Circulate)

Intermediate #1 - (Conventional)
Hole Size: 17.5"
Casing: 13.375" - 54.5# J-55 BTC Casing
Depth Top: Surface
Depth Btm: 2660'
Cement: 1821 sks - Class C + Additives (50% Excess)
Cement Top: Surface - (Circulate)

Intermediate #2 - (Conventional)
Hole Size: 12.25"
Casing: 9.625" - 40# HCL-80 BTC Casing
Depth Top: Surface
Depth Btm: 8814'
Cement: Stg 1: 1333 sks, Stg 2: 755 sks - All Class C + Additives (50% Excess)
Cement Top: Stg 1: 2760' (ECP/DV Tool, Circulate), Stg 2: Surface - (Circulate)
ECP/DV Tool: 2760'

Intermediate #3 - (Liner)
Hole Size: 8.75"
Casing: 7.625" - 39# HCL-80 FJ Casing
Depth Top: 8614'
Depth Btm: 12094'
Cement: 336 sks - Class H + Additives
Cement Top: 8614' - (Volumetric)

Intermediate #4 - (Open Hole)
Hole Size: 6.5"
Depth: 14294'
Inj. Interval: 12094' - 14294' (Open-Hole Completion)



Tubing - (Tapered)
Tubing Depth: 12049'
Tubing: 5.5" - 17# HCL-80 BTC Casing & 5" 15# HCL-80 BTC Casing (Fiberglass Lined)
X/O Depth: 8614'
X/O: 5.5" 17# HCL-80 BTC Casing - X - 5" 15# HCL-80 BTC Casing (Fiberglass Lined)
Packer Depth: 12059'
Packer: 5" - Perma-Pak or Equivalent (Inconel)

Drilling Program

Solaris Water Midstream
McCrae SWD #1
SL: 275' FNL & 1000' FEL
Sec 33, T19S, R28E
Eddy County, New Mexico

Surface Hole

Hole size: **26"**

Depth: **656'**

Mud: Fresh water "spud" mud/ "native". Need 28 to 36 visc. (mud weight not to exceed 8.8 ppg).

Drilling Parameters: Weld 30" drilling conductor with flow nipple onto the 30" conductor pipe at surface. **Notify NMOCD prior to spudding well *and* in sufficient time to witness cementing of surface casing.** Run 26" bit, BHA and 5" DP to casing point. Seepage should be controllable with LCM sweeps. After drilling to 656', pump heavy LCM sweep and circulate hole clean. TOOH to run csg.

Casing: From 0' to 656' – (20" 94# J55 BTC CSG)

Fill casing with drilling fluid as needed. Run 20" casing with Texas pattern guide shoe. Weld guide shoe and thread-lock bottom 2 joints. Centralizers to go in the middle of the first joint, on the second coupling and the fourth coupling.

Cement: Lead: 1066 sks Class "C" + Additives
Yield – 1.77 cu ft/sk @ 13.5 ppg

Tail: 200 sks Class "C" + Additives
Yield – 1.34 cu ft/sk @ 14.8 ppg

Notify NMOCD in sufficient time to witness cementing of casing. After getting casing to TD, displace casing volume with the rig pump. RU cementers and cement as prescribed**.** If cement ***does not*** circulate, notify NMOCD. If cement ***does*** circulate, shut in head and WOC 8 hours before cutting off casing and **welding on a 20" diverter head**.

Wellhead: **20" casing w/diverter head**

Solaris Water Midstream – McCrae SWD #1

First Intermediate Hole

Hole size: **17 ½"**

Depth: **2660' *Adjust depth to "fit" hole for Cameron Speed Head***

Mud: Saturated Brine with 29 to 31 visc. (Mud weight not to exceed 10.3 ppg).

Drilling Parameters: **Ensure 20" diverter head is installed prior to TIH**. WOC 8 hours total or until all cement has reached 500 psi compressive strength as required by NMOCD before drilling cement or the plug. Run 17 ½" bit, BHA and 5" DP to casing point. Saturated brine water will be used to minimize washout in salt sections. Seepage should be controllable with LCM sweeps. After drilling to 2660', pump heavy LCM sweep and circulate hole clean. TOOH to run csg.

Casing: From 0' to 2660' – (13 ⅜" 54.5# J55 BTC CSG)

Fill casing with drilling fluid every 20 jts or less as needed. Run float shoe, 1 jt 13 ⅜" 54.5# J55 BTC casing, float collar, & remainder jts 13 ⅜" 54.5# J55 BTC casing to surface. **Thread - lock guide shoe and first 2 joints.** Centralizers will go in the middle of the first joint, on the second coupling and the fourth coupling. Float equipment should be PDC drillable.

Make up Cameron Speed Head on final jt of 13 3/8" Casing and land on depth with landing joint.

Cement: Lead: 1621 sks Class "C" + Additives
Yield – 1.77 cu ft/sk @ 13.5 ppg

Tail: 200 sks Class "C" + Additives
Yield – 1.33 cu ft/sk @ 14.8 ppg

Notify NMOCD in sufficient time to witness cementing of casing. After getting casing to TD, displace casing volume with the rig pump. RU cementers and cement as per cement recommendation. If cement ***does not*** circulate, notify NMOCD. If cement ***does*** circulate, **WOC 8 hours** total or until all cement has reached 500 psi compressive strength as required by NMOCD before testing BOPE.

Wellhead: **13 ⅝" 5K rated Cameron Speed Head**

BOPE: **13 ⅝" 10K rated triple ram BOP stack, 5K rated annular & rotating head.**

BOPE Testing:	**WOC 8 hours or 500 psi compressive strength as required by NMOCD prior to testing BOPE. Test BOP Rams to 5000 psi & Annular to 5000 psi with third party.**

Solaris Water Midstream – McCrae SWD #1

Second Intermediate Hole

Hole size: **12 ¼"**

Depth: **8814' *Adjust depth to "fit" hole for Cameron Speed Head***

Mud: Cut Brine 9.0 to 9.4 ppg, 29 to 34 visc. Mud weight not to exceed 10 ppg.

Drilling Parameters: **Ensure 13 ⅝" triple ram BOP stack, 5K rated annular & rotating head are NU & Tested to 5000 psi. WOC 8 hours total** or until all cement has reached 500 psi compressive strength as required by NMOCD before drilling cement or the plug. H_2S monitors and related safety equipment will be operational before drilling out 13 ⅜" casing shoe. Run 12 ¼" bit, & BHA, with 5" DP back to surface. **Prior to drilling any cement, test casing to 2150# for 30 mins with rig pump**. **Before drilling 20' into formation, perform a FIT to 10.0 ppg mud equivalent.** Drill out with viscous cut brine and circulate through steel pits. Utilize mud cleaning equipment to keep fluid as clean as possible. Seepage should be controllable with LCM sweeps. After drilling to 8814', pump heavy LCM sweep and circulate hole clean. TOOH to run csg.

Casing: From 0' to 8814' – (9 ⅝" 40# HCL80 BTC CSG)
(ECP/DV tool @ 2760' – Ensure 50' min below previous csg shoe)

Fill casing with drilling fluid every 20 jts or less as needed. Run float shoe, 1 jt 9 ⅝" 40# HCL80 BTC casing, float collar, 4574' - 9 ⅝" 40# HCL80 BTC casing, 1440' – **BOND COATED** 9 ⅝" 40# HCL80 BTC casing, **ECP/DV TOOL** & remainder of 9 ⅝" 40# HCL80 BTC casing to surface. **Thread - lock guide shoe and first 2 joints.** Run centralizers in the middle of 1st joint, top of 2nd joint, then, alternating every other collar for a total of 8 centralizers. Float equipment should be PDC drillable. **Land 9 5/8" casing hanger in Cameron Speed Head using landing joint.**

Cement:

Stage 1: Lead: 1133 sks Class "C" + Additives
Yield – 2.41 cu ft/sk @ 11.5 ppg

Tail: 200 sks Class "C" + Additives
Yield – 1.18 cu ft/sk @ 15.6 ppg

ECP/DV TOOL @ 2760'

Stage 2: Lead: 555 sks Class "C" + Additives
Yield – 2.41 cu ft/sk @ 11.5 ppg

Tail: 200 sks Class "C" + Additives
Yield – 1.33 cu ft/sk @ 14.8 ppg

Notify NMOCD in sufficient time to witness cementing of casing. After getting casing to TD, displace casing volume with the rig pump. RU cementers and cement as prescribed in attached recommendation**. Cement volume to be adjusted after running fluid caliper**. If cement ***does not*** circulate, notify NMOCD. If cement ***does*** circulate, WOC 8 hours or 500 psi compressive strength as required by NMOCD before drilling cement & plug. **While WOC, displace pits with OBM & condition to spec.**

Wellhead: **13 ⅜" 5K rated Cameron Speed Head**

BOPE: **13 ⅝" 10K psi rated triple ram BOP stack, 5K psi rated annular & rotating head.**

BOPE Testing: **NU BOPE Testing required due to using Cameron Speed Head**

Solaris Water Midstream – McCrae SWD #1

Third Intermediate Hole

Hole size: **8 ¾"**

Depth: **12094'**

Mud: Mud up to 11.8 to 12 ppg WBM as per mud recommendation. Mud properties may have to be adjusted as needed for hole conditions.

Drilling Parameters: **Ensure 13 ⅝" 10K rated triple ram BOP stack, 5K rated annular & rotating head are NU & Tested. Ensure super choke installed on choke manifold. WOC 8 hours total** or until all cement has reached 500 psi compressive strength as required by NMOCD before drilling cement or the plug. Ensure H_2S monitors and related safety equipment are operational before drilling out shoe. PU 8 ¾" bit and BHA, with 5" drill pipe back to surface. **NOTE: (ECP/DV Tool @ 2760').** Use caution when drilling DV tool & float equipment to avoid damaging bit. **Test casing to 4100# for 30 mins with rig pump**. Drill out with WBM and circulate through steel pits. **Before drilling 20' into formation, perform a FIT to 12.0 ppg mud equivalent.** Utilize mud cleaning equipment to keep fluid as clean as possible. When nearing the top of the Devonian formation, circulate samples up every 5'. After drilling to 12094', pump heavy LCM sweep and circulate hole clean. TOOH to run csg.

Casing: 7 ⅝" 39# HCL80 FJ CSG
TOL @ 8614'
Halliburton Versaflex Liner Hanger

Fill casing with drilling fluid every 20 jts or less as needed. Run float shoe, 10' jt 7 ⅝" 39# HCL80 LFJM, Float Collar, 10' jt 7 ⅝" 39# HCL80 LFJM, Halliburton Landing Collar & 3415' 7 ⅝" 39# HCL80 LFJM, 7 ⅝" x 9 ⅝" liner hanger & DP to surface. **Set liner hanger to tie back minimum 100' inside 9 ⅝" casing.** Float equipment should be PDC drillable.

Cement: Lead: 336 sks Class "H" + Additives
Yield – 1.57 cu ft/sk @ 15.6 ppg

Notify NMOCD in sufficient time to witness cementing of casing. After getting casing to TD, displace casing volume with the rig pump. RU cementers and cement as prescribed in attached recommendation**.** If cement ***does not*** circulate, notify NMOCD. If cement ***does*** circulate, TOH w/liner hanger setting tool.

Wellhead: **No Change in wellhead required**

BOPE: **13 ⅝" 10K psi rated triple ram BOP stack, 5K psi rated annular & rotating head.**

BOPE Testing: **No BOPE testing required as the stack was not broken**

Solaris Water Midstream – McCrae SWD #1

Production Hole

Hole size:	6 ½"
Depth:	**14294'**
Mud:	Cut Brine 8.4 to 8.6 ppg, 29 to 32 visc. Mud weight not to exceed 9.0 ppg. Mud properties may have to be adjusted as needed for hole conditions.
Drilling Parameters:	**Ensure 13 ⅝" 10K rated triple ram BOP stack, 5K rated annular & rotating head are NU & Tested. WOC 8 hours total** or until all cement has reached 500 psi compressive strength as required by NMOCD before drilling cement or the plug. Ensure H_2S monitors and related safety equipment are operational before drilling out 7 ⅝" liner shoe. PU 6 ½" bit and BHA, with DP back to surface. **Prior to drilling any cement, test casing to 4100# for 30 mins with rig pump**. Use caution when drilling DV tool & float equipment to avoid damaging bit. **Before drilling 20' into formation, perform a FIT to 9.0 ppg mud equivalent.** Utilize mud cleaning equipment to keep fluid as clean as possible. After drilling to 14294' +/-, pump heavy LCM sweep and circulate hole clean. **DO NOT DRILL INTO MONTOYA FORMATION (CHERT RETURNS).** TOOH to 7 ⅝" casing shoe & LDDP.

Solaris Water Midstream – McCrae SWD #1

Completion

Logging: MIRU wireline truck & RIH w/open hole CNL/GR/ and cased hole CBL w/CCL. Verify formation markers with drilled depth.

Packer Setting: PU Setting Tool, CCL & 5" x 7 5/8" Perma-Pak Packer with short jt 4 ½" 13.5# casing tail pipe & pump out plug. RIH on wireline to packer setting depth **(< 100' to 7 5/8" csg shoe req'd)** & set packer. POH & RDMO wireline truck.

Tubing: 5 ½" x 5" CLS tubing string

If drilled depths correspond to formation tops, RU casers. Strap, tally & clean 5 ½" x 5" tubing. RIH with 5 ½" x 5" tubing and Packer Top Sub. PU landing joint and space out packer to correspond with proper landing depth. Lightly tag packer to confirm space out. Reverse circulate packer fluid down backside & up tubing. Pump 25% excess. Once backside is displaced, Sting into packer & set 50-100k lbs on packer. ND BOP & set well head slips with remaining string weight. LD BOP & NU injection head. RDMO drilling rig.