



Application for Permit to Drill

APD Package Report

Date Printed:

APD ID:	Well Status:
APD Received Date:	Well Name:
Operator:	Well Number:

APD Package Report Contents

- Form 3160-3
- Operator Certification Report
- Application Report
- Application Attachments
 - Well Plat: 2 file(s)
- Drilling Plan Report
- Drilling Plan Attachments
 - Blowout Prevention Choke Diagram Attachment: 1 file(s)
 - Blowout Prevention BOP Diagram Attachment: 1 file(s)
 - Casing Design Assumptions and Worksheet(s): 4 file(s)
 - Hydrogen sulfide drilling operations plan: 1 file(s)
 - Other Facets: 2 file(s)
- SUPO Report
- SUPO Attachments
 - Existing Road Map: 1 file(s)
 - New Road Map: 1 file(s)
 - Additional Attachment: 1 file(s)
 - Attach Well map: 2 file(s)
 - Production Facilities map: 1 file(s)
 - Water source and transportation map: 1 file(s)
 - Construction Materials source location attachment: 1 file(s)
 - Well Site Layout Diagram: 3 file(s)
- PWD Report
- PWD Attachments
 - None
- Bond Report
- Bond Attachments

-- None

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No. 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No.
2. Name of Operator		9. API Well No. 30-025-56015
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
13. State		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|---|---|
| 1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
 Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



(Continued on page 2)

*(Instructions on page 2)

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to a new evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

0. SHL: NESE / 1430 FSL / 300 FEL / TWSP: 23S / RANGE: 32E / SECTION: 28 / LAT: 32.2722574 / LONG: -103.6720262 (TVD: 0 feet, MD: 0 feet)

BHL: NESE / 1430 FSL / 300 FEL / TWSP: 23S / RANGE: 32E / SECTION: 28 / LAT: 32.2722574 / LONG: -103.6720262 (TVD: 18830 feet, MD: 18830 feet)

BLM Point of Contact

Name: CANDY VIGIL

Title: LLE

Phone: (575) 234-5982

Email: CVIGIL@BLM.GOV

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Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Solaris Water Midstream
LEASE NO.:	NMNM 062225
COUNTY:	Lea County, New Mexico

Wells:

Moonwalk Fed SWD No. 1

Surface Hole Location: 1430 feet from south line (FSL) and
300 feet from east line (FEL), Section 28, T. 23 S., R. 32 E.

Bottom Hole Location: 1430 feet from south line (FSL) and
300 feet from east line (FEL), Section 28, T. 23 S, R 32 E.

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1. GENERAL PROVISIONS

The failure of the operator to comply with these requirements may result in the assessment of liquidated damages or penalties pursuant to 43 CFR 3163.1 or 3163.2. A copy of these conditions of approval shall be present on the location during construction, drilling and reclamation activity. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

1.1. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural resource (historic or prehistoric site or object) discovered by the operator, or any person working on the operator's behalf, on the public or federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area (within 100ft) of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer, in conjunction with a BLM Cultural Resource Specialist, to determine appropriate actions to prevent the loss of significant scientific values. The operator shall be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the operator.

Traditional Cultural Properties (TCPs) are protected by NHPA as codified in 36 CFR 800 for possessing traditional, religious, and cultural significance tied to a certain group of individuals. Though there are currently no designated TCPs within the project area or within a mile of the project area, but it is possible for a TCP to be designated after the approval of this project. **If a TCP is designated in the project area after the project's approval, the BLM Authorized Officer will notify the operator of the following conditions and the duration for which these conditions are required.**

1. Temporary halting of all construction, drilling, and production activities to lower noise.
2. Temporary shut-off of all artificial lights at night.

The operator is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA), specifically NAGPRA Subpart B regarding discoveries, to protect human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered during project work. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and a BLM-CFO Authorized Officer will be notified immediately. The BLM will then be required to be notified, in writing, within 24 hours of the discovery. The written notification should include the geographic location by county and state, the contents of the discovery, and the steps taken to protect said discovery. You must also include any potential threats to the discovery and a conformation that all activity within 100ft of the discovery has ceased and work will not resume until written certification is issued. All work on the entire project must halt for a minimum of 3 days and work cannot resume until an Authorized Officer grants permission to do so.

Any paleontological resource discovered by the operator, or any person working on the operator's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. The operator will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the operator.

1.2. RANGELAND RESOURCES

1.2.1. Cattleguards

Where a permanent cattleguard is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

1.2.2. Fence Requirement

Where entry granted across a fence line, the fence must be braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

1.2.3. Livestock Watering Requirement

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

1.3. NOXIOUS WEEDS

If noxious weeds were NOT found during onsite:

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA, New Mexico Department of Agriculture, and BLM requirements and policies.

1.3.1 African Rue (*Peganum harmala*)

Spraying: The spraying of African Rue must be completed by a licensed or certified applicator. In order to attempt to kill or remove African Rue the proper mix of chemical is needed. The mix consists of 2% Arsenal (Imazapyr) and 2% Roundup (Glyphosate) along with a nonionic surfactant. Any other chemicals or combinations shall be approved by the BLM Noxious Weeds Coordinator prior to treatment. African Rue shall be sprayed in connection to any dirt working activities or disturbances to the site being sprayed. Spraying of African Rue shall be done on immature plants at initial growth through flowering and mature plants between budding and flowering stages. Spraying shall not be conducted after flowering when plant is fruiting. This will ensure optimal intake of chemical and decrease chances of developing herbicide resistance. After spraying, the operator or necessary parties must contact the Carlsbad Field Office to inspect the effectiveness of the application treatment to the plant species. No ground disturbing activities can take place until the inspection by the authorized officer is complete. The operator may contact the Environmental Protection Department or the BLM Noxious Weed Coordinator at (575) 234-5972 or BLM_NM_CFO_NoxiousWeeds@blm.gov.

Management Practices: In addition to spraying for African Rue, good management practices should be followed. All equipment should be washed off using a power washer in a designated containment area. The containment area shall be bermed to allow for containment of the seed to prevent it from entering any open areas of the nearby landscape. The containment area shall be excavated near or adjacent to the well pad at a depth of three feet and just large enough to get equipment inside it to be washed off. This will allow all seeds to be in a centrally located area that can be treated at a later date if the need arises.

1.4. LIGHT POLLUTION

1.4.1. Downfacing

All permanent lighting will be pointed straight down at the ground in order to prevent light spill beyond the edge of approved surface disturbance.

1.4.2. Shielding

All permanent lighting will use full cutoff luminaires, which are fully shielded (i.e., not emitting direct or indirect light above an imaginary horizontal plane passing through the lowest part of the light source).

1.4.3. Lighting Color

Lighting shall be 3,500 Kelvin or less (Warm White) except during drilling, completion, and workover operations. No bluish-white lighting shall be used in permanent outdoor lighting.

2. SPECIAL REQUIREMENTS

2.1. WATERSHED

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The topsoil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

2.1.1. Facilities

Facility locations will be lined and bermed. A 20-mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Secondary containment holding capacity must be large enough to contain 1 ½ times the content of the largest tank or 24-hour production, whichever is greater (displaced volume from all tanks within the berms MUST be subtracted from total volume of containment in calculating holding capacity). Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

2.3 WILDLIFE

2.3.1 Lesser Prairie Chicken

2.3.1.1 Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

2.3.1.2 Timing Limitation Exceptions:

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

2.3.1.3 Ground-level Abandoned Well Marker to avoid raptor perching:

2.4 VISUAL RESOURCE MANAGEMENT

2.5.1 VRM IV

Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color, Shale Green from the BLM Standard Environmental Color Chart (CC-001: June 2008).

2.5.2 VRM III Facility Requirement

Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color, Shale Green from the BLM Standard Environmental Color Chart (CC-001: June 2008).

3. CONSTRUCTION REQUIREMENTS

3.1 CONSTRUCTION NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at BLM_NM_CFO_Construction_Reclamation@blm.gov at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and COAs on the well site and they shall be made available upon request by the Authorized Officer.

3.2 TOPSOIL

The operator shall strip the topsoil (the A horizon) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. No more than the top 6 inches of topsoil shall be removed. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (the B horizon and below) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

3.3 CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No reserve pits will be used for drill cuttings. The operator shall properly dispose of drilling contents at an authorized disposal site.

3.4 FEDERAL MINERAL PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

3.5 WELL PAD & SURFACING

Any surfacing material used to surface the well pad will be removed at the time of interim and final reclamation.

3.6 EXCLOSURE FENCING (CELLARS & PITS)

The operator will install and maintain enclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the well cellar is free of fluids and the operator initiates backfilling. (For examples of enclosure fencing design, refer to BLM's Oil and Gas Gold Book, Enclosure Fence Illustrations, Figure 1, Page 18.)

The operator will also install and maintain mesh netting for all open well cellars to prevent access to smaller wildlife before and after drilling operations until the well cellar is free of fluids and the operator. Use a maximum netting mesh size of 1 ½ inches. The netting must not have holes or gaps.

3.7 ON LEASE ACCESS ROAD

3.7.1 Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed twenty (20) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

3.7.2 Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements will be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

3.7.3 Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

3.7.4 Ditching

Ditching shall be required on both sides of the road.

3.7.5 Turnouts

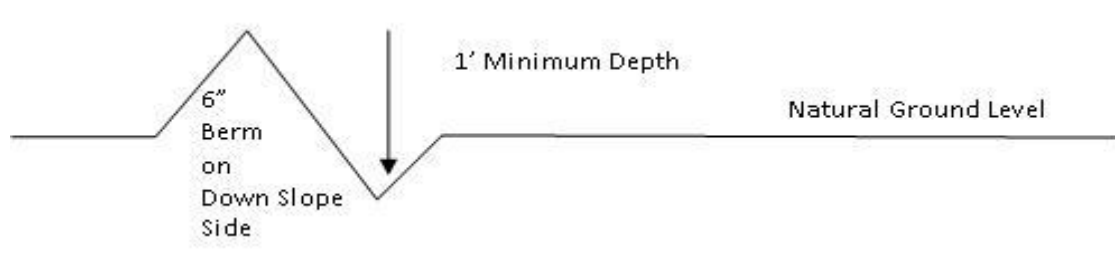
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

3.7.6 Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out-sloping and in-sloping, leadoff ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4} + 100' = 200' \text{ lead-off ditch interval}$$

3.7.7 Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

- Construction Steps**
1. Salvage topsoil
 2. Construct road
 3. Redistribute topsoil
 4. Revegetate slopes

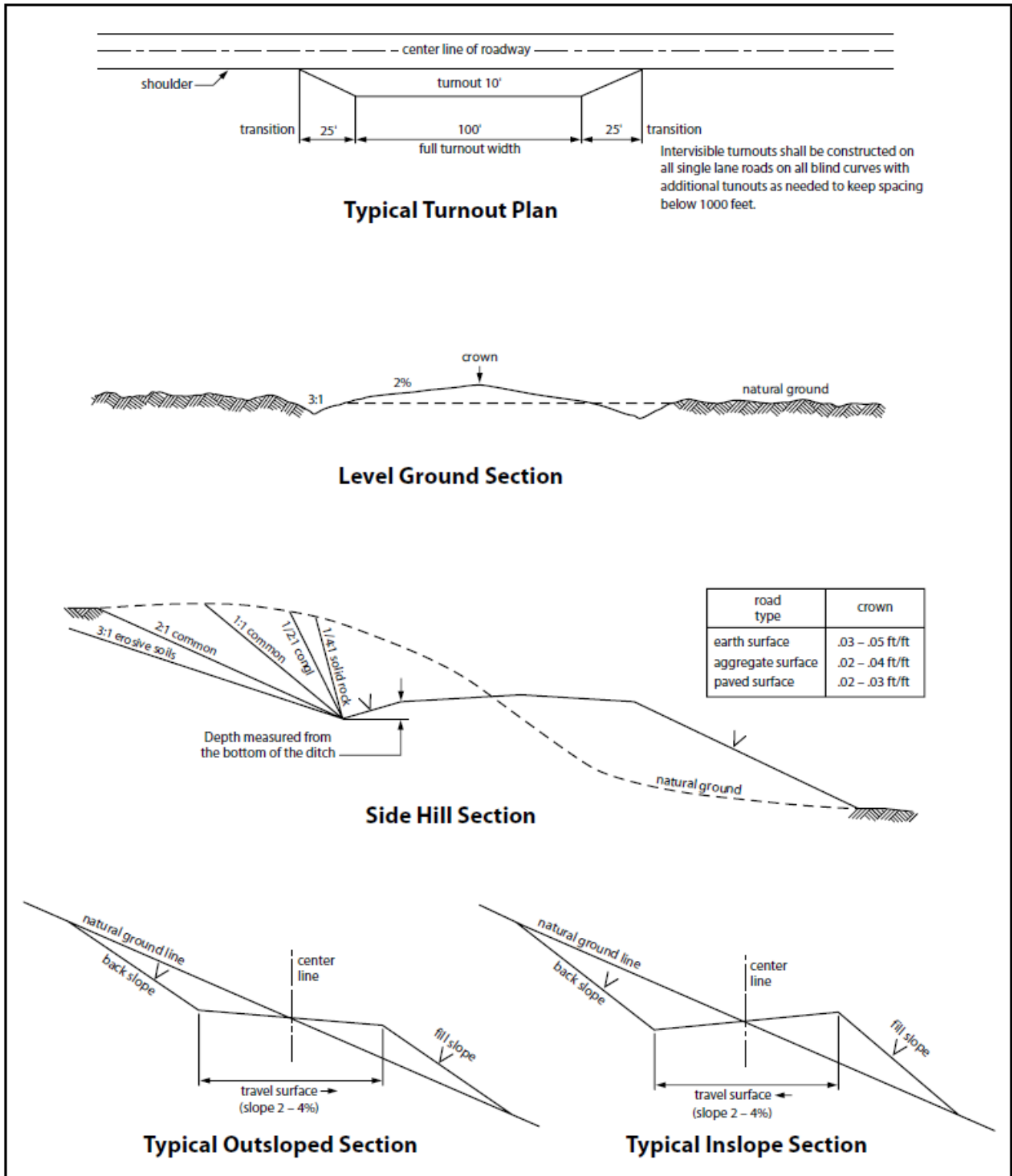


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

4.1 RANGLAND MITIGATION FOR PIPELINES

4.5.1 Fence Requirement

Where entry is granted across a fence line, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment operator prior to crossing any fence(s).

4.5.2 Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at road-fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

4.5.3 Livestock Watering Requirement

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

Any damage to structures that provide water to livestock throughout the life of the well, caused by operations from the well site, must be immediately corrected by the operator. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment operator if any damage occurs to structures that provide water to livestock.

- Livestock operators will be contacted, and adequate crossing facilities will be provided as needed to ensure livestock are not prevented from reaching water sources because of the open trench.
- Wildlife and livestock trails will remain open and passable by adding soft plugs (areas where the trench is excavated and replaced with minimal compaction) during the construction phase. Soft plugs with ramps on either side will be left at all well-defined livestock and wildlife trails along the open trench to allow passage across the trench and provide a means of escape for livestock and wildlife that may enter the trench.
- Trenches will be backfilled as soon as feasible to minimize the amount of open trench. The Operator will avoid leaving trenches open overnight to the extent possible and open trenches that cannot be backfilled immediately will have escape ramps (wooden) placed at no more than 2,500 feet intervals and sloped no more than 45 degrees.

5. PRODUCTION (POST DRILLING)

5.1 WELL STRUCTURES & FACILITIES

5.1.1 Placement of Production Facilities

Production facilities must be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

5.1.2 Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will

net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

5.1.3. Chemical and Fuel Secondary Containment and Enclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock enclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

5.1.4. Open-Vent Exhaust Stack Enclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended enclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

5.1.5. Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

6. RECLAMATION

Stipulations required by the Authorized Officer on specific actions may differ from the following general guidelines

6.1 ROAD AND SITE RECLAMATION

Any roads constructed during the life of the well will have the caliche removed or linear burial. If contaminants are indicated then testing will be required for chlorides and applicable contaminate anomalies for final disposal determination (disposed of in a manner approved by the Authorized Officer within Federal, State and Local statutes, regulations, and ordinances) and seeded to the specifications in sections 6.5 and 6.6.

6.2 EROSION CONTROL

Install erosion control berms, windrows, and hummocks. Windrows must be level and constructed perpendicular to down-slope drainage; steeper slopes will require greater windrow density. Topsoil between windrows must be ripped to a depth of at least 12", unless bedrock is encountered. Any large boulders pulled up during ripping must be deep-buried on location. Ripping must be perpendicular to down-slope. The surface must be left rough in order to catch and contain rainfall on-site. Any trenches resulting from erosion cause by run-off shall be addressed immediately.

6.3 INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations must undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators must work with BLM surface protection specialists (BLM_NM_CFO_Construction_Reclamation@blm.gov) to devise the best strategies to reduce the size of the location. Interim reclamation must allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche and any other surface material is required. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided in section 6.6.

Upon completion of interim reclamation, the operator shall submit a Sundry Notice, Subsequent Report of Reclamation (Form 3160-5).

6.4 FINAL ABANDONMENT & RECLAMATION

Prior to surface abandonment, the operator shall submit a Notice of Intent Sundry Notice and reclamation plan.

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding will be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM. After earthwork and seeding is completed, the operator is required to submit a Sundry Notice, Subsequent Report of Reclamation.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (BLM_NM_CFO_Construction_Reclamation@blm.gov).

6.5 SEEDING TECHNIQUES

Seeds shall be hydro-seeded, mechanically drilled, or broadcast, with the broadcast-seeded area raked, ripped or dragged to aid in covering the seed. The seed mixture shall be evenly and uniformly planted over the disturbed area.

6.6 SOIL SPECIFIC SEED MIXTURE

The lessee/permittee shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed land application will be accomplished by mechanical planting using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area. Smaller/heavier seeds tend to drop the bottom of the drill and are planted first; the operator shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory BLM or Soil Conservation

District stand is established as determined by the Authorized Officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding or until several months of precipitation have occurred, enabling a full four months of growth, with one or more seed generations being establishe

Seed Mixture #5 for LPC Sand/Shinnery Sites

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Solaris Water Midstream
LOCATION:	Section 28, T.23 S., R.32 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Moonwalk Fed SWD 1
ATS/API ID:	ATS-24-530
APD ID:	10400095347
Sundry ID:	N/a

COA

H2S	Yes		
Potash	None	None	
Cave/Karst Potential	Low		
Cave/Karst Potential	<input type="checkbox"/> Critical		
Variance	<input checked="" type="radio"/> None	<input type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	Conventional		
Other	<input type="checkbox"/> 4 String <input type="checkbox"/> 5 String	Capitan Reef None	<input type="checkbox"/> WIPP
Other	Pilot Hole None	<input type="checkbox"/> Open Annulus	
Cementing	Contingency Squeeze None	Echo-Meter None	Primary Cement Squeeze None
Special Requirements	<input checked="" type="checkbox"/> Water Disposal/Injection	<input type="checkbox"/> COM	<input type="checkbox"/> Unit
Special Requirements	<input type="checkbox"/> Batch Sundry	Waste Prevention None	
Special Requirements Variance	<input type="checkbox"/> BOPE Break Testing <input type="checkbox"/> Offline BOPE Testing	<input type="checkbox"/> Offline Cementing	<input type="checkbox"/> Casing Clearance

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H₂S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet **43 CFR part 3170 Subpart 3176** requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **20** inch surface casing shall be set at approximately **1295 feet** (a minimum of 70 feet into the Rustler Anhydrite and above the salt when present, and below usable fresh water) and cemented to the surface. The surface hole shall be **26** inch in diameter.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **13-3/8** inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Production casing must be kept fluid filled to meet BLM minimum collapse requirement.

3. The minimum required fill of cement behind the **9-5/8** inch production casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

4. The minimum required fill of cement behind the **7-5/8** inch production liner is:
 - Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13-3/8** inch intermediate casing shoe shall be **5000 (5M)** psi.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

D. SPECIAL REQUIREMENT (S)

Well Completions

The operator shall supply the BLM with a copy of a mud log over the permitted disposal interval and estimated in-situ water salinity based on open-hole logs. If hydrocarbon shows occur while drilling, the operator shall notify the BLM.

The operator shall provide to the BLM a summary of formation depth picks based on mud log and geophysical logs along with a copy of the mud log and open hole logs from TD to top of injected formation.

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

1. Properly evaluate the injection zone utilizing open hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.
2. Restrict the injection fluid to the approved formation.
3. If a step rate test will be run an NOI sundry shall be submitted to the BLM for approval.

If off-lease water will be disposed/injected in this well, the operator shall provide proof of right-of-way approval.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per **43 CFR part 3170 Subpart 3172** as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends of both lead and tail cement, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR part 3170 Subpart 3172 and API STD 53 Sec. 5.3**.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke

manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172.6(b)(9) must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be

initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)

- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR part 3170 Subpart 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for 8 hours or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR part 3170 Subpart 3172**.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and

disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Long Vo (LVO) 6/5/2025



U. S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

06/16/2025

Operator

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: FAITH MALTON

Signed on: 04/03/2025

Title: Regulatory Engineer

Street Address: 9651 KATY FREEWAY SUITE 400

City: HOUSTON

State: TX

Zip: 77024

Phone: (832)454-0001

Email address: FAITH.MALTON@ARISWATER.COM

Field

Representative Name: Faith Malton

Street Address: 9651 Katy Freeway Suite 400

City: Houston

State: TX

Zip: 77024

Phone:

Email address: faith.malton@ariswater.com



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data

06/16/2025

APD ID: 10400095347	Submission Date: 12/08/2023	Highlighted data reflects the most recent changes Show Final Text
Operator Name: SOLARIS WATER MIDSTREAM LLC		
Well Name: MOONWALK FED SWD	Well Number: 1	
Well Type: INJECTION - DISPOSAL	Well Work Type: Drill	

Section 1 - General

APD ID: 10400095347	Tie to previous NOS? Y	Submission Date: 12/08/2023
BLM Office: Carlsbad	User: FAITH MALTON	Title: Regulatory Engineer
Federal/Indian APD: FED	Is the first lease penetrated for production Federal or Indian? FED	
Lease number: NMNM62225	Lease Acres:	
Surface access agreement in place?	Allotted?	Reservation:
Agreement in place? NO	Federal or Indian agreement:	
Agreement number:		
Agreement name:		
Keep application confidential? Y		
Permitting Agent? NO	APD Operator: SOLARIS WATER MIDSTREAM LLC	
Operator letter of		

Operator Info

Operator Organization Name: SOLARIS WATER MIDSTREAM LLC

Operator Address: 9651 KATY FREEWAY SUITE 400 **Zip:** 77024

Operator PO Box:

Operator City: HOUSTON **State:** TX

Operator Phone: (281)501-3070

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO	Master Development Plan name:	
Well in Master SUPO? NO	Master SUPO name:	
Well in Master Drilling Plan? NO	Master Drilling Plan name:	
Well Name: MOONWALK FED SWD	Well Number: 1	Well API Number:
Field/Pool or Exploratory? Field and Pool	Field Name: SWD	Pool Name: DEVONIAN-SILURIAN

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Is the proposed well in an area containing other mineral resources? NATURAL GAS,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: SINGLE WELL

Multiple Well Pad Name:

Number:

Well Class: VERTICAL

Number of Legs: 1

Well Work Type: Drill

Well Type: INJECTION - DISPOSAL

Describe Well Type:

Well sub-Type: INJECTION - DISPOSAL

Describe sub-type:

Distance to town: 25 Miles

Distance to nearest well: 5936 FT

Distance to lease line: 300 FT

Reservoir well spacing assigned acres Measurement: 5 Acres

Well plat: MWF_1_Moonwalk_SWD_No_1_Well_Pad_20250515140548.pdf

Moonwalk_Fed_SWD_No1_Well_Pad_REV3_25_25_20250528111234.pdf

Well work start Date: 01/01/2026

Duration: 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum: GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
SHL Leg #1	1430	FSL	300	FEL	23S	32E	28	Aliquot NESE	32.2722574	-103.6720262	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 62225	3670			N
BHL Leg #1	1430	FSL	300	FEL	23S	32E	28	Aliquot NESE	32.2722574	-103.6720262	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 62225	-15160	18830	18830	N

Operator Name: SOLARIS WATER MIDSTREAM LLC

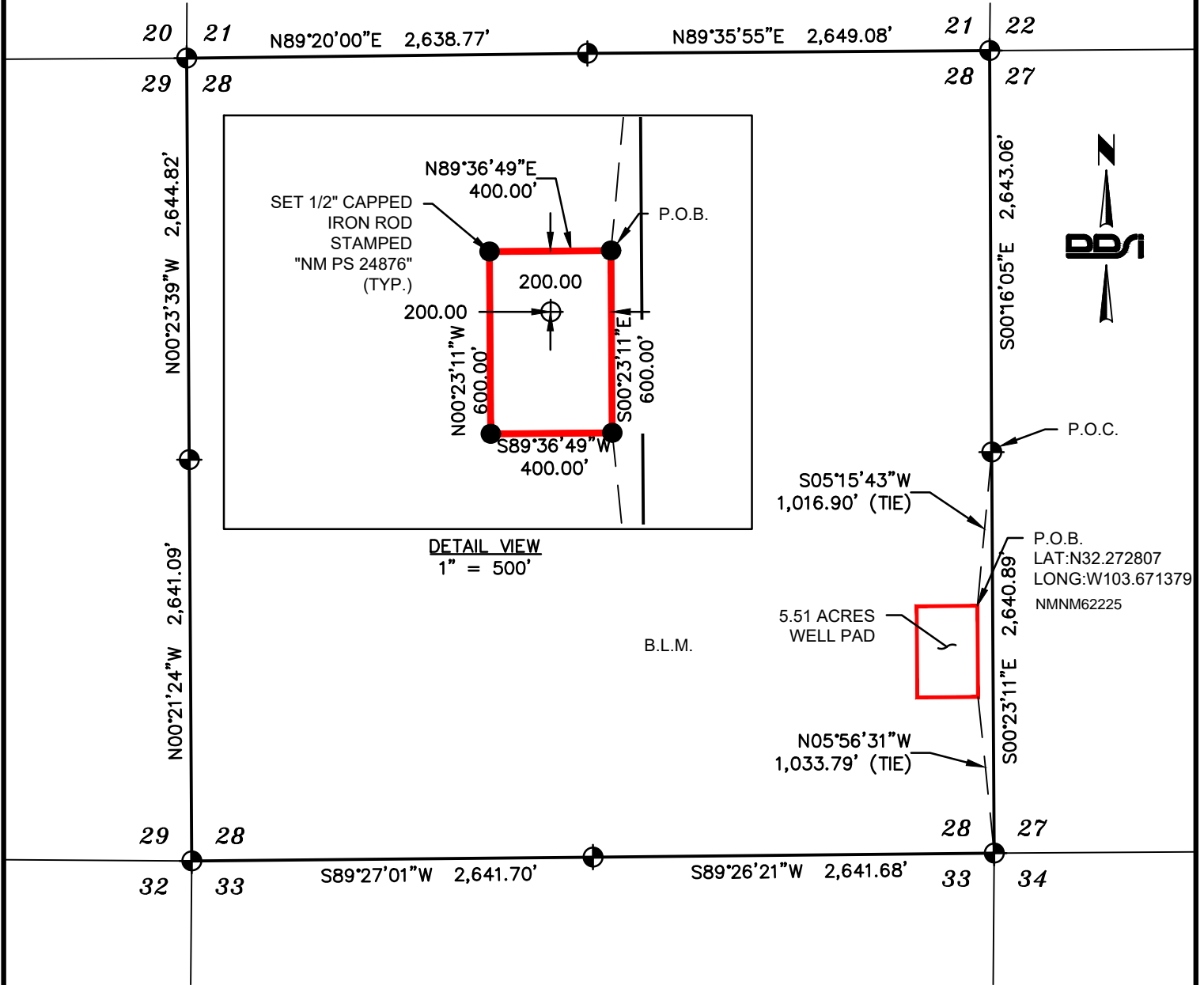
Well Name: MOONWALK FED SWD

Well Number: 1

CONFIDENTIAL

EXHIBIT A

SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, NEW MEXICO
BUREAU OF LAND MANAGEMENT (B.L.M.)



A METES AND BOUNDS DESCRIPTION OF A PROPOSED WELL PAD

BEING AN 5.51 ACRE TRACT OF LAND SITUATED IN SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., IN LEA COUNTY, NEW MEXICO, SAID SURFACE SITE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 28 BEING A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY", THENCE SOUTH 05°15'43" WEST, 1,016.90 FEET TO THE POINT OF BEGINNING AT A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE SOUTH 00°23'11" EAST, 600.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876" AND BEING NORTH 05°56'31" WEST, 1,033.79 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 28 BEING A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY"; THENCE SOUTH 89°36'49" WEST, 400.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE NORTH 00°23'11" WEST, 600.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE NORTH 89°36'49" EAST, 400.00 FEET TO THE POINT OF BEGINNING AND CONTAINING 5.51 ACRES (240,000 SQUARE FEET) OF LAND.

BASIS OF BEARING: BEARINGS SHOWN HEREON ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983, NEW MEXICO EAST STATE PLANE ZONE #3001, US SURVEY FEET. ALL DISTANCES ARE GRID.

NOTES:

- RESEARCH HAS BEEN PROVIDED BY OTHERS.
- THIS IS NOT A BOUNDARY SURVEY, THIS PLAT IS FOR EASEMENT PURPOSES ONLY.
- EASEMENTS, SETBACKS, AND OTHER ENCUMBRANCES ARE NOT SHOWN BY AGREEMENT WITH CLIENT.
- P.O.C. = POINT OF COMMENCEMENT
- P.O.B. = POINT OF BEGINNING
- P.O.T. = POINT OF TERMINATION
- I.R.F. = IRON ROD FOUND
- I.P.F. = IRON PIPE FOUND
- MODIFICATION IN ANY WAY OF THE FOREGOING DESCRIPTION TERMINATES LIABILITY OF SURVEYOR.

LEGEND:

- = DENOTES SURFACE SITE EASEMENT
- = DENOTES SUBJECT PARCEL
- = DENOTES FOUND/SET CORNER AS NOTED
- ⊙ = DENOTES FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY"
- ⊕ = DENOTES FUTURE WELL HEAD

EASEMENT TABLE

SURFACE SITE	240,000 SQUARE FEET	5.51 ACRES
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SURVEYOR'S CERTIFICATE

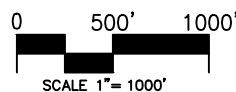
I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT ACROSS AN EXISTING TRACT OR TRACTS.

Chris Carlson

DATE OF SIGNATURE: 06/21/2021
CHRIS E. CARLSON N.M.P.S. NO. 24876



DOWNTOWN DESIGN SERVICES, INC.
16 E. 16TH ST. SUITE 400
TULSA, OK 74119
Tel: 918-592-3374 Fax: 918-221-3940
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SOLARIS WATER MIDSTREAM, LLC.

MOONWALK FED SWD NO. 1
LOCATION OF A PROPOSED WELL PAD IN
SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO

FIELD DATE:	06/16/2021	WELL PAD
DRAFTING DATE:	06/21/2021	PAGE 1 OF 1

JOB No. 2021-170 APPROVED BY: CEC DRAWN BY: TJA TRACT: MWF-1

NO.	REVISION DESCRIPTION	DATE	BY

Santa Fe Main Office Phone: (505) 476-3441 Fax: (55) 476-3462 General Information Phone: (505) 629-6116 Online Phone Directory Visit: https://www.emnrd.nm.gov/ocd/contact-us/	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	C-102 Revised July 9, 2024 Submit Electronically via OCD Permitting
		Submittal Type: <input type="checkbox"/> Initial Submittal <input type="checkbox"/> Amended Report <input type="checkbox"/> As Drilled

WELL LOCATION INFORMATION

API Number	Pool Code 97869	Pool Name SWD; DEVONIAN-SILURIAN
Property Code	Property Name MOONWALK FED SWD	Well Number #1
OGRID No. 371643	Operator Name SOLARIS WATER MIDSTREAM, LLC.	Ground Level Elevation 3670'
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal		Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal

Surface Location

UL I	Section 28	Township 23-S	Range 32-E	Lot	Ft. from N/S 1,430 FSL	Ft. from E/W 300 FEL	Latitude 32.2722574° N	Longitude 103.6720262° W	County LEA
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Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code
Order Numbers.			Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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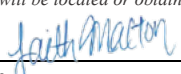


First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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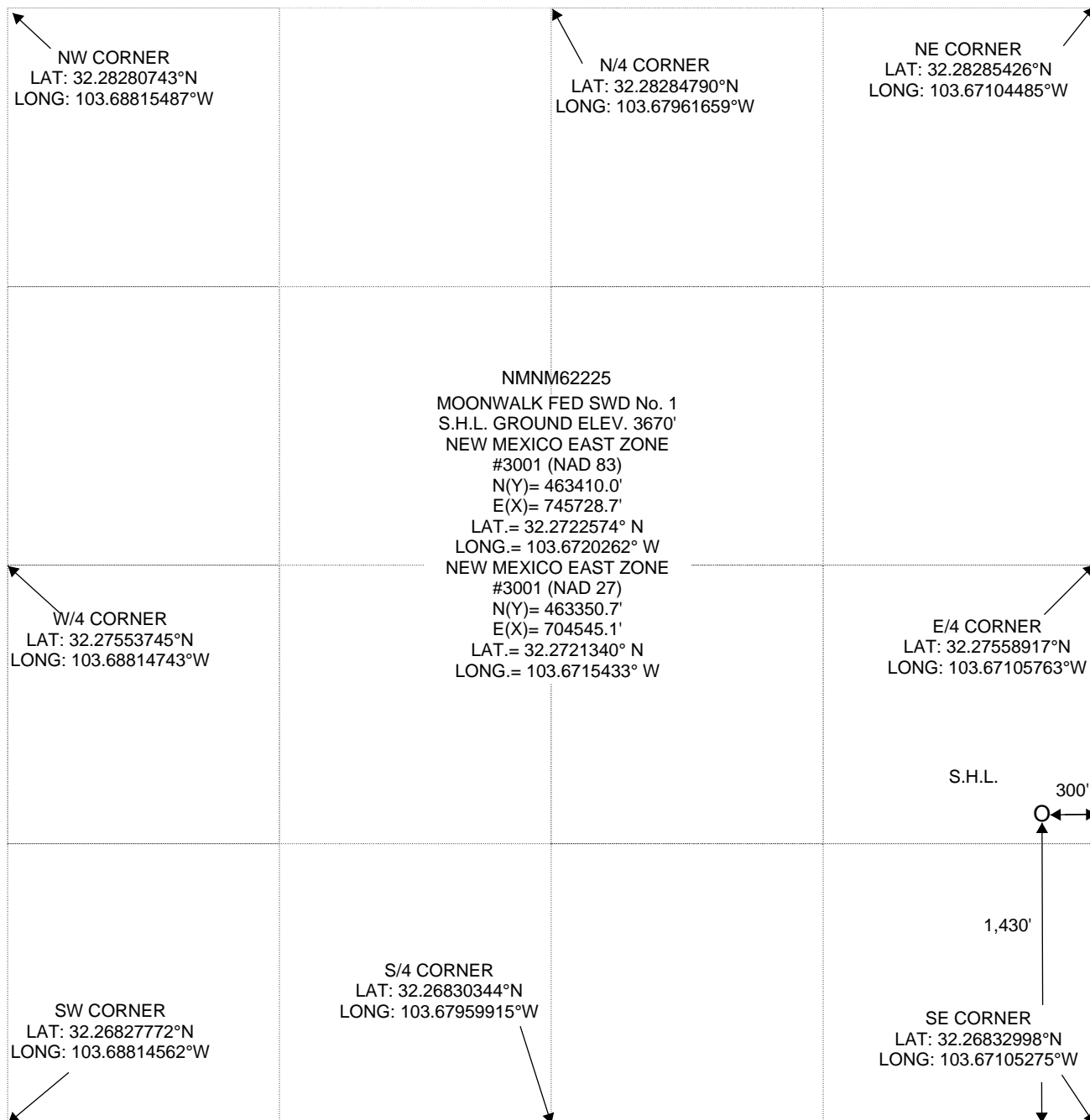
Unitized Area or Area of Uniform Interest	Spacing Unit Type <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Ground Floor Elevation:
---	---	-------------------------

<p>OPERATOR CERTIFICATIONS</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p><i>If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.</i></p> <p style="text-align: center;">  May 8 2025 Signature Date </p> <p style="text-align: center;"> Faith Malton Printed Name </p> <p style="text-align: center;"> faith.malton@ariswater.com Email Address </p>	<p>SURVEYOR CERTIFICATIONS</p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p style="text-align: center;">  Signature and Seal of Professional Surveyor </p> <div style="text-align: right;">  </div> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;">Certificate Number</td> <td style="width:50%; border: none;">Date of Survey</td> </tr> <tr> <td style="text-align: center; border: none;">24876</td> <td style="text-align: center; border: none;">6-22-2021</td> </tr> </table>	Certificate Number	Date of Survey	24876	6-22-2021
Certificate Number	Date of Survey				
24876	6-22-2021				

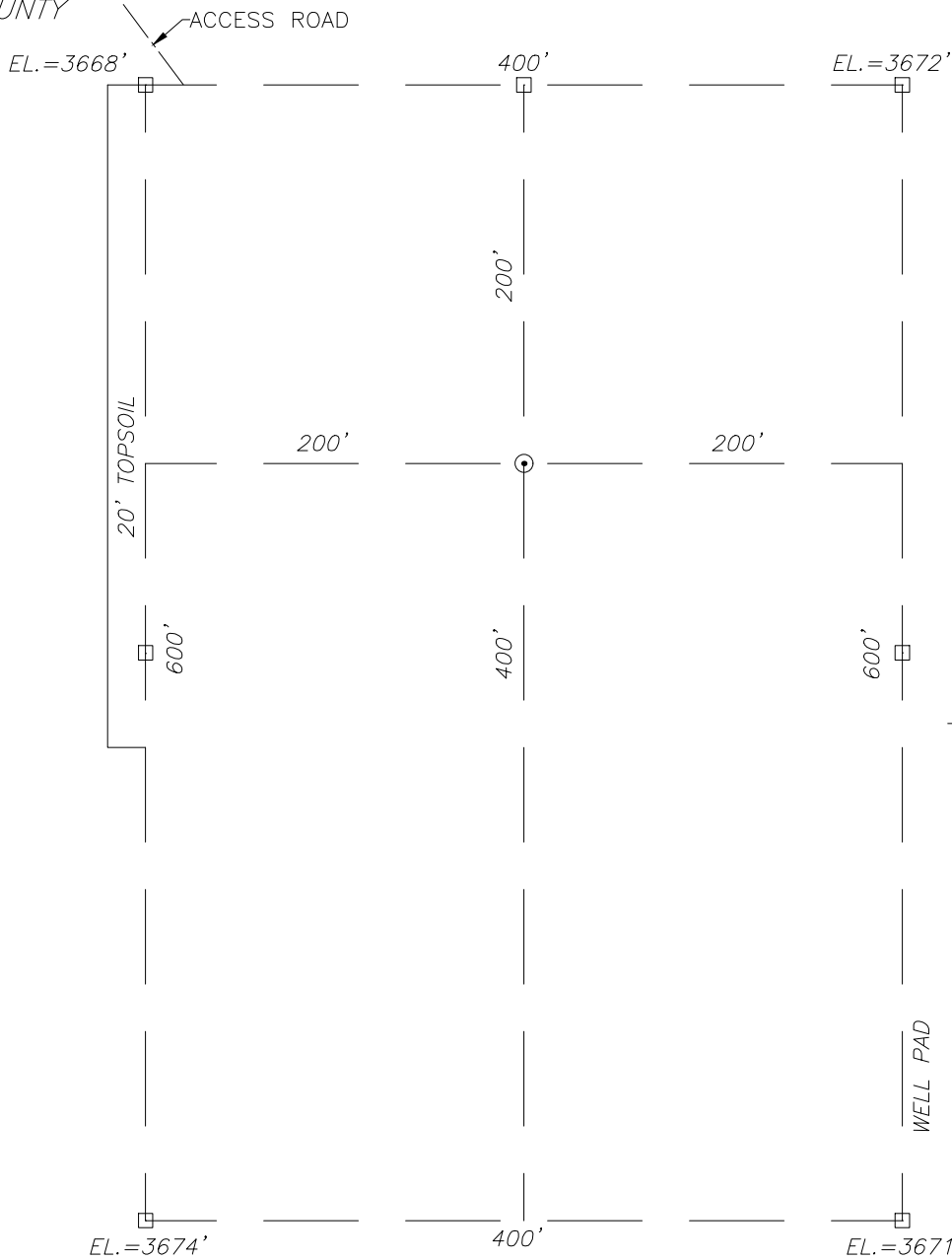
Note: No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.



SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY NEW MEXICO



MOONWALK FED SWD No. 1
 SHL: GR. ELEV. 3670'
 NEW MEXICO EAST ZONE
 #3001 (NAD 83)
 N(Y)= 463410.0'
 E(X)= 745728.7'
 LAT.= 32.2722574° N
 LONG.=103.6720262° W
 NEW MEXICO EAST ZONE
 #3001 (NAD 27)
 N(Y)= 463350.7'
 E(X)= 704545.1'
 LAT.= 32.2721340° N
 LONG.=103.6715433° W

DIRECTIONS TO LOCATION:

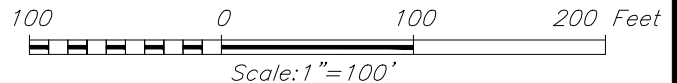
BEGINNING AT THE INTERSECTION OF US-285 AND POTASH MINES RD. IN CARLSBAD, NEW MEXICO; HEAD EASTERLY ON POTASH MINES RD. FOR ±7.7 MILES TO HIGHWAY 128. TURN RIGHT. HEAD EASTERLY/SOUTHEASTERLY ON HIGHWAY 128 FOR ±19.0 MILES TO LEASE ROAD. TURN LEFT. HEAD NORTHEAST FOR ±3.8 MILES. THE STAKED LOCATION FLAG IS TO THE SOUTHEAST ±606 FEET FROM THE LEASE ROAD.

ELEVATIONS SHOWN WERE DERIVED FROM STATIC GPS AND ARE IN N.A.V.D. 1988 DATUM.



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REV. 3 ADD SURVEY NOTE TJA 3-25-25



SURVEYOR'S CERTIFICATE

I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS RULE 12.8.2.15 FOR UNCLASSIFIED SURVEY IN NEW MEXICO.



Chris Carlson 3/25/2025
 CHRIS E. CARLSON N.M.P.S. NO. 24876

SOLARIS WATER MIDSTREAM, LLC		
MOONWALK FED SWD No. 1 LOCATED 1,430 FEET FROM THE SOUTH LINE AND 300 FEET FROM THE EAST LINE OF SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK FED SWD No. 1

VICINITY MAP



MOONWALK FED SWD No.1

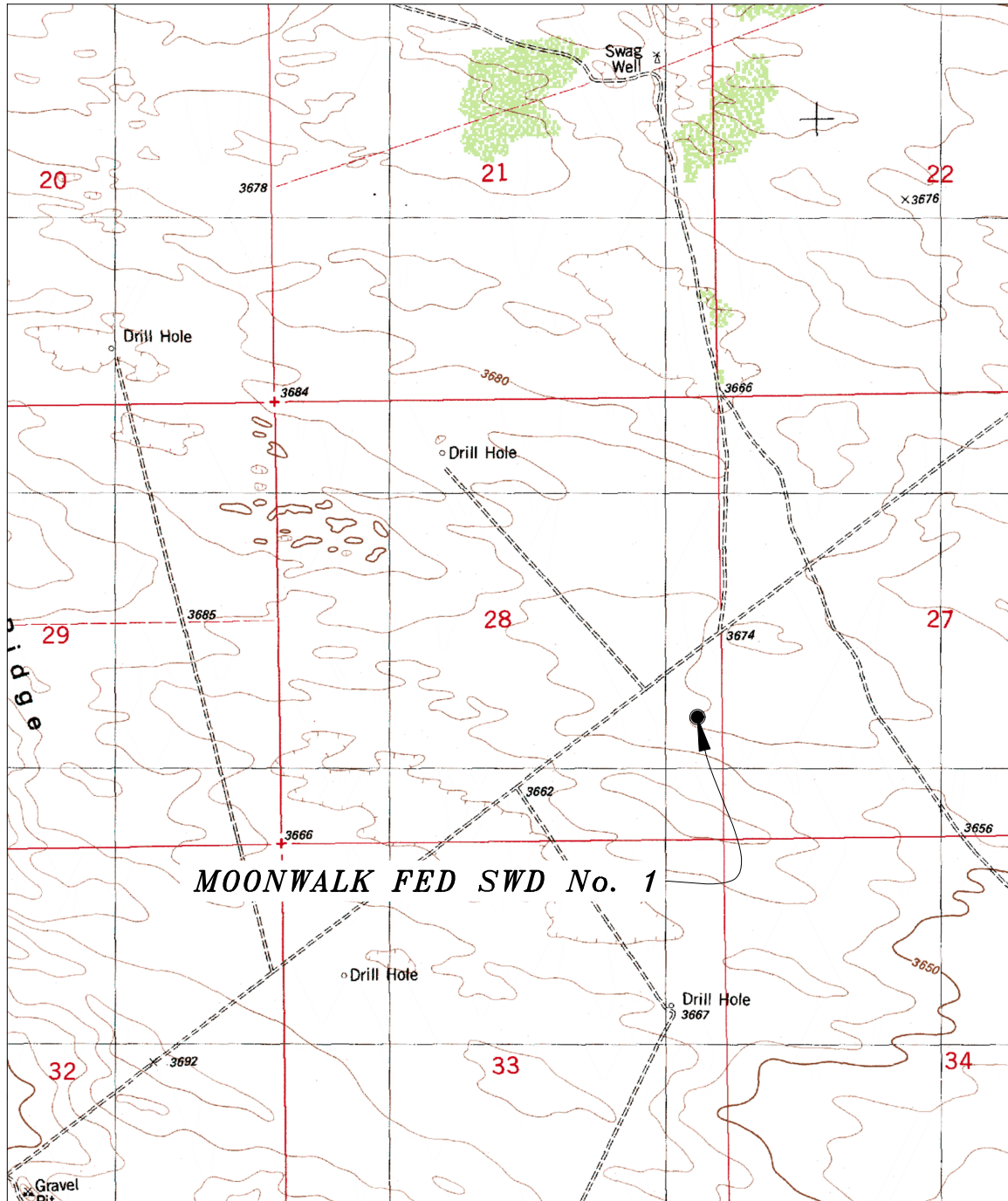
SEC. 28 TWP. 23-S RGE. 32-E
 SURVEY N.M.P.M.
 COUNTY LEA STATE NEW MEXICO
 DESCRIPTION 1,430' FSL & 300' FEL
 N.A.V.D. 88 ELEVATION 3670'
 OPERATOR SOLARIS WATER MIDSTREAM, LLC
 LEASE MOONWALK FED SWD No. 1
 U.S.G.S. TOPOGRAPHIC MAP
LEA, N.M.

SCALE: 1" = 2000'

ELEVATIONS SHOWN WERE DERIVED FROM
STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.

SOLARIS WATER MIDSTREAM, LLC		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK SWD No. 1

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 28 TWP. 23-S RGE. 32-E
 SURVEY N.M.P.M.
 COUNTY LEA STATE NEW MEXICO
 DESCRIPTION 1,430' FSL & 300' FEL
 N.A.V.D.88 ELEVATION 3670'
 OPERATOR SOLARIS WATER MIDSTREAM, LLC
 LEASE MOONWALK FED SWD No. 1
 U.S.G.S. TOPOGRAPHIC MAP
 LEA, N.M.

SOLARIS WATER MIDSTREAM, LLC		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK SWD No. 1

ELEVATIONS SHOWN WERE DERIVED FROM
 STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.



Drilling Plan Data Report

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

06/16/2025

APD ID: 10400095347

Submission Date: 12/08/2023

Highlighted data reflects the most recent changes

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Well Type: INJECTION - DISPOSAL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
15832285	QUATERNARY	3670	0	0	ALLUVIUM	USEABLE WATER	N
15832289	RUSTLER	2421	1249	1249	ANHYDRITE	NONE	N
15832290	SALADO	2113	1557	1557	SALT	NONE	N
15832292	LAMAR	-1210	4880	4880	LIMESTONE, SHALE	NONE	N
15832293	BELL CANYON	-1249	4919	4919	SANDSTONE	NATURAL GAS, OIL	N
15832294	CHERRY CANYON	-2105	5775	5775	SANDSTONE	NATURAL GAS, OIL	N
15832295	BRUSHY CANYON	-3402	7072	7072	SANDSTONE	NATURAL GAS, OIL	N
15832296	BONE SPRING LIME	-5022	8692	8692	LIMESTONE, SHALE	NATURAL GAS, OIL	N
15832297	BONE SPRING 1ST	-6185	9855	9855	SANDSTONE	NATURAL GAS, OIL	N
15832298	BONE SPRING 2ND	-6472	10142	10142	LIMESTONE, SHALE	NATURAL GAS, OIL	N
15832299	BONE SPRING 2ND	-6816	10486	10486	SANDSTONE	NATURAL GAS, OIL	N
15832302	WOLFCAMP	-8428	12098	12098	SHALE	NATURAL GAS, OIL	N
15832300	BONE SPRING 3RD	-9090	12760	12760	LIMESTONE, SHALE	NATURAL GAS, OIL	N
15832301	BONE SPRING 3RD	-9503	13173	13173	SANDSTONE	NATURAL GAS, OIL	N
15832303	STRAWN	-10510	14180	14180	LIMESTONE	NATURAL GAS, OIL	N
15832304	MORROW	-10885	14555	14555	LIMESTONE, SHALE	NATURAL GAS, OIL	N
15832305	BARNETT	-12735	16405	16405	SHALE	NATURAL GAS, OIL	N

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
15832306	MISSISSIPPIAN	-13185	16855	16855	LIMESTONE	NATURAL GAS, OIL	Y
15832307	WOODFORD	-13505	17175	17175	CHERT, DOLOMITE, LIMESTONE	NONE	Y
15832308	MONTOYA	-15360	19030	19030	DOLOMITE, LIMESTONE	NONE	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 10000

Equipment: All required equipment per Federal Regulations to be in place prior to drilling out the surface casing.

Requesting Variance? NO

Variance request:

Testing Procedure: The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure as per Onshore Order 2 requirements. Pipe Rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per Onshore Order #2. Mud logging unit (2 Man) below 16" casing. Open hole and cased hole logging may be conducted in intermediate and production hole sections. Logs that may be run include triple combo, sonic, and cement bond log.

Choke Diagram Attachment:

10M_BOP_Diagram_3_Ram_V2_20240911081031_20250519084713.pdf

BOP Diagram Attachment:

10M_BOP_Diagram_3_Ram_V2_20240911081031_20250519084722.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	26	20.0	NEW	API	N	0	1274	0	1274	3670	2396	1274	J-55	106.5	N/A	1.23	1.55	BUOY	13.68	BUOY	14.45
2	INTERMEDIATE	17.5	13.375	NEW	API	N	0	4919	0	4919	3670	-1249	4919	L-80	68	N/A	1.63	1.83	BUOY	5.45	BUOY	5.49
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	12200	0	12200	3670	-8530	12200	P-110	43.5	N/A	1.155	1.33	BUOY	3.07	BUOY	3.09

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
4	LINER	8.75	7.625	NEW	API	N	12000	17680	12000	17680	-8330	-14010	5680	P-110	39	N/A	2.26	1.5	BUOY	4.34	BUOY	6.81

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Solaris__Moonwalk_SWD__1__Casing_SF_Calcs_20250403115235.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Solaris__Moonwalk_SWD__1__Casing_SF_Calcs_20250403115252.pdf

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Casing Attachments

Casing ID: 3 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Solaris__Moonwalk_SWD__1__Casing_SF_Calcs_20250403115308.pdf

Casing ID: 4 **String** LINER

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Solaris__Moonwalk_SWD__1__Casing_SF_Calcs_20250403115327.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	900	1756	1.72	13.5	3020	100	Class C	+Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
SURFACE	Tail		900	1274	560	1.33	14.8	745	50	Class C	+C-45, CaCl
INTERMEDIATE	Lead		0	3933	2922	2.13	12.7	6224	100	65:10:25 Class C Premium: Compass Poz-Mix:CPO-18	Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
INTERMEDIATE	Tail		3933	4919	856	1.2	14.8	1027	50	50:50 Class C Premium: Compass Poz-	Salt, C-51, STE, C-23

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
										Mix	
INTERMEDIATE	Lead		0	1144 7	1766	3.66	10.6	6464	75	100% HSLD 9420 Cement	Salt, C-45 Econolite, Citric Acid, CSA-1000- Fluid Loss Additive, C- 49 Expanding Gas Flow Control
INTERMEDIATE	Tail		1144 7	1202 0	268	1.32	15	354	50	100% Class H Premium Cement	STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
LINER	Lead		1200 0	1768 0	1091	1.3	15.6	1418	40	Class C	STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with 43 CFR 3172:

Diagram of the equipment for the circulating system in accordance with 43 CFR 3172:

Describe what will be on location to control well or mitigate other conditions: BOP and Choke Manifold will be used to control the well.

Describe the mud monitoring system utilized: A PVT system will be utilized to actively monitor the pit system, along with daily mud checks by a Mud Engineer.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	1320	SPUD MUD	8.4	9.2							

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1320	4919	SALT SATURATED	9.5	10							BRINE
4919	12200	SALT SATURATED	9	10							
12200	17680	OIL-BASED MUD	12.5	13.5							
17680	18830	WATER-BASED MUD	8.4	8.8							Fresh water

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

Mud logging unit (2 Man) below 20" casing (surface) to TD of the injection section. Will record drilling parameters (including rate), cuttings lithology, mud gas, and hydrocarbon shows. A triple combo (gamma, resistivity/induction, density, compensated neutron, caliper) will be run over the injection section to confirm that hydrocarbons cannot be produced in economic quantities. Through casing GR/Neutron or MWD GR will provide final as drilled tops above the injection zone. A CBL will be run over the cased hole sections of the well to ensure injection zone isolation.

List of open and cased hole logs run in the well:

CEMENT BOND LOG,CALIPER,FORMATION DENSITY COMPENSATED LOG,POROSITY-RESISTIVITY LOG,MUD LOG/GEOLOGICAL LITHOLOGY LOG,GAMMA RAY LOG,

Coring operation description for the well:

No core or drill stem testing is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8470

Anticipated Surface Pressure: 4327

Anticipated Bottom Hole Temperature(F): 180

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

SOLARIS_H2S_CONTINGENCY_7_30_2018_20231113090802.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Other proposed operations facets description:

Other proposed operations facets attachment:

Moonwalk_Fed_SWD__1__WBD_04.03.2025_20250403115432.pdf

Moonwalk_Fed_SWD__1__Drilling_Plan__04.30.2025__20250515134151.pdf

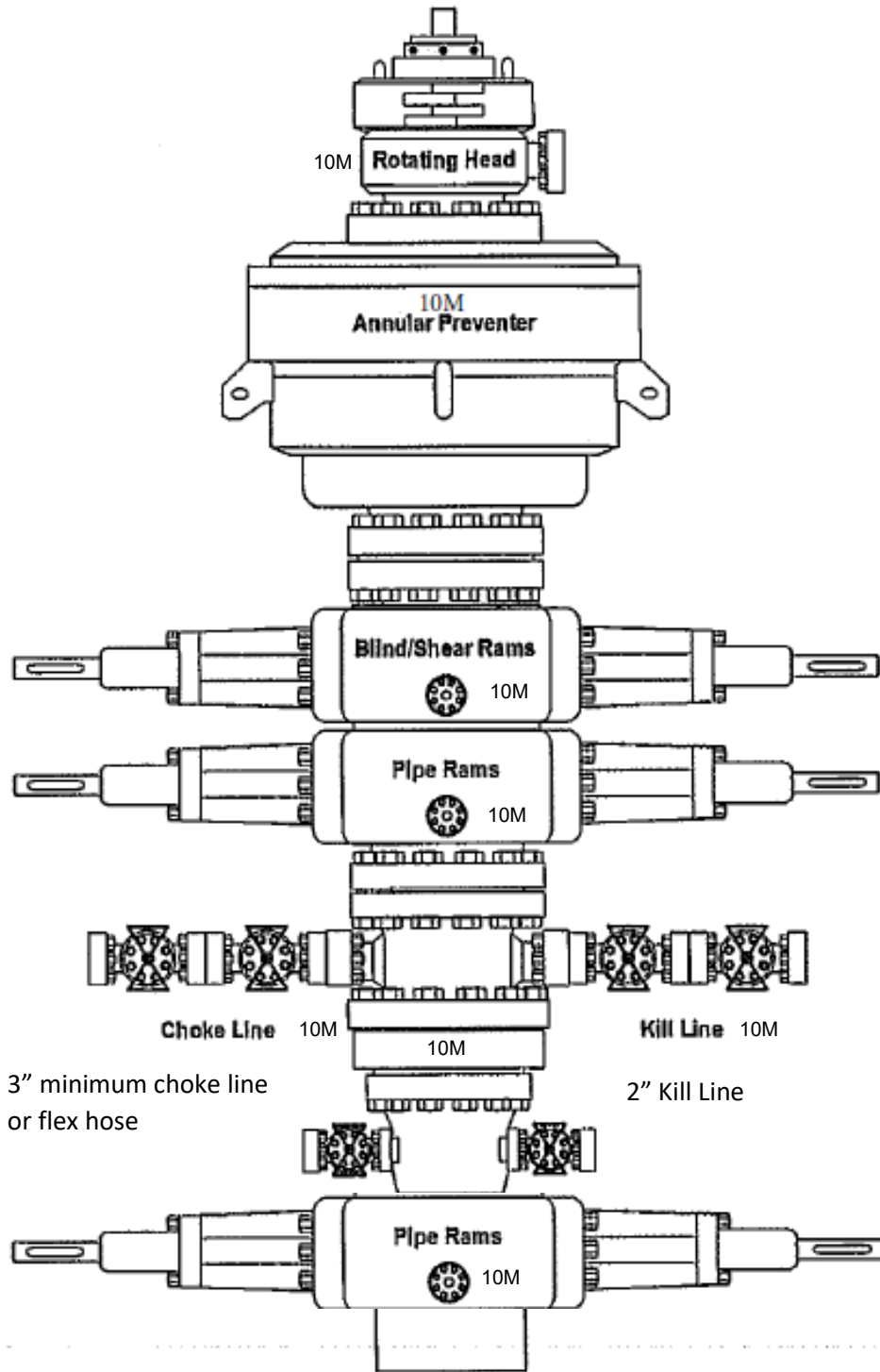
Other Variance request(s)?: N

Other Variance attachment:

CONFIDENTIAL

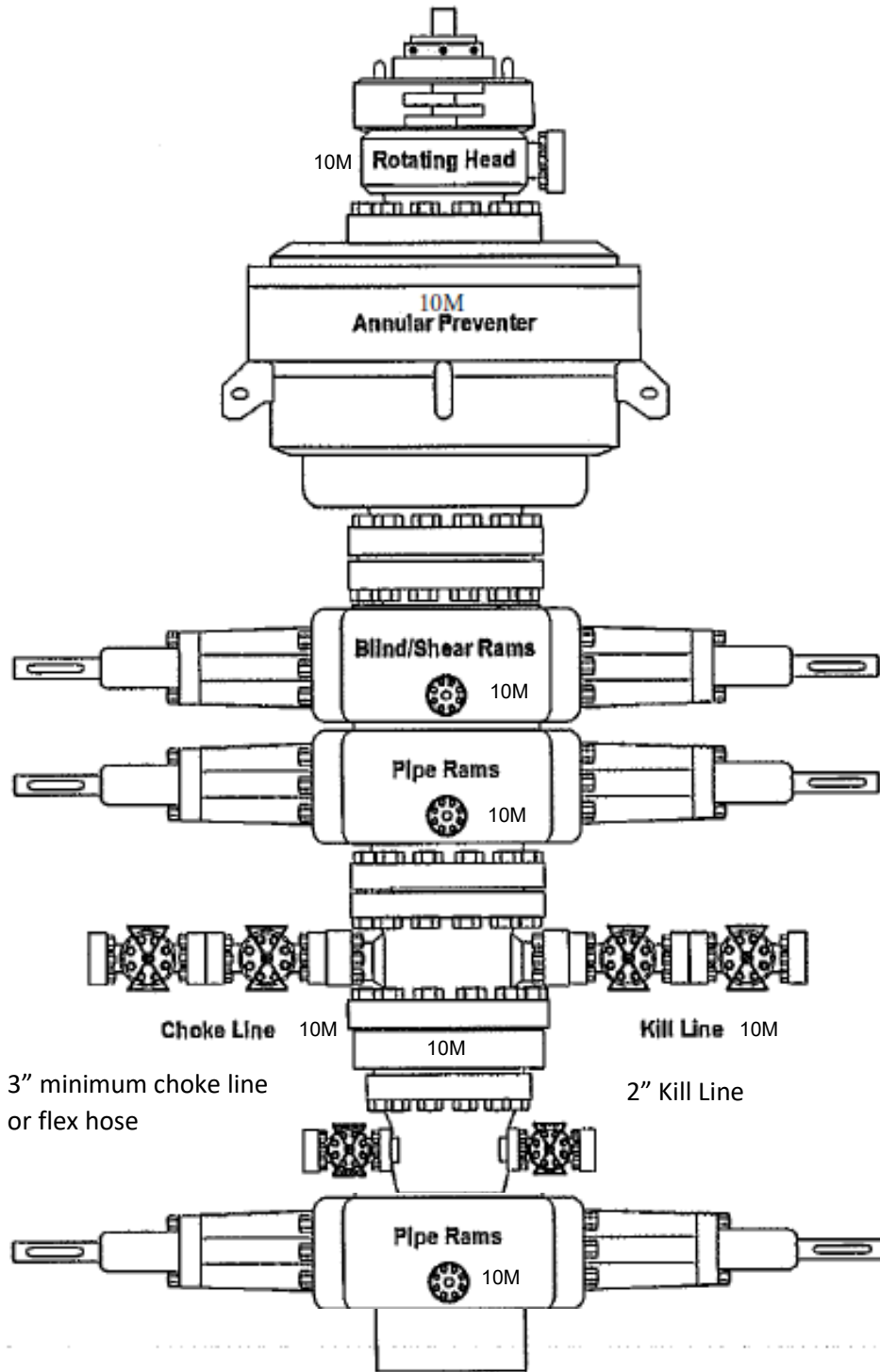
10M BOPE Schematic

Representative BOP Set up



10M BOPE Schematic

Representative BOP Set up



Casing Safety Factor Calculations

Well Name: Moonwalk SWD #1

Surface	
Casing Properties	
CasingCode	20, 106.50, J-55, BTC
OD	20
Weight	106.5
Grade	J-55
Collapse	770
Burst	2,410
Body Yield	1,685,000
Joint Yield	1,595,000
Hole Specifics	
Shoe Depth	1,274
Max MW	9.2
BHP	609
Frac Grad.	1.0
Backup Grad.	0.433
Mud Grad.	0.478
Test Casing Press	1,500
Calcs	
Evacuation %	100%
B.F.	0.85954
Air Weight	135,681
Buoy. Weight	116,624
Body Tension S.F.	14.45
Joint Tension S.F.	13.68
Tension 'X'	0.081
Y' Lookup	0.976
Net Collapse	752
Collapse S.F.	1.23
Pshoe	1,558
Pwh	592
Burst S.F. (Shoe)	1.55
Burst S.F. (Surface)	4.07

1st Intermediate	
Casing Properties	
CasingCode	13-3/8, 68, L-80, BTC
OD	13.375
Weight	68
Grade	L-80
Collapse	2,260
Burst	5,020
Body Yield	1,556,000
Joint Yield	1,545,000
Hole Specifics	
Shoe Depth	4,919
Max MW	10
BHP	1,279
Frac Grad.	1.00
Backup Grad.	0.442
Mud Grad.	0.520
Calcs	
Evacuation %	50%
B.F.	0.84733
Air Weight	334,492
Buoy. Weight	283,425
Tension S.F.	5.49
Joint Tension S.F.	5.45
Tension 'X'	0.215
Y' Lookup	0.922
Net Collapse	2,084
Collapse S.F.	1.63
Pshoe	2,745
Pwh	1,145
Burst S.F. (Shoe)	1.83
Burst S.F. (Surface)	4.39

2nd Intermediate	
Casing Properties	
CasingCode	9-5/8, 43.50, P-110, BTC
OD	9.625
Weight	43.5
Grade	P-110
Collapse	4,420
Burst	8,700
Body Yield	1,381,000
Joint Yield	1,388,000
Hole Specifics	
Shoe Depth	12,200
Max MW	10
BHP	3,172
Frac Grad.	1.00
Backup Grad.	0.465
Mud Grad.	0.520
Test Casing Press	-
Calcs	
Evacuation %	50%
B.F.	0.84733
Air Weight	530,700
Buoy. Weight	449,677
Tension S.F.	3.07
Joint Tension S.F.	3.09
Tension 'X'	0.384
Y' Lookup	0.829
Net Collapse	3,663
Collapse S.F.	1.155
Pshoe	6,527
Pwh	2,409
Burst S.F. (Shoe)	1.33
Burst S.F. (Surface)	3.61

Liner 1	
Top String	
CasingCode	7-5/8", 39, P-110, USS-Liberty FJM
OD	7.625
Weight	39
Grade	P-110
Collapse	12,180
Burst	12,640
Body Yield	1,231,000
Joint Yield	733,000
Hole Specifics	
Liner Top	12,000
Shoe Depth	17,680
Max MW	13.5
BHP	6,206
Frac Grad.	1.00
Backup Grad.	0.442
Mud Grad.	0.702
Frac Surface Psi	2,000
Calcs	
Evacuation %	50%
B.F.	0.79389
Air Weight	221,520
Buoy. Weight	175,863
Tension S.F.	7.00
Joint Tension S.F.	4.17
Tension 'X'	0.180
Y' Lookup	0.938
Net Collapse	11,425
Collapse S.F.	1.84
Pshoe	11,865
Pwh	4,165
Burst S.F. (Shoe)	1.50

Casing Safety Factor Calculations

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Y' Lookup	0.938
Net Collapse	11,425
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Pshoe	11,865
Pwh	4,165
Burst S.F. (Shoe)	1.50



H₂S Contingency Plan

Developed by
SOS Consulting, LLC
September 21, 2017



This plan was developed exclusively for Solaris Water Midstream, LLC
Use of this document by its employees including
contractors, is at the discretion of Solaris management.

No part of the content may be copied or used for
other purposes by any other entity without the consent of
SOS Consulting, LLC | 903-488-9850 | info@sosconsulting.us

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

PREFACE / OVERVIEW

PLAN ACTIVATION

AT A MINIMUM, THE PLAN MUST BE ACTIVATED WHENEVER A RELEASE MAY CREATE A CONCENTRATION OF H₂S OF MORE THAN 100 PPM IN ANY PUBLIC AREA, 500 PPM AT ANY PUBLIC ROAD OR 100 PPM 3,000 FEET FROM THE SITE OF RELEASE.

OPERATIONAL DISTINCTION OF CONDITION

FOR ALL OPERATIONS, SOLARIS WATER MIDSTREAM, LLC WILL APPLY THESE CRITERIA TO DETERMINE THE OPERATIONAL CONDITION:

A. NORMAL / LOW CONDITIONS: KNOWN H₂S IS AT OR LESS THAN 10 PPM.

PURSUANT TO NMOCD RULES AND REGULATIONS, SOLARIS WATER MIDSTREAM, LLC MAY PETITION THE NEW MEXICO OIL CONSERVATION DIVISION DIRECTOR FOR AN **EXEMPTION** TO ANY REQUIREMENT OF THIS SECTION.

FOR NORMAL / LOW CONDITION OPERATIONS, OTHER THAN AN AWARENESS OF THIS PLAN AND BASIC MONITORING AND WIND DIRECTION INDICATORS, AN EXEMPTION WILL BE REQUESTED AND DETAILED INFORMATION NOT OTHERWISE PROVIDED FOR IN THE NORMAL REGULATORY PERMITTING PROCESS MAY BE OMITTED.

B. HIGH RISK CONDITIONS: KNOWN H₂S MAY APPROACH OR BE MORE THAN 100 PPM.

IMPLEMENTATION

THIS PLAN DETAILS PROCEDURES AND ACTIVITIES PARTICULARLY GEARED TOWARDS HIGH RISK OPERATIONAL CONDITIONS .

ADDITIONAL INFORMATION SHALL BE FURNISHED IN THE FORM OF SITE SPECIFICS AND MAPS WHEN THE OPERATIONAL CONDITION IS DETERMINED TO BE HIGH RISK.

PREFACE / OVERVIEW (continued)

A. NOTIFICATION / COORDINATION OF EMERGENCY SERVICES

PRIOR TO COMMENCING ACTIVITIES AT A HIGH-RISK SITE, THE APPROPRIATE EMERGENCY PERSONNEL FOR THE AREA WILL BE ALERTED TO THE ACTIVITY INCLUDING DATES, ANTICIPATED WORK TIMES, A COPY OF THIS PLAN AND THE FOLLOWING ITEMS SUCH THAT EMERGENCY PERSONNEL IS FULLY APPRISED OF THE OPERATION AND POTENTIAL OCCURANCES NO MATTER HOW UNLIKELY. (REFER TO EMERGENCY TELEPHONE LIST IN SECTION 5 OF THE PLAN, PAGES 8-9.)

B. SITE SPECIFIC PLANS SHALL INCLUDE*:

WELL OR FACILITY NAME, LOCATION (INCLUDING GIS COORDINATES) TYPE, DEPTH, ANTICIPATED OR MEASURED H₂S CONCENTRATION, WELL OR LINE PRESSURES, PRESSURE AND FLOW CONTROL EQUIPMENT AND A SCHEMATIC DIAGRAM.

C. MAPS SHALL INDICATE:

1. LOCATION OF WELL OF FACILITY WITH LOCATION IN RELATION TO ROADS, PUBLIC AREAS AND TOWNS AS APPLICABLE.
2. DIRECTION AND SPEED OF PREVAILING WINDS AT THE SITE, AS CURRENT AS POSSIBLE.
3. INGRESS / EGRESS TO THE SITE AS WELL AS TYPICAL ACCESS ROUTES FROM THE NEAREST TOWN WITH EMERGENCY SERVICES.
4. POTENTIAL ROAD CLOSURE AREAS SHALL BE COORDINATED WITH EMERGENCY PERSONNEL AND MAPPED BASED ON CRITERIA ABOVE.

*** NOTE: THIS PLAN SATISFIES NORMAL OPERATING ENVIRONMENTS. WHEN SOLARIS WATER MISTREAM, LLC PLANS DRILLING OR OTHER ACTIVITIES IN A KNOWN H₂S AREA (REASONABLY EXPECTED TO APPROACH 100 PPM AND HIGHER VOLUMES), THE PLAN SHOULD BE AUGMENTED FOR THAT SPECIFIC SITE - SEE SITE SPECIFIC CHECK LIST IN APPENDIX 'B' OF THE MAIN PLAN.**

PLAN DEVELOPMENT

THIS PLAN HAS BEEN DEVELOPED IN ACCORDANCE WITH TITLE 19 NATURAL RESOURCES AND WILDLIFE CHAPTER 15, OIL AND GAS PART II, HYDROGEN SULFIDE GAS AND ALL PARTS CONTAINED THEREIN.

IT FURTHER MEETS AS APPLICABLE, OSHA REQUIREMENTS AND API H₂S PUBLICATIONS:

- 'RECOMMENDED PRACTICE FOR OIL AND GAS WELL SERVICING AND WORKOVER OPERATIONS INVOLVING HYDROGEN SULFIDE', RP-68 (API);
- 'RECOMMENDED PRACTICES FOR DRILLING AND WELL SERVICING OPERATIONS INVOLVING WELLS CONTAINING HYDROGEN SULFIDE', RP-49 (API);
- 'H₂S AT CRUDE OIL PUMP STATIONS, PRODUCING WELLS, TANK BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS', RP-55 (API)

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

PLEASE NOTICE

APPLICABILITY OF PLAN

NORMAL OPERATIONS

THIS PLAN IS GENERALLY APPLICABLE TO ALL OPERATIONS IN NORMAL CONDITIONS IN SOUTHEAST NEW MEXICO WHERE KNOWN ***H₂S IS AT OR LESS THAN 10 PPM.***

HIGH RISK / KNOWN H₂S AREAS

SITE SPECIFIC PLANS WILL BE DEVELOPED FOR WORK PLANNED IN HIGH RISK AREA. THESE ARE AREAS WHERE KNOWN H₂S CONCENTRATION MAY REASONABLY BE EXPECTED TO ***APPROACH OR EXCEED 100 PPM*** AND AT SIGNIFICANT VOLUMES.

TO MEET THE REQUIREMENTS FOR SITE SPECIFIC PLANS, THIS PLAN WILL BE AMENDED OR AUGMENTED TO INCLUDE MAPS, DIAGRAMS AND DRAWINGS AND DETAIL THE COORDINATION BETWEEN COMPANY PERSONNEL AND COUNTY EMERGENCY AGENCIES INCLUDING LAW ENFORCEMENT.

THE CHECKLIST ON THE FOLLOWING PAGE SHOWS THE ADDITIONAL ITEMS REQUIRED TO MEET NEW MEXICO OIL CONSERVATION DIVISION RULES AND REGULATIONS.

**OIL CONSERVATION DIVISION
H2S CONTINGENCY PLAN REQUIRED BY OCD RULE 19.15.11 NMAC**

Operator Name: SOLARIS WATER MIDSTREAM, LLC

Date: Implemented/ Adopted September 2017

Contingency Plan Requirements Checklist				
19.15.11.9.B NMAC Requirement	Included?	Page in Document?		Notes
Emergency Procedures				
Responsibilities & duties of personnel during emergency	YES	2, 3		
Immediate action plan	YES	4, 5		
Evacuation and shelter in place plans	YES	9, 10		Applicable to site specific - Shelter in Place.
Telephone numbers of emergency responders	YES	8, 9		
Telephone numbers of public agencies	YES	8, 9		
Telephone numbers of local government	YES	8, 9		
Telephone numbers of appropriate public authorities	YES	8, 9		
Location of potentially affected public areas Also see 19.15.11.12.B & D	n/a			Applicable to site specific.
Location of potentially affected public roads	n/a			Applicable to site specific.
Proposed evacuation routes, with locations of road blocks	n/a			Applicable to site specific.
Procedures for notifying the public	YES	10		
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	n/a	7, 13		Applicable to site specific. H2S Safety Trailer on location. Equipment list pg.13
Characteristics of hydrogen sulfide and sulfur dioxide				
Discussion of characteristics	YES	16, 17		
	YES	16, 17, 18		
Maps and Drawings				
Area of exposure	n/a			Applicable to site specific.
Public areas within area of exposure	n/a			Applicable to site specific.
Public roads within area of exposure	n/a			Applicable to site specific.
Training and Drills				
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	YES	11		Solaris Water Midstream, LLC personnel and all contractors will be certified in H2S Safety. Training requirements are listed in plan.
Periodic drills or exercises that simulate a release	n/a			Applicable to site specific.
Documentation of training, drills, & attendance	n/a			Applicable to site specific.
Training of residents on protective measures	n/a			Applicable to site specific.
Briefing of public officials on evacuation or shelter-in-place plans	n/a			Applicable to site specific.
Coordination with state emergency plans				
How emergency response actions will coordinate with OCD and the state police response plans	Perhaps	10, 20		[Mostly] Applicable to site specific.
Activation Levels				
Activation Levels and description of events which may lead to a release in excess of activation level	YES	4, 5		
Plan Activation				
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm in a public area or 500 ppm at a public road	YES	15		
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm 3000 feet from the site of release	YES	15		

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

SCOPE

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR ALL COMPANY AND CONTRACTOR PERSONNEL WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H2S) GAS. GUIDELINES ADDRESSING PUBLIC SAFETY ARE INCLUDED.

OBJECTIVE

1. PREVENT ANY AND ALL ACCIDENTS, AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.
2. PROVIDE PROPER PROCEDURES TO HANDLE EMERGENCIES AND POSSIBLE EVACUATION.
3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

IMPLEMENTATION

THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE OPERATIONS COMMENCE PURSUANT TO THE CONDITION BEING:

NORMAL / LOW CONDITIONS: KNOWN H2S IS AT OR LESS THAN 10 PPM.

HIGH RISK CONDITIONS: KNOWN H2S MAY APPROACH OR BE MORE THAN 100 PPM.

OVERVIEW OF PLAN

- | | |
|--|---|
| 1. PERSONNEL RESPONSIBILITY
(PAGES 2-3) | THIS SECTION SHOWS SPECIFIC RESPONSIBILITIES FOR ALL PERSONNEL PRESENT - BY TITLE OR JOB DUTIES. |
| 2. NORMAL /
LOW H2S CONDITIONS
(PAGES 3-4) | THIS SECTION OUTLINES PROCEDURES DURING NORMAL OPERATIONS WHEN EXPECTATIONS OF AN H2S ENVIRONMENT ARE REASONABLY LOW. |

H2S Contingency Plan (continued)

- 3. **EMERGENCY RESPONSE PROCEDURES**
(PAGES 4-6) THIS SECTION OUTLINES THE CONDITIONS PROCEDURE AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY OR HIGH RISK LEVELS OF H2S ARE IMMINENT.
- 4. **HIGH RISK / EMERGENCY EQUIPMENT**
(PAGES 6-7) THIS SECTION OUTLINES THE USE OF EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OR WORKOVER OF THIS WELL.
- 5. **EMERGENCY TELEPHONE NUMBERS**
(PAGES 8-9) ALL PARTIES TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
- 6. **SAFETY BRIEFING**
(PAGE 9) THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
- 7. **EVACUATION / PUBLIC SAFETY**
(PAGES 9-10) THIS SECTION DEALS WITH THE EVACUATION OF PERSONNEL AND PUBLIC SAFETY IN THE EVENT OF AN EMERGENCY.

APPENDICES

- A. **TRAINING REQUIREMENTS AND FIRST AIDE**
(PAGE 11-12) ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN H2S SAFETY PROCEDURES. FIRST AIDE FOR H2S.
- B. **CHECK LISTS**
(PAGES 13-15) A STATUS CHECK LIST, PROCEDURAL CHECK LIST AND SITE SPECIFIC PLAN CHECK LIST HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
- C. **EFFECTS, LEVELS, RADIUS OF EXPOSURE, THRESHOLDS**
(PAGES 16-19) A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION INCLUDING EFFECTS OF H2S, LEVELS AND RADIUS OF EXPOSURE & REGULATORY THRESHOLDS.
- D. **INCIDENT RESPONSE PROTOCOL**
(PAGE 20) **IN THE EVENT OF AN ACTUAL EMERGENCY INCIDENT, THIS STEP-BY-STEP PROCEDURE CAN BE TURNED TO QUICKLY AT THE BACK OF THE DOCUMENT.**

I. PERSONNEL RESPONSIBILITY

COMPANY FOREMAN / SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THIS PLAN.

H2S Contingency Plan (continued)

DESIGNATED PERSONNEL

SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY. **(INCIDENT COMMANDER)**

SHALL DESIGNATE A BACK-UP.

ALL PERSONNEL

1. ON ALARM, DON ESCAPE UNIT AND REPORT IN UP WIND BRIEFING AREA.
2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).
3. SECURE BREATHING EQUIPMENT.
4. AWAIT ORDERS FROM SUPERVISOR.

DRILLING FOREMAN / RIG OPERATOR

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H2S CONCENTRATIONS.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

TOOL PUSHER

1. REPORT TO UP WIND SAFETY BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H2S CONCENTRATION.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

DRILLER

1. DON ESCAPE UNIT.
2. CHECK MONITOR FOR POINT OF RELEASE.
3. REPORT TO BRIEFING AREA.
4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE, USE THE BUDDY SYSTEM).
5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.
6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT.

DERRICK MAN
FLOOR MAN #1
FLOOR MAN #2
VISITORS

REPORT TO AND REMAIN IN SAFETY BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR.

MUD ENGINEER

1. REPORT TO BRIEFING AREA.
2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H2S LEVEL.

SAFETY PERSONNEL

MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA.

H₂S Contingency Plan (continued)

2. NORMAL / LOW H₂S CONDITION

CONDITIONS ARE CONSIDERED NORMAL WHEN THERE ARE REASONABLE EXPECTATIONS THAT NONE OR LOW CONCENTRATIONS OF H₂S WILL BE ENCOUNTERED DURING ALL PHASES OF THE CURRENT OPERATIONS. (SEE APPENDIX 'C', THRESHOLDS, PRGPH.3)

1. LOW H₂S - LEVELS ARE KNOWN TO CONSISTENTLY BE AT OR **BELOW 10 PPM**.
2. NORMAL CONDIDTION EXPECTATIONS ARE BASED ON HISTORICAL EVIDENCE OF THE AREA, GEOLOGIC FORMATIONS AND TYPE OF OPERATIONS WITH REGARD TO FLUIDS BEING UTILIZED FOR DRILLING AND/OR WORKOVER TASKS.
3. OPERATING IN A NORMAL CONDITION DOES NOT RELIEVE ANY PERSONNEL OF THEIR RESPONSIBILITY, NOR SHOULD IT LESSEN THEIR ATTENTION TO KNOWING THE SAFETY PROCEDURES THAT WILL IMMEDIATELY BE IMPLEMENTED UPON ANY EVIDENCE OF CHANGING H₂S LEVELS.
4. ALL PERSONNEL WORKING ON SITE WILL DON PERSONAL H₂S DETECTORS.
5. A WINDSOCK OR OTHER WIND DIRECTION INDICATOR WILL BE ON LOCATION AND EASILY VISIBLE FROM ALL AREAS.
6. ALL PERSONNEL WILL HAVE A CURRENT H₂S TRAINING CARD.
7. ALL PERSONNEL WILL HAVE VIEWED THIS H₂S CONTINGENCY PLAN.

3. EMERGENCY RESPONSE PROCEDURES (SEE ALSO APPENDIX 'D')

NOTICE: FOR ALL SITES AND OPERATIONS WHERE REASONABLE EXPECTATIONS ARE THAT H₂S LEVELS MAY BE **ABOVE 100 PPM**, ALL SERVICE COMPANY PERSONNEL HAVE READ THIS H₂S CONTINGENCY PLAN AND WILL VERBALLY INDICATE STRICT ADHERENCE TO WITH ALL PROCEDURES ESPECIALLY WITH REGARD TO THEIR JOB TITLE AND DUTIES ON THIS LOCATION.

IMMEDIATE PROCEDURES

A. IN THE EVENT OF ANY EVIDENCE OF H₂S LEVEL **ABOVE 100 PPM**, (OR IS APPROACHING 100 PPM) TAKE THE FOLLOWING STEPS:

1. SECURE BREATHING EQUIPMENT.
2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.
3. TAKE STEPS TO DETERMINE IF THE H₂S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.

B. IF UNCONTROLLABLE CONDITIONS OCCUR: (SEE ALSO APPENDIX 'D')

1. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG - PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY

H₂S Contingency Plan (continued)

PUBLIC SAFETY PERSONNEL EMERGENCY RESPONDERS OF THE SITUATION, E.G. STATE POLICE, COUNTY EMERGENCY MANAGEMENT, SHERRIF, MEDICAL IF REQUIRED.

2. REMOVE ALL PERSONNEL TO SAFE BREATHING AREA.
3. NOTIFY PUBLIC SAFETY PERSONNEL TO SAFE BREATHING AREA.
4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.

EMERGENCY ACTIONS

WELL BLOWOUT - IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS - EVACUATE RIG PERSONNEL.
3. IF SOUR GAS - EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY COMPANY FOREMAN / DESIGNATED PERSONNEL.
6. GIVE FIRST AID.

PERSON DOWN LOCATION / FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE - BUDDY SYSTEM ONLY.

AS APPLICABLE FOR TODAY'S CURRENT OPERATIONS / EVENTS

TAKING A KICK

WHEN TAKING A KICK DURING AN H₂S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

OPEN-HOLE LOGGING

ALL UNNECESSARY PERSONNEL OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION, ADVISE STATUS AND DETERMINE NEED FOR USE OF AID EQUIPMENT.

RUNNING CASING OR PLUGGING

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

H₂S Contingency Plan (continued)

WELL OUT OF CONTROL

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:

1. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE OF CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

**NOTIFY EMERGENCY AUTHORITIES IF TIME PERMITS,
BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.**

INITIATE EVACUATION PLAN.

IGNITION PROCEDURES

INSTRUCTIONS FOR IGNITING THE WELL

1. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING APPARATUS (SCBA) UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 25 MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE.
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

**REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE
WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC.
DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.**

H₂S Contingency Plan (continued)**4. HIGH RISK / EMERGENCY EQUIPMENT REQUIREMENTS**

A. SIGNS (ANSI STANDARD ZS3S.1-2002; SAFETY COLOR CODE)

1. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

**(LEASE) CAUTION - POTENTIAL POISON GAS HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION**

B. WINDSOCK- WIND STREAMERS

1. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
2. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

C. HYDROGEN SULFIDE DETECTOR AND ALARMS

1. H₂S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. **THESE MONITORS WILL BE SET TO ALARM AT 15 PPM WITH RED LIGHT, AND TO ALARM AT 20 PPM WITH RED LIGHT AND AUDIBLE ALARM.**
2. HAND OPERATED DETECTORS WITH TUBES.
3. H₂S MONITOR TESTER.

D. CONDITION FLAGS

1. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS:

**GREEN - NORMAL CONDITIONS (POTENTIAL)
YELLOW - POTENTIAL DANGER (MODERATE)
RED - DANGER, H₂S PRESENT (EXTREME)**

2. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

E. AUXILIARY RESCUE EQUIPMENT

1. STRETCHER
2. 100' LENGTH OF 5/8" NYLON ROPE.

F. MUD INSPECTION DEVICES - GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

G. FIRE EXTINGUISHER - ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

H. BLOW OUT PREVENTION EQUIPMENT - THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BOTTOM HOLE PRESSURE. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

H₂S Contingency Plan (continued)

I. COMBUSTIBLE GAS DETECTOR - THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

J. BOP TESTING - BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

K. AUDIO SYSTEM - RADIO COMMUNICATION WILL BE AVAILABLE AT THE **RIG, RIG FLOOR OR TRAILER AND VEHICLES.**

L. SPECIAL CONTROL EQUIPMENT - MAKE SURE OF HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND AND ROTATING HEAD.

5. EMERGENCY TELEPHONE NUMBERS

<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤ <u>SOLARIS WATER MIDSTREAM EMERGENCY</u>	
1) Jason Pyle HSE Manager	CELL: 512-750-2723
2) Stephen Martinez SR. VP- Operations and Engineering	CELL: 432) 556-0262
3) Mike Titsworth Senior Operations Manager	CELL: 432-703-8052
➤ <u>STATE POLICE</u>	
EDDY COUNTY	575-748-9718
LEA COUNTY	575-392-5588
➤ <u>SHERIFF</u>	
EDDY COUNTY	575-887-1888
Substation - ARTESIA: 575-748-2323	
LEA COUNTY	575-396-3611
Substations - EUNICE: 575-394-2020; HOBBS: 575-393-2515; JAL: 575-394-2121	
➤ <u>EMERGENCY MEDICAL</u>	
EDDY COUNTY	911 OR 575-746-2701
LEA COUNTY	911 OR 575-394-3258
AIRLIFT - AeroCare (Lubbock): 800-823-1991; AirMed (El Paso): 800-527-2767	
➤ <u>EMERGENCY RESPONSE</u>	
EDDY COUNTY	575-616-7155
LEA COUNTY	575-391-2961

H2S Contingency Plan (continued)

	<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤	<u>FIRE DEPARTMENTS</u>	
	ARTESIA	575-746-5051
	CARLSBAD	575-885-3125
	HOBBS	575-397-9308
	EUNICE	575-394-3258
	JAL	575-395-2221
☒	<u>POLICE DEPARTMENTS</u>	
	ARTESIA	575-746-5000
	CARLSBAD	575-885-2111
	HOBBS	575-397-9265
	EUNICE	575-394-2112
	JAL	575-395-2501
➤	<u>TOTAL SAFETY</u>	
	EDDY & LEA COUNTIES	575-392-2973
➤	<u>AMERICAN SAFETY SERVICES</u>	
	EDDY & LEA COUNTIES	575-746-1096
➤	<u>WILD WELL CONTROL</u>	
	MIDLAND, TX	281-784-4700
☒	<u>NM OIL CONSERVATION DIVISION</u>	
	ARTESIA DIST.2 (EDDY) 575-748-1283	HOBBS DIST.1 (LEA) 575-393-6161

6. SAFETY BRIEFING

SERVICE COMPANY AND VISITING PERSONNEL

A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H2S.

B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.

C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A SAFETY BRIEFING.

7. EVACUATION PLAN

GENERAL REQUIREMENTS

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

H₂S Contingency Plan (continued)

I. DESIGNATED AREA

A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PRE-DETERMINED AND SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.

B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.

C. IF A MOVABLE H₂S SAFETY TRAILER IS USED, IT SHOULD BE KEPT UPWIND OF EXISTING OR PREVAILING WIND DIRECTION. WHEN WIND IS FROM THE PREVAILING DIRECTION, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

2. EVACUATION IMPLEMENTATION AND PUBLIC SAFETY

TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:
(NOTE: REFER ALSO TO APPENDIX 'C', POTENTIALLY HAZARDOUS VOLUMES.)

1. WHEN THE COMPANY APPROVED SUPERVISOR (DESIGNATED PERSONNEL, I.E., DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H₂S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.

2. COMPANY FOREMAN OR DESIGNATED PERSONNEL WILL NOTIFY LOCAL GOVERNMENT AGENCIES AND STATE POLICE THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.

3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H₂S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H₂S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.

4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, LOCAL POLICE , FIRE DEPARTMENT AND SHERIFF) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON (OR ON SITE) AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

H₂S Contingency Plan (continued)

APPENDIX 'A'

TRAINING REQUIREMENTS

WHEN WORKING IN AN AREA WHERE **ANY LEVEL** OF HYDROGEN SULFIDE GAS (H₂S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H₂S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H₂S DETECTION.
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H₂S ON METALS.
9. LOCATION SAFETY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM OPERATING, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

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H₂S Contingency Plan (continued)

APPENDIX 'A' (continued)

FIRST AID FOR H₂S POISONING

DO NOT PANIC - REMAIN CALM - THINK!

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST - JUST STOP BREATHING.)
2. PUT ON BREATHING APPARATUS.
3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND - NOT DOWNWIND.)
4. YELL (!) "**SOMEONE CALL 911**". **YELL!!**
5. BRIEFLY APPLY CHEST PRESSURE - ARM LIFT METHOD OF ARTIFICIAL RESPIRATION TO CLEAN THE VICTIM'S LUNGS AND TO AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.
6. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
7. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H₂S GAS POISONING - NO MATTER HOW REMOTE THE POSSIBILITY IS.
8. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H₂S GAS.

BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH H₂S AND S₂O GAS OR SULFURIC ACID.

EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.

H₂S Contingency Plan (continued)

APPENDIX 'B'

STATUS CHECK LIST

APPLICABLE TO ALL OPERATIONS WHEN LEVELS ARE EXPECTED THAT APPROACH OR ARE ABOVE 100 PPM H₂S.

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

- I. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WINDSOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SETUP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H₂S DETECTION SYSTEM HOOKED UP.
10. H₂S ALARM SYSTEM HOOKED UP AND READY.
- II. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. I - 100' LENGTH OF 5/8" NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H₂S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H₂S DETECTOR WITH TUBES ON LOCATION AND CHECKED BY DATE IS WITHIN CURRENT TIME FRAME.

H₂S Contingency Plan (continued)

APPENDIX 'B' (continued)

PROCEDURAL CHECK LIST

PERFORM DURING EACH TOUR:

- I. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.
2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.
3. MAKE SURE ALL THE H₂S DETECTION SYSTEM IS OPERATIVE. PERFORM EACH WEEK:
4. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.
5. BLOW OUT PREVENTER SKILLS ARE APPROPRIATELY COVERED BY CREW.
6. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.
7. CHECK ALL SCBA UNITS FOR OPERATION:

DEMAND REGULATOR

ESCAPE BOTTLE AIR VOLUMES

SUPPLY BOTTLE OF AIR VOLUME

8. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENEED AND TURNED BACK, READY TO PUT ON.
9. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.
10. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.
- II. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.
12. CHECK THE FOLLOWING FOR AVAILABILITY:

EMERGENCY TELEPHONE LIST (PAGES 8 & 9)

HAND OPERATED H₂S DETECTORS AND TUBES

H₂S Contingency Plan (continued)**APPENDIX 'B' (continued)****SITE SPECIFIC PLAN CHECK LIST (NEW PLAN)**

IF A WELL, FACILITY OR OPERATION IS REASONABLY EXPECTED TO INVOLVE A POTENTIALLY HAZARDOUS VOLUME OF H₂S WITH CONCENTRATIONS APPROACHING 100 PPM, THE PERSON SHALL DEVELOP A H₂S CONTINGENCY PLAN THAT THE PERSON WILL USE TO ALERT AND PROTECT THE PUBLIC IN ACCORDANCE WITH THE SUBSECTIONS B THROUGH I OF 19.15.11.9 NMAC.

- I. A SITE SPECIFIC PLAN WILL BE DEVELOPED AND SUBMITTED TO THE NMOCD OR OTHER APPLICABLE AGENCIES AND TO THE APPLICABLE COUNTY EMERGENCY COORDINATOR.
2. THIS PLAN AND ALL PARTS INCLUDING APPENDICES SHALL BE THE BASIS OF SUCH SITE SPECIFIC PLAN AND BEYOND THAT, ADDITIONAL REQUIREMENTS INCLUDE:
 - A. **SITE IDENTIFICATION** INCLUDING API NUMBER IF APPLICABLE AND LOCATION INCLUDING LAT / LONG COORDINATES.
 - B. **MAPS AND DRAWINGS** TO DEPICT THE AREA OF EXPOSURE AND PUBLIC AREAS AND PUBLIC ROADS WITHIN AREA OF EXPOSURE. MAPS SHALL INCLUDE POTENTIAL LEVEL 2 (500 PPM) AND LEVEL 3 (100 PPM) AREA OF EXPOSURE RADII BY CALCULATION. (APPENDIX 'C', PG.19.) IF ROADS ARE INVOLVED, ROAD BLOCKS SHOULD BE DESIGNATED ON MAPS. (COORDINATE WITH LAW ENFORCEMENT AGENCIES.)
 - C. **TRAINING AND DRILLS** INCLUDING TRAINING IN THE RESPONSIBILITIES AND DUTIES OF ESSENTIAL PERSONNEL AND PERIODIC ON-SITE OR CLASSROOM DRILLS OR EXERCISES THAT SIMULATE A RELEASE, AND SHALL DESCRIBE HOW THE PERSON WILL DOCUMENT THE TRAINING, DRILLS AND ATTENDANCE.
 - D. **RESIDENT TRAINING.** WHEN APPLICABLE, THE H₂S CONTINGENCY PLAN SHALL ALSO PROVIDE FOR TRAINING OF RESIDENTS AS APPROPRIATE ON THE PROPER PROTECTIVE MEASURES TO BE TAKEN IN THE EVENT OF A RELEASE, AND SHALL PROVIDE FOR BRIEFING OF PUBLIC OFFICIALS ON ISSUES SUCH AS EVACUATION OR SHELTER-IN-PLACE PLANS.
 - E. **COORDINATION WITH STATE EMERGENCY PLANS.** THE H₂S CONTINGENCY PLAN SHALL DESCRIBE HOW THE PERSON WILL COORDINATE EMERGENCY RESPONSE ACTIONS UNDER THE PLAN WITH THE DIVISION AND THE NEW MEXICO STATE POLICE CONSISTENT WITH THE NEW MEXICO HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN.
 - F. **PLAN ACTIVATION.** THE PERSON SHALL ACTIVATE THE H₂S CONTINGENCY PLAN CONTINGENCY PLAN WHEN A RELEASE CREATES A H₂S CONCENTRATION GREATER THAN THE ACTIVATION LEVEL SET FORTH IN THE H₂S CONTINGENCY PLAN. AT A MINIMUM, THE PERSON SHALL ACTIVATE THE PLAN WHENEVER A RELEASE MAY CREATE A H₂S CONCENTRATION OF MORE THAN 100 PPM IN A PUBLIC AREA, 500 PPM AT A PUBLIC ROAD OR 100 PPM 3000 FEET FROM THE SITE OF RELEASE.

H₂S Contingency Plan (continued)**APPENDIX 'C'****GENERAL INFORMATION****TOXIC EFFECTS OF HYDROGEN SULFIDE**

HYDROGEN SULFIDE IS EXTREMELY TOXIC. THE ACCEPTABLE CEILING CONCENTRATION FOR EIGHT-HOUR EXPOSURE IS 10 PPM, WHICH IS .001% BY VOLUME.

HYDROGEN SULFIDE IS HEAVIER THAN AIR (SPECIFIC GRAVITY - 1.192) AND COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME.

HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE.

TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I.

PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

TABLE I**TOXICITY OF VARIOUS GASES**

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN SULFIDE	H ₂ S	1.19	10 PPM	100 PPM/HR	600 PPM
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
SULFUR DIOXIDE	SO ₂	2.21	2 PPM	N/A	1000 PPM
CHLORINE	CL ₂	2.45	1 PPM	150 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	150 PPM/HR	1000 PPM
CARBON DIOXIDE	CO ₂	1.52	5000 PPM	5%	10%
METHANE	CH ₄	0.55	90,000 PPM	COMBUSTIBLE @ 5% IN AIR	N/A

(1) THRESHOLD LIMIT - CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.

(2) HAZARDOUS LIMIT - CONCENTRATION THAT MAY CAUSE DEATH WITH PROLONGED EXPOSURE.

(3) LETHAL CONCENTRATION - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****TABLE II****PHYSICAL EFFECTS OF HYDROGEN SULFIDE**

CONCENTRATION	PHYSICAL EFFECTS
0.001 or 10 PPM	OBVIOUS AND UNPLEASANT ODOR. SAFE FOR 8 HOURS OF EXPOSURE.
0.002 or 20 PPM	MAY STING EYES AND THROAT. MAY CAUSE FLU-LIKE SYMPTOMS.
0.010 or 100 PPM	KILLS SMELL IN 3 - 15 MINUTES. STINGS EYES AND THROAT. MAY HAVE SOME DIZZINESS AFTER PROLONGED EXPOSURE.
0.050 or 500 PPM	DIZZINESS; BREATHING CEASES IN A FEW MINUTES; NEEDS PROMPT RESUSCITATION. MAY CAUSE LUNG DAMAGE OR DEATH AFTER 4 HOURS EXPOSURE.
0.070 or 700 PPM	UNCONSCIOUS QUICKLY; DEATH WILL RESULT IF NOT RESCUED PROMPTLY.
0.100 or 1000 ppm	UNCONSCIOUS AT ONCE; FOLLOWED BY DEATH WITHIN MINUTES.

SCBA'S SHOULD BE WORN WHEN...

1. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TESTS REVEAL LESS THAN 10 PPM OF H₂S.
2. WHEN BREAKING OUT ANY LINE WHERE H₂S CAN REASONABLY BE EXPECTED.
3. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H₂S EXISTS.
4. WHEN WORKING IN AREAS WHERE OVER 100 PPM H₂S HAS BEEN DETECTED.
5. AT ANY TIME THERE IS A DOUBT AS TO THE H₂S LEVEL IN THE AREA TO BE ENTERED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****POTENTIALLY HAZARDOUS VOLUMES**

THIS IS THE VOLUME OF H₂S GAS OF SUCH CONCENTRATION THAT:

1. THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE INCLUDES A PUBLIC AREA;
2. THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE INCLUDES A PUBLIC ROAD;
3. THE 100-PPM RADIUS OF EXPOSURE EXCEEDS 3000 FEET.

(1) RADIUS OF EXPOSURE MEANS THE RADIUS CONSTRUCTED WITH THE POINT OF ESCAPE AS ITS STARTING POINT AND ITS LENGTH.

(2) PUBLIC AREA IS A BUILDING OR STRUCTURE THAT IS NOT ASSOCIATED WITH THE WELL, FACILITY OR OPERATION FOR WHICH THE RADIUS OF EXPOSURE IS BEING CALCULATED AND THAT IS USED AS A DWELLING, OFFICE, PLACE OF BUSINESS, CHURCH, SCHOOL, HOSPITAL OR GOVERNMENT BUILDING, OR A PORTION OF A PARK, CITY, TOWN, VILLAGE OR DESIGNATED SCHOOL BUS STOP OR OTHER SIMILAR AREA WHERE MEMBERS OF THE PUBLIC MAY REASONABLY BE EXPECTED TO BE PRESENT.

(3) PUBLIC ROAD MEANS A FEDERAL, STATE, MUNICIPAL OR COUNTY ROAD OR HIGHWAY.

RADIUS OF EXPOSURE

THE RADIUS OF EXPOSURE IS CALCULATED USING THE FOLLOWING PASQUILL-GIFFORD DERIVED EQUATION (OR BY OTHER SUCH METHOD) AS FOLLOWS:

A. FOR DETERMINING THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE:

$$X = [(1.589)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

B. FOR DETERMINING THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE:

$$X = [(0.4546)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

C. FOR A WELL BEING DRILLED, COMPLETED, RECOMPLETED, WORKED OVER OR SERVICED IN AN AREA WHERE INSUFFICIENT DATA EXISTS TO CALCULATE A RADIUS OF EXPOSURE BUT WHERE H₂S COULD REASONABLY BE EXPECTED TO BE PRESENT IN CONCENTRATIONS IN EXCESS OF 100 PPM IN THE GASEOUS MIXTURE, A 100 PPM RADIUS OF EXPOSURE EQUAL TO 3000 FEET IS ASSUMED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****REGULATORY THRESHOLD****A. DETERMINATION OF H₂S CONCENTRATION**

1. THE H₂S CONCENTRATION IN THE GASEOUS MIXTURE WITHIN WELLS, FACILITIES OR OPERATIONS SHALL BE DETERMINED EITHER BY TESTING, TESTING A REPRESENTATIVE SAMPLE OR USING PROCESS KNOWLEDGE IN LIEU OF TESTING. IF THE PERSON USES A REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE, THE CONCENTRATION DERIVED FROM THE REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE SHALL BE REASONABLY REPRESENTATIVE OF THE H₂S CONCENTRATION WITHIN THE WELL OR FACILITY.
2. THE TESTS USED TO MAKE THE DETERMINATION SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE ASTM OR GPA STANDARDS OR BY STANDARDLY ACCEPTED METHOD.
3. IF A CHANGE OR ALTERATION MAY MATERIALLY INCREASE THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION, TESTING SHALL BE CONDUCTED TO MAKE A NEW DETERMINATION.

B. CONCENTRATIONS DETERMINED TO BE BELOW 100 PPM - IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS LESS THAN 100 PPM, NO FURTHER ACTIONS SHALL BE REQUIRED **EXCEPT AS PROVIDED IN THIS H₂S CONTINGENCY PLAN CONCERNING "NORMAL / LOW H₂S CONDITIONS"**.

C. CONCENTRATIONS DETERMINED TO BE ABOVE 100 PPM

1. IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS DETERMINED TO BE 100 PPM OR GREATER, THEN THE RADIUS OF EXPOSURE SHALL BE CALCULATED TO COMPLY WITH APPLICABLE REQUIREMENTS OF STATE AND FEDERAL LAW.
2. IF CALCULATION OF THE RADIUS OF EXPOSURE REVEALS THAT A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS OF THE H₂S CONCENTRATION DETERMINATION AND THE CALCULATION OF THE RADIUS OF EXPOSURE SHALL BE PROVIDED TO NMOCD AND BLM. FOR A WELL, FACILITY OR OPERATION, THE ACCOMPLISH THE DETERMINATIONS, CALCULATIONS AND SUBMISSIONS WILL BE MADE BEFORE OPERATIONS BEGIN.

D. RECALCULATION - OF THE RADIUS OF EXPOSURE SHALL BE PERFORMED IF:

1. THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION INCREASES TO 100 PPM OR GREATER.
2. THE CONCENTRATION OF H₂S INCREASES BY A FACTOR OF 25% IN AN AREA THAT PREVIOUSLY HAD A H₂S CONCENTRATION OF 100 PPM OR GREATER.

IF A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS SHALL BE PROVIDED TO THE NMOCD AND BLM (IF APPLICABLE) WITHIN 60 DAYS.

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H2S Contingency Plan (continued)

APPENDIX 'D'

INCIDENT RESPONSE PROTOCOL

FOLLOW THE PLAN

!!! AN EMERGENCY HAS OCCURRED !!!

- 1. **IMPLEMENT PLAN** - COMPANY FOREMAN OR DESIGNATED PERSON IS IMMEDIATE INCIDENT COMMANDER. (SAFETY CONSULTANT IF ON SITE.)
- 2. **ASSESS SITUATION** - DIRECT ALL PERSONNEL TO REPORT TO SAFETY BREIFING AREA. NOTIFY TO EVACUATE PUBLIC IF APPLICABLE.
- 3. **CONTROL SITUATION IF POSSIBLE** - DON BREATHING AND SAFETY APPARTUS; SHUT DOWN OPERATIONS AND WELL.

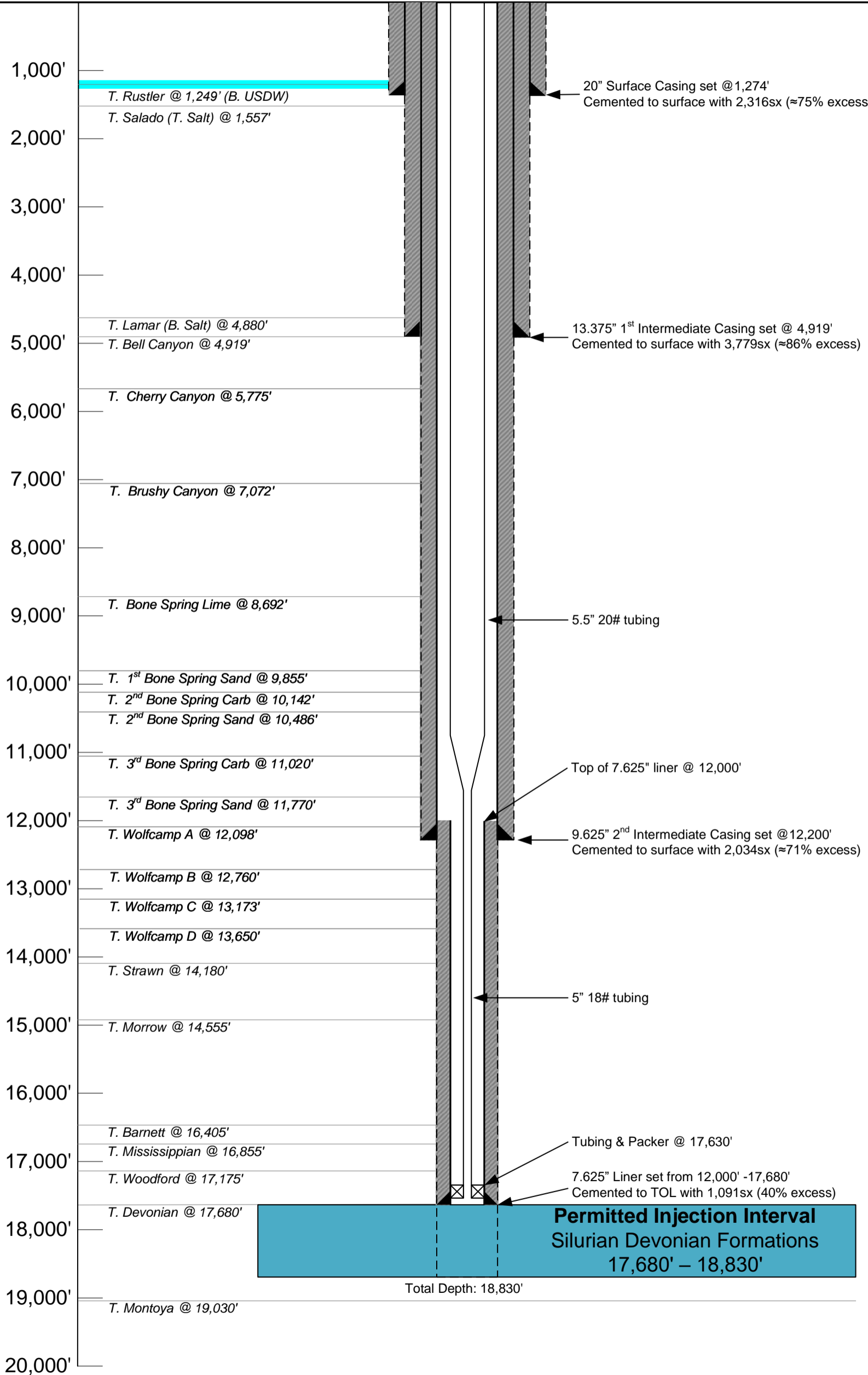
BACK-UP DESIGNEE SHOULD: (EMERGENCY NUMBERS PAGES 8 & 9)

- A. REPORT INCIDENT TO COUNTY EMERGENCY RESPONSE & STATE POLICE.
 - B. CALL 911 OR MEDICAL IF NECESSARY. (GIVE FIRST AID, PAGE 12)
 - C. CALL COUNTY SHERIFF, OTHER EMERGENCY AGENCIES.
 - D. CALL SAFETY COMPANY, COMPANY REPS IF NOT ALREADY ON SITE.
 - E. ESTABLISH RADIO COMMUNICATION WITH EMERGENCY RESPONDERS.
- 4. **ATTEMPT RESCUE IF REQUIRED** - QUALIFIED PERSONNEL MUST BE MASKED UP AND BUDDY SYSTEM ONLY. (PER TRAINING AND CERTIFICATION.)
 - 5. **CONTROL OR PARTIAL CONTROL**
 - A. MAKE DECISION TO IGNITE WELL IF REQUIRED. (PAGE 6)
 - B. BRIEF PERSONNEL ASSEMBLY IN SAFETY AREA - GIVE INSTRUCTIONS TO EVACUATE NON-ESSENTIAL PERSONNEL.
 - 6. **BRIEF LAW ENFORCEMENT AND COUNTY EMERGENCY RESPONDERS.**
 - A. STATE POLICE WILL BE IN CONTROL OF INCIDENT BEYOND LOCATION.
 - B. COMPANY PERSONNEL WILL FOLLOW INSTRUCTIONS OF STATE POLICE, LOCAL EMERGENCY PERSONNEL AND COOPERATE WITH ALL PARTIES TO ENSURE SAFE OPERATIONS MOVING FORWARD.
 - C. IF WELL IS OUT OF CONTROL (BLOWOUT), A NEW INCIDENT COMMANDER MAY BE DESIGNATED FOR THE DURATION OF THE EVENT.
 - 7. **INCIDENT IS CONTROLLED** AND SHUT DOWN OR, INCIDENT OPERATIONS WILL CONTINUE UNTIL RESOLVED.
 - 8. **REGULATORY REPORTING & PAPERWORK** IS COMPLETED AS APPLICABLE - DETERMINE CAUSE OF FAILURE, VOLUMES, ETC. EVENT IS TERMINATED.

Moonwalk Fed SWD #1 Wellbore Diagram

Injection Interval: Silurian Devonian @ 17,680' – 18,830'

Formation Depth Picks



Surface Casing	
Casing Size :	20 in
Casing Type:	106.5# J-55 BTC
Casing Depth:	0 ft - 1,274 ft
Hole Size:	26 in
Top of Cement:	Surface
Lead Cement:	
# Sk:	1,756 (100% Excess)
Type:	C +Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
Yield:	1.72
Tail Cement:	
# Sk:	560 (50% Excess)
Type:	C+C-45, CaCl
Yield:	1.33

1st Intermediate Casing	
Casing Size:	13.375 in
Casing Type:	68 lb/ft L-80 BTC
Casing Depth:	0 ft - 4,919 ft
Hole Size:	17.5 in
Top of Cement:	Surface
Lead Cement:	
# Sk:	2,922 (100% Excess)
Type:	65:10:25 Class C Premium: Compass Poz-Mix:CPO-18; Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
Yield:	2.13 ft ³ /sk
Tail Cement:	
# Sk:	856 (50% Excess)
Type:	50:50 Class C Premium: Compass Poz-Mix; Salt, C-51, STE, C-23
Yield:	1.2 ft ³ /sk

2nd Intermediate Casing	
Casing Size:	9.625 in
Casing Type:	43.5# P-110 BTC
Casing Depth:	0 ft - 12,200 ft
Hole Size:	12.25 in
Top of Cement:	Surface
Lead Cement:	
# Sk:	1,766 (75% Excess)
Type:	100% HSLD 9420 Cement; Salt, C-45 Econolite, Citric Acid, CSA-1000-Fluid Loss Additive, C-49 Expanding Gas Flow Control
Yield:	3.66 ft ³ /sk
Tail Cement:	
# Sk:	268 (50% Excess)
Type:	100% Class H Premium Cement; STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
Yield:	1.32 ft ³ /sk

Liner	
Casing Size:	7.625 in
Casing Type:	39 lb/ft P110 FJ
Casing Depth:	12,000 ft – 17,680 ft
Hole Size:	8.75 in
Top of Cement:	TOL
Cement:	
# Sk:	1,091 (40% Excess)
Type:	STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand
Yield:	1.3 ft ³ /sk

Injection Tubing & Packer	
Tubing Size:	5.5 in x 5 in Tapered
Tubing Type	20# &18# HCL-80 FJ
Tubing & Packer Depth:	17,630 ft

Injection Interval	
Formation(s):	Silurian Devonian
Permitted Injection Interval:	
Top:	17,680 ft
Bottom:	18,830 ft
Hole size:	6.5 in
Cased/OpenHole:	Open-Hole

Permitted Injection Interval
Silurian Devonian Formations
17,680' – 18,830'

Note: Listed depths and cement volumes are approximates based on available information.

NOT TO SCALE

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

DRILLING PLAN

1. GENERAL WELL INFORMATION

Operator: Solaris Water Midstream, LLC

Well Name: Moonwalk Fed SWD #1

Well Type: Saltwater Disposal

Surface Hole Location:

- Latitude/Longitude: 32.2722574, -103.6720262 (NAD83)
- Legal Location: Section 28 T23S R32E

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS

Formation	Expected Top (TVD) (ft)	Lithology	Mineral Resources (Hydrocarbon / Salt / Water)
Quaternary	0	Alluvium	Useable Water
Rustler	1,249	Anhydrite	None
Salado (Top of Salt)	1,557	Salt	None
Lamar (Base of Salt)	4,880	Limestone, Shale	None
Bell Canyon	4,919	Sandstone	Natural Gas, Oil
Cherry Canyon	5,775	Sandstone	Natural Gas, Oil
Brushy Canyon	7,072	Sandstone	Natural Gas, Oil
Bone Spring Lime	8,692	Limestone, Shale	Natural Gas, Oil
1st Bone Spring Sand	9,855	Sandstone	Natural Gas, Oil
2nd Bone Spring Carb	10,142	Limestone, Shale	Natural Gas, Oil
2nd Bone Spring Sand	10,486	Sandstone	Natural Gas, Oil
3rd Bone Spring Carb	11,020	Limestone, Shale	Natural Gas, Oil
3rd Bone Spring Sand	11,770	Sandstone	Natural Gas, Oil
Wolfcamp A	12,098	Shale	Natural Gas, Oil
Wolfcamp B	12,760	Shale	Natural Gas, Oil
Wolfcamp C	13,173	Shale	Natural Gas, Oil
Wolfcamp D	13,650	Shale	Natural Gas, Oil
Strawn	14,180	Limestone	Natural Gas, Oil
Morrow	14,555	Shale, Limestone	Natural Gas, Oil
Barnett	16,405	Shale	Natural Gas, Oil
Mississippian	16,855	Limestone	Natural Gas, Oil
Woodford	17,175	Shale	Natural Gas, Oil
Devonian	17,680	Limestone, Dolomite, Chert	None
Total Depth	18,830		
Montoya	19,030	Dolomite, Limestone	None

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

3. PRESSURE CONTROL

3.1 Equipment

A 10,000 psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below surface casing to TD. See **Appendix A** for Diagrams of a Representative BOP and BOP/Manifold Closed Loop System Equipment Schematic.

Pipe Rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per Title 43 CFR 3172.

A conventional wellhead assembly will be used.

3.2 Testing Procedure

BOP will be inspected and operated as required in Title 43 CFR 3172. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position.

A third-party company will test the BOPs.

A full BOP test will be performed whenever any seal subject to test pressure is broken. For each test, the BOP will be tested with a test plug at a low pressure of 250 psi for a minimum of 10 minutes. This test shall be performed prior to testing the BOP at full stack pressure of 5,000 psi for the 5M annual preventer and 10,000 psi for the 10M ram stack.

3.3 Variances

Solaris is requesting the following variances:

- Variance to drill this well using a 5M annular preventer with a 10M BOP ram stack. The “Well Control Plan” for 10M MASP Section of Wellbore is attached as **Appendix B**.

4. CASING PROGRAM

The proposed casing program is described below. All casing will be new.

Casing String	Hole Size (in)	Casing							Depth (Top – Bottom)		
		O.D. (in)	I.D. (in)	Wt. (lb/ft)	Grade	Conn.	API?	Clearance (in)		TVD (ft)	MD (ft)
								Casing-Casing	Casing - Wellbore		
Surface	26	20	19.0	106.5	J-55	BTC	Yes	N/A	2.50	0 - 1,274	0 - 1,274
1 st Int.	17.5	13.375	12.415	68	L-80	BTC	Yes	2.3125	1.5625	0 - 4,919	0 - 4,919
2 nd Int.	12.25	9.625	8.755	43.5	P-110	BTC	Yes	0.895	0.8125	0 – 12,200	0 – 12,200
Liner	8.75	7.625	6.625	39	P-110	FJ	No	0.565	0.5625	12,000 – 17,680	12,000 – 17,680

Notes:

- Per 43 CFR 3172.7(a)(4), each casing string will have at least 0.422” clearance on all sides between the outside of the casing and the wellbore wall and/or next casing string. (See **Appendix C** for Casing Clearance Detail).
- Per 43 CFR 3172.7(a)(4), each string of casing will be cemented to surface, with the exception of the Liner. Cement specifications, including top of cement (TOC) for each casing string are detailed in Section 5 below.
- All casing strings will be tested in accordance with Title 43 CFR 3172.7(b)(8).
- Rustler formation top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed to ensure surface casing is set 25 ft below the top of the Rustler formation.
- Casing/Coupling Specification Sheets for non-API casing are included as **Appendix D**.

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

5. CEMENTING PROGRAM

The proposed cementing program is described below.

Casing String	Type	Sacks	Yield (ft ³ /sk)	Weight (lb/gal)	Excess (%)	Top of Cement (ft)	Cement Class and Slurry Description
Surface	Lead	1,756	1.72	13.5	100	0	Class C: +Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
	Tail	560	1.33	14.8	50	990	Class C: +C-45, CaCl
1 st Intermediate	Lead	2,922	2.13	12.7	100	0	Class C: 65:10:25 Class C Premium: Compass Poz-Mix: CPO-18; Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
	Tail	856	1.2	14.8	50	3,933	Class C: 50:50 Class C Premium: Compass Poz-Mix; Salt, C-51, STE, C-23
2 nd Intermediate	Lead	1,766	3.66	10.6	75	0	Class C: 100% HSLD 9420 Cement; Salt, C-45 Econolite, Citric Acid, CSA-1000-Fluid Loss Additive, C-49 Expanding Gas Flow Control
	Tail	268	1.32	15	50	11,447	Class H - 100% Class H Premium Cement; STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
Liner	Lead	1,091	1.3	15.6	40	12,000	Class C - STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand
	Tail	N/A	N/A	N/A	N/A	N/A	N/A

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM

An electronic Pason mud monitoring system complying with Title 43 CFR 3172 will be used. All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

A description of the mud characteristics at their associated drilling depths is included in the table below:

Interval MD (ft)	Mud Type	Density (lb/gal)	Viscosity	Fluid Loss
0 – 1,274	Spud Mud with Native Water	8.4 – 9.2	28-30	NC
1,274 – 4,919	Brine Emulsion	9.5 - 10	28-30	NC
4,919 – 12,200	Brine Emulsion	9 – 10	28-30	NC
12,200 – 17,680	Oil-Based Mud	12.5 – 13.5	50-65	<20
17,680 – 18,830	Water-Based Mud	8.4 – 8.8	29	NC

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

7. Cores, Tests, & Logs

Mud logging unit (2 Man) below 20" casing (surface) to TD of the injection section. Will record drilling parameters (including rate), cuttings lithology, mud gas, and hydrocarbon shows.

A triple combo (gamma, resistivity/induction, density, compensated neutron, caliper) will be run over the injection section to confirm that hydrocarbons cannot be produced in economic quantities.

Through casing GR/Neutron or MWD GR will provide final as drilled tops above the injection zone. A CBL will be run over the cased-hole sections of the well to ensure injection zone isolation.

No core or drill stem testing is planned.

A Mechanical Integrity Test (MIT) will be performed annually.

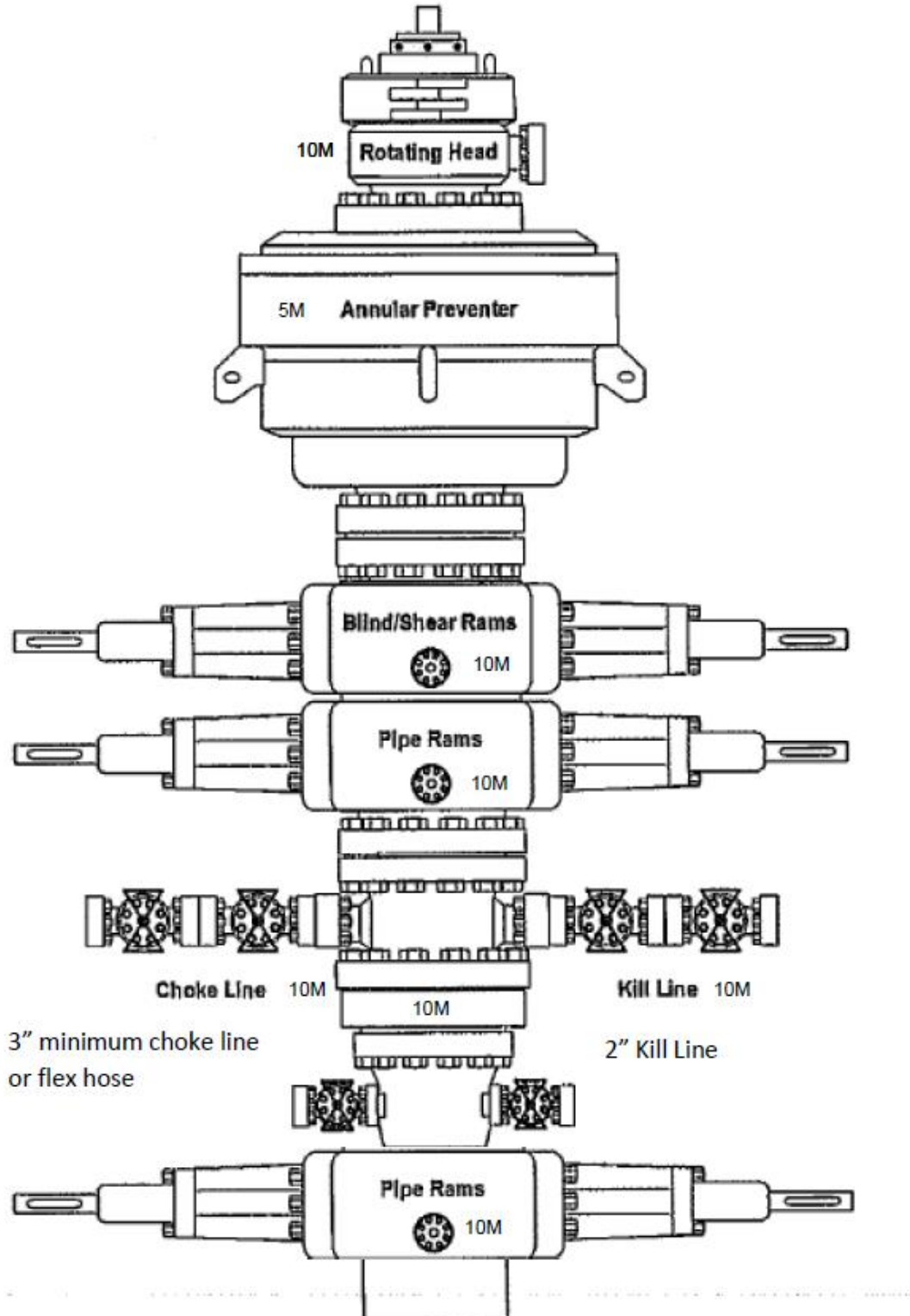
8. QUESTIONNAIRE

Casing	Y/N
Is casing new? If used, attach certification as required in 43 CFR 3171.	Y
Is casing API approved? If no, attach casing specification sheet. (see Appendix D)	N
Is premium or uncommon casing planned? If yes attach casing specification sheet. (see Appendix D)	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Capitan Reef / KPLA R-111-P Area / Secretary Potash Area	Y/N
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N/A
Is well within the designated 4-string boundary?	N
Is well located within the R-111-P boundaries?	N
If yes, are the first three strings cemented to surface?	N/A
Is the 2 nd string set 100' to 600' below the base of salt?	N/A
Is well located within the Secretary Potash Area boundaries?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N/A
Cave and Karst	Y/N
Is well located in High Cave/Karst area?	N
If yes, are there two strings cemented to surface?	N/A
Is well located in critical Cave/Karst area?	N
If yes, are there three strings cemented to surface?	N/A

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX A

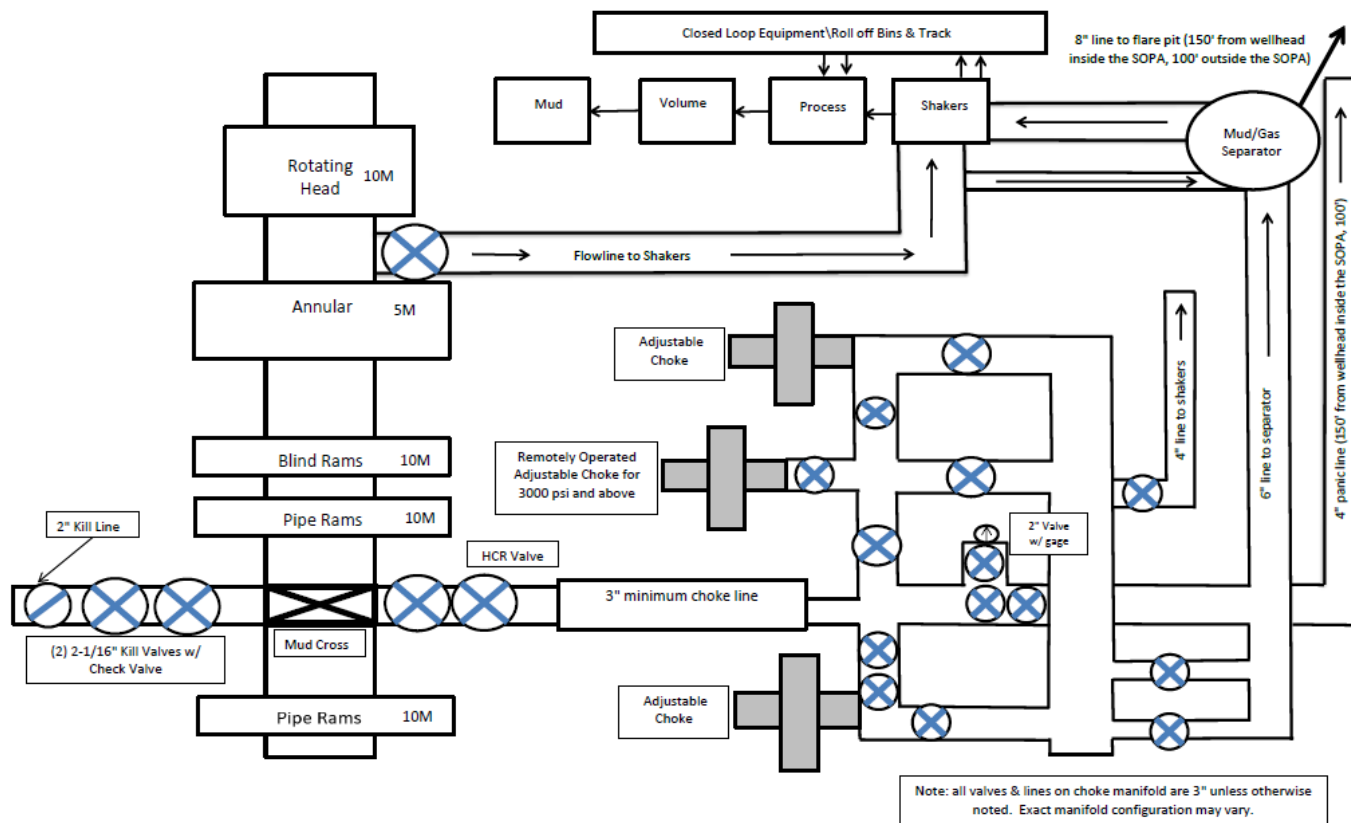
Representative BOP Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX A

BOP/Manifold & Closed Loop System Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX B: WELL CONTROL PLAN

1. INTRODUCTION

Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, while pipe is not in the hole and moving the BHA through the BOP's. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the Permian Oilfield Partners drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore Oil & Gas Order No. 2 with the exception of the 5M annular which will be tested to 100% of its RWP. *Note: HCR valve and choke manifold will remain close during all normal operations. Manipulation of such equipment will occur as part of the general well control procedures.

2. GENERAL WELL CONTROL PROCEDURE WHILE DRILLING

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

3. GENERAL PROCEDURE WHILE TRIPPING

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

4. GENERAL PROCEDURE WHILE RUNNING PRODUCTION CASING

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX B: WELL CONTROL PLAN

1. Sound alarm (alert crew)
2. Stab crossover and full-opening safety valve and close
3. Space out string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

5. GENERAL PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

1. Sound alarm (alert crew)
2. Shut-in with blind rams (HCR & choke will already be in the closed position)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
6. Regroup and identify forward plan

6. GENERAL PROCEDURES WHILE PULLING BHA THROUGH STACK

1. PRIOR to pulling last joint of drillpipe through stack:
 - a. Perform flow check. If flowing, continue to (b).
 - b. Sound alarm (alert crew)
 - c. Stab full-opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper variable bore rams
 - e. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full-opening safety valve and close
 - c. Space out drill string with upset just beneath the upper variable bore rams
 - d. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX B: WELL CONTROL PLAN

- e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combination immediately available:
- a. Sound alarm (alert crew)
 - b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
 - c. If impossible to pull string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe and full-opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper variable bore ram
 - f. Shut-in using upper variable bore ram (HCR & choke will already be in the closed position)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX C: CASING CLEARANCE DETAIL

Casing String	Moonwalk SWD #1									
	Hole	Casing				Collar		Clearance (in)		API
		Size		Weight (lb/ft)	Grade	Type	Size OD (in)	Casing-Casing	Casing-Wellbore	
		OD (in)	ID (in)							
Surface	26	20	19	106.5#	J-55	BTC	21	N/A	2.50	Yes
1st Intermediate	17.5	13.375	12.415	68#	L-80	BTC	14.375	2.3125	1.5625	Yes
2nd Intermediate	12.25	9.625	8.755	43.5#	P-110	BTC	10.625	0.895	0.8125	Yes
Liner	8.75	7.625	6.625	39#	P-110	FJ	7.625	0.565	0.5625	No

Clearance Calculations:


Casing-Casing: $(\text{Outer Casing I.D.} - \text{Inner Casing Collar O.D.}) / 2$

Wellbore - Casing: $(\text{Hole Size} - \text{Casing Collar O.D.}) / 2$

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX D: CASING - COUPLING SPECIFICATION


7.625 39# P-110 FJ



U. S. Steel Tubular Products

7.625" 39.00lb/ft (0.500" Wall) P110 HC USS-LIBERTY FJM®

4/1/2025 1:53:21 PM



MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM®	--
Minimum Yield Strength	110,000	--	psi
Maximum Yield Strength	140,000	--	psi
Minimum Tensile Strength	125,000	--	psi
DIMENSIONS	Pipe	USS-LIBERTY FJM®	--
Outside Diameter	7.625	7.625	in.
Wall Thickness	0.500	--	in.
Inside Diameter	6.625	6.539	in.
Standard Drift	6.500	6.500	in.
Alternate Drift	--	--	in.
Nominal Linear Weight, T&C	39.00	--	lb/ft
Plain End Weight	38.08	--	lb/ft
SECTION AREA	Pipe	USS-LIBERTY FJM®	--
Critical Area	11.192	6.665	sq. in.
Joint Efficiency	--	59.5	%
PERFORMANCE	Pipe	USS-LIBERTY FJM®	--
Minimum Collapse Pressure	12,180	12,180	psi
Minimum Internal Yield Pressure	12,640	12,640	psi
Minimum Pipe Body Yield Strength	1,231,000	--	lb
Joint Strength	--	733,000	lb
Compression Rating	--	733,000	lb
Reference Length	--	12,843	ft
Maximum Uniaxial Bend Rating	--	39.4	deg/100 ft
MAKE-UP DATA	Pipe	USS-LIBERTY FJM®	--
Make-Up Loss	--	4.75	in.
Minimum Make-Up Torque	--	14,700	ft-lb
Maximum Make-Up Torque	--	20,750	ft-lb

Notes

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4. USS-LIBERTY FJM™ connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
5. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
6. Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
7. Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

Legal Notice

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U. S. Steel Tubular Products 1-877-893-9461
 460 Wildwood Forest Drive, Suite 300S connections@uss.com
 Spring, Texas 77380 www.usstubular.com



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

SUPO Data Report

06/16/2025

APD ID: 10400095347

Submission Date: 12/08/2023

Highlighted data reflects the most recent changes

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

[Show Final Text](#)

Well Type: INJECTION - DISPOSAL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Moonwalk_Existing_Lease_Road_2025.03_20250401122730.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? YES

ROW ID(s)

ID: NMNM106391645

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Moonwalk_Proposed_New_Lease_Road_2025.03_20250401122741.pdf

New road type: RESOURCE

Length: 383 Feet

Width (ft.): 20

Max slope (%): 4

Max grade (%): 2

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: As required per BLM requirements.

New road access plan or profile prepared? N

New road access plan

Operator Name: SOLARIS WATER MIDSTREAM LLC	
Well Name: MOONWALK FED SWD	Well Number: 1

Access road engineering design? N

Access road engineering design

Turnout? N

Access surfacing type: GRAVEL

Access topsoil source: ONSITE

Access surfacing type description:

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: As required per BLM requirements.

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: CROSSING

Drainage Control comments: Per BLM instructions during on-site.

Road Drainage Control Structures (DCS) description: Per BLM instructions during on-site.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment

Moonwalk_SWD_No_1_Access_Road_Rev_03_17_25_20250401122921.pdf

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Existing Well map Attachment:

Moonwalk_Fed_SWD__1__C_108__Inj_Permit__Seismicity_Report_20240822123241.pdf

Moonwalk_Fed_SWD__1__C_108__Inj_Permit__APPROVED_20250401134517.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The facilities are located on the southern part of the pad, towards the east. The pad spans 800' by 400'. Access road is on the north west side of the pad. Topsoil is on the north west side of the pad. Spoils are in the north east corner.

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Production Facilities map:

J0_XXXX_100_RA__MOONWALK_SWD__1__20250515140639.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Fresh water

Water source use type: SURFACE CASING

Source latitude:

Source longitude:

Source datum:

City:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 2000

Source volume (acre-feet): 0.25778619

Source volume (gal): 84000

Water source and transportation

Moonwalk_Fed_SWD__1__Water_Supply_Location_Map__FINAL__20250325114225.pdf

Water source comments:

New water well? N

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Operator Name: SOLARIS WATER MIDSTREAM LLC	
Well Name: MOONWALK FED SWD	Well Number: 1

Grout material: **Grout depth:**
Casing length (ft.): **Casing top depth (ft.):**
Well Production type: **Completion Method:**
Water well additional information:
State appropriation permit:
Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES
Construction Materials description: On site caliche and caliche from SWQ/SWQ Section 7 T24S R32E (32.2270489, - 103.7212499) will be used for construction.
Construction Materials source location
Moonwalk_Fed_SWD__1___Construction_Material_Map_FINAL__20250325114319.pdf

Section 7 - Methods for Handling

Waste type: SEWAGE
Waste content description: Human waste and grey water
Amount of waste: 500 gallons
Waste disposal frequency : Weekly
Safe containment description: Current laws and regulations pertaining to the disposal of human waste will be complied with.
Safe containmant attachment:
Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:
Disposal location description: Portable containers will be utilized for garbage disposal during the drilling of this well. Garbage will be hauled to Lea County landfill for solid waste.

Reserve Pit

Reserve Pit being used? NO
Temporary disposal of produced water into reserve pit? NO
Reserve pit length (ft.) **Reserve pit width (ft.)**
Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**
Is at least 50% of the reserve pit in cut?
Reserve pit liner
Reserve pit liner specifications and installation description

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? N

Description of cuttings location

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

Cuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities

Comments:

Section 9 - Well Site

Well Site Layout Diagram:

Moonwalk_Fed_SWD__1__Wellpad_Layout_Plant__2025_04_01_20250401125936.pdf

Moonwalk_Fed_SWD__1__Rig_Layout_Plant__2025_04_01_20250401125957.pdf

MWF_1_Moonwalk_SWD_No_1_Well_Pad_20250507102310.pdf

Comments: a. Rig Orientation and Layout: See rig layout diagram. Only minor leveling of the well site will be required. No significant cuts or fills will be necessary. The topsoil will be stockpiled on the north side of the location.

Section 10 - Plans for Surface

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring

Drainage/Erosion control construction: As required per BLM requirements for proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

Drainage/Erosion control reclamation: As required per BLM requirements for proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Well pad proposed disturbance (acres): 5.5	Well pad interim reclamation (acres): 0	Well pad long term disturbance (acres): 5.5
Road proposed disturbance (acres): 0.5	Road interim reclamation (acres): 0	Road long term disturbance (acres): 0.5
Powerline proposed disturbance (acres): 0.5	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 0.5
Pipeline proposed disturbance (acres): 0	Pipeline interim reclamation (acres): 0	Pipeline long term disturbance (acres): 0
Other proposed disturbance (acres): 0	Other interim reclamation (acres): 0	Other long term disturbance (acres): 0
Total proposed disturbance: 6.5	Total interim reclamation: 0	Total long term disturbance: 6.5

Disturbance Comments:

Reconstruction method: The areas planned for reclamation will be re contoured to the original contour if feasible. If not feasible the contour will blend with the surrounding topography as much as possible.

Topsoil redistribution: As required per BLM requirements, topsoil will be evenly re spread and aggressively revegetated over the entire disturbed area needed.

Soil treatment: As required per BLM requirements, proper seed mixture, free of noxious weeds will be used.

Existing Vegetation at the well pad: N/A

Existing Vegetation at the well pad

Existing Vegetation Community at the road: N/A

Existing Vegetation Community at the road

Existing Vegetation Community at the pipeline: N/A

Existing Vegetation Community at the pipeline

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances

Non native seed used? N

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Seed

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type

Pounds/Acre

Seed reclamation

Operator Contact/Responsible Official

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment

Weed treatment plan description: As required per BLM requirements, standard regular maintenance to maintain a clear location and road.

Weed treatment plan

Monitoring plan description: As required per BLM requirements, standard regular maintenance to maintain a clear location and road.

Monitoring plan

Success standards: To maintain all disturbed areas as required per BLM requirements.

Pit closure description: After the rig is moved out and the well is either completed or abandoned, all the waste materials will be cleaned up within 30 days. In the event of a dry hold only a dry hole marker will remain.

Pit closure attachment:

Section 11 - Surface

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

Operator Name: SOLARIS WATER MIDSTREAM LLC	
Well Name: MOONWALK FED SWD	Well Number: 1

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Section 12 - Other

Right of Way needed? Y

Use APD as ROW? N

ROW Type(s):

ROW

NMNM105853676_Moonwalk_Fed_SWD_1__ROW_Grant__Approved_20250401131007.pdf

NMNM106381625_Moonwalk_Fed_Well_Connect__ROW_Grant__Approved_20250401131008.pdf

SUPO Additional Information:

Use a previously conducted onsite? Y

Previous Onsite information: NOS 10400074376

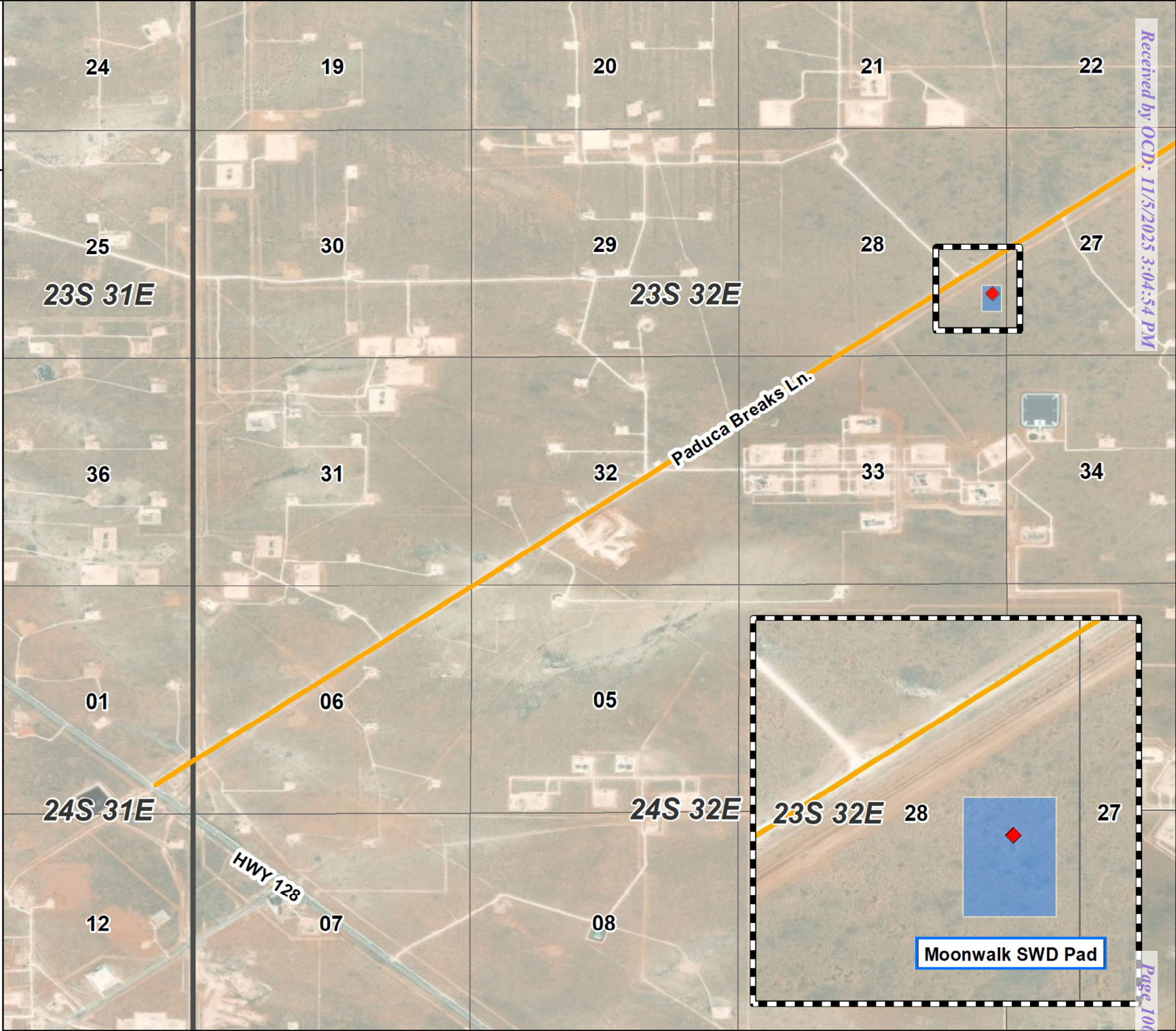
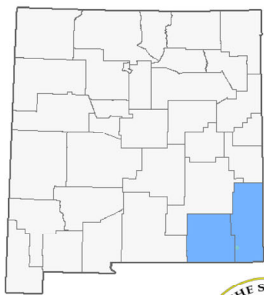
Other SUPO

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Aris Water Solutions, Inc.

9651 Katy Freeway Ste 400
Houston, TX 77024

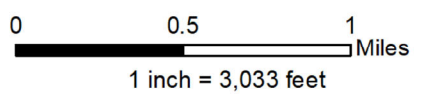
Existing Lease Road
Grant # NMNM106391645



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Date: 3/26/2025
Prepared By Bradley Rains



Moonwalk SWD Existing Lease Road Access
Eddy & Lea County, New Mexico

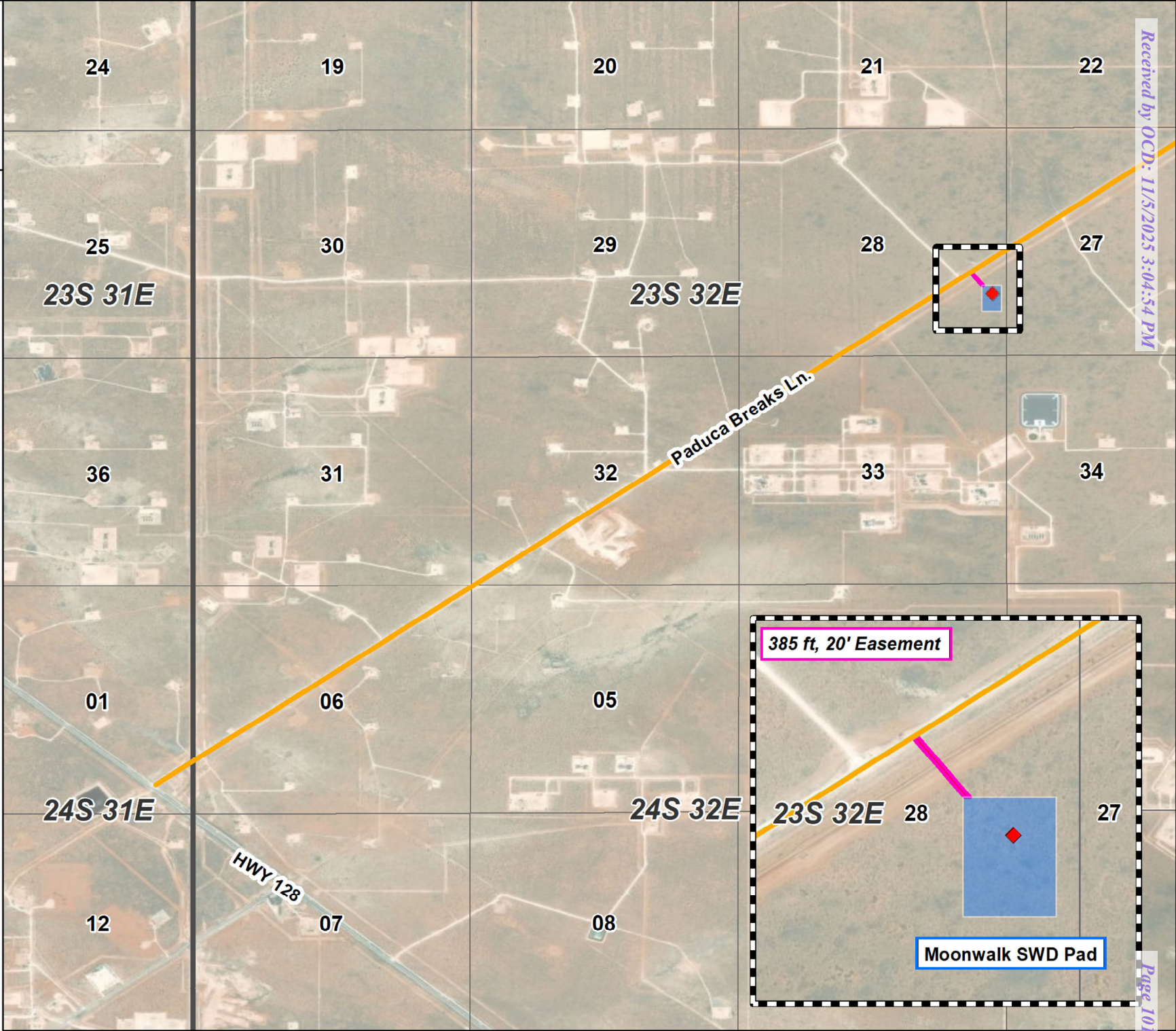
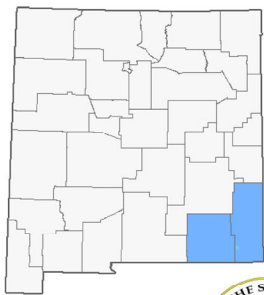


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Aris Water Solutions, Inc.

9651 Katy Freeway Ste 400
Houston, TX 77024

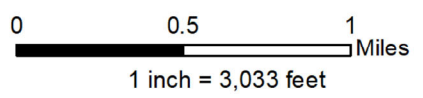
-  New Lease Road
-  Existing Lease Road
Grant # NMNM106391645



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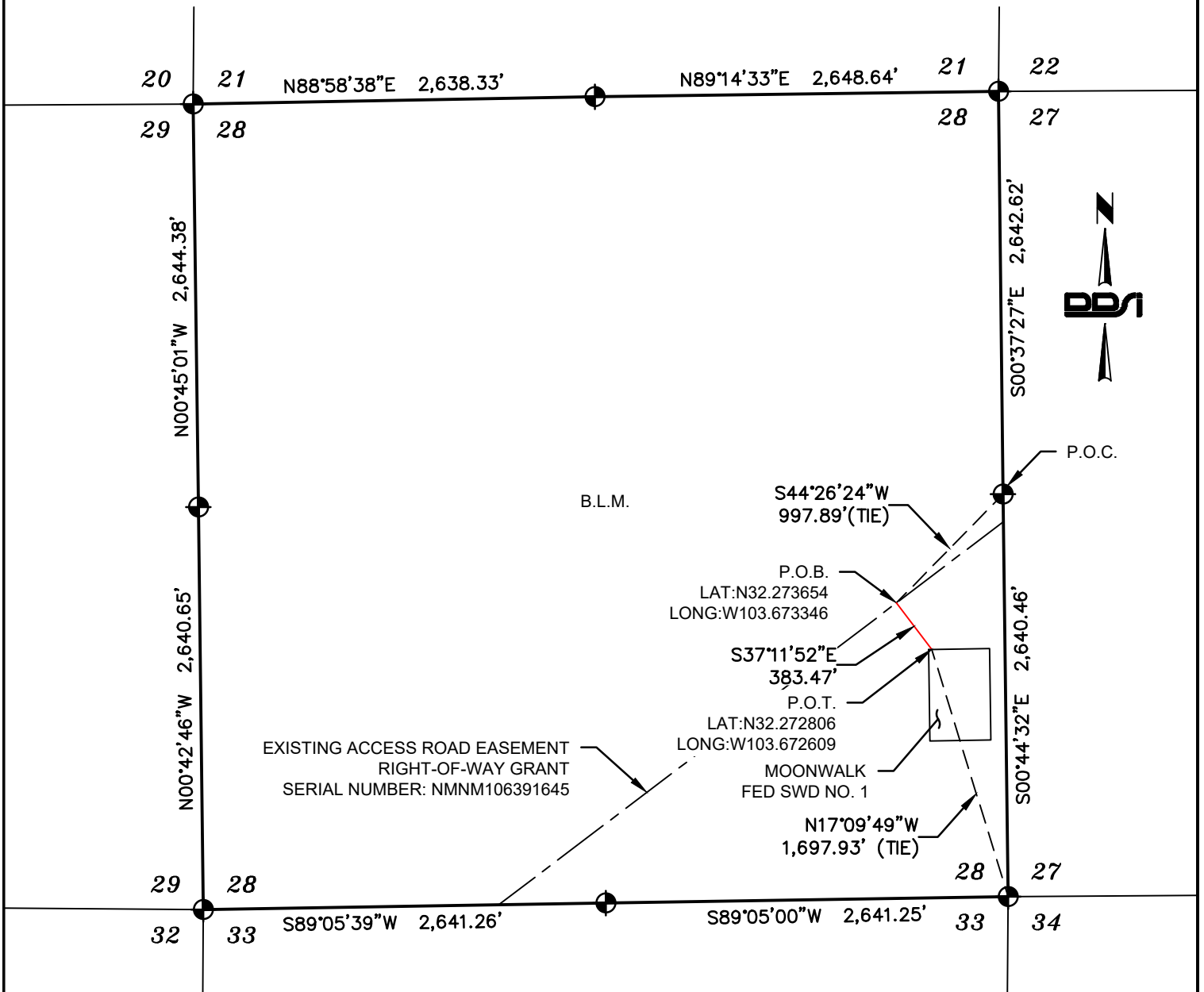
Date: 3/26/2025
Prepared By Bradley Rains



Moonwalk SWD Proposed New Lease Road Access
Eddy & Lea County, New Mexico



SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, NEW MEXICO
BUREAU OF LAND MANAGEMENT (B.L.M.)



CENTERLINE DESCRIPTION OF A PROPOSED ACCESS ROAD EASEMENT

A TWENTY FOOT WIDE PROPOSED ACCESS ROAD EASEMENT, HAVING TEN FEET EACH SIDE OF THE SAID CENTERLINE IN SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., IN LEA COUNTY, NEW MEXICO, SAID EASEMENT CENTERLINE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 28, BEING A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY; THENCE SOUTH 44°26'24" WEST, 997.89 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 37°11'52" EAST, 383.47 FEET TO THE POINT OF TERMINATION, BEING NORTH 17°09'49" WEST, 1,697.93 FEET OF A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY", BEING THE SOUTHEAST CORNER OF SAID SECTION 28.

THE EASEMENT CENTERLINE HAVING A TOTAL LENGTH OF 383.47 FEET (23.24 RODS) AND THE EASEMENT CONTAINING 0.18 ACRES (7,669 SQUARE FEET) OF LAND.

BASIS OF BEARING: BEARINGS SHOWN HEREON ARE BASED UPON UNIVERSAL TRANSVERSE MERCATOR ZONE 13 NORTH, US SURVEY FEET, NORTH AMERICAN DATUM OF 1983. ALL DISTANCES ARE GRID.

NOTES:

- RESEARCH HAS BEEN PROVIDED BY OTHERS.
- THIS PLAT IS FOR EASEMENT PURPOSES ONLY.
- EASEMENTS, SETBACKS, AND OTHER ENCUMBRANCES ARE NOT SHOWN BY AGREEMENT WITH CLIENT.
- P.O.C. = POINT OF COMMENCEMENT
- P.O.B. = POINT OF BEGINNING
- P.O.T. = POINT OF TERMINATION
- MODIFICATION IN ANY WAY OF THE FOREGOING DESCRIPTION TERMINATES LIABILITY OF SURVEYOR.

SURVEYOR'S CERTIFICATE

I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT ACROSS AN EXISTING TRACT OR TRACTS.

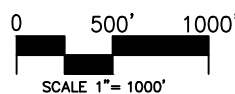
Chris Carlson 3/17/2025
CHRIS E. CARLSON N.M.P.S. NO. 24876



LEGEND:

- = DENOTES SUBJECT PARCEL
- = DENOTES CENTERLINE (C/L) OF EASEMENT
- = DENOTES CENTERLINE OF ROAD
- = DENOTES FOUND CORNER AS NOTED
- = DENOTES FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY"

NEW CONSTRUCTION EASEMENT TABLE		
CENTERLINE LENGTH	383.47 FT.	23.24 RODS
PERMANENT R.O.W.	7,669 SQ. FT.	0.18 ACRES



DOWNTOWN DESIGN SERVICES, INC.
16 E. 16TH ST. SUITE 400
TULSA, OK 74119
Tel: 918-592-3374 Fax: 918-221-3940
www.ddsiglobal.com

SOLARIS WATER MIDSTREAM, LLC.		
MOONWALK FED SWD NO. 1 ACCESS ROAD LOCATION OF A PROPOSED ACCESS ROAD EASEMENT IN SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO		
FIELD DATE:	06/16/2021	PERM. EASEMENT
DRAFTING DATE:	06/22/2021	PAGE 1 OF 1
APPROVED BY: CEC	DRAWN BY: TJA	TRACT: MWF-1

NO.	REVISION DESCRIPTION	DATE	BY
1	ADD GRANT NUMBER	03-17-25	TJA

JOB No. 2021-170

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

August 21, 2019

Mr. Phillip Goetze, P.G.
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Solaris Water Midstream, LLC, Moonwalk Fed SWD#1
Unit Letter I, Section 28 T23S R32E, Lea County

Dear Mr. Goetze:

On behalf of Solaris Water Midstream, LLC., R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018¹
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
 - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
 - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
 - Green, G. N., and G. E. Jones, 1997, e digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
 - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
 - NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology²

¹ https://scits.stanford.edu/sites/default/files/3702_tss_lundsnee_v2.pdf

² http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

August 21, 2019

Page 2

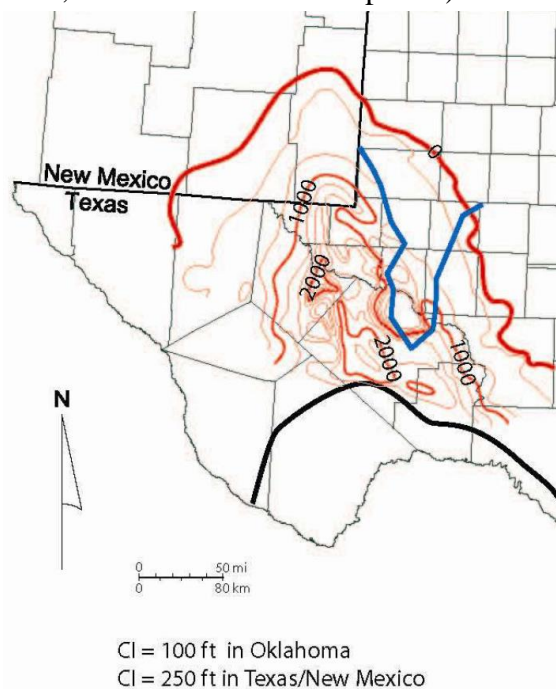
Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, such as the Dagger Draw area and a magnitude 2.0-2.9 earthquake that occurred between 1970-2004 about 4-miles northeast of the proposed Moonwalk Fed SWD #1. A slightly larger magnitude and more recent seismic event is reported about 25 miles east of the Moonwalk Fed SWD #1 well location.
3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the mapped fault that is closest to the Moonwalk Fed SWD #1 (about 9.0 miles to the east) exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
4. Other mapped faults in southern Lea and Eddy Counties shown on Plate 5 also show a low FSP. Thirty and forty-miles to the west are two southwest-northeast trending faults. Portions (10 and 20 miles in length) of these faults have an FSP of 20 to 30%. About 30-miles to the east are several short (1-2 mile) fault segments also having an FSP of 20 to 30%.

Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within a 6-mile radius around the proposed Moonwalk Fed SWD #1, the OCD database shows 6 active and 4 new/proposed Devonian SWDs, which translates into an average density of about one SWD for every 2.82 square miles or one SWD for every 2.57 square miles with the Moonwalk SWD.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, And Reservoir Development) is attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.

Data from the Amoco Federal CW Com 1 (30-025-28119) show that the thickness of the Simpson in the Antelope Ridge area of Lea County (Section 3 T24S R34E) is about 450 feet thick. This data point is about 13-miles east southeast of the Moonwalk Fed SWD, and is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).



We contend that the data permit conclusion that unmapped faults (which may be located by confidential seismic data that Solaris Midstream

August 21, 2019

Page 3

Water does not possess) near the Moonwalk Fed SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate 6 permit a conclusion that faults near the Moonwalk Fed SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Moonwalk Fed SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Moonwalk Fed SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenberger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenberger and, over time, increase the fluid pressure. After fluid pressure in the Ellenberger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events. In my opinion, the probability that injection into the Moonwalk Fed SWD will measurably contribute to the events described above and will cause a seismic event resulting in damage is so low as to be nil.

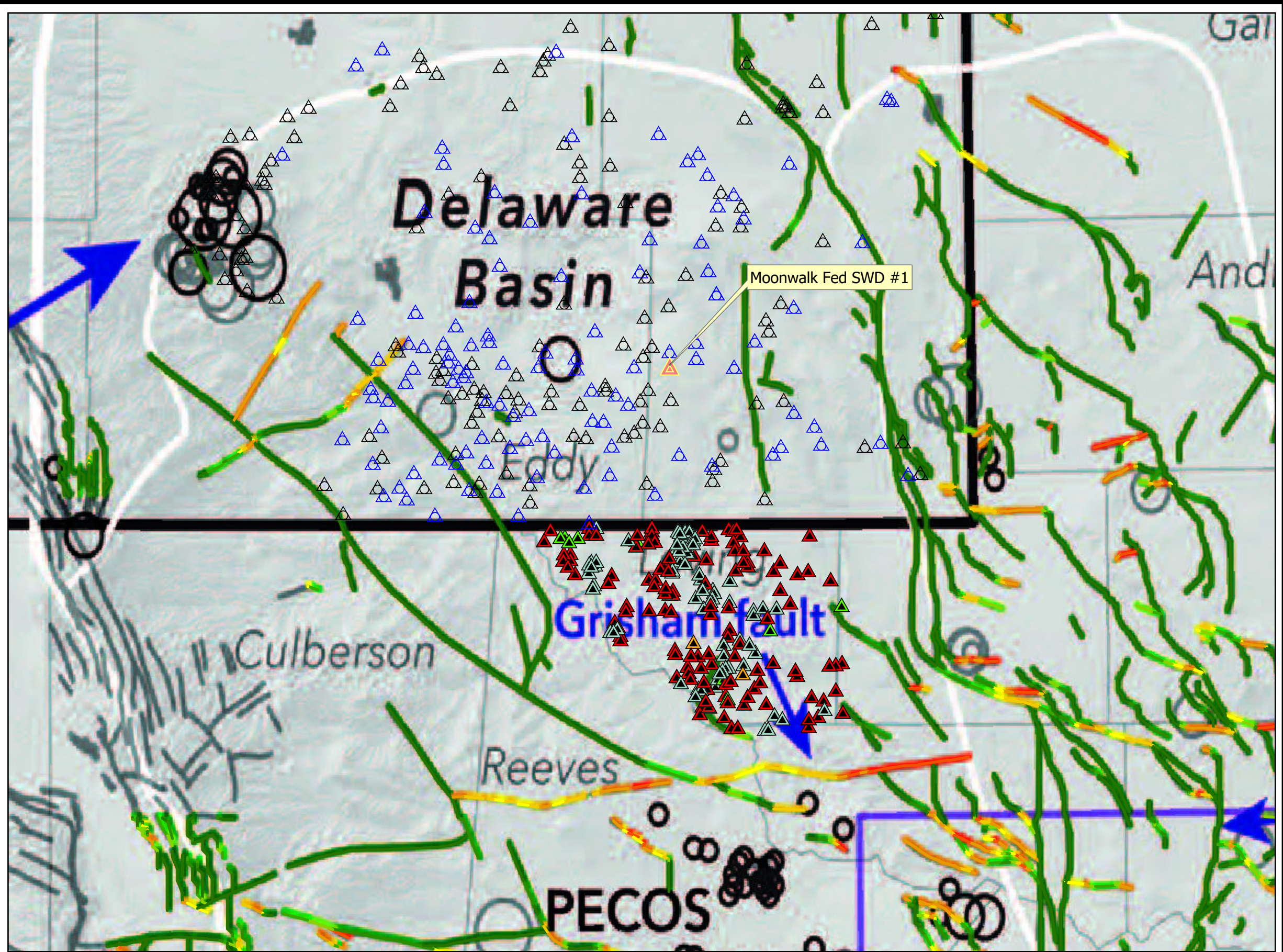
Sincerely,

R.T. Hicks Consultants



Randall T. Hicks
Principal

Copy: Solaris Water Midstream, LLC



- ▲ SWD
- Oil and Gas (NMOCD)
- Salt Water Injection, Active
- Salt Water Injection, New
- Loving, Tx Oil and Gas Wells
- Injection/Disposal From Gas
- Injection/Disposal From Oil
- Injection/Disposal From Oil/Gas
- Injection/Disposal Well

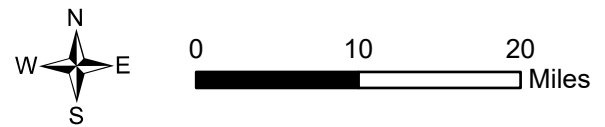
Seismicity:

- M_w 2.0-2.9 Since 2005
- M_w 3.0-3.9 1970-2004
- M_w 4.0+

Fault slip potential (%):

0 10 20 30 40 50+

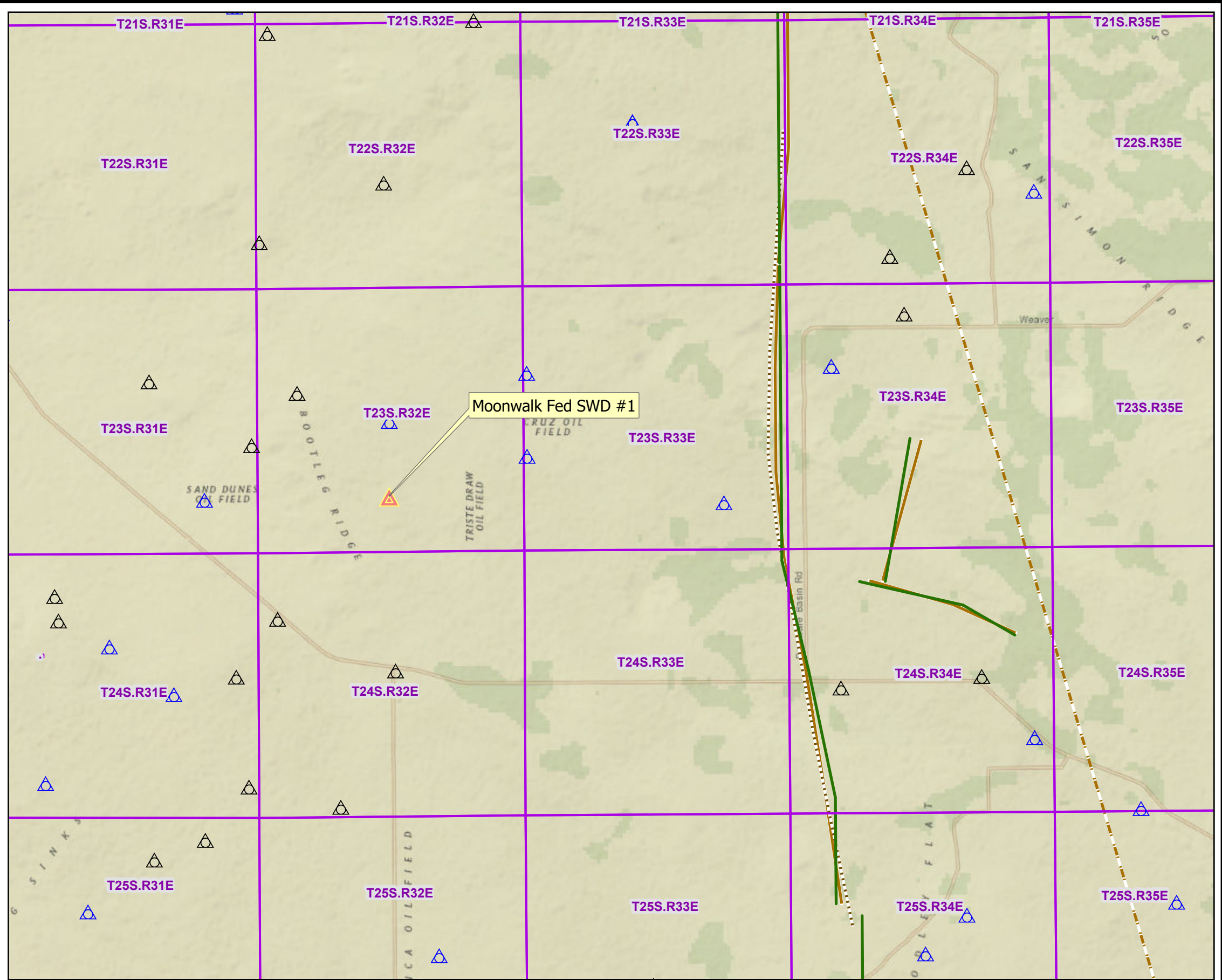
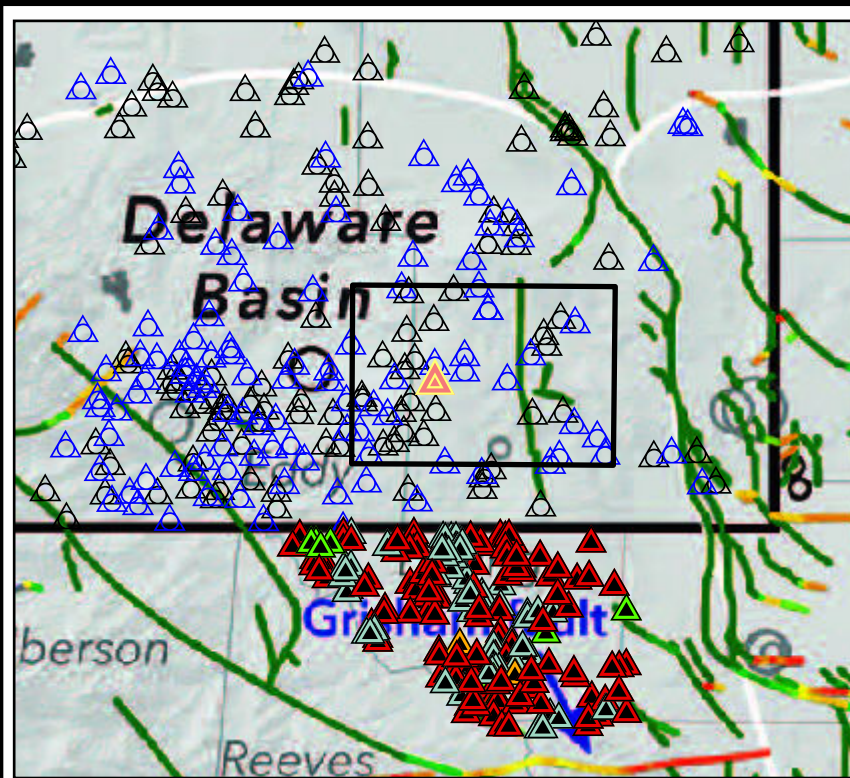
Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).



R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Seismicity and Fault Slip Potential Relative to
SWD and Injection Wells
Solaris Water Midstream
Moonwalk Fed SWD #1

Plate 5
June 2019



- SWD
- Oil and Gas (NMOCD)
- Salt Water Injection, Active
- Salt Water Injection, New
- Faults
- Fault - Woodford
- Fault - Precambrian
- Fault - Basement
- Fault Slip Potential (%)
- <5

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel et al. (2005), and the USGS Quaternary Faults and Folds Database (Crone and Wheeler, 2000).



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Fault Slip Potential Relative to
SWD and Injection Well
Solaris Water Midstream
Moonwalk Fed SWD #1

Plate 6
June 2019

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Adrienne Sandoval, Director
Oil Conservation Division



Administrative Order SWD-2251
May 21, 2020

**ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION**

Pursuant to the provisions of Division Rule 19.15.26.8(B) NMAC, Solaris Water Midstream, LLC (“Operator”) seeks an administrative order for its Moonwalk Federal SWD Well No. 1 (“Well”) with a location of 1430 feet from the South line and 300 feet from the East line, Unit letter I of Section 28, Township 23 South, Range 32 East, NMPM, Lea County, New Mexico, for the purpose of commercial disposal of produced water.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of Division Rule 19.15.26.8(B) NMAC and satisfactory information has been provided that affected parties have been notified. No objections were received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in Division Rule 19.15.26.8 NMAC have been met and the operator is in compliance with Division Rule 19.15.5.9 NMAC.

Application for Disposal in Devonian and Silurian Formations: Due to the potential for the projected injection volume of the proposed well to impact an area greater than the one-half mile radius applied in Division Form C-108 and Division rule, the applicant has provided the following supplementary information:

1. Notification following Division Rule 19.15.26.8(B) NMAC for a radius of one mile from the surface location of the proposed well;
2. An expanded Area of Review for wells penetrating the disposal interval for a radius of one mile from the surface location of the proposed well; and

IT IS THEREFORE ORDERED THAT:

The Operator is hereby authorized to utilize its Well for disposal of oil field produced water (UIC Class II only) through open-hole completion into an interval consisting of the Devonian and Silurian formations from approximately 17,680 feet to approximately 18,830 feet. Injection will occur through internally coated, 5½-inch tubing tapered down to 5-inches within the 9⅝-inch production casing and 5 inch or smaller tubing withing the 7⅝-inch liner. **A packer shall be set within 100 feet of the top of the disposal interval.** This permit does not allow disposal into:

1. The Woodford Shale and formations above the lower contact of the Woodford Shale;

Administrative Order SWD-2251
Solaris Water Midstream, LLC
May 21, 2020
Page 2 of 5

2. Formations below the Silurian formations including the Montoya formation and the Simpson formation (Middle Ordovician); and
3. Any lost circulation intervals directly on top and obviously connected to these formations.

Prior to commencing disposal, the operator shall submit mudlog and geophysical logs information, to the Division's District geologist and Santa Fe Engineering Bureau, showing evidence agreeable that only the permitted formation is open for disposal including a summary of depths (picks) for contacts of the formations which the Division shall use to amend this order for a final description of the depth for the injection interval. If significant hydrocarbon shows occur while drilling, the operator shall notify the Division's District office and the operator shall be required to receive written permission prior to commencing disposal.

The operator shall set surface casing at 1,655 feet in order to seal off protectable water.

The operator shall circulate to surface the cement for the 9⁵/₈-inch production casing.

If cement does not circulate on any casing string, the operator shall run a cement bond log ("CBL") or other log to determine top of cement and shall notify the Division's District I Office with the top of cement on the emergency phone number prior to continuing with any further cement activity with the proposed well. If cement did not tie back into the next higher casing shoe, the operator shall perform remedial cement job to bring cement, at a minimum, 200 feet above the next higher casing shoe.

The operator shall run a CBL (or equivalent) for the 7⁵/₈-inch liner to demonstrate the placement of cement and the cement bond with the tie-in with 9⁵/₈-inch production casing string. The operator shall provide a copy of the CBL to the Division's District I office prior to commencing disposal.

Prior to commencing disposal, the operator shall obtain a bottom-hole pressure measurement representative of the open-hole completion. This information shall be provided with the written notice of the date of commencement of disposal.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the approved disposal interval and is not permitted to escape to other formations or onto the surface. This includes the completion and construction of the well as described in the application and, if necessary, as modified by the District Supervisor or the Bureau of Land Management.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially

Administrative Order SWD-2251
Solaris Water Midstream, LLC
May 21, 2020
Page 3 of 5

commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT procedures and schedules shall follow the requirements in Division Rule 19.15.26.11(A) NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's District I office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

If the disposal well fails a MIT or if there is evidence that the mechanical integrity of said well is impacting correlative rights, the public health, any underground sources of fresh water, or the environment, the Division Director shall require the well to be shut-in within 24 hours of discovery and the operator shall redirect all disposal waters to another facility. The operator shall take the necessary actions to address the impacts resulting from the mechanical integrity issues in accordance with Division Rule 19.15.26.10 NMAC, and the well shall be tested pursuant to Rule 19.15.26.11 NMAC prior to returning to injection.

The wellhead injection pressure on the well shall be limited to **no more than 3,400 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formations. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable step-rate test.

The operator shall notify the supervisor of the Division's District I office of the date and time of the installation of disposal equipment and of any MIT so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's District I office. The operator shall submit monthly reports of the disposal operations that includes number of days of operation, injection volume, and injection pressure on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.24 NMAC.

The injection authority granted under this order is not transferable except upon Division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The Division may revoke this injection order after notice and hearing if the operator is in violation of Rule 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate one (1) year after the effective date of this Order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well

Administrative Order SWD-2251
Solaris Water Midstream, LLC
May 21, 2020
Page 4 of 5

abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Compliance with this Order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.

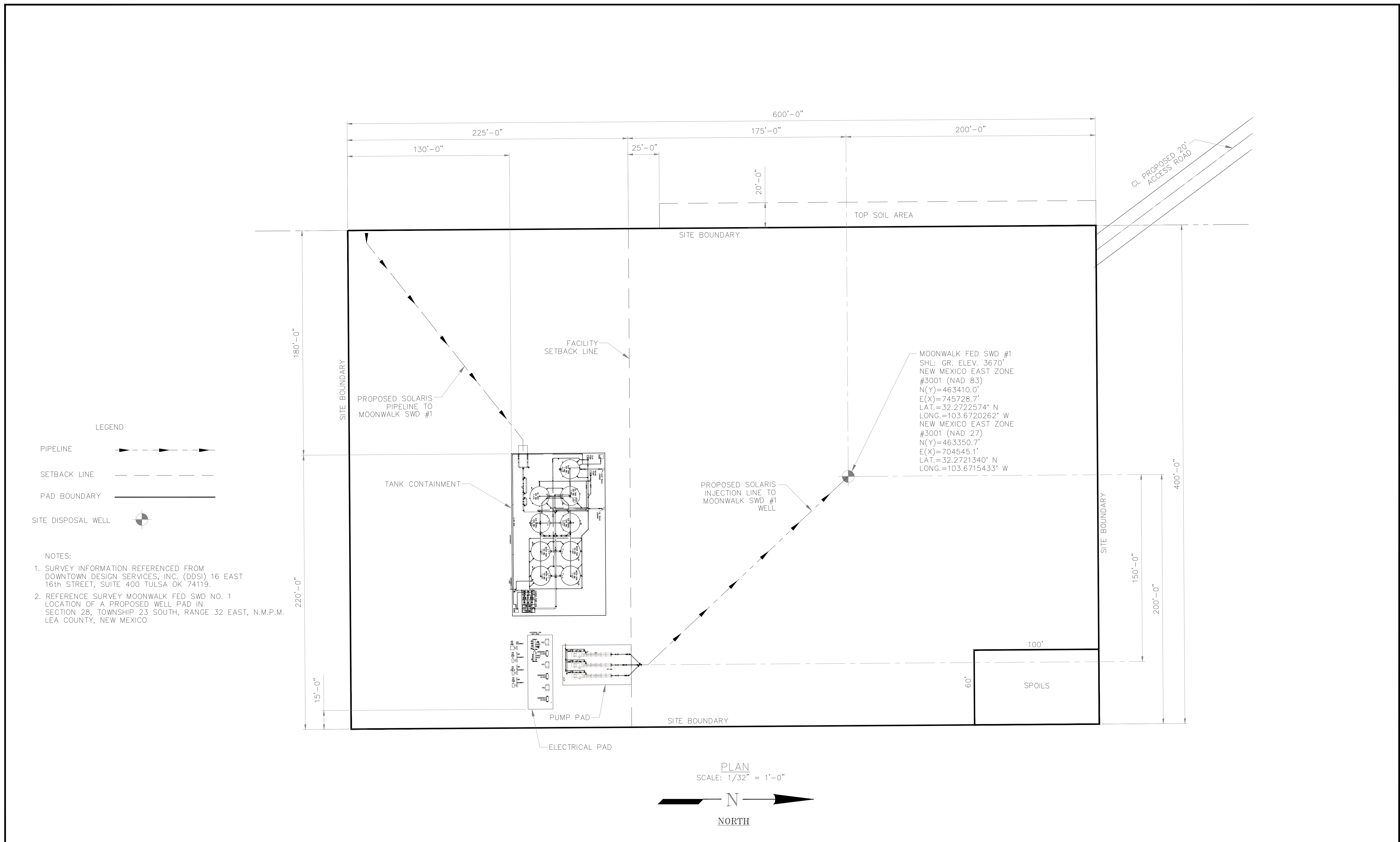


ADRIENNE SANDOVAL
Director

AS/jag

cc: Oil Conservation Division – Hobbs District Office
Admin. Appl. No. pMAM1923343254
Bureau of Land Management – Carlsbad Field Office

Attachment: C-108 well completion diagram



REV	BY	DESCRIPTION	DATE	APP
A	HB/PL	ISSUED FOR APPROVAL	05-13-25	

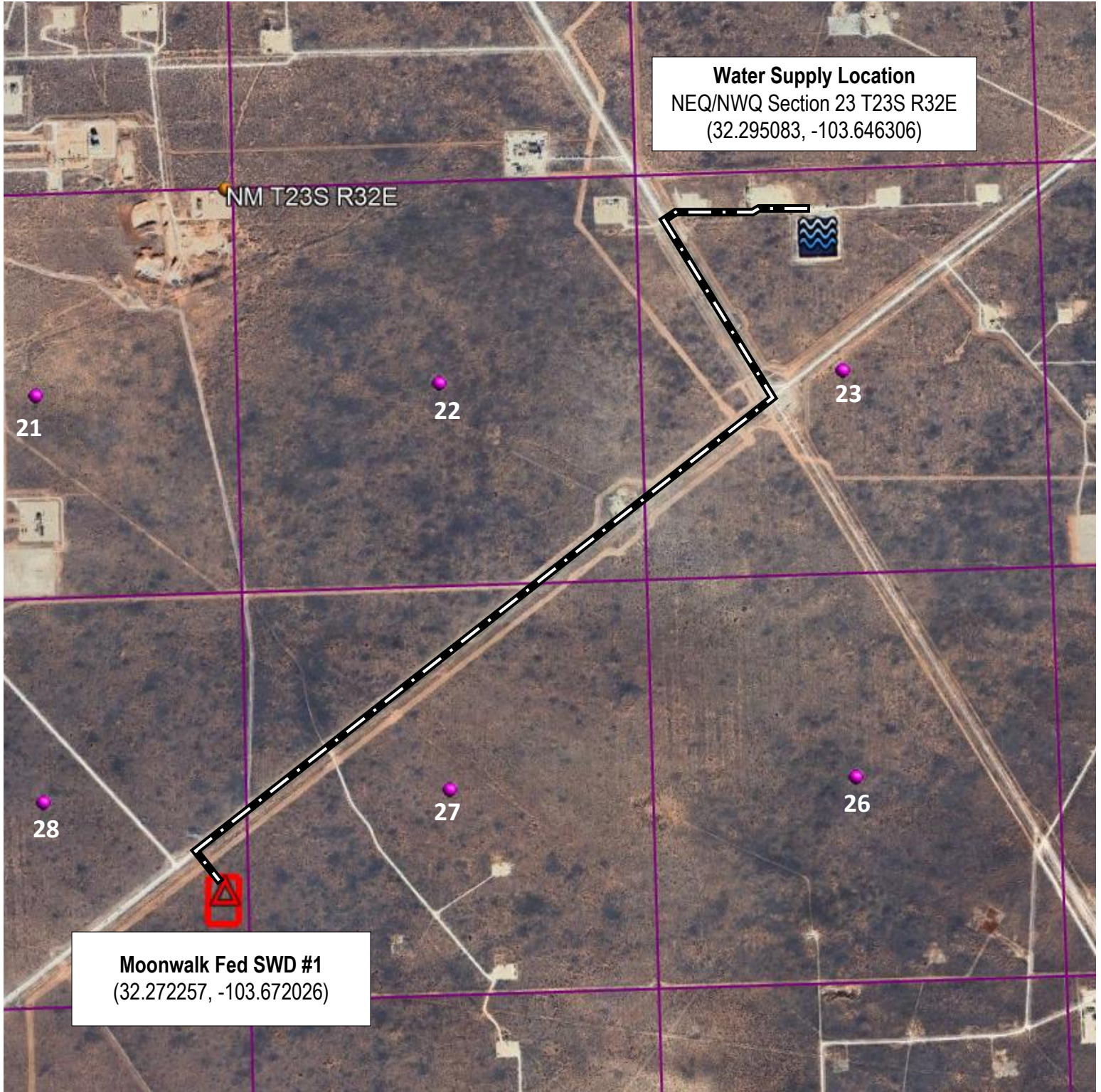
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PREMIER EQUIPMENT CORP. INC.
 J.A. YOUNG
 www.premierequipla.com

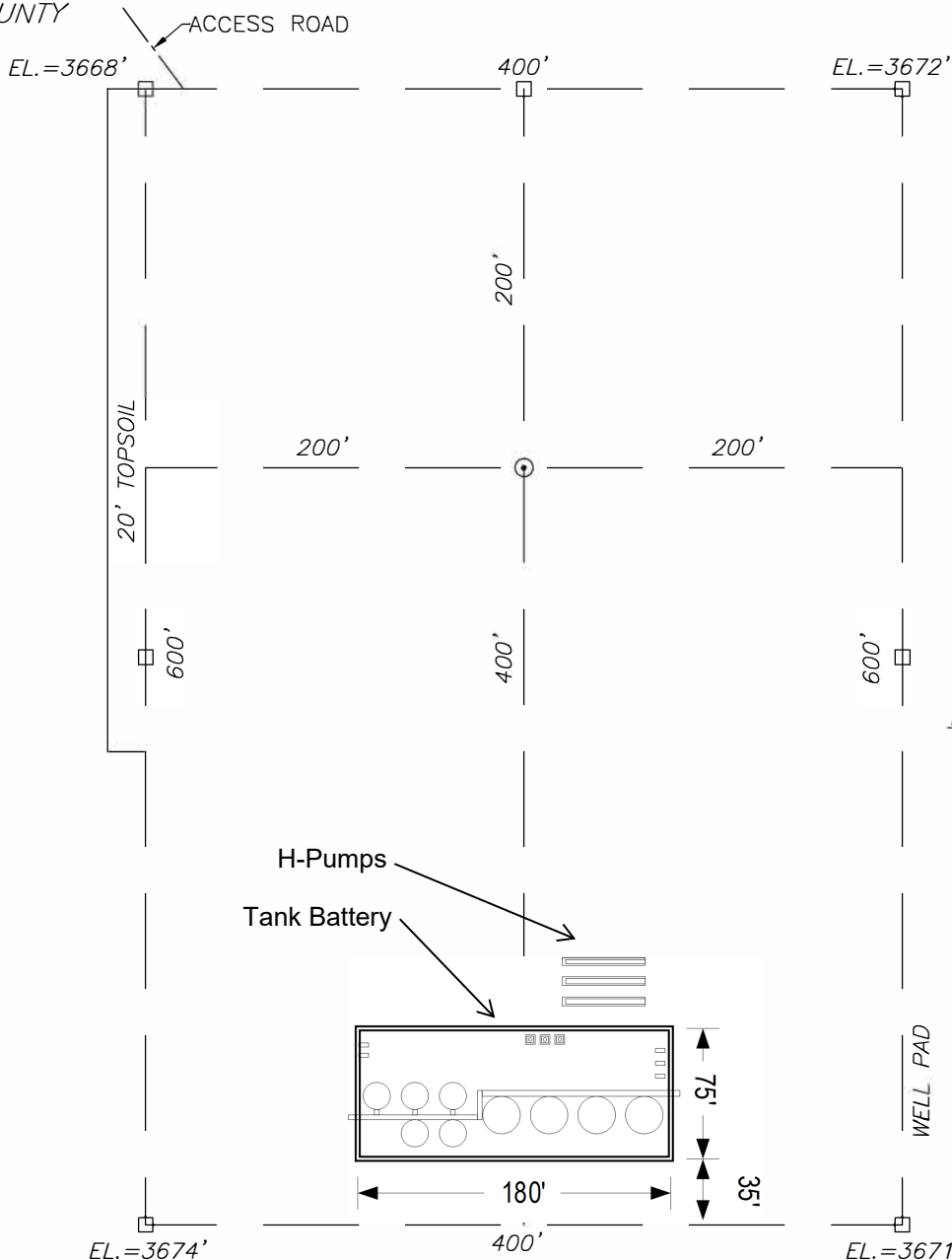
BATON ROUGE OFFICE
 13918 AIRLINE HWY.
 BATON ROUGE, LA 70817
 TELE: 225-255-2240
 FAX: 225-753-7125

ARIS WATER			
MOONWALK SWD #1 - XX,XXXX BPD PLOT PLAN			
DATE: 05-08-25	DRAWN BY: PLUGO	PREMIER JOB No.:	JO-XXXX
SCALE: AS SHOWN	CHECKED BY:	APPROVED BY:	
TITLE: PLOT PLAN	DWG. No.:	JO-XXXX-100	REV: A



Document Type	Water Supply Location
Well Name	Moonwalk Fed SWD #1
Operator	Solaris Water Midstream

SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY NEW MEXICO



MOONWALK FED SWD No. 1
 SHL: GR. ELEV. 3670'
 NEW MEXICO EAST ZONE
 #3001 (NAD 83)
 N(Y)= 463410.0'
 E(X)= 745728.7'
 LAT.= 32.2722574° N
 LONG.=103.6720262° W
 NEW MEXICO EAST ZONE
 #3001 (NAD 27)
 N(Y)= 463350.7'
 E(X)= 704545.1'
 LAT.= 32.2721340° N
 LONG.=103.6715433° W

H-Pumps
 Tank Battery

WELL PAD

DIRECTIONS TO LOCATION:

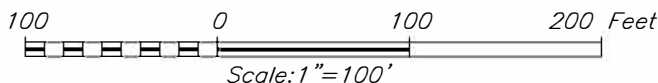
BEGINNING AT THE INTERSECTION OF US-285 AND POTASH MINES RD. IN CARLSBAD, NEW MEXICO; HEAD EASTERLY ON POTASH MINES RD. FOR ±7.7 MILES TO HIGHWAY 128. TURN RIGHT. HEAD EASTERLY/SOUTHEASTERLY ON HIGHWAY 128 FOR ±19.0 MILES TO LEASE ROAD. TURN LEFT. HEAD NORTHEAST FOR ±3.8 MILES. THE STAKED LOCATION FLAG IS TO THE SOUTHEAST ±606 FEET FROM THE LEASE ROAD.

ELEVATIONS SHOWN WERE DERIVED FROM STATIC GPS AND ARE IN N.A.V.D. 1988 DATUM.



DOWNTOWN DESIGN SERVICES, INC.
 16 EAST 16th STREET, SUITE 400
 TULSA, OK 74119
 Tel: 918-592-3374 Fax: 918-221-3940
 www.ddsiglobal.com

REV. 3 ADD SURVEY NOTE TJA 3-25-25



SURVEYOR'S CERTIFICATE

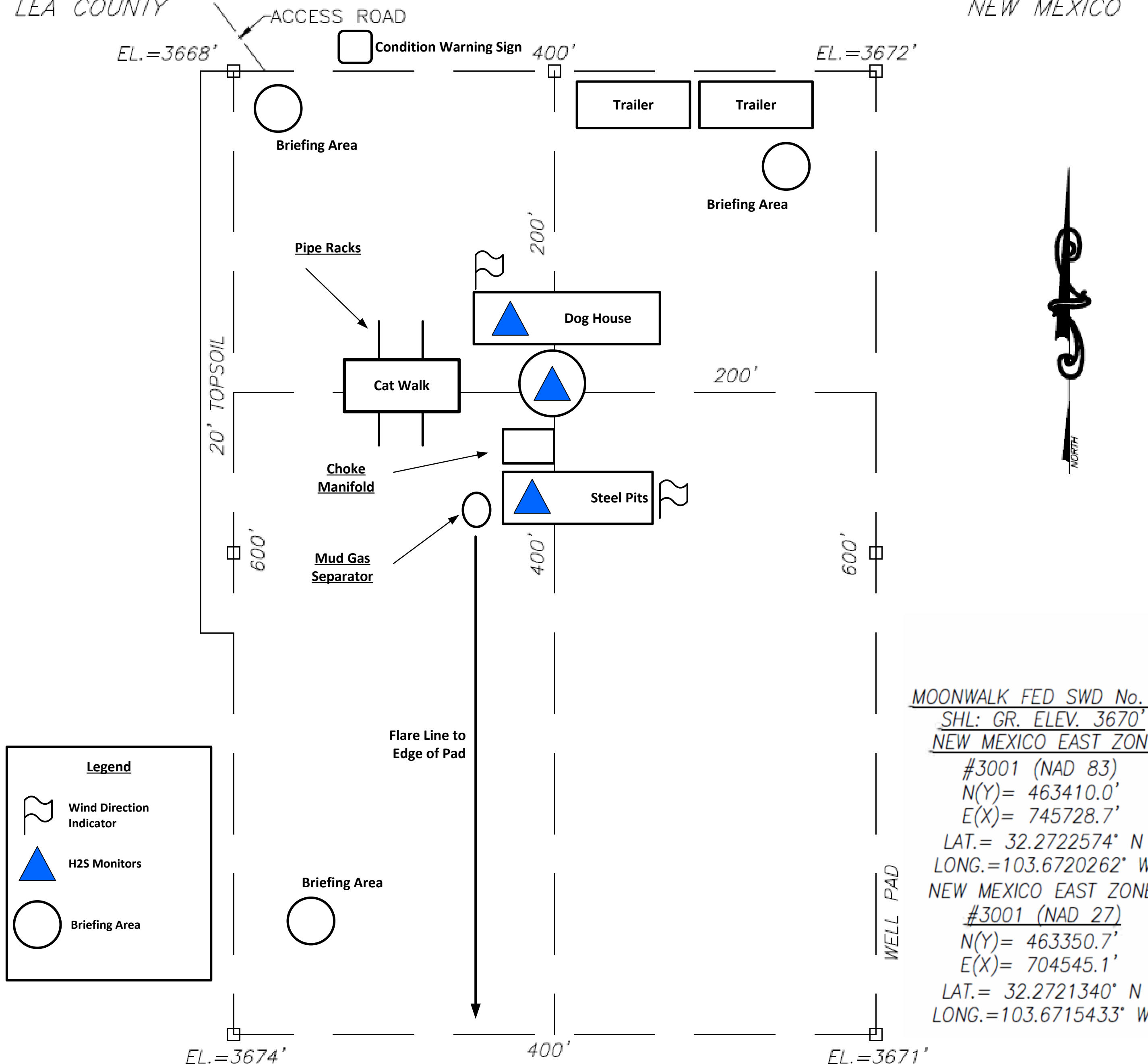
I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS RULE 12.8.2.15 FOR UNCLASSIFIED SURVEY IN NEW MEXICO.



Chris Carlson 3/25/2025
 CHRIS E. CARLSON N.M.P.S. NO. 24876

SOLARIS WATER MIDSTREAM, LLC		
MOONWALK FED SWD No. 1 LOCATED 1,430 FEET FROM THE SOUTH LINE AND 300 FEET FROM THE EAST LINE OF SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK FED SWD No. 1

SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY NEW MEXICO



MOONWALK FED SWD No. 1
 SHL: GR. ELEV. 3670'
 NEW MEXICO EAST ZONE
 #3001 (NAD 83)
 N(Y)= 463410.0'
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 #3001 (NAD 27)
 N(Y)= 463350.7'
 E(X)= 704545.1'
 LAT.= 32.2721340° N
 LONG.=103.6715433° W

Legend

- Wind Direction Indicator
- H2S Monitors
- Briefing Area

DIRECTIONS TO LOCATION:

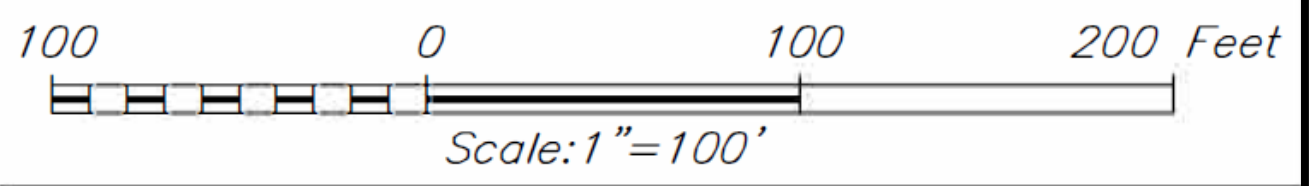
BEGINNING AT THE INTERSECTION OF US-285 AND POTASH MINES RD. IN CARLSBAD, NEW MEXICO; HEAD EASTERLY ON POTASH MINES RD. FOR ±7.7 MILES TO HIGHWAY 128. TURN RIGHT. HEAD EASTERLY/SOUTHEASTERLY ON HIGHWAY 128 FOR ±19.0 MILES TO LEASE ROAD. TURN LEFT. HEAD NORTHEAST FOR ±3.8 MILES. THE STAKED LOCATION FLAG IS TO THE SOUTHEAST ±606 FEET FROM THE LEASE ROAD.

ELEVATIONS SHOWN WERE DERIVED FROM STATIC GPS AND ARE IN N.A.V.D. 1988 DATUM.



DOWNTOWN DESIGN SERVICES, INC.
 16 EAST 16th STREET, SUITE 400
 TULSA, OK 74119
 Tel: 918-592-3374 Fax: 918-221-3940
 www.ddsiglobal.com

REV. 3 ADD SURVEY NOTE TJA 3-25-25



SURVEYOR'S CERTIFICATE

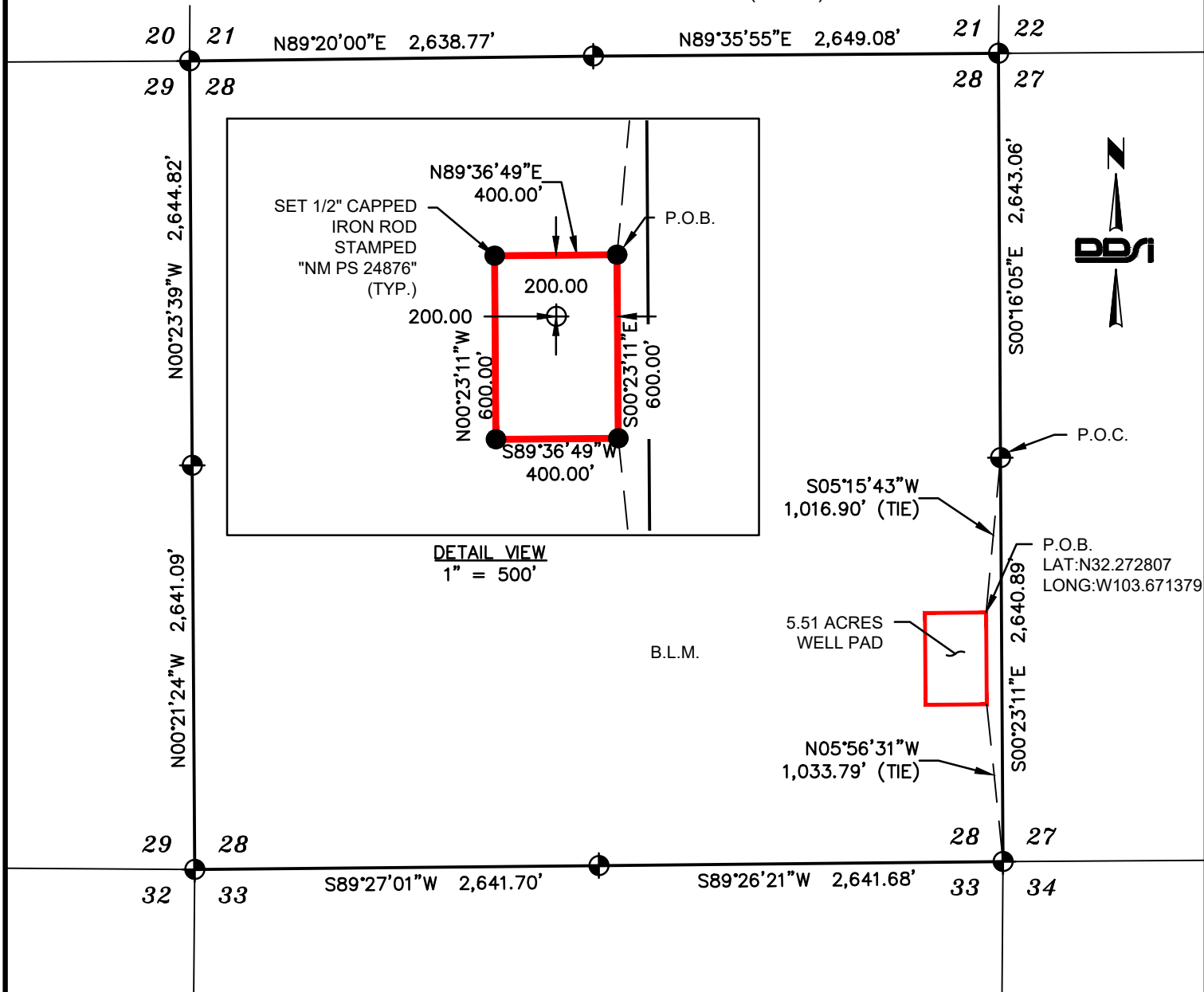
I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS RULE 12.8.2.15 FOR UNCLASSIFIED SURVEY IN NEW MEXICO.



Chris Carlson 3/25/2025
 CHRIS E. CARLSON N.M.P.S. NO. 24876

SOLARIS WATER MIDSTREAM, LLC	
MOONWALK FED SWD No. 1 LOCATED 1,430 FEET FROM THE SOUTH LINE AND 300 FEET FROM THE EAST LINE OF SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO	
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1
DRAFTING DATE: JUNE 22, 2021	
APPROVED BY: RM	DRAWN BY: TJA
FILE: MOONWALK FED SWD No. 1	

EXHIBIT A
 SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.
 LEA COUNTY, NEW MEXICO
 BUREAU OF LAND MANAGEMENT (B.L.M.)



A METES AND BOUNDS DESCRIPTION OF A PROPOSED WELL PAD

BEING AN 5.51 ACRE TRACT OF LAND SITUATED IN SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., IN LEA COUNTY, NEW MEXICO, SAID SURFACE SITE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 28 BEING A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY", THENCE SOUTH 05°15'43" WEST, 1,016.90 FEET TO THE POINT OF BEGINNING AT A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE SOUTH 00°23'11" EAST, 600.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876" AND BEING NORTH 05°56'31" WEST, 1,033.79 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 28 BEING A FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY"; THENCE SOUTH 89°36'49" WEST, 400.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE NORTH 00°23'11" WEST, 600.00 FEET TO A SET 1/2 INCH CAPPED IRON ROD STAMPED "NM PS 24876"; THENCE NORTH 89°36'49" EAST, 400.00 FEET TO THE POINT OF BEGINNING AND CONTAINING 5.51 ACRES (240,000 SQUARE FEET) OF LAND.

BASIS OF BEARING: BEARINGS SHOWN HEREON ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983, NEW MEXICO EAST STATE PLANE ZONE #3001, US SURVEY FEET. ALL DISTANCES ARE GRID.

NOTES:

- RESEARCH HAS BEEN PROVIDED BY OTHERS.
- THIS IS NOT A BOUNDARY SURVEY, THIS PLAT IS FOR EASEMENT PURPOSES ONLY.
- EASEMENTS, SETBACKS, AND OTHER ENCUMBRANCES ARE NOT SHOWN BY AGREEMENT WITH CLIENT.
- P.O.C. = POINT OF COMMENCEMENT
- P.O.B. = POINT OF BEGINNING
- P.O.T. = POINT OF TERMINATION
- I.R.F. = IRON ROD FOUND
- I.P.F. = IRON PIPE FOUND
- MODIFICATION IN ANY WAY OF THE FOREGOING DESCRIPTION TERMINATES LIABILITY OF SURVEYOR.

LEGEND:

- = DENOTES SURFACE SITE EASEMENT
- = DENOTES SUBJECT PARCEL
- = DENOTES FOUND/SET CORNER AS NOTED
- ⊙ = DENOTES FOUND BRASS CAP MONUMENT STAMPED "U.S. GENERAL LAND OFFICE SURVEY"
- ⊕ = DENOTES FUTURE WELL HEAD

EASEMENT TABLE

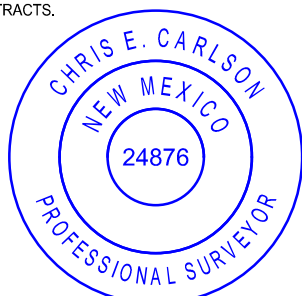
SURFACE SITE	240,000 SQUARE FEET	5.51 ACRES
--------------	---------------------	------------

SURVEYOR'S CERTIFICATE

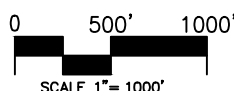
I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT ACROSS AN EXISTING TRACT OR TRACTS.

Chris Carlson

DATE OF SIGNATURE: 06/21/2021
 CHRIS E. CARLSON N.M.P.S. NO. 24876



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SOLARIS WATER MIDSTREAM, LLC.

MOONWALK FED SWD NO. 1
 LOCATION OF A PROPOSED WELL PAD IN
 SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
 LEA COUNTY, NEW MEXICO

FIELD DATE:	06/16/2021	WELL PAD
DRAFTING DATE:	06/21/2021	PAGE 1 OF 1
APPROVED BY: CEC	DRAWN BY: TJA	TRACT: MWF-1

JOB No. 2021-170



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report

06/16/2025

APD ID: 10400095347

Submission Date: 12/08/2023

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Well Type: INJECTION - DISPOSAL

Well Work Type: Drill

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description:

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit

Pit liner description:

Pit liner manufacturers

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule

Lined pit reclamation description:

Lined pit reclamation

Leak detection system description:

Leak detection system

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Lined pit Monitor description:

Lined pit Monitor

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information

Section 3 - Unlined

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Other PWD Surface Owner Description:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule

Unlined pit reclamation description:

Unlined pit reclamation

Unlined pit Monitor description:

Unlined pit Monitor

Do you propose to put the produced water to beneficial use?

Beneficial use user

Estimated depth of the shallowest aquifer (feet):

Precipitated Solids Permit

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

State

Unlined Produced Water Pit Estimated

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information

Section 4 -

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description:

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection

Underground Injection Control (UIC) Permit?

UIC Permit

Section 5 - Surface

Would you like to utilize Surface Discharge PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD Surface Owner Description :

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Section 6 -

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

PWD Surface Owner Description:

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type

Have other regulatory requirements been met?

Other regulatory requirements



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data

06/16/2025

APD ID: 10400095347

Submission Date: 12/08/2023

Operator Name: SOLARIS WATER MIDSTREAM LLC

Well Name: MOONWALK FED SWD

Well Number: 1

Well Type: INJECTION - DISPOSAL

Well Work Type: Drill

Highlighted data reflects the most recent changes
[Show Final Text](#)

Bond

Federal/Indian APD: FED

BLM Bond number: NMB106698534

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Santa Fe Main Office Phone: (505) 476-3441 Fax: (55) 476-3462 General Information Phone: (505) 629-6116 Online Phone Directory Visit: https://www.emnrd.nm.gov/ocd/contact-us/	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	C-102 Revised July 9, 2024 Submit Electronically via OCD Permitting
		Submittal Type: <input type="checkbox"/> Initial Submittal <input type="checkbox"/> Amended Report <input type="checkbox"/> As Drilled

WELL LOCATION INFORMATION

API Number 30-025-56015	Pool Code 97869	Pool Name SWD; DEVONIAN-SILURIAN
Property Code 338918	Property Name MOONWALK FED SWD	Well Number #1
OGRID No. 371643	Operator Name SOLARIS WATER MIDSTREAM, LLC.	Ground Level Elevation 3670'
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal		Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input type="checkbox"/> Federal

Surface Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
I	28	23-S	32-E		1,430 FSL	300 FEL	32.2722574° N	103.6720262° W	LEA

Bottom Hole Location

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County

Dedicated Acres	Infill or Defining Well	Defining Well API	Overlapping Spacing Unit (Y/N)	Consolidation Code
Order Numbers. SWD-2251			Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County

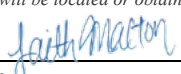


First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County

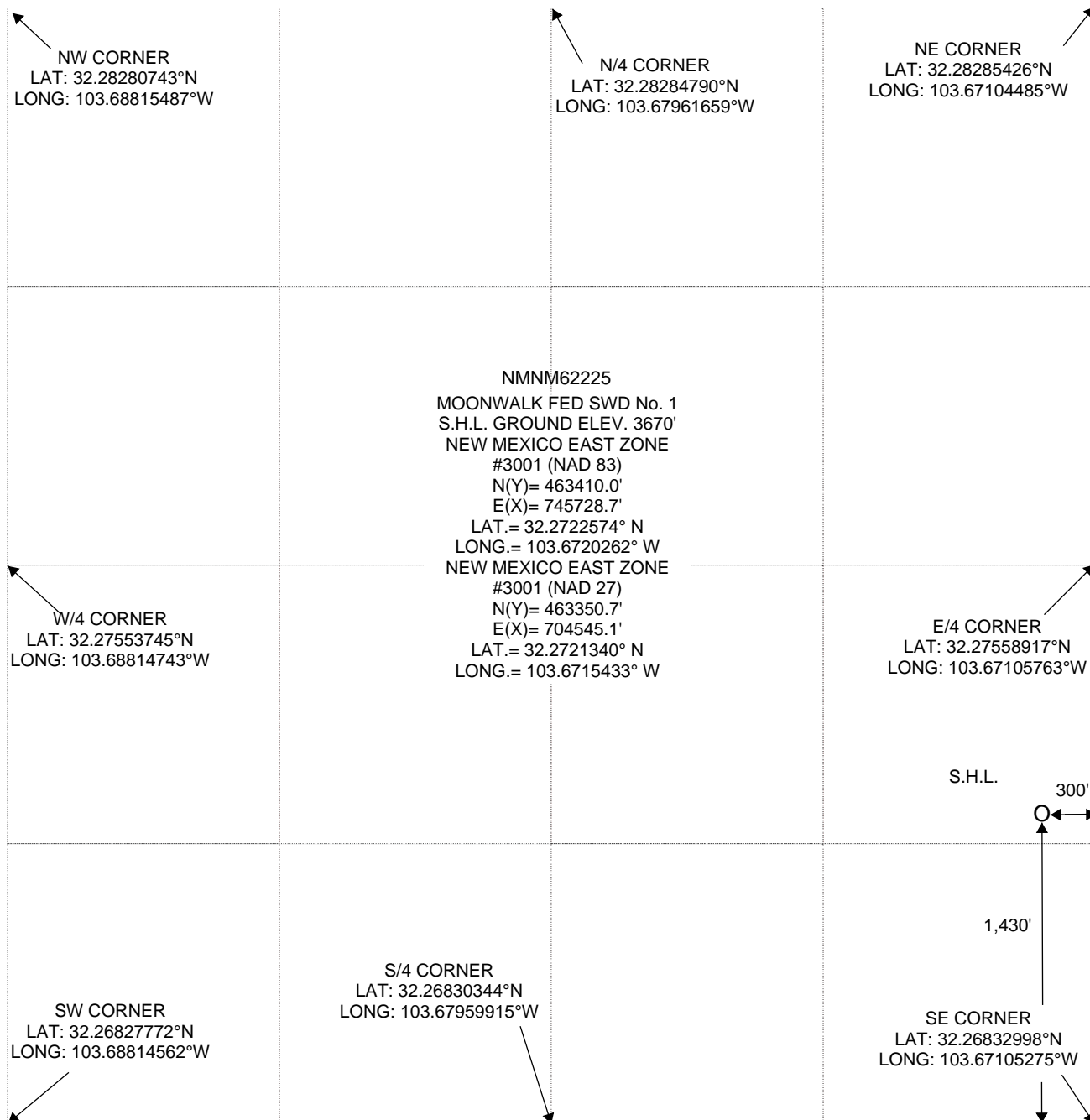
Unitized Area or Area of Uniform Interest	Spacing Unit Type <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Ground Floor Elevation:

<p>OPERATOR CERTIFICATIONS</p> <p><i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p><i>If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.</i></p> <p style="text-align: center;">  May 8 2025 Signature Date </p> <p style="text-align: center;"> Printed Name Faith Malton </p> <p style="text-align: center;"> Email Address faith.malton@ariswater.com </p>	<p>SURVEYOR CERTIFICATIONS</p> <p><i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i></p> <p style="text-align: center;">  Signature and Seal of Professional Surveyor </p> <div style="text-align: right;">  </div> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;">Certificate Number</td> <td style="width:50%; border: none;">Date of Survey</td> </tr> <tr> <td style="text-align: center; border: none;">24876</td> <td style="text-align: center; border: none;">6-22-2021</td> </tr> </table>	Certificate Number	Date of Survey	24876	6-22-2021
Certificate Number	Date of Survey				
24876	6-22-2021				

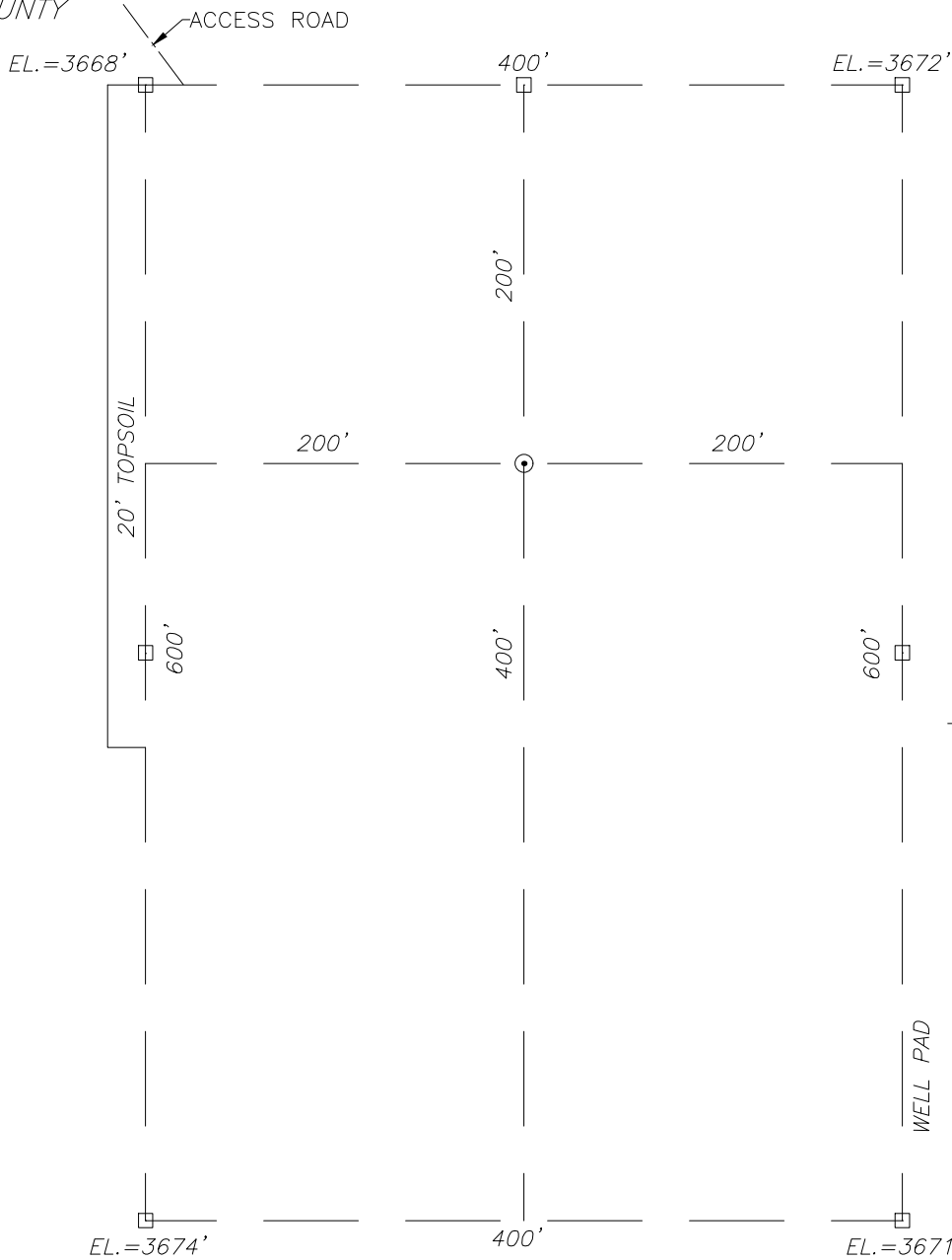
Note: No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.



SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY NEW MEXICO



MOONWALK FED SWD No. 1
 SHL: GR. ELEV. 3670'
 NEW MEXICO EAST ZONE
 #3001 (NAD 83)
 N(Y)= 463410.0'
 E(X)= 745728.7'
 LAT.= 32.2722574° N
 LONG.=103.6720262° W
 NEW MEXICO EAST ZONE
 #3001 (NAD 27)
 N(Y)= 463350.7'
 E(X)= 704545.1'
 LAT.= 32.2721340° N
 LONG.=103.6715433° W

DIRECTIONS TO LOCATION:

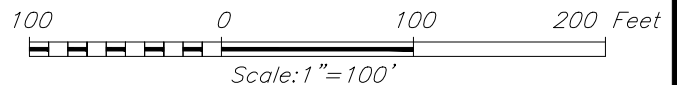
BEGINNING AT THE INTERSECTION OF US-285 AND POTASH MINES RD. IN CARLSBAD, NEW MEXICO; HEAD EASTERLY ON POTASH MINES RD. FOR ±7.7 MILES TO HIGHWAY 128. TURN RIGHT. HEAD EASTERLY/SOUTHEASTERLY ON HIGHWAY 128 FOR ±19.0 MILES TO LEASE ROAD. TURN LEFT. HEAD NORTHEAST FOR ±3.8 MILES. THE STAKED LOCATION FLAG IS TO THE SOUTHEAST ±606 FEET FROM THE LEASE ROAD.

ELEVATIONS SHOWN WERE DERIVED FROM STATIC GPS AND ARE IN N.A.V.D. 1988 DATUM.



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REV. 3 ADD SURVEY NOTE TJA 3-25-25



SURVEYOR'S CERTIFICATE

I, CHRIS E. CARLSON, NEW MEXICO PROFESSIONAL SURVEYOR NO. 24876, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION BASED ON AN ACTUAL SURVEY ON THE GROUND AS DESCRIBED HEREIN; THAT I AM RESPONSIBLE FOR THIS SURVEY; AND THAT THE SURVEY AND REPORT MEETS THE MINIMUM STANDARDS RULE 12.8.2.15 FOR UNCLASSIFIED SURVEY IN NEW MEXICO.



Chris Carlson 3/25/2025
 CHRIS E. CARLSON N.M.P.S. NO. 24876

SOLARIS WATER MIDSTREAM, LLC		
MOONWALK FED SWD No. 1 LOCATED 1,430 FEET FROM THE SOUTH LINE AND 300 FEET FROM THE EAST LINE OF SECTION 28, TOWNSHIP 23 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK FED SWD No. 1

VICINITY MAP



MOONWALK FED SWD No.1

© 2021 Microsoft Corporation © 2021 Maxar ©CNES (2021) Distribution Airbus DS

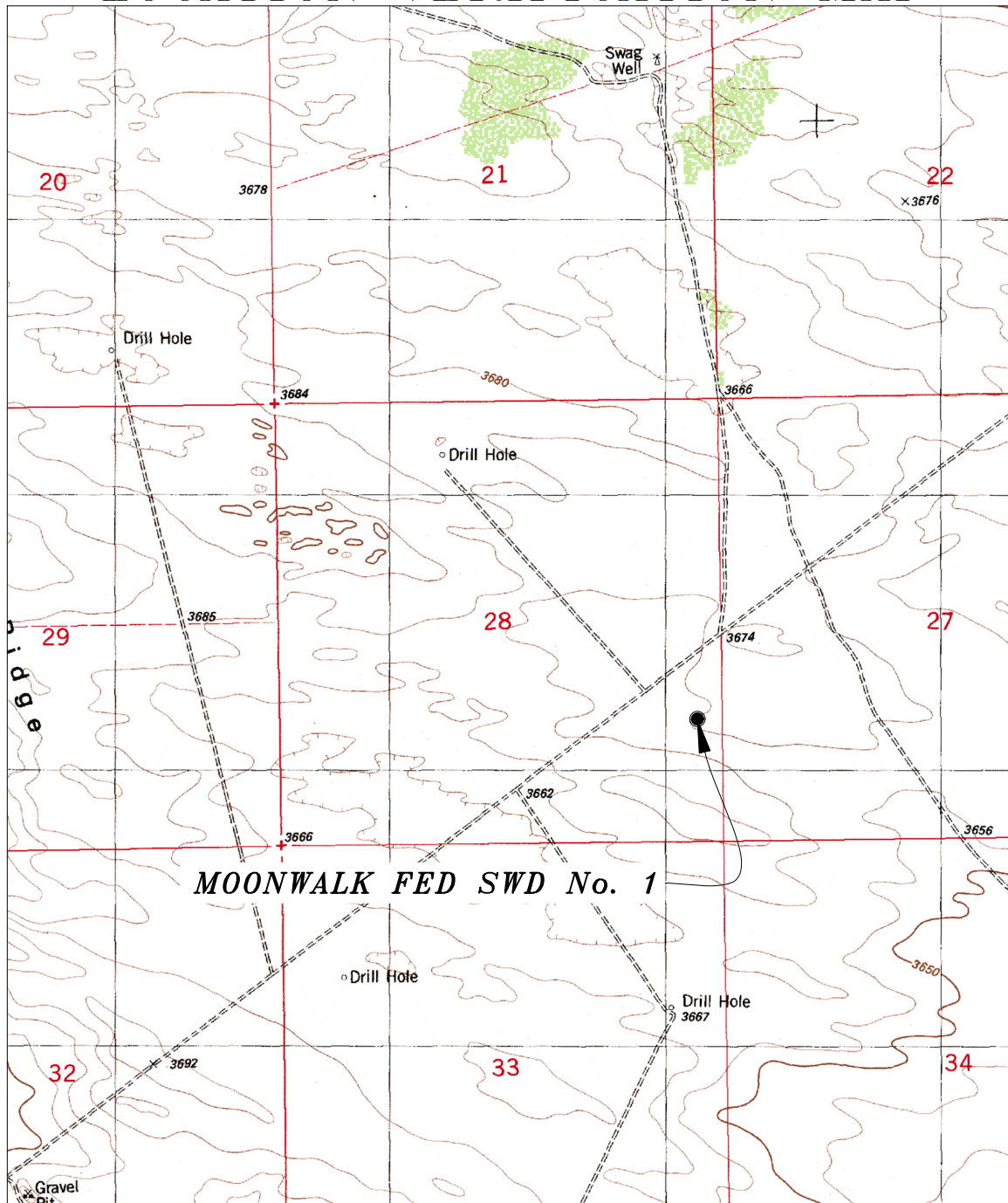
SEC. 28 TWP. 23-S RGE. 32-E
 SURVEY N.M.P.M.
 COUNTY LEA STATE NEW MEXICO
 DESCRIPTION 1,430' FSL & 300' FEL
 N.A.V.D. 88 ELEVATION 3670'
 OPERATOR SOLARIS WATER MIDSTREAM, LLC
 LEASE MOONWALK FED SWD No. 1
 U.S.G.S. TOPOGRAPHIC MAP
LEA, N.M.

SCALE: 1" = 2000'

ELEVATIONS SHOWN WERE DERIVED FROM
STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.

SOLARIS WATER MIDSTREAM, LLC		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
DRAFTING DATE: JUNE 22, 2021		
APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK SWD No. 1

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 28 TWP. 23-S RGE. 32-E
 SURVEY N.M.P.M.
 COUNTY LEA STATE NEW MEXICO
 DESCRIPTION 1,430' FSL & 300' FEL
 N.A.V.D.88 ELEVATION 3670'
 OPERATOR SOLARIS WATER MIDSTREAM, LLC
 LEASE MOONWALK FED SWD No. 1
 U.S.G.S. TOPOGRAPHIC MAP
 LEA, N.M.

SOLARIS WATER MIDSTREAM, LLC		
SURVEY DATE: JUNE 16, 2021	PAGE: 1 OF 1	
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APPROVED BY: RM	DRAWN BY: TJA	FILE: MOONWALK SWD No. 1

ELEVATIONS SHOWN WERE DERIVED FROM
 STATIC GPS AND ARE IN N.A.V.D 1988 DATUM.



H₂S Contingency Plan

Developed by
SOS Consulting, LLC
September 21, 2017



This plan was developed exclusively for Solaris Water Midstream, LLC
Use of this document by its employees including
contractors, is at the discretion of Solaris management.

No part of the content may be copied or used for
other purposes by any other entity without the consent of
SOS Consulting, LLC | 903-488-9850 | info@sosconsulting.us

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

PREFACE / OVERVIEW

PLAN ACTIVATION

AT A MINIMUM, THE PLAN MUST BE ACTIVATED WHENEVER A RELEASE MAY CREATE A CONCENTRATION OF H₂S OF MORE THAN 100 PPM IN ANY PUBLIC AREA, 500 PPM AT ANY PUBLIC ROAD OR 100 PPM 3,000 FEET FROM THE SITE OF RELEASE.

OPERATIONAL DISTINCTION OF CONDITION

FOR ALL OPERATIONS, SOLARIS WATER MIDSTREAM, LLC WILL APPLY THESE CRITERIA TO DETERMINE THE OPERATIONAL CONDITION:

A. NORMAL / LOW CONDITIONS: KNOWN H₂S IS AT OR LESS THAN 10 PPM.

PURSUANT TO NMOCD RULES AND REGULATIONS, SOLARIS WATER MIDSTREAM, LLC MAY PETITION THE NEW MEXICO OIL CONSERVATION DIVISION DIRECTOR FOR AN **EXEMPTION** TO ANY REQUIREMENT OF THIS SECTION.

FOR NORMAL / LOW CONDITION OPERATIONS, OTHER THAN AN AWARENESS OF THIS PLAN AND BASIC MONITORING AND WIND DIRECTION INDICATORS, AN EXEMPTION WILL BE REQUESTED AND DETAILED INFORMATION NOT OTHERWISE PROVIDED FOR IN THE NORMAL REGULATORY PERMITTING PROCESS MAY BE OMITTED.

B. HIGH RISK CONDITIONS: KNOWN H₂S MAY APPROACH OR BE MORE THAN 100 PPM.

IMPLEMENTATION

THIS PLAN DETAILS PROCEDURES AND ACTIVITIES PARTICULARLY GEARED TOWARDS HIGH RISK OPERATIONAL CONDITIONS .

ADDITIONAL INFORMATION SHALL BE FURNISHED IN THE FORM OF SITE SPECIFICS AND MAPS WHEN THE OPERATIONAL CONDITION IS DETERMINED TO BE HIGH RISK.

PREFACE / OVERVIEW (continued)

A. NOTIFICATION / COORDINATION OF EMERGENCY SERVICES

PRIOR TO COMMENCING ACTIVITIES AT A HIGH-RISK SITE, THE APPROPRIATE EMERGENCY PERSONNEL FOR THE AREA WILL BE ALERTED TO THE ACTIVITY INCLUDING DATES, ANTICIPATED WORK TIMES, A COPY OF THIS PLAN AND THE FOLLOWING ITEMS SUCH THAT EMERGENCY PERSONNEL IS FULLY APPRISED OF THE OPERATION AND POTENTIAL OCCURANCES NO MATTER HOW UNLIKELY. (REFER TO EMERGENCY TELEPHONE LIST IN SECTION 5 OF THE PLAN, PAGES 8-9.)

B. SITE SPECIFIC PLANS SHALL INCLUDE*:

WELL OR FACILITY NAME, LOCATION (INCLUDING GIS COORDINATES) TYPE, DEPTH, ANTICIPATED OR MEASURED H₂S CONCENTRATION, WELL OR LINE PRESSURES, PRESSURE AND FLOW CONTROL EQUIPMENT AND A SCHEMATIC DIAGRAM.

C. MAPS SHALL INDICATE:

1. LOCATION OF WELL OF FACILITY WITH LOCATION IN RELATION TO ROADS, PUBLIC AREAS AND TOWNS AS APPLICABLE.
2. DIRECTION AND SPEED OF PREVAILING WINDS AT THE SITE, AS CURRENT AS POSSIBLE.
3. INGRESS / EGRESS TO THE SITE AS WELL AS TYPICAL ACCESS ROUTES FROM THE NEAREST TOWN WITH EMERGENCY SERVICES.
4. POTENTIAL ROAD CLOSURE AREAS SHALL BE COORDINATED WITH EMERGENCY PERSONNEL AND MAPPED BASED ON CRITERIA ABOVE.

*** NOTE: THIS PLAN SATISFIES NORMAL OPERATING ENVIRONMENTS. WHEN SOLARIS WATER MISTREAM, LLC PLANS DRILLING OR OTHER ACTIVITIES IN A KNOWN H₂S AREA (REASONABLY EXPECTED TO APPROACH 100 PPM AND HIGHER VOLUMES), THE PLAN SHOULD BE AUGMENTED FOR THAT SPECIFIC SITE - SEE SITE SPECIFIC CHECK LIST IN APPENDIX 'B' OF THE MAIN PLAN.**

PLAN DEVELOPMENT

THIS PLAN HAS BEEN DEVELOPED IN ACCORDANCE WITH TITLE 19 NATURAL RESOURCES AND WILDLIFE CHAPTER 15, OIL AND GAS PART 11, HYDROGEN SULFIDE GAS AND ALL PARTS CONTAINED THEREIN.

IT FURTHER MEETS AS APPLICABLE, OSHA REQUIREMENTS AND API H₂S PUBLICATIONS:

- 'RECOMMENDED PRACTICE FOR OIL AND GAS WELL SERVICING AND WORKOVER OPERATIONS INVOLVING HYDROGEN SULFIDE', RP-68 (API);
- 'RECOMMENDED PRACTICES FOR DRILLING AND WELL SERVICING OPERATIONS INVOLVING WELLS CONTAINING HYDROGEN SULFIDE', RP-49 (API);
- 'H₂S AT CRUDE OIL PUMP STATIONS, PRODUCING WELLS, TANK BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS', RP-55 (API)

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

PLEASE NOTICE

APPLICABILITY OF PLAN

NORMAL OPERATIONS

THIS PLAN IS GENERALLY APPLICABLE TO ALL OPERATIONS IN NORMAL CONDITIONS IN SOUTHEAST NEW MEXICO WHERE KNOWN ***H₂S IS AT OR LESS THAN 10 PPM.***

HIGH RISK / KNOWN H₂S AREAS

SITE SPECIFIC PLANS WILL BE DEVELOPED FOR WORK PLANNED IN HIGH RISK AREA. THESE ARE AREAS WHERE KNOWN H₂S CONCENTRATION MAY REASONABLY BE EXPECTED TO ***APPROACH OR EXCEED 100 PPM*** AND AT SIGNIFICANT VOLUMES.

TO MEET THE REQUIREMENTS FOR SITE SPECIFIC PLANS, THIS PLAN WILL BE AMENDED OR AUGMENTED TO INCLUDE MAPS, DIAGRAMS AND DRAWINGS AND DETAIL THE COORDINATION BETWEEN COMPANY PERSONNEL AND COUNTY EMERGENCY AGENCIES INCLUDING LAW ENFORCEMENT.

THE CHECKLIST ON THE FOLLOWING PAGE SHOWS THE ADDITIONAL ITEMS REQUIRED TO MEET NEW MEXICO OIL CONSERVATION DIVISION RULES AND REGULATIONS.

**OIL CONSERVATION DIVISION
H2S CONTINGENCY PLAN REQUIRED BY OCD RULE 19.15.11 NMAC**

Operator Name: SOLARIS WATER MIDSTREAM, LLC
Date: Implemented/ Adopted September 2017

Contingency Plan Requirements Checklist				
19.15.11.9.B NMAC Requirement	Included?	Page in Document?		Notes
Emergency Procedures				
Responsibilities & duties of personnel during emergency	YES	2, 3		
Immediate action plan	YES	4, 5		
Evacuation and shelter in place plans	YES	9, 10		Applicable to site specific - Shelter in Place.
Telephone numbers of emergency responders	YES	8, 9		
Telephone numbers of public agencies	YES	8, 9		
Telephone numbers of local government	YES	8, 9		
Telephone numbers of appropriate public authorities	YES	8, 9		
Location of potentially affected public areas Also see 19.15.11.12.B & D	n/a			Applicable to site specific.
Location of potentially affected public roads	n/a			Applicable to site specific.
Proposed evacuation routes, with locations of road blocks	n/a			Applicable to site specific.
Procedures for notifying the public	YES	10		
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	n/a	7, 13		Applicable to site specific. H2S Safety Trailer on location. Equipment list pg.13
Characteristics of hydrogen sulfide and sulfur dioxide				
Discussion of characteristics	YES	16, 17, 18		
Maps and Drawings				
Area of exposure	n/a			Applicable to site specific.
Public areas within area of exposure	n/a			Applicable to site specific.
Public roads within area of exposure	n/a			Applicable to site specific.
Training and Drills				
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	YES	11		Solaris Water Midstream, LLC personnel and all contractors will be certified in H2S Safety. Training requirements are listed in plan.
Periodic drills or exercises that simulate a release	n/a			Applicable to site specific.
Documentation of training, drills, & attendance	n/a			Applicable to site specific.
Training of residents on protective measures	n/a			Applicable to site specific.
Briefing of public officials on evacuation or shelter-in-place plans	n/a			Applicable to site specific.
Coordination with state emergency plans				
How emergency response actions will coordinate with OCD and the state police response plans	Perhaps	10, 20		[Mostly] Applicable to site specific.
Activation Levels				
Activation Levels and description of events which may lead to a release in excess of activation level	YES	4, 5		
Plan Activation				
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm in a public area or 500 ppm at a public road	YES	15		
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm 3000 feet from the site of release	YES	15		

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

SCOPE

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR ALL COMPANY AND CONTRACTOR PERSONNEL WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H2S) GAS. GUIDELINES ADDRESSING PUBLIC SAFETY ARE INCLUDED.

OBJECTIVE

1. PREVENT ANY AND ALL ACCIDENTS, AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.
2. PROVIDE PROPER PROCEDURES TO HANDLE EMERGENCIES AND POSSIBLE EVACUATION.
3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

IMPLEMENTATION

THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE OPERATIONS COMMENCE PURSUANT TO THE CONDITION BEING:

NORMAL / LOW CONDITIONS: KNOWN H2S IS AT OR LESS THAN 10 PPM.

HIGH RISK CONDITIONS: KNOWN H2S MAY APPROACH OR BE MORE THAN 100 PPM.

OVERVIEW OF PLAN

- | | |
|--|---|
| 1. PERSONNEL RESPONSIBILITY
(PAGES 2-3) | THIS SECTION SHOWS SPECIFIC RESPONSIBILITIES FOR ALL PERSONNEL PRESENT - BY TITLE OR JOB DUTIES. |
| 2. NORMAL /
LOW H2S CONDITIONS
(PAGES 3-4) | THIS SECTION OUTLINES PROCEDURES DURING NORMAL OPERATIONS WHEN EXPECTATIONS OF AN H2S ENVIRONMENT ARE REASONABLY LOW. |

H2S Contingency Plan (continued)

- 3. **EMERGENCY RESPONSE PROCEDURES**
(PAGES 4-6) THIS SECTION OUTLINES THE CONDITIONS PROCEDURE AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY OR HIGH RISK LEVELS OF H2S ARE IMMINENT.
- 4. **HIGH RISK / EMERGENCY EQUIPMENT**
(PAGES 6-7) THIS SECTION OUTLINES THE USE OF EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OR WORKOVER OF THIS WELL.
- 5. **EMERGENCY TELEPHONE NUMBERS**
(PAGES 8-9) ALL PARTIES TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
- 6. **SAFETY BRIEFING**
(PAGE 9) THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
- 7. **EVACUATION / PUBLIC SAFETY**
(PAGES 9-10) THIS SECTION DEALS WITH THE EVACUATION OF PERSONNEL AND PUBLIC SAFETY IN THE EVENT OF AN EMERGENCY.

APPENDICES

- A. **TRAINING REQUIREMENTS AND FIRST AIDE**
(PAGE 11-12) ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN H2S SAFETY PROCEDURES. FIRST AIDE FOR H2S.
- B. **CHECK LISTS**
(PAGES 13-15) A STATUS CHECK LIST, PROCEDURAL CHECK LIST AND SITE SPECIFIC PLAN CHECK LIST HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
- C. **EFFECTS, LEVELS, RADIUS OF EXPOSURE, THRESHOLDS**
(PAGES 16-19) A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION INCLUDING EFFECTS OF H2S, LEVELS AND RADIUS OF EXPOSURE & REGULATORY THRESHOLDS.
- D. **INCIDENT RESPONSE PROTOCOL**
(PAGE 20) **IN THE EVENT OF AN ACTUAL EMERGENCY INCIDENT, THIS STEP-BY-STEP PROCEDURE CAN BE TURNED TO QUICKLY AT THE BACK OF THE DOCUMENT.**

I. PERSONNEL RESPONSIBILITY

COMPANY FOREMAN / SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THIS PLAN.

H₂S Contingency Plan (continued)

DESIGNATED
PERSONNEL

SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY. **(INCIDENT COMMANDER)**

SHALL DESIGNATE A BACK-UP.

ALL PERSONNEL

1. ON ALARM, DON ESCAPE UNIT AND REPORT IN UP WIND BRIEFING AREA.
2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).
3. SECURE BREATHING EQUIPMENT.
4. AWAIT ORDERS FROM SUPERVISOR.

DRILLING FOREMAN /
RIG OPERATOR

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H₂S CONCENTRATIONS.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

TOOL PUSHER

1. REPORT TO UP WIND SAFETY BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H₂S CONCENTRATION.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

DRILLER

1. DON ESCAPE UNIT.
2. CHECK MONITOR FOR POINT OF RELEASE.
3. REPORT TO BRIEFING AREA.
4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE, USE THE BUDDY SYSTEM).
5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.
6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT.

DERRICK MAN
FLOOR MAN #1
FLOOR MAN #2
VISITORS

REPORT TO AND REMAIN IN SAFETY BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR.

MUD ENGINEER

1. REPORT TO BRIEFING AREA.
2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H₂S LEVEL.

SAFETY PERSONNEL

MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA.

H₂S Contingency Plan (continued)

2. NORMAL / LOW H₂S CONDITION

CONDITIONS ARE CONSIDERED NORMAL WHEN THERE ARE REASONABLE EXPECTATIONS THAT NONE OR LOW CONCENTRATIONS OF H₂S WILL BE ENCOUNTERED DURING ALL PHASES OF THE CURRENT OPERATIONS. (SEE APPENDIX 'C', THRESHOLDS, PRGPH.3)

1. LOW H₂S - LEVELS ARE KNOWN TO CONSISTENTLY BE AT OR **BELOW 10 PPM**.
2. NORMAL CONDIDTION EXPECTATIONS ARE BASED ON HISTORICAL EVIDENCE OF THE AREA, GEOLOGIC FORMATIONS AND TYPE OF OPERATIONS WITH REGARD TO FLUIDS BEING UTILIZED FOR DRILLING AND/OR WORKOVER TASKS.
3. OPERATING IN A NORMAL CONDITION DOES NOT RELIEVE ANY PERSONNEL OF THEIR RESPONSIBILITY, NOR SHOULD IT LESSEN THEIR ATTENTION TO KNOWING THE SAFETY PROCEDURES THAT WILL IMMEDIATELY BE IMPLEMENTED UPON ANY EVIDENCE OF CHANGING H₂S LEVELS.
4. ALL PERSONNEL WORKING ON SITE WILL DON PERSONAL H₂S DETECTORS.
5. A WINDSOCK OR OTHER WIND DIRECTION INDICATOR WILL BE ON LOCATION AND EASILY VISIBLE FROM ALL AREAS.
6. ALL PERSONNEL WILL HAVE A CURRENT H₂S TRAINING CARD.
7. ALL PERSONNEL WILL HAVE VIEWED THIS H₂S CONTINGENCY PLAN.

3. EMERGENCY RESPONSE PROCEDURES (SEE ALSO APPENDIX 'D')

NOTICE: FOR ALL SITES AND OPERATIONS WHERE REASONABLE EXPECTATIONS ARE THAT H₂S LEVELS MAY BE **ABOVE 100 PPM**, ALL SERVICE COMPANY PERSONNEL HAVE READ THIS H₂S CONTINGENCY PLAN AND WILL VERBALLY INDICATE STRICT ADHERENCE TO WITH ALL PROCEDURES ESPECIALLY WITH REGARD TO THEIR JOB TITLE AND DUTIES ON THIS LOCATION.

IMMEDIATE PROCEDURES

A. IN THE EVENT OF ANY EVIDENCE OF H₂S LEVEL **ABOVE 100 PPM**, (OR IS APPROACHING 100 PPM) TAKE THE FOLLOWING STEPS:

1. SECURE BREATHING EQUIPMENT.
2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.
3. TAKE STEPS TO DETERMINE IF THE H₂S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.

B. IF UNCONTROLLABLE CONDITIONS OCCUR: (SEE ALSO APPENDIX 'D')

1. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG - PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY

H₂S Contingency Plan (continued)

PUBLIC SAFETY PERSONNEL EMERGENCY RESPONDERS OF THE SITUATION, E.G. STATE POLICE, COUNTY EMERGENCY MANAGEMENT, SHERRIF, MEDICAL IF REQUIRED.

2. REMOVE ALL PERSONNEL TO SAFE BREATHING AREA.
3. NOTIFY PUBLIC SAFETY PERSONNEL TO SAFE BREATHING AREA.
4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.

EMERGENCY ACTIONS

WELL BLOWOUT - IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS - EVACUATE RIG PERSONNEL.
3. IF SOUR GAS - EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY COMPANY FOREMAN / DESIGNATED PERSONNEL.
6. GIVE FIRST AID.

PERSON DOWN LOCATION / FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE - BUDDY SYSTEM ONLY.

AS APPLICABLE FOR TODAY'S CURRENT OPERATIONS / EVENTS

TAKING A KICK

WHEN TAKING A KICK DURING AN H₂S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

OPEN-HOLE LOGGING

ALL UNNECESSARY PERSONNEL OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION, ADVISE STATUS AND DETERMINE NEED FOR USE OF AID EQUIPMENT.

RUNNING CASING OR PLUGGING

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

H₂S Contingency Plan (continued)

WELL OUT OF CONTROL

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:

1. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE OF CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

**NOTIFY EMERGENCY AUTHORITIES IF TIME PERMITS,
BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.**

INITIATE EVACUATION PLAN.

IGNITION PROCEDURES

INSTRUCTIONS FOR IGNITING THE WELL

1. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING APPARATUS (SCBA) UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 25 MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE.
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

**REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE
WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC.
DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.**

H₂S Contingency Plan (continued)**4. HIGH RISK / EMERGENCY EQUIPMENT REQUIREMENTS**

A. SIGNS (ANSI STANDARD ZS3S.1-2002; SAFETY COLOR CODE)

1. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

**(LEASE) CAUTION - POTENTIAL POISON GAS HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION**

B. WINDSOCK- WIND STREAMERS

1. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
2. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

C. HYDROGEN SULFIDE DETECTOR AND ALARMS

1. H₂S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. **THESE MONITORS WILL BE SET TO ALARM AT 15 PPM WITH RED LIGHT, AND TO ALARM AT 20 PPM WITH RED LIGHT AND AUDIBLE ALARM.**
2. HAND OPERATED DETECTORS WITH TUBES.
3. H₂S MONITOR TESTER.

D. CONDITION FLAGS

1. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS:

**GREEN - NORMAL CONDITIONS (POTENTIAL)
YELLOW - POTENTIAL DANGER (MODERATE)
RED - DANGER, H₂S PRESENT (EXTREME)**

2. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

E. AUXILIARY RESCUE EQUIPMENT

1. STRETCHER
2. 100' LENGTH OF 5/8" NYLON ROPE.

F. MUD INSPECTION DEVICES - GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

G. FIRE EXTINGUISHER - ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

H. BLOW OUT PREVENTION EQUIPMENT - THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BOTTOM HOLE PRESSURE. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

H₂S Contingency Plan (continued)

I. COMBUSTIBLE GAS DETECTOR - THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

J. BOP TESTING - BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

K. AUDIO SYSTEM - RADIO COMMUNICATION WILL BE AVAILABLE AT THE **RIG, RIG FLOOR OR TRAILER AND VEHICLES.**

L. SPECIAL CONTROL EQUIPMENT - MAKE SURE OF HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND AND ROTATING HEAD.

5. EMERGENCY TELEPHONE NUMBERS

<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤ <u>SOLARIS WATER MIDSTREAM EMERGENCY</u>	
1) Jason Pyle HSE Manager	CELL: 512-750-2723
2) Stephen Martinez SR. VP- Operations and Engineering	CELL: 432) 556-0262
3) Mike Titsworth Senior Operations Manager	CELL: 432-703-8052
➤ <u>STATE POLICE</u>	
EDDY COUNTY	575-748-9718
LEA COUNTY	575-392-5588
➤ <u>SHERIFF</u>	
EDDY COUNTY	575-887-1888
Substation - ARTESIA: 575-748-2323	
LEA COUNTY	575-396-3611
Substations - EUNICE: 575-394-2020; HOBBS: 575-393-2515; JAL: 575-394-2121	
➤ <u>EMERGENCY MEDICAL</u>	
EDDY COUNTY	911 OR 575-746-2701
LEA COUNTY	911 OR 575-394-3258
AIRLIFT - AeroCare (Lubbock): 800-823-1991; AirMed (El Paso): 800-527-2767	
➤ <u>EMERGENCY RESPONSE</u>	
EDDY COUNTY	575-616-7155
LEA COUNTY	575-391-2961

H2S Contingency Plan (continued)

	<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤	<u>FIRE DEPARTMENTS</u>	
	ARTESIA	575-746-5051
	CARLSBAD	575-885-3125
	HOBBS	575-397-9308
	EUNICE	575-394-3258
	JAL	575-395-2221
☒	<u>POLICE DEPARTMENTS</u>	
	ARTESIA	575-746-5000
	CARLSBAD	575-885-2111
	HOBBS	575-397-9265
	EUNICE	575-394-2112
	JAL	575-395-2501
➤	<u>TOTAL SAFETY</u>	
	EDDY & LEA COUNTIES	575-392-2973
➤	<u>AMERICAN SAFETY SERVICES</u>	
	EDDY & LEA COUNTIES	575-746-1096
➤	<u>WILD WELL CONTROL</u>	
	MIDLAND, TX	281-784-4700
☒	<u>NM OIL CONSERVATION DIVISION</u>	
	ARTESIA DIST.2 (EDDY) 575-748-1283	HOBBS DIST.1 (LEA) 575-393-6161

6. SAFETY BRIEFING

SERVICE COMPANY AND VISITING PERSONNEL

A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H2S.

B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.

C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A SAFETY BRIEFING.

7. EVACUATION PLAN

GENERAL REQUIREMENTS

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

H₂S Contingency Plan (continued)

I. DESIGNATED AREA

A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PRE-DETERMINED AND SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.

B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.

C. IF A MOVABLE H₂S SAFETY TRAILER IS USED, IT SHOULD BE KEPT UPWIND OF EXISTING OR PREVAILING WIND DIRECTION. WHEN WIND IS FROM THE PREVAILING DIRECTION, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

2. EVACUATION IMPLEMENTATION AND PUBLIC SAFETY

TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:
(NOTE: REFER ALSO TO APPENDIX 'C', POTENTIALLY HAZARDOUS VOLUMES.)

1. WHEN THE COMPANY APPROVED SUPERVISOR (DESIGNATED PERSONNEL, I.E., DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H₂S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.

2. COMPANY FOREMAN OR DESIGNATED PERSONNEL WILL NOTIFY LOCAL GOVERNMENT AGENCIES AND STATE POLICE THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.

3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H₂S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H₂S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.

4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, LOCAL POLICE , FIRE DEPARTMENT AND SHERIFF) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON (OR ON SITE) AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

H₂S Contingency Plan (continued)

APPENDIX 'A'

TRAINING REQUIREMENTS

WHEN WORKING IN AN AREA WHERE **ANY LEVEL** OF HYDROGEN SULFIDE GAS (H₂S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H₂S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H₂S DETECTION.
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H₂S ON METALS.
9. LOCATION SAFETY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM OPERATING, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

This plan was developed exclusively for Solaris Water Midstream, LLC
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H₂S Contingency Plan (continued)

APPENDIX 'A' (continued)

FIRST AID FOR H₂S POISONING

DO NOT PANIC - REMAIN CALM - THINK!

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST - JUST STOP BREATHING.)
2. PUT ON BREATHING APPARATUS.
3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND - NOT DOWNWIND.)
4. YELL (!) "**SOMEONE CALL 911**". **YELL!!**
5. BRIEFLY APPLY CHEST PRESSURE - ARM LIFT METHOD OF ARTIFICIAL RESPIRATION TO CLEAN THE VICTIM'S LUNGS AND TO AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.
6. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
7. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H₂S GAS POISONING - NO MATTER HOW REMOTE THE POSSIBILITY IS.
8. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H₂S GAS.

BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH H₂S AND S₂O GAS OR SULFURIC ACID.

EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.

H₂S Contingency Plan (continued)

APPENDIX 'B'

STATUS CHECK LIST

APPLICABLE TO ALL OPERATIONS WHEN LEVELS ARE EXPECTED THAT APPROACH OR ARE ABOVE 100 PPM H₂S.

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

- I. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WINDSOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SETUP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H₂S DETECTION SYSTEM HOOKED UP.
10. H₂S ALARM SYSTEM HOOKED UP AND READY.
- II. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. I - 100' LENGTH OF 5/8" NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H₂S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H₂S DETECTOR WITH TUBES ON LOCATION AND CHECKED BY DATE IS WITHIN CURRENT TIME FRAME.

H₂S Contingency Plan (continued)

APPENDIX 'B' (continued)

PROCEDURAL CHECK LIST

PERFORM DURING EACH TOUR:

- I. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.
2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.
3. MAKE SURE ALL THE H₂S DETECTION SYSTEM IS OPERATIVE. PERFORM EACH WEEK:
4. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.
5. BLOW OUT PREVENTER SKILLS ARE APPROPRIATELY COVERED BY CREW.
6. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.
7. CHECK ALL SCBA UNITS FOR OPERATION:

DEMAND REGULATOR

ESCAPE BOTTLE AIR VOLUMES

SUPPLY BOTTLE OF AIR VOLUME

8. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENED AND TURNED BACK, READY TO PUT ON.
9. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.
10. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.
- II. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.
12. CHECK THE FOLLOWING FOR AVAILABILITY:

EMERGENCY TELEPHONE LIST (PAGES 8 & 9)

HAND OPERATED H₂S DETECTORS AND TUBES

H₂S Contingency Plan (continued)**APPENDIX 'B' (continued)****SITE SPECIFIC PLAN CHECK LIST (NEW PLAN)**

IF A WELL, FACILITY OR OPERATION IS REASONABLY EXPECTED TO INVOLVE A POTENTIALLY HAZARDOUS VOLUME OF H₂S WITH CONCENTRATIONS APPROACHING 100 PPM, THE PERSON SHALL DEVELOP A H₂S CONTINGENCY PLAN THAT THE PERSON WILL USE TO ALERT AND PROTECT THE PUBLIC IN ACCORDANCE WITH THE SUBSECTIONS B THROUGH I OF 19.15.11.9 NMAC.

- I. A SITE SPECIFIC PLAN WILL BE DEVELOPED AND SUBMITTED TO THE NMOCD OR OTHER APPLICABLE AGENCIES AND TO THE APPLICABLE COUNTY EMERGENCY COORDINATOR.
2. THIS PLAN AND ALL PARTS INCLUDING APPENDICES SHALL BE THE BASIS OF SUCH SITE SPECIFIC PLAN AND BEYOND THAT, ADDITIONAL REQUIREMENTS INCLUDE:
 - A. **SITE IDENTIFICATION** INCLUDING API NUMBER IF APPLICABLE AND LOCATION INCLUDING LAT / LONG COORDINATES.
 - B. **MAPS AND DRAWINGS** TO DEPICT THE AREA OF EXPOSURE AND PUBLIC AREAS AND PUBLIC ROADS WITHIN AREA OF EXPOSURE. MAPS SHALL INCLUDE POTENTIAL LEVEL 2 (500 PPM) AND LEVEL 3 (100 PPM) AREA OF EXPOSURE RADII BY CALCULATION. (APPENDIX 'C', PG.19.) IF ROADS ARE INVOLVED, ROAD BLOCKS SHOULD BE DESIGNATED ON MAPS. (COORDINATE WITH LAW ENFORCEMENT AGENCIES.)
 - C. **TRAINING AND DRILLS** INCLUDING TRAINING IN THE RESPONSIBILITIES AND DUTIES OF ESSENTIAL PERSONNEL AND PERIODIC ON-SITE OR CLASSROOM DRILLS OR EXERCISES THAT SIMULATE A RELEASE, AND SHALL DESCRIBE HOW THE PERSON WILL DOCUMENT THE TRAINING, DRILLS AND ATTENDANCE.
 - D. **RESIDENT TRAINING.** WHEN APPLICABLE, THE H₂S CONTINGENCY PLAN SHALL ALSO PROVIDE FOR TRAINING OF RESIDENTS AS APPROPRIATE ON THE PROPER PROTECTIVE MEASURES TO BE TAKEN IN THE EVENT OF A RELEASE, AND SHALL PROVIDE FOR BRIEFING OF PUBLIC OFFICIALS ON ISSUES SUCH AS EVACUATION OR SHELTER-IN-PLACE PLANS.
 - E. **COORDINATION WITH STATE EMERGENCY PLANS.** THE H₂S CONTINGENCY PLAN SHALL DESCRIBE HOW THE PERSON WILL COORDINATE EMERGENCY RESPONSE ACTIONS UNDER THE PLAN WITH THE DIVISION AND THE NEW MEXICO STATE POLICE CONSISTENT WITH THE NEW MEXICO HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN.
 - F. **PLAN ACTIVATION.** THE PERSON SHALL ACTIVATE THE H₂S CONTINGENCY PLAN CONTINGENCY PLAN WHEN A RELEASE CREATES A H₂S CONCENTRATION GREATER THAN THE ACTIVATION LEVEL SET FORTH IN THE H₂S CONTINGENCY PLAN. AT A MINIMUM, THE PERSON SHALL ACTIVATE THE PLAN WHENEVER A RELEASE MAY CREATE A H₂S CONCENTRATION OF MORE THAN 100 PPM IN A PUBLIC AREA, 500 PPM AT A PUBLIC ROAD OR 100 PPM 3000 FEET FROM THE SITE OF RELEASE.

H₂S Contingency Plan (continued)**APPENDIX 'C'****GENERAL INFORMATION****TOXIC EFFECTS OF HYDROGEN SULFIDE**

HYDROGEN SULFIDE IS EXTREMELY TOXIC. THE ACCEPTABLE CEILING CONCENTRATION FOR EIGHT-HOUR EXPOSURE IS 10 PPM, WHICH IS .001% BY VOLUME.

HYDROGEN SULFIDE IS HEAVIER THAN AIR (SPECIFIC GRAVITY - 1.192) AND COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME.

HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE.

TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I.

PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

TABLE I**TOXICITY OF VARIOUS GASES**

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN SULFIDE	H ₂ S	1.19	10 PPM	100 PPM/HR	600 PPM
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
SULFUR DIOXIDE	SO ₂	2.21	2 PPM	N/A	1000 PPM
CHLORINE	CL ₂	2.45	1 PPM	150 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	150 PPM/HR	1000 PPM
CARBON DIOXIDE	CO ₂	1.52	5000 PPM	5%	10%
METHANE	CH ₄	0.55	90,000 PPM	COMBUSTIBLE @ 5% IN AIR	N/A

(1) THRESHOLD LIMIT - CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.

(2) HAZARDOUS LIMIT - CONCENTRATION THAT MAY CAUSE DEATH WITH PROLONGED EXPOSURE.

(3) LETHAL CONCENTRATION - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****TABLE II****PHYSICAL EFFECTS OF HYDROGEN SULFIDE**

CONCENTRATION	PHYSICAL EFFECTS
0.001 or 10 PPM	OBVIOUS AND UNPLEASANT ODOR. SAFE FOR 8 HOURS OF EXPOSURE.
0.002 or 20 PPM	MAY STING EYES AND THROAT. MAY CAUSE FLU-LIKE SYMPTOMS.
0.010 or 100 PPM	KILLS SMELL IN 3 - 15 MINUTES. STINGS EYES AND THROAT. MAY HAVE SOME DIZZINESS AFTER PROLONGED EXPOSURE.
0.050 or 500 PPM	DIZZINESS; BREATHING CEASES IN A FEW MINUTES; NEEDS PROMPT RESUSCITATION. MAY CAUSE LUNG DAMAGE OR DEATH AFTER 4 HOURS EXPOSURE.
0.070 or 700 PPM	UNCONSCIOUS QUICKLY; DEATH WILL RESULT IF NOT RESCUED PROMPTLY.
0.100 or 1000 ppm	UNCONSCIOUS AT ONCE; FOLLOWED BY DEATH WITHIN MINUTES.

SCBA'S SHOULD BE WORN WHEN...

1. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TESTS REVEAL LESS THAN 10 PPM OF H₂S.
2. WHEN BREAKING OUT ANY LINE WHERE H₂S CAN REASONABLY BE EXPECTED.
3. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H₂S EXISTS.
4. WHEN WORKING IN AREAS WHERE OVER 100 PPM H₂S HAS BEEN DETECTED.
5. AT ANY TIME THERE IS A DOUBT AS TO THE H₂S LEVEL IN THE AREA TO BE ENTERED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****POTENTIALLY HAZARDOUS VOLUMES**

THIS IS THE VOLUME OF H₂S GAS OF SUCH CONCENTRATION THAT:

1. THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE INCLUDES A PUBLIC AREA;
2. THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE INCLUDES A PUBLIC ROAD;
3. THE 100-PPM RADIUS OF EXPOSURE EXCEEDS 3000 FEET.

(1) RADIUS OF EXPOSURE MEANS THE RADIUS CONSTRUCTED WITH THE POINT OF ESCAPE AS ITS STARTING POINT AND ITS LENGTH.

(2) PUBLIC AREA IS A BUILDING OR STRUCTURE THAT IS NOT ASSOCIATED WITH THE WELL, FACILITY OR OPERATION FOR WHICH THE RADIUS OF EXPOSURE IS BEING CALCULATED AND THAT IS USED AS A DWELLING, OFFICE, PLACE OF BUSINESS, CHURCH, SCHOOL, HOSPITAL OR GOVERNMENT BUILDING, OR A PORTION OF A PARK, CITY, TOWN, VILLAGE OR DESIGNATED SCHOOL BUS STOP OR OTHER SIMILAR AREA WHERE MEMBERS OF THE PUBLIC MAY REASONABLY BE EXPECTED TO BE PRESENT.

(3) PUBLIC ROAD MEANS A FEDERAL, STATE, MUNICIPAL OR COUNTY ROAD OR HIGHWAY.

RADIUS OF EXPOSURE

THE RADIUS OF EXPOSURE IS CALCULATED USING THE FOLLOWING PASQUILL-GIFFORD DERIVED EQUATION (OR BY OTHER SUCH METHOD) AS FOLLOWS:

A. FOR DETERMINING THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE:

$$X = [(1.89)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

B. FOR DETERMINING THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE:

$$X = [(0.4546)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

C. FOR A WELL BEING DRILLED, COMPLETED, RECOMPLETED, WORKED OVER OR SERVICED IN AN AREA WHERE INSUFFICIENT DATA EXISTS TO CALCULATE A RADIUS OF EXPOSURE BUT WHERE H₂S COULD REASONABLY BE EXPECTED TO BE PRESENT IN CONCENTRATIONS IN EXCESS OF 100 PPM IN THE GASEOUS MIXTURE, A 100 PPM RADIUS OF EXPOSURE EQUAL TO 3000 FEET IS ASSUMED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****REGULATORY THRESHOLD****A. DETERMINATION OF H₂S CONCENTRATION**

1. THE H₂S CONCENTRATION IN THE GASEOUS MIXTURE WITHIN WELLS, FACILITIES OR OPERATIONS SHALL BE DETERMINED EITHER BY TESTING, TESTING A REPRESENTATIVE SAMPLE OR USING PROCESS KNOWLEDGE IN LIEU OF TESTING. IF THE PERSON USES A REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE, THE CONCENTRATION DERIVED FROM THE REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE SHALL BE REASONABLY REPRESENTATIVE OF THE H₂S CONCENTRATION WITHIN THE WELL OR FACILITY.
2. THE TESTS USED TO MAKE THE DETERMINATION SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE ASTM OR GPA STANDARDS OR BY STANDARDLY ACCEPTED METHOD.
3. IF A CHANGE OR ALTERATION MAY MATERIALLY INCREASE THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION, TESTING SHALL BE CONDUCTED TO MAKE A NEW DETERMINATION.

B. CONCENTRATIONS DETERMINED TO BE BELOW 100 PPM - IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS LESS THAN 100 PPM, NO FURTHER ACTIONS SHALL BE REQUIRED **EXCEPT AS PROVIDED IN THIS H₂S CONTINGENCY PLAN CONCERNING "NORMAL / LOW H₂S CONDITIONS"**.

C. CONCENTRATIONS DETERMINED TO BE ABOVE 100 PPM

1. IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS DETERMINED TO BE 100 PPM OR GREATER, THEN THE RADIUS OF EXPOSURE SHALL BE CALCULATED TO COMPLY WITH APPLICABLE REQUIREMENTS OF STATE AND FEDERAL LAW.
2. IF CALCULATION OF THE RADIUS OF EXPOSURE REVEALS THAT A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS OF THE H₂S CONCENTRATION DETERMINATION AND THE CALCULATION OF THE RADIUS OF EXPOSURE SHALL BE PROVIDED TO NMOCD AND BLM. FOR A WELL, FACILITY OR OPERATION, THE ACCOMPLISH THE DETERMINATIONS, CALCULATIONS AND SUBMISSIONS WILL BE MADE BEFORE OPERATIONS BEGIN.

D. RECALCULATION - OF THE RADIUS OF EXPOSURE SHALL BE PERFORMED IF:

1. THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION INCREASES TO 100 PPM OR GREATER.
2. THE CONCENTRATION OF H₂S INCREASES BY A FACTOR OF 25% IN AN AREA THAT PREVIOUSLY HAD A H₂S CONCENTRATION OF 100 PPM OR GREATER.

IF A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS SHALL BE PROVIDED TO THE NMOCD AND BLM (IF APPLICABLE) WITHIN 60 DAYS.

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H₂S Contingency Plan (continued)**APPENDIX 'D'**

INCIDENT RESPONSE PROTOCOL

FOLLOW THE PLAN

!!! AN EMERGENCY HAS OCCURRED !!!

1. **IMPLEMENT PLAN** - COMPANY FOREMAN OR DESIGNATED PERSON IS IMMEDIATE INCIDENT COMMANDER. (SAFETY CONSULTANT IF ON SITE.)
2. **ASSESS SITUATION** - DIRECT ALL PERSONNEL TO REPORT TO SAFETY BREIFING AREA. NOTIFY TO EVACUATE PUBLIC IF APPLICABLE.
3. **CONTROL SITUATION IF POSSIBLE** - DON BREATHING AND SAFETY APPARTUS; SHUT DOWN OPERATIONS AND WELL.

BACK-UP DESIGNEE SHOULD: (EMERGENCY NUMBERS PAGES 8 & 9)

- A. REPORT INCIDENT TO COUNTY EMERGENCY RESPONSE & STATE POLICE.
 - B. CALL 911 OR MEDICAL IF NECESSARY. (GIVE FIRST AID, PAGE 12)
 - C. CALL COUNTY SHERIFF, OTHER EMERGENCY AGENCIES.
 - D. CALL SAFETY COMPANY, COMPANY REPS IF NOT ALREADY ON SITE.
 - E. ESTABLISH RADIO COMMUNICATION WITH EMERGENCY RESPONDERS.
4. **ATTEMPT RESCUE IF REQUIRED** - QUALIFIED PERSONNEL MUST BE MASKED UP AND BUDDY SYSTEM ONLY. (PER TRAINING AND CERTIFICATION.)
 5. **CONTROL OR PARTIAL CONTROL**
 - A. MAKE DECISION TO IGNITE WELL IF REQUIRED. (PAGE 6)
 - B. BRIEF PERSONNEL ASSEMBLY IN SAFETY AREA - GIVE INSTRUCTIONS TO EVACUATE NON-ESSENTIAL PERSONNEL.
 6. **BRIEF LAW ENFORCEMENT AND COUNTY EMERGENCY RESPONDERS.**
 - A. STATE POLICE WILL BE IN CONTROL OF INCIDENT BEYOND LOCATION.
 - B. COMPANY PERSONNEL WILL FOLLOW INSTRUCTIONS OF STATE POLICE, LOCAL EMERGENCY PERSONNEL AND COOPERATE WITH ALL PARTIES TO ENSURE SAFE OPERATIONS MOVING FORWARD.
 - C. IF WELL IS OUT OF CONTROL (BLOWOUT), A NEW INCIDENT COMMANDER MAY BE DESIGNATED FOR THE DURATION OF THE EVENT.
 7. **INCIDENT IS CONTROLLED** AND SHUT DOWN OR, INCIDENT OPERATIONS WILL CONTINUE UNTIL RESOLVED.
 8. **REGULATORY REPORTING & PAPERWORK** IS COMPLETED AS APPLICABLE - DETERMINE CAUSE OF FAILURE, VOLUMES, ETC. EVENT IS TERMINATED.

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

DRILLING PLAN

1. GENERAL WELL INFORMATION

Operator: Solaris Water Midstream, LLC

Well Name: Moonwalk Fed SWD #1

Well Type: Saltwater Disposal

Surface Hole Location:

- Latitude/Longitude: 32.2722574, -103.6720262 (NAD83)
- Legal Location: Section 28 T23S R32E

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS

Formation	Expected Top (TVD) (ft)	Lithology	Mineral Resources (Hydrocarbon / Salt / Water)
Quaternary	0	Alluvium	Useable Water
Rustler	1,249	Anhydrite	None
Salado (Top of Salt)	1,557	Salt	None
Lamar (Base of Salt)	4,880	Limestone, Shale	None
Bell Canyon	4,919	Sandstone	Natural Gas, Oil
Cherry Canyon	5,775	Sandstone	Natural Gas, Oil
Brushy Canyon	7,072	Sandstone	Natural Gas, Oil
Bone Spring Lime	8,692	Limestone, Shale	Natural Gas, Oil
1st Bone Spring Sand	9,855	Sandstone	Natural Gas, Oil
2nd Bone Spring Carb	10,142	Limestone, Shale	Natural Gas, Oil
2nd Bone Spring Sand	10,486	Sandstone	Natural Gas, Oil
3rd Bone Spring Carb	11,020	Limestone, Shale	Natural Gas, Oil
3rd Bone Spring Sand	11,770	Sandstone	Natural Gas, Oil
Wolfcamp A	12,098	Shale	Natural Gas, Oil
Wolfcamp B	12,760	Shale	Natural Gas, Oil
Wolfcamp C	13,173	Shale	Natural Gas, Oil
Wolfcamp D	13,650	Shale	Natural Gas, Oil
Strawn	14,180	Limestone	Natural Gas, Oil
Morrow	14,555	Shale, Limestone	Natural Gas, Oil
Barnett	16,405	Shale	Natural Gas, Oil
Mississippian	16,855	Limestone	Natural Gas, Oil
Woodford	17,175	Shale	Natural Gas, Oil
Devonian	17,680	Limestone, Dolomite, Chert	None
Total Depth	18,830		
Montoya	19,030	Dolomite, Limestone	None

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

3. PRESSURE CONTROL

3.1 Equipment

A 10,000 psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below surface casing to TD. See **Appendix A** for Diagrams of a Representative BOP and BOP/Manifold Closed Loop System Equipment Schematic.

Pipe Rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per Title 43 CFR 3172.

A conventional wellhead assembly will be used.

3.2 Testing Procedure

BOP will be inspected and operated as required in Title 43 CFR 3172. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position.

A third-party company will test the BOPs.

A full BOP test will be performed whenever any seal subject to test pressure is broken. For each test, the BOP will be tested with a test plug at a low pressure of 250 psi for a minimum of 10 minutes. This test shall be performed prior to testing the BOP at full stack pressure of 5,000 psi for the 5M annual preventer and 10,000 psi for the 10M ram stack.

3.3 Variances

Solaris is requesting the following variances:

- Variance to drill this well using a co-flex line between the BOP and choke manifold. Certification of compliance with API 16C and spec sheet for proposed co-flex hose is included as **Appendix B**. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.
- Variance to drill this well using a 5M annular preventer with a 10M BOP ram stack. The "Well Control Plan" for 10M MASP Section of Wellbore is attached as **Appendix C**.

4. CASING PROGRAM

The proposed casing program is described below. All casing will be new.

Casing String	Hole Size (in)	Casing							Depth (Top – Bottom)		
		O.D. (in)	I.D. (in)	Wt. (lb/ft)	Grade	Conn.	API?	Clearance (in)		TVD (ft)	MD (ft)
								Casing-Casing	Casing - Wellbore		
Surface	26	20	19.0	106.5	J-55	BTC	Yes	N/A	2.50	0 - 1,274	0 - 1,274
1 st Int.	17.5	13.375	12.415	68	L-80	BTC	Yes	2.3125	1.5625	0 - 4,919	0 - 4,919
2 nd Int.	12.25	9.625	8.755	43.5	P-110	BTC	Yes	0.895	0.8125	0 – 12,200	0 – 12,200
Liner	8.75	7.625	6.625	39	P-110	FJ	No	0.565	0.5625	12,000 – 17,680	12,000 – 17,680

Notes:

- Per 43 CFR 3172.7(a)(4), each casing string will have at least 0.422" clearance on all sides between the outside of the casing and the wellbore wall and/or next casing string. (See **Appendix D** for Casing Clearance Detail).
- Per 43 CFR 3172.7(a)(4), each string of casing will be cemented to surface, with the exception of the Liner. Cement specifications, including top of cement (TOC) for each casing string are detailed in Section 5 below.
- All casing strings will be tested in accordance with Title 43 CFR 3172.7(b)(8).
- Rustler formation top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed to ensure surface casing is set 25 ft below the top of the Rustler formation.
- Casing/Coupling Specification Sheets for non-API casing are included as **Appendix E**.

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

5. CEMENTING PROGRAM

The proposed cementing program is described below.

Casing String	Type	Sacks	Yield (ft ³ /sk)	Weight (lb/gal)	Excess (%)	Top of Cement (ft)	Cement Class and Slurry Description
Surface	Lead	1,756	1.72	13.5	100	0	Class C: +Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
	Tail	560	1.33	14.8	50	990	Class C: +C-45, CaCl
1 st Intermediate	Lead	2,922	2.13	12.7	100	0	Class C: 65:10:25 Class C Premium: Compass Poz-Mix: CPO-18; Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
	Tail	856	1.2	14.8	50	3,933	Class C: 50:50 Class C Premium: Compass Poz-Mix; Salt, C-51, STE, C-23
2 nd Intermediate	Lead	1,766	3.66	10.6	75	0	Class C: 100% HSLD 9420 Cement; Salt, C-45 Econolite, Citric Acid, CSA-1000-Fluid Loss Additive, C-49 Expanding Gas Flow Control
	Tail	268	1.32	15	50	11,447	Class H - 100% Class H Premium Cement; STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
Liner	Lead	1,091	1.3	15.6	40	12,000	Class C - STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand
	Tail	N/A	N/A	N/A	N/A	N/A	N/A

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM

An electronic Pason mud monitoring system complying with Title 43 CFR 3172 will be used. All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

A description of the mud characteristics at their associated drilling depths is included in the table below:

Interval MD (ft)	Mud Type	Density (lb/gal)	Viscosity	Fluid Loss
0 – 1,274	Spud Mud with Native Water	8.4 – 9.2	28-30	NC
1,274 – 4,919	Brine Emulsion	9.5 - 10	28-30	NC
4,919 – 12,200	Brine Emulsion	9 – 10	28-30	NC
12,200 – 17,680	Oil-Based Mud	12.5 – 13.5	50-65	<20
17,680 – 18,830	Water-Based Mud	8.4 – 8.8	29	NC

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
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7. Cores, Tests, & Logs

Mud logging unit (2 Man) below 20" casing (surface) to TD of the injection section. Will record drilling parameters (including rate), cuttings lithology, mud gas, and hydrocarbon shows.

A triple combo (gamma, resistivity/induction, density, compensated neutron, caliper) will be run over the injection section to confirm that hydrocarbons cannot be produced in economic quantities.

Through casing GR/Neutron or MWD GR will provide final as drilled tops above the injection zone. A CBL will be run over the cased-hole sections of the well to ensure injection zone isolation.

No core or drill stem testing is planned.

A Mechanical Integrity Test (MIT) will be performed annually.

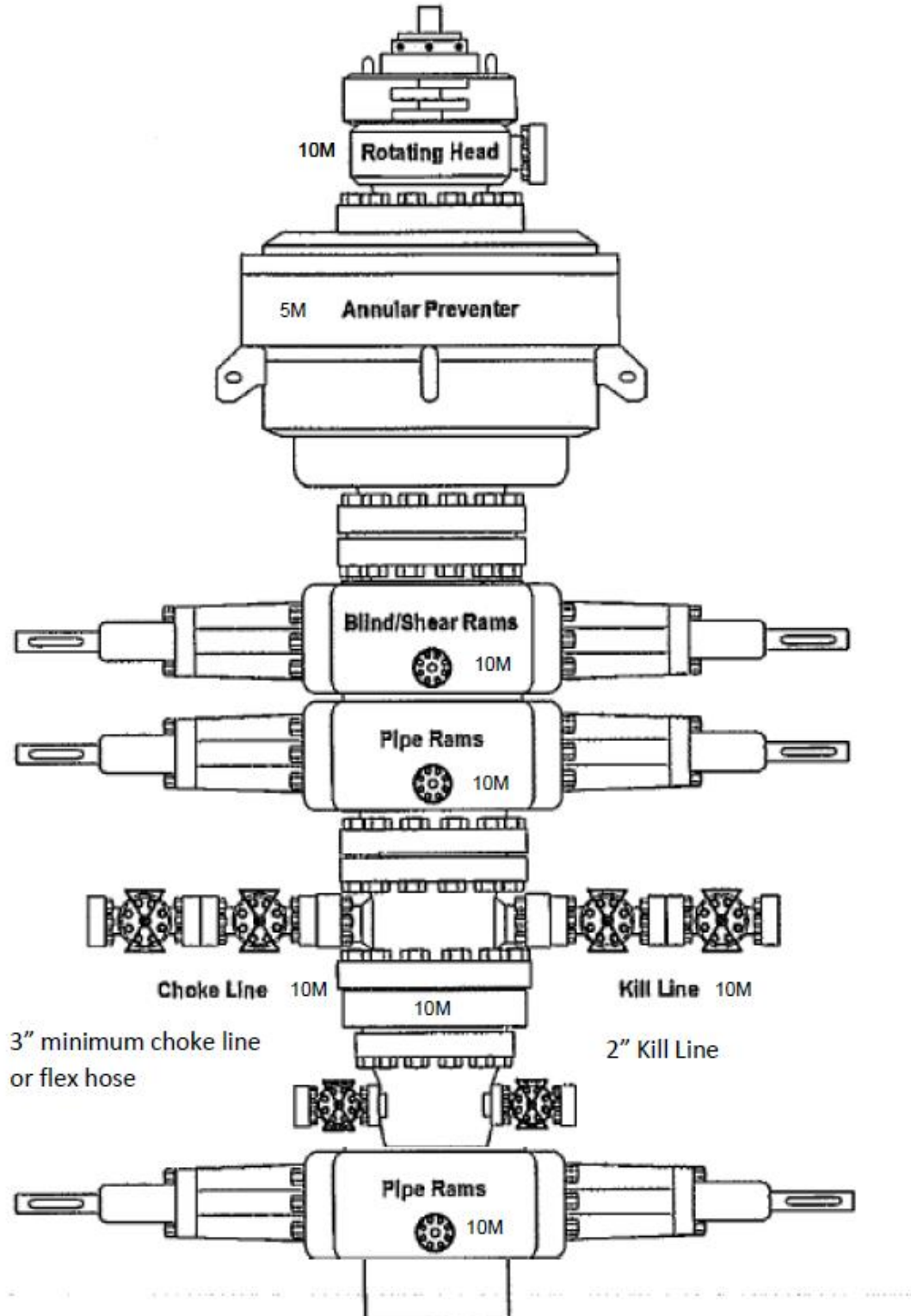
8. QUESTIONNAIRE

Casing	Y/N
Is casing new? If used, attach certification as required in 43 CFR 3171.	Y
Is casing API approved? If no, attach casing specification sheet. (see Appendix E)	N
Is premium or uncommon casing planned? If yes attach casing specification sheet. (see Appendix E)	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Capitan Reef / KPLA R-111-P Area / Secretary Potash Area	Y/N
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N/A
Is well within the designated 4-string boundary?	N
Is well located within the R-111-P boundaries?	N
If yes, are the first three strings cemented to surface?	N/A
Is the 2 nd string set 100' to 600' below the base of salt?	N/A
Is well located within the Secretary Potash Area boundaries?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N/A
Cave and Karst	Y/N
Is well located in High Cave/Karst area?	N
If yes, are there two strings cemented to surface?	N/A
Is well located in critical Cave/Karst area?	N
If yes, are there three strings cemented to surface?	N/A

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

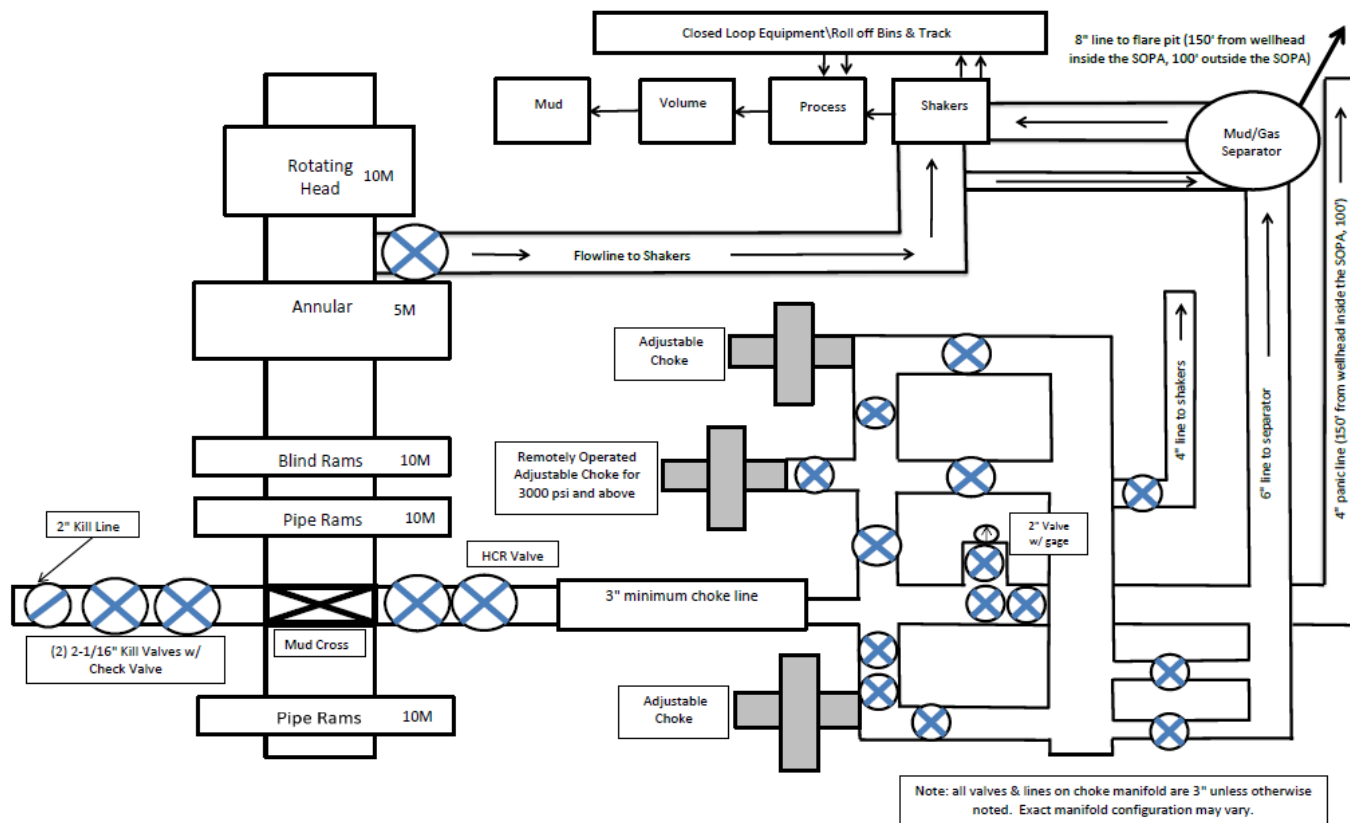
Representative BOP Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

BOP/Manifold & Closed Loop System Diagram



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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Certification



Certificate of Authority to use the Official API Monogram

License Number: 16C-0383

ORIGINAL

The American Petroleum Institute hereby grants to
COPPER STATE RUBBER, INC.
10485 W. Roosevelt Street
Avondale, AZ
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines at FSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: **APRIL 21, 2022**

Expiration Date: **APRIL 21, 2025**

Senior Vice President of Global Industry Services

To verify the authenticity of this license, go to www.api.org/compositelist.

Solaris Water Midstream, LLC
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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

2 ▼ COPPER STATE RUBBER

API 16C Monogrammed Choke & Kill Product Diagram

1 Copper State Rubber Full Flow Choke & Kill Coupling
No protruding parts on coupling available with API Hubs/Flanges, Unions, Grayloc Hubs. Couplings are built-in as an integral part of the hose, reducing flexing fatigue at the end connection, thus making the hose less susceptible to damage if the bend radius is exceeded. All Copper State Rubber hoses are built as a single unit. To maintain our quality control after sale, no Copper State Rubber hoses are coupled outside our plant.

2 Steel Cable
Spirally wound at each end of hose for additional reinforcement at coupling.

3 Abrasive Resistant Fire Retardant Cover
Neoprene-base synthetic compounded to be extra tough to assure greater resistance to oil, cuts, abrasion, weather, and temperature extremes. Guide stripe provided for easy alignment. Also available with ¼ full round stainless steel armor.

4 Secondary Carcass
Gives added strength and safety with one ply of specially woven fabric and layer of protective rubber.

5 4, 6 and 8 Layer Wire Reinforcement
This all-important section assures maximum safety, strength, and flexibility with the use of four, six or eight spirally wound layers of special fatigue resistant, high-tensile steel wires, each embedded in a thick layer of rubber and tough fabric.

6 Primary Carcass
Provides greater flexibility through scientifically constructed multiple plies of premium grade high-tensile fabric impregnated with rubber. Our flexible liner prevents any sudden rupture without warning at the hose ends.

7 Tube
Copolymer suitable for hydrocarbons, resistant to H2S and gas permeation.

Choke & Kill Hose is surge tested at 15,000 PSI in .75 of a second.

--- • CERTIFIED FACTORY TEST REPORTS WITH GRAPH FURNISHED WITH EVERY HOSE • ---
(WE TEST 100% OF OUR HOSES BEFORE SHIPMENT)

copperstaterubber.com / sales@copperstaterubber.com

Solaris Water Midstream, LLC
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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

OIL FIELD PRODUCTS
CHOKES & KILL HOSES / SPECIFICATIONS

Regular Choke & Kill Hose

SPEC 090-1915C

10,000 PSI Working Pressure

Master Choke & Kill Hose

SPEC 090-1910C

5,000 PSI Working Pressure



Hose and coupling are suitable for H2S service. Couplings are Ni-Kanigen plated for salt water resistance.

Application:

- Choke & Kill Suitable for H2S
- Working Temperature -20F to 212F
- Max Length; 200 ft.

Non API16 C Monogrammed 4" 10,000 Working Pressure and 2" Through 3" 15,000PSI Working Pressure Choke & Kill Hoses Available



API 16C Choke & Kill Hose

ID (inches)	OD (inches)	MBR (inches)	Straight Ends (inches)	Working Pressure (PSI)	Test Pressure (PSI)	Hose Body Weight (lbs/ft)		Coupling Weight (lbs)
						Armored	Unarmored	
2	4.3	36	40	5,000	10,000	20	16	65
	4.5	36	42	10,000	15,000	22	16	104
2 ½	5.0	36	42	10,000	15,000	36	28	100
3	5.7	36	40	5,000	10,000	25	20	81
	6.3	36	42	10,000	15,000	35	31	110

Choke & Kill Hose
 API 16C LICENSED, CERTIFICATE No API-0383 FSL3

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Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX C: WELL CONTROL PLAN

1. INTRODUCTION

Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, while pipe is not in the hole and moving the BHA through the BOP's. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the Permian Oilfield Partners drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore Oil & Gas Order No. 2 with the exception of the 5M annular which will be tested to 100% of its RWP. *Note: HCR valve and choke manifold will remain close during all normal operations. Manipulation of such equipment will occur as part of the general well control procedures.

2. GENERAL WELL CONTROL PROCEDURE WHILE DRILLING

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

3. GENERAL PROCEDURE WHILE TRIPPING

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

4. GENERAL PROCEDURE WHILE RUNNING PRODUCTION CASING

Page 10

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX C: WELL CONTROL PLAN

1. Sound alarm (alert crew)
2. Stab crossover and full-opening safety valve and close
3. Space out string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

5. GENERAL PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

1. Sound alarm (alert crew)
2. Shut-in with blind rams (HCR & choke will already be in the closed position)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
6. Regroup and identify forward plan

6. GENERAL PROCEDURES WHILE PULLING BHA THROUGH STACK

1. PRIOR to pulling last joint of drillpipe through stack:
 - a. Perform flow check. If flowing, continue to (b).
 - b. Sound alarm (alert crew)
 - c. Stab full-opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper variable bore rams
 - e. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full-opening safety valve and close
 - c. Space out drill string with upset just beneath the upper variable bore rams
 - d. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)

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Drilling Plan

APPENDIX C: WELL CONTROL PLAN

- e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combination immediately available:
- a. Sound alarm (alert crew)
 - b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
 - c. If impossible to pull string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe and full-opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper variable bore ram
 - f. Shut-in using upper variable bore ram (HCR & choke will already be in the closed position)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX D: CASING CLEARANCE DETAIL

Casing String	Moonwalk SWD #1									
	Hole	Casing				Collar		Clearance (in)		API
		Size		Weight (lb/ft)	Grade	Type	Size OD (in)	Casing-Casing	Casing-Wellbore	
		OD (in)	ID (in)							
Surface	26	20	19	106.5#	J-55	BTC	21	N/A	2.50	Yes
1st Intermediate	17.5	13.375	12.415	68#	L-80	BTC	14.375	2.3125	1.5625	Yes
2nd Intermediate	12.25	9.625	8.755	43.5#	P-110	BTC	10.625	0.895	0.8125	Yes
Liner	8.75	7.625	6.625	39#	P-110	FJ	7.625	0.565	0.5625	No

Clearance Calculations:


Casing-Casing: $(\text{Outer Casing I.D} - \text{Inner Casing Collar O.D.}) / 2$

Wellbore - Casing: $(\text{Hole Size} - \text{Casing Collar O.D.}) / 2$

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX E: CASING - COUPLING SPECIFICATION


7.625 39# P-110 FJ



U. S. Steel Tubular Products

7.625" 39.00lb/ft (0.500" Wall) P110 HC USS-LIBERTY FJM[®]

4/1/2025 1:53:21 PM



MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM [®]	--
Minimum Yield Strength	110,000	--	psi
Maximum Yield Strength	140,000	--	psi
Minimum Tensile Strength	125,000	--	psi

DIMENSIONS	Pipe	USS-LIBERTY FJM [®]	--
Outside Diameter	7.625	7.625	in.
Wall Thickness	0.500	--	in.
Inside Diameter	6.625	6.539	in.
Standard Drift	6.500	6.500	in.
Alternate Drift	--	--	in.
Nominal Linear Weight, T&C	39.00	--	lb/ft
Plain End Weight	38.08	--	lb/ft

SECTION AREA	Pipe	USS-LIBERTY FJM [®]	--
Critical Area	11.192	6.665	sq. in.
Joint Efficiency	--	59.5	%

PERFORMANCE	Pipe	USS-LIBERTY FJM [®]	--
Minimum Collapse Pressure	12,180	12,180	psi
Minimum Internal Yield Pressure	12,640	12,640	psi
Minimum Pipe Body Yield Strength	1,231,000	--	lb
Joint Strength	--	733,000	lb
Compression Rating	--	733,000	lb
Reference Length	--	12,843	ft
Maximum Uniaxial Bend Rating	--	39.4	deg/100 ft

MAKE-UP DATA	Pipe	USS-LIBERTY FJM [®]	--
Make-Up Loss	--	4.75	in.
Minimum Make-Up Torque	--	14,700	ft-lb
Maximum Make-Up Torque	--	20,750	ft-lb

Notes

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4. USS-LIBERTY FJM[™] connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
5. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
6. Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
7. Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

Legal Notice

USS-LIBERTY FJM[®] is a trademark of U. S. Steel Corporation. All material contained in this publication is for general information only. This material should not therefore be used or relied upon for any specific application without independent competent professional examination and verification of accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use. U.S. Steel disclaims any and all expressed or implied warranties of fitness for any general or particular application.

U. S. Steel Tubular Products
 460 Wildwood Forest Drive, Suite 300S
 Spring, Texas 77380

1-877-893-9461
 connections@uss.com
 www.usstubular.com



H₂S Contingency Plan

Developed by
SOS Consulting, LLC
September 21, 2017



This plan was developed exclusively for Solaris Water Midstream, LLC
Use of this document by its employees including
contractors, is at the discretion of Solaris management.

No part of the content may be copied or used for
other purposes by any other entity without the consent of
SOS Consulting, LLC | 903-488-9850 | info@sosconsulting.us

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

PREFACE / OVERVIEW

PLAN ACTIVATION

AT A MINIMUM, THE PLAN MUST BE ACTIVATED WHENEVER A RELEASE MAY CREATE A CONCENTRATION OF H₂S OF MORE THAN 100 PPM IN ANY PUBLIC AREA, 500 PPM AT ANY PUBLIC ROAD OR 100 PPM 3,000 FEET FROM THE SITE OF RELEASE.

OPERATIONAL DISTINCTION OF CONDITION

FOR ALL OPERATIONS, SOLARIS WATER MIDSTREAM, LLC WILL APPLY THESE CRITERIA TO DETERMINE THE OPERATIONAL CONDITION:

A. NORMAL / LOW CONDITIONS: KNOWN H₂S IS AT OR LESS THAN 10 PPM.

PURSUANT TO NMOCD RULES AND REGULATIONS, SOLARIS WATER MIDSTREAM, LLC MAY PETITION THE NEW MEXICO OIL CONSERVATION DIVISION DIRECTOR FOR AN **EXEMPTION** TO ANY REQUIREMENT OF THIS SECTION.

FOR NORMAL / LOW CONDITION OPERATIONS, OTHER THAN AN AWARENESS OF THIS PLAN AND BASIC MONITORING AND WIND DIRECTION INDICATORS, AN EXEMPTION WILL BE REQUESTED AND DETAILED INFORMATION NOT OTHERWISE PROVIDED FOR IN THE NORMAL REGULATORY PERMITTING PROCESS MAY BE OMITTED.

B. HIGH RISK CONDITIONS: KNOWN H₂S MAY APPROACH OR BE MORE THAN 100 PPM.

IMPLEMENTATION

THIS PLAN DETAILS PROCEDURES AND ACTIVITIES PARTICULARLY GEARED TOWARDS HIGH RISK OPERATIONAL CONDITIONS .

ADDITIONAL INFORMATION SHALL BE FURNISHED IN THE FORM OF SITE SPECIFICS AND MAPS WHEN THE OPERATIONAL CONDITION IS DETERMINED TO BE HIGH RISK.

PREFACE / OVERVIEW (continued)

A. NOTIFICATION / COORDINATION OF EMERGENCY SERVICES

PRIOR TO COMMENCING ACTIVITIES AT A HIGH-RISK SITE, THE APPROPRIATE EMERGENCY PERSONNEL FOR THE AREA WILL BE ALERTED TO THE ACTIVITY INCLUDING DATES, ANTICIPATED WORK TIMES, A COPY OF THIS PLAN AND THE FOLLOWING ITEMS SUCH THAT EMERGENCY PERSONNEL IS FULLY APPRISED OF THE OPERATION AND POTENTIAL OCCURANCES NO MATTER HOW UNLIKELY. (REFER TO EMERGENCY TELEPHONE LIST IN SECTION 5 OF THE PLAN, PAGES 8-9.)

B. SITE SPECIFIC PLANS SHALL INCLUDE*:

WELL OR FACILITY NAME, LOCATION (INCLUDING GIS COORDINATES) TYPE, DEPTH, ANTICIPATED OR MEASURED H₂S CONCENTRATION, WELL OR LINE PRESSURES, PRESSURE AND FLOW CONTROL EQUIPMENT AND A SCHEMATIC DIAGRAM.

C. MAPS SHALL INDICATE:

1. LOCATION OF WELL OF FACILITY WITH LOCATION IN RELATION TO ROADS, PUBLIC AREAS AND TOWNS AS APPLICABLE.
2. DIRECTION AND SPEED OF PREVAILING WINDS AT THE SITE, AS CURRENT AS POSSIBLE.
3. INGRESS / EGRESS TO THE SITE AS WELL AS TYPICAL ACCESS ROUTES FROM THE NEAREST TOWN WITH EMERGENCY SERVICES.
4. POTENTIAL ROAD CLOSURE AREAS SHALL BE COORDINATED WITH EMERGENCY PERSONNEL AND MAPPED BASED ON CRITERIA ABOVE.

*** NOTE: THIS PLAN SATISFIES NORMAL OPERATING ENVIRONMENTS. WHEN SOLARIS WATER MISTREAM, LLC PLANS DRILLING OR OTHER ACTIVITIES IN A KNOWN H₂S AREA (REASONABLY EXPECTED TO APPROACH 100 PPM AND HIGHER VOLUMES), THE PLAN SHOULD BE AUGMENTED FOR THAT SPECIFIC SITE - SEE SITE SPECIFIC CHECK LIST IN APPENDIX 'B' OF THE MAIN PLAN.**

PLAN DEVELOPMENT

THIS PLAN HAS BEEN DEVELOPED IN ACCORDANCE WITH TITLE 19 NATURAL RESOURCES AND WILDLIFE CHAPTER 15, OIL AND GAS PART II, HYDROGEN SULFIDE GAS AND ALL PARTS CONTAINED THEREIN.

IT FURTHER MEETS AS APPLICABLE, OSHA REQUIREMENTS AND API H₂S PUBLICATIONS:

- 'RECOMMENDED PRACTICE FOR OIL AND GAS WELL SERVICING AND WORKOVER OPERATIONS INVOLVING HYDROGEN SULFIDE', RP-68 (API);
- 'RECOMMENDED PRACTICES FOR DRILLING AND WELL SERVICING OPERATIONS INVOLVING WELLS CONTAINING HYDROGEN SULFIDE', RP-49 (API);
- 'H₂S AT CRUDE OIL PUMP STATIONS, PRODUCING WELLS, TANK BATTERIES AND ASSOCIATED PRODUCTION FACILITIES, PIPELINES, REFINERIES, GAS PLANTS AND COMPRESSOR STATIONS', RP-55 (API)

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

PLEASE NOTICE

APPLICABILITY OF PLAN

NORMAL OPERATIONS

THIS PLAN IS GENERALLY APPLICABLE TO ALL OPERATIONS IN NORMAL CONDITIONS IN SOUTHEAST NEW MEXICO WHERE KNOWN **H₂S IS AT OR LESS THAN 10 PPM**.

HIGH RISK / KNOWN H₂S AREAS

SITE SPECIFIC PLANS WILL BE DEVELOPED FOR WORK PLANNED IN HIGH RISK AREA. THESE ARE AREAS WHERE KNOWN H₂S CONCENTRATION MAY REASONABLY BE EXPECTED TO **APPROACH OR EXCEED 100 PPM** AND AT SIGNIFICANT VOLUMES.

TO MEET THE REQUIREMENTS FOR SITE SPECIFIC PLANS, THIS PLAN WILL BE AMENDED OR AUGMENTED TO INCLUDE MAPS, DIAGRAMS AND DRAWINGS AND DETAIL THE COORDINATION BETWEEN COMPANY PERSONNEL AND COUNTY EMERGENCY AGENCIES INCLUDING LAW ENFORCEMENT.

THE CHECKLIST ON THE FOLLOWING PAGE SHOWS THE ADDITIONAL ITEMS REQUIRED TO MEET NEW MEXICO OIL CONSERVATION DIVISION RULES AND REGULATIONS.

**OIL CONSERVATION DIVISION
H2S CONTINGENCY PLAN REQUIRED BY OCD RULE 19.15.11 NMAC**

Operator Name: SOLARIS WATER MIDSTREAM, LLC

Date: Implemented/ Adopted September 2017

Contingency Plan Requirements Checklist				
19.15.11.9.B NMAC Requirement	Included?	Page in Document?		Notes
Emergency Procedures				
Responsibilities & duties of personnel during emergency	YES	2, 3		
Immediate action plan	YES	4, 5		
Evacuation and shelter in place plans	YES	9, 10		Applicable to site specific - Shelter in Place.
Telephone numbers of emergency responders	YES	8, 9		
Telephone numbers of public agencies	YES	8, 9		
Telephone numbers of local government	YES	8, 9		
Telephone numbers of appropriate public authorities	YES	8, 9		
Location of potentially affected public areas Also see 19.15.11.12.B & D	n/a			Applicable to site specific.
Location of potentially affected public roads	n/a			Applicable to site specific.
Proposed evacuation routes, with locations of road blocks	n/a			Applicable to site specific.
Procedures for notifying the public	YES	10		
Availability and location of safety equipment and supplies Also see 19.15.11.12.C	n/a	7, 13		Applicable to site specific. H2S Safety Trailer on location. Equipment list pg.13
Characteristics of hydrogen sulfide and sulfur dioxide				
Discussion of characteristics	YES	16, 17, 18		
Maps and Drawings				
Area of exposure	n/a			Applicable to site specific.
Public areas within area of exposure	n/a			Applicable to site specific.
Public roads within area of exposure	n/a			Applicable to site specific.
Training and Drills				
Training of personnel to include responsibilities, duties, hazards, detection, personal protection and contingency procedure	YES	11		Solaris Water Midstream, LLC personnel and all contractors will be certified in H2S Safety. Training requirements are listed in plan.
Periodic drills or exercises that simulate a release	n/a			Applicable to site specific.
Documentation of training, drills, & attendance	n/a			Applicable to site specific.
Training of residents on protective measures	n/a			Applicable to site specific.
Briefing of public officials on evacuation or shelter-in-place plans	n/a			Applicable to site specific.
Coordination with state emergency plans				
How emergency response actions will coordinate with OCD and the state police response plans	Perhaps	10, 20		[Mostly] Applicable to site specific.
Activation Levels				
Activation Levels and description of events which may lead to a release in excess of activation level	YES	4, 5		
Plan Activation				
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm in a public area or 500 ppm at a public road	YES	15		
Commitment to activate contingency plan whenever H2S concentration of more than 100 ppm 3000 feet from the site of release	YES	15		

HYDROGEN SULFIDE CONTINGENCY PLAN

POLICY OF

SOLARIS WATER MIDSTREAM, LLC

**MUST BE REVIEWED BY ALL PERSONNEL
PRIOR TO COMMENCEMENT OF OPERATIONS**

SCOPE

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR ALL COMPANY AND CONTRACTOR PERSONNEL WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H2S) GAS. GUIDELINES ADDRESSING PUBLIC SAFETY ARE INCLUDED.

OBJECTIVE

1. PREVENT ANY AND ALL ACCIDENTS, AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.
2. PROVIDE PROPER PROCEDURES TO HANDLE EMERGENCIES AND POSSIBLE EVACUATION.
3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

IMPLEMENTATION

THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE OPERATIONS COMMENCE PURSUANT TO THE CONDITION BEING:

NORMAL / LOW CONDITIONS: KNOWN H2S IS AT OR LESS THAN 10 PPM.

HIGH RISK CONDITIONS: KNOWN H2S MAY APPROACH OR BE MORE THAN 100 PPM.

OVERVIEW OF PLAN

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. PERSONNEL RESPONSIBILITY
(PAGES 2-3) | THIS SECTION SHOWS SPECIFIC RESPONSIBILITIES FOR ALL PERSONNEL PRESENT - BY TITLE OR JOB DUTIES. |
| <ol style="list-style-type: none"> 2. NORMAL /
LOW H2S CONDITIONS
(PAGES 3-4) | THIS SECTION OUTLINES PROCEDURES DURING NORMAL OPERATIONS WHEN EXPECTATIONS OF AN H2S ENVIRONMENT ARE REASONABLY LOW. |

H2S Contingency Plan (continued)

- 3. **EMERGENCY RESPONSE PROCEDURES**
(PAGES 4-6) THIS SECTION OUTLINES THE CONDITIONS PROCEDURE AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY OR HIGH RISK LEVELS OF H2S ARE IMMINENT.
- 4. **HIGH RISK / EMERGENCY EQUIPMENT**
(PAGES 6-7) THIS SECTION OUTLINES THE USE OF EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OR WORKOVER OF THIS WELL.
- 5. **EMERGENCY TELEPHONE NUMBERS**
(PAGES 8-9) ALL PARTIES TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
- 6. **SAFETY BRIEFING**
(PAGE 9) THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
- 7. **EVACUATION / PUBLIC SAFETY**
(PAGES 9-10) THIS SECTION DEALS WITH THE EVACUATION OF PERSONNEL AND PUBLIC SAFETY IN THE EVENT OF AN EMERGENCY.

APPENDICES

- A. **TRAINING REQUIREMENTS AND FIRST AIDE**
(PAGE 11-12) ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN H2S SAFETY PROCEDURES. FIRST AIDE FOR H2S.
- B. **CHECK LISTS**
(PAGES 13-15) A STATUS CHECK LIST, PROCEDURAL CHECK LIST AND SITE SPECIFIC PLAN CHECK LIST HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
- C. **EFFECTS, LEVELS, RADIUS OF EXPOSURE, THRESHOLDS**
(PAGES 16-19) A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION INCLUDING EFFECTS OF H2S, LEVELS AND RADIUS OF EXPOSURE & REGULATORY THRESHOLDS.
- D. **INCIDENT RESPONSE PROTOCOL**
(PAGE 20) **IN THE EVENT OF AN ACTUAL EMERGENCY INCIDENT, THIS STEP-BY-STEP PROCEDURE CAN BE TURNED TO QUICKLY AT THE BACK OF THE DOCUMENT.**

I. PERSONNEL RESPONSIBILITY

COMPANY FOREMAN / SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THIS PLAN.

H₂S Contingency Plan (continued)

DESIGNATED
PERSONNEL

SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY. **(INCIDENT COMMANDER)**

SHALL DESIGNATE A BACK-UP.

ALL PERSONNEL

1. ON ALARM, DON ESCAPE UNIT AND REPORT IN UP WIND BRIEFING AREA.
2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).
3. SECURE BREATHING EQUIPMENT.
4. AWAIT ORDERS FROM SUPERVISOR.

DRILLING FOREMAN /
RIG OPERATOR

1. REPORT TO UP WIND BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H₂S CONCENTRATIONS.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

TOOL PUSHER

1. REPORT TO UP WIND SAFETY BRIEFING AREA.
2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).
3. DETERMINE H₂S CONCENTRATION.
4. ASSESS SITUATION AND TAKE CONTROL MEASURES.

DRILLER

1. DON ESCAPE UNIT.
2. CHECK MONITOR FOR POINT OF RELEASE.
3. REPORT TO BRIEFING AREA.
4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE, USE THE BUDDY SYSTEM).
5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.
6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT.

DERRICK MAN
FLOOR MAN #1
FLOOR MAN #2
VISITORS

REPORT TO AND REMAIN IN SAFETY BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR.

MUD ENGINEER

1. REPORT TO BRIEFING AREA.
2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H₂S LEVEL.

SAFETY PERSONNEL

MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA.

H₂S Contingency Plan (continued)**2. NORMAL / LOW H₂S CONDITION**

CONDITIONS ARE CONSIDERED NORMAL WHEN THERE ARE REASONABLE EXPECTATIONS THAT NONE OR LOW CONCENTRATIONS OF H₂S WILL BE ENCOUNTERED DURING ALL PHASES OF THE CURRENT OPERATIONS. (SEE APPENDIX 'C', THRESHOLDS, PRGPH.3)

1. LOW H₂S - LEVELS ARE KNOWN TO CONSISTENTLY BE AT OR **BELOW 10 PPM**.
2. NORMAL CONDIDTION EXPECTATIONS ARE BASED ON HISTORICAL EVIDENCE OF THE AREA, GEOLOGIC FORMATIONS AND TYPE OF OPERATIONS WITH REGARD TO FLUIDS BEING UTILIZED FOR DRILLING AND/OR WORKOVER TASKS.
3. OPERATING IN A NORMAL CONDITION DOES NOT RELIEVE ANY PERSONNEL OF THEIR RESPONSIBILITY, NOR SHOULD IT LESSEN THEIR ATTENTION TO KNOWING THE SAFETY PROCEDURES THAT WILL IMMEDIATELY BE IMPLEMENTED UPON ANY EVIDENCE OF CHANGING H₂S LEVELS.
4. ALL PERSONNEL WORKING ON SITE WILL DON PERSONAL H₂S DETECTORS.
5. A WINDSOCK OR OTHER WIND DIRECTION INDICATOR WILL BE ON LOCATION AND EASILY VISIBLE FROM ALL AREAS.
6. ALL PERSONNEL WILL HAVE A CURRENT H₂S TRAINING CARD.
7. ALL PERSONNEL WILL HAVE VIEWED THIS H₂S CONTINGENCY PLAN.

3. EMERGENCY RESPONSE PROCEDURES (SEE ALSO APPENDIX 'D')

NOTICE: FOR ALL SITES AND OPERATIONS WHERE REASONABLE EXPECTATIONS ARE THAT H₂S LEVELS MAY BE **ABOVE 100 PPM**, ALL SERVICE COMPANY PERSONNEL HAVE READ THIS H₂S CONTINGENCY PLAN AND WILL VERBALLY INDICATE STRICT ADHERENCE TO WITH ALL PROCEDURES ESPECIALLY WITH REGARD TO THEIR JOB TITLE AND DUTIES ON THIS LOCATION.

IMMEDIATE PROCEDURES

A. IN THE EVENT OF ANY EVIDENCE OF H₂S LEVEL **ABOVE 100 PPM**. (OR IS APPROACHING 100 PPM) TAKE THE FOLLOWING STEPS:

1. SECURE BREATHING EQUIPMENT.
2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.
3. TAKE STEPS TO DETERMINE IF THE H₂S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.

B. IF UNCONTROLLABLE CONDITIONS OCCUR: (SEE ALSO APPENDIX 'D')

1. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG - PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY

H₂S Contingency Plan (continued)

PUBLIC SAFETY PERSONNEL EMERGENCY RESPONDERS OF THE SITUATION, E.G. STATE POLICE, COUNTY EMERGENCY MANAGEMENT, SHERRIF, MEDICAL IF REQUIRED.

2. REMOVE ALL PERSONNEL TO SAFE BREATHING AREA.
3. NOTIFY PUBLIC SAFETY PERSONNEL TO SAFE BREATHING AREA.
4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.

EMERGENCY ACTIONS

WELL BLOWOUT - IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS - EVACUATE RIG PERSONNEL.
3. IF SOUR GAS - EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY COMPANY FOREMAN / DESIGNATED PERSONNEL.
6. GIVE FIRST AID.

PERSON DOWN LOCATION / FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE - BUDDY SYSTEM ONLY.

AS APPLICABLE FOR TODAY'S CURRENT OPERATIONS / EVENTS

TAKING A KICK

WHEN TAKING A KICK DURING AN H₂S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

OPEN-HOLE LOGGING

ALL UNNECESSARY PERSONNEL OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION, ADVISE STATUS AND DETERMINE NEED FOR USE OF AID EQUIPMENT.

RUNNING CASING OR PLUGGING

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

H₂S Contingency Plan (continued)

WELL OUT OF CONTROL

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:

- I. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE OF CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

**NOTIFY EMERGENCY AUTHORITIES IF TIME PERMITS,
BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.**

INITIATE EVACUATION PLAN.

IGNITION PROCEDURES

INSTRUCTIONS FOR IGNITING THE WELL

- I. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING APPARATUS (SCBA) UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 25 MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE.
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

**REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE
WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC.
DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.**

H₂S Contingency Plan (continued)

4. HIGH RISK / EMERGENCY EQUIPMENT REQUIREMENTS

A. SIGNS (ANSI STANDARD ZS3S.1-2002; SAFETY COLOR CODE)

1. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

**(LEASE) CAUTION - POTENTIAL POISON GAS HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION**

B. WINDSOCK- WIND STREAMERS

1. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
2. ONE 36" (IN LENGTH) WINDSOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

C. HYDROGEN SULFIDE DETECTOR AND ALARMS

1. H₂S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. **THESE MONITORS WILL BE SET TO ALARM AT 15 PPM WITH RED LIGHT, AND TO ALARM AT 20 PPM WITH RED LIGHT AND AUDIBLE ALARM.**
2. HAND OPERATED DETECTORS WITH TUBES.
3. H₂S MONITOR TESTER.

D. CONDITION FLAGS

1. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS:

**GREEN - NORMAL CONDITIONS (POTENTIAL)
YELLOW - POTENTIAL DANGER (MODERATE)
RED - DANGER, H₂S PRESENT (EXTREME)**

2. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

E. AUXILIARY RESCUE EQUIPMENT

1. STRETCHER
2. 100' LENGTH OF 5/8" NYLON ROPE.

F. MUD INSPECTION DEVICES - GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

G. FIRE EXTINGUISHER - ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

H. BLOW OUT PREVENTION EQUIPMENT - THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BOTTOM HOLE PRESSURE. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

H₂S Contingency Plan (continued)

I. COMBUSTIBLE GAS DETECTOR - THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

J. BOP TESTING - BOP AND CHOKE LINE AND KILL LINE WILL BE TESTED.

K. AUDIO SYSTEM - RADIO COMMUNICATION WILL BE AVAILABLE AT THE **RIG, RIG FLOOR OR TRAILER AND VEHICLES.**

L. SPECIAL CONTROL EQUIPMENT - MAKE SURE OF HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND AND ROTATING HEAD.

5. EMERGENCY TELEPHONE NUMBERS

<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤ <u>SOLARIS WATER MIDSTREAM EMERGENCY</u>	
1) Jason Pyle HSE Manager	CELL: 512-750-2723
2) Stephen Martinez SR. VP- Operations and Engineering	CELL: 432) 556-0262
3) Mike Titsworth Senior Operations Manager	CELL: 432-703-8052
➤ <u>STATE POLICE</u>	
EDDY COUNTY	575-748-9718
LEA COUNTY	575-392-5588
➤ <u>SHERIFF</u>	
EDDY COUNTY	575-887-1888
Substation - ARTESIA: 575-748-2323	
LEA COUNTY	575-396-3611
Substations - EUNICE: 575-394-2020; HOBBS: 575-393-2515; JAL: 575-394-2121	
➤ <u>EMERGENCY MEDICAL</u>	
EDDY COUNTY	911 OR 575-746-2701
LEA COUNTY	911 OR 575-394-3258
AIRLIFT - AeroCare (Lubbock): 800-823-1991; AirMed (El Paso): 800-527-2767	
➤ <u>EMERGENCY RESPONSE</u>	
EDDY COUNTY	575-616-7155
LEA COUNTY	575-391-2961

H2S Contingency Plan (continued)

	<u>CONTACT PARTY</u>	<u>OFFICE</u>
➤	<u>FIRE DEPARTMENTS</u>	
	ARTESIA	575-746-5051
	CARLSBAD	575-885-3125
	HOBBS	575-397-9308
	EUNICE	575-394-3258
	JAL	575-395-2221
☒	<u>POLICE DEPARTMENTS</u>	
	ARTESIA	575-746-5000
	CARLSBAD	575-885-2111
	HOBBS	575-397-9265
	EUNICE	575-394-2112
	JAL	575-395-2501
➤	<u>TOTAL SAFETY</u>	
	EDDY & LEA COUNTIES	575-392-2973
➤	<u>AMERICAN SAFETY SERVICES</u>	
	EDDY & LEA COUNTIES	575-746-1096
➤	<u>WILD WELL CONTROL</u>	
	MIDLAND, TX	281-784-4700
☒	<u>NM OIL CONSERVATION DIVISION</u>	
	ARTESIA DIST.2 (EDDY) 575-748-1283	HOBBS DIST.1 (LEA) 575-393-6161

6. SAFETY BRIEFING

SERVICE COMPANY AND VISITING PERSONNEL

A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H2S.

B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.

C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A SAFETY BRIEFING.

7. EVACUATION PLAN

GENERAL REQUIREMENTS

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

H₂S Contingency Plan (continued)

I. DESIGNATED AREA

A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PRE-DETERMINED AND SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.

B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.

C. IF A MOVABLE H₂S SAFETY TRAILER IS USED, IT SHOULD BE KEPT UPWIND OF EXISTING OR PREVAILING WIND DIRECTION. WHEN WIND IS FROM THE PREVAILING DIRECTION, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

2. EVACUATION IMPLEMENTATION AND PUBLIC SAFETY

TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:
(NOTE: REFER ALSO TO APPENDIX 'C', POTENTIALLY HAZARDOUS VOLUMES.)

1. WHEN THE COMPANY APPROVED SUPERVISOR (DESIGNATED PERSONNEL, I.E., DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H₂S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.

2. COMPANY FOREMAN OR DESIGNATED PERSONNEL WILL NOTIFY LOCAL GOVERNMENT AGENCIES AND STATE POLICE THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.

3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H₂S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H₂S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.

4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, LOCAL POLICE , FIRE DEPARTMENT AND SHERIFF) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON (OR ON SITE) AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

H₂S Contingency Plan (continued)

APPENDIX 'A'

TRAINING REQUIREMENTS

WHEN WORKING IN AN AREA WHERE **ANY LEVEL** OF HYDROGEN SULFIDE GAS (H₂S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H₂S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H₂S DETECTION.
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H₂S ON METALS.
9. LOCATION SAFETY.

IT IS THE RESPONSIBILITY OF EVERY CONTRACTOR EMPLOYED BY SOLARIS WATER MIDSTREAM OPERATING, LLC TO HAVE ALL THEIR EMPLOYEES CERTIFIED IN H₂S SAFETY.

ALL PERSONNEL ON A SOLARIS WATER MIDSTREAM, LLC SITE WILL BE REQUIRED TO HAVE ON THEIR PERSON AN H₂S TRAINING CERTIFICATE CARD THAT IS VALID FOR THE CURRENT DATE.

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H₂S Contingency Plan (continued)

APPENDIX 'A' (continued)

FIRST AID FOR H₂S POISONING

DO NOT PANIC - REMAIN CALM - THINK!

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST - JUST STOP BREATHING.)
2. PUT ON BREATHING APPARATUS.
3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND - NOT DOWNWIND.)
4. YELL (!) "**SOMEONE CALL 911**". **YELL!!**
5. BRIEFLY APPLY CHEST PRESSURE - ARM LIFT METHOD OF ARTIFICIAL RESPIRATION TO CLEAN THE VICTIM'S LUNGS AND TO AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.
6. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
7. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H₂S GAS POISONING - NO MATTER HOW REMOTE THE POSSIBILITY IS.
8. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H₂S GAS.

BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH H₂S AND S₂O GAS OR SULFURIC ACID.

EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.

H₂S Contingency Plan (continued)

APPENDIX 'B'

STATUS CHECK LIST

APPLICABLE TO ALL OPERATIONS WHEN LEVELS ARE EXPECTED THAT APPROACH OR ARE ABOVE 100 PPM H₂S.

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

- I. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WINDSOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS.
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SETUP.
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H₂S DETECTION SYSTEM HOOKED UP.
10. H₂S ALARM SYSTEM HOOKED UP AND READY.
- II. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. I - 100' LENGTH OF 5/8" NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H₂S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H₂S DETECTOR WITH TUBES ON LOCATION AND CHECKED BY DATE IS WITHIN CURRENT TIME FRAME.

H₂S Contingency Plan (continued)

APPENDIX 'B' (continued)

PROCEDURAL CHECK LIST

PERFORM DURING EACH TOUR:

- I. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.
2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH.
3. MAKE SURE ALL THE H₂S DETECTION SYSTEM IS OPERATIVE. PERFORM EACH WEEK:
4. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE, YOU RECEIVE AIR.
5. BLOW OUT PREVENTER SKILLS ARE APPROPRIATELY COVERED BY CREW.
6. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.
7. CHECK ALL SCBA UNITS FOR OPERATION:

DEMAND REGULATOR

ESCAPE BOTTLE AIR VOLUMES

SUPPLY BOTTLE OF AIR VOLUME

8. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENED AND TURNED BACK, READY TO PUT ON.
9. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.
10. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.
- II. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.
12. CHECK THE FOLLOWING FOR AVAILABILITY:

EMERGENCY TELEPHONE LIST (PAGES 8 & 9)

HAND OPERATED H₂S DETECTORS AND TUBES

H₂S Contingency Plan (continued)**APPENDIX 'B' (continued)****SITE SPECIFIC PLAN CHECK LIST (NEW PLAN)**

IF A WELL, FACILITY OR OPERATION IS REASONABLY EXPECTED TO INVOLVE A POTENTIALLY HAZARDOUS VOLUME OF H₂S WITH CONCENTRATIONS APPROACHING 100 PPM, THE PERSON SHALL DEVELOP A H₂S CONTINGENCY PLAN THAT THE PERSON WILL USE TO ALERT AND PROTECT THE PUBLIC IN ACCORDANCE WITH THE SUBSECTIONS B THROUGH I OF 19.15.11.9 NMAC.

- I. A SITE SPECIFIC PLAN WILL BE DEVELOPED AND SUBMITTED TO THE NMOCD OR OTHER APPLICABLE AGENCIES AND TO THE APPLICABLE COUNTY EMERGENCY COORDINATOR.
2. THIS PLAN AND ALL PARTS INCLUDING APPENDICES SHALL BE THE BASIS OF SUCH SITE SPECIFIC PLAN AND BEYOND THAT, ADDITIONAL REQUIREMENTS INCLUDE:
 - A. **SITE IDENTIFICATION** INCLUDING API NUMBER IF APPLICABLE AND LOCATION INCLUDING LAT / LONG COORDINATES.
 - B. **MAPS AND DRAWINGS** TO DEPICT THE AREA OF EXPOSURE AND PUBLIC AREAS AND PUBLIC ROADS WITHIN AREA OF EXPOSURE. MAPS SHALL INCLUDE POTENTIAL LEVEL 2 (500 PPM) AND LEVEL 3 (100 PPM) AREA OF EXPOSURE RADII BY CALCULATION. (APPENDIX 'C', PG.19.) IF ROADS ARE INVOLVED, ROAD BLOCKS SHOULD BE DESIGNATED ON MAPS. (COORDINATE WITH LAW ENFORCEMENT AGENCIES.)
 - C. **TRAINING AND DRILLS** INCLUDING TRAINING IN THE RESPONSIBILITIES AND DUTIES OF ESSENTIAL PERSONNEL AND PERIODIC ON-SITE OR CLASSROOM DRILLS OR EXERCISES THAT SIMULATE A RELEASE, AND SHALL DESCRIBE HOW THE PERSON WILL DOCUMENT THE TRAINING, DRILLS AND ATTENDANCE.
 - D. **RESIDENT TRAINING.** WHEN APPLICABLE, THE H₂S CONTINGENCY PLAN SHALL ALSO PROVIDE FOR TRAINING OF RESIDENTS AS APPROPRIATE ON THE PROPER PROTECTIVE MEASURES TO BE TAKEN IN THE EVENT OF A RELEASE, AND SHALL PROVIDE FOR BRIEFING OF PUBLIC OFFICIALS ON ISSUES SUCH AS EVACUATION OR SHELTER-IN-PLACE PLANS.
 - E. **COORDINATION WITH STATE EMERGENCY PLANS.** THE H₂S CONTINGENCY PLAN SHALL DESCRIBE HOW THE PERSON WILL COORDINATE EMERGENCY RESPONSE ACTIONS UNDER THE PLAN WITH THE DIVISION AND THE NEW MEXICO STATE POLICE CONSISTENT WITH THE NEW MEXICO HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN.
 - F. **PLAN ACTIVATION.** THE PERSON SHALL ACTIVATE THE H₂S CONTINGENCY PLAN CONTINGENCY PLAN WHEN A RELEASE CREATES A H₂S CONCENTRATION GREATER THAN THE ACTIVATION LEVEL SET FORTH IN THE H₂S CONTINGENCY PLAN. AT A MINIMUM, THE PERSON SHALL ACTIVATE THE PLAN WHENEVER A RELEASE MAY CREATE A H₂S CONCENTRATION OF MORE THAN 100 PPM IN A PUBLIC AREA, 500 PPM AT A PUBLIC ROAD OR 100 PPM 3000 FEET FROM THE SITE OF RELEASE.

H₂S Contingency Plan (continued)**APPENDIX 'C'****GENERAL INFORMATION****TOXIC EFFECTS OF HYDROGEN SULFIDE**

HYDROGEN SULFIDE IS EXTREMELY TOXIC. THE ACCEPTABLE CEILING CONCENTRATION FOR EIGHT-HOUR EXPOSURE IS 10 PPM, WHICH IS .001% BY VOLUME.

HYDROGEN SULFIDE IS HEAVIER THAN AIR (SPECIFIC GRAVITY - 1.192) AND COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME.

HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE.

TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I.

PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

TABLE I**TOXICITY OF VARIOUS GASES**

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN SULFIDE	H ₂ S	1.19	10 PPM	100 PPM/HR	600 PPM
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
SULFUR DIOXIDE	SO ₂	2.21	2 PPM	N/A	1000 PPM
CHLORINE	CL ₂	2.45	1 PPM	150 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	150 PPM/HR	1000 PPM
CARBON DIOXIDE	CO ₂	1.52	5000 PPM	5%	10%
METHANE	CH ₄	0.55	90,000 PPM	COMBUSTIBLE @ 5% IN AIR	N/A

(1) THRESHOLD LIMIT - CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.

(2) HAZARDOUS LIMIT - CONCENTRATION THAT MAY CAUSE DEATH WITH PROLONGED EXPOSURE.

(3) LETHAL CONCENTRATION - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****TABLE II****PHYSICAL EFFECTS OF HYDROGEN SULFIDE**

CONCENTRATION	PHYSICAL EFFECTS
0.001 or 10 PPM	OBVIOUS AND UNPLEASANT ODOR. SAFE FOR 8 HOURS OF EXPOSURE.
0.002 or 20 PPM	MAY STING EYES AND THROAT. MAY CAUSE FLU-LIKE SYMPTOMS.
0.010 or 100 PPM	KILLS SMELL IN 3 - 15 MINUTES. STINGS EYES AND THROAT. MAY HAVE SOME DIZZINESS AFTER PROLONGED EXPOSURE.
0.050 or 500 PPM	DIZZINESS; BREATHING CEASES IN A FEW MINUTES; NEEDS PROMPT RESUSCITATION. MAY CAUSE LUNG DAMAGE OR DEATH AFTER 4 HOURS EXPOSURE.
0.070 or 700 PPM	UNCONSCIOUS QUICKLY; DEATH WILL RESULT IF NOT RESCUED PROMPTLY.
0.100 or 1000 ppm	UNCONSCIOUS AT ONCE; FOLLOWED BY DEATH WITHIN MINUTES.

SCBA'S SHOULD BE WORN WHEN...

1. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TESTS REVEAL LESS THAN 10 PPM OF H₂S.
2. WHEN BREAKING OUT ANY LINE WHERE H₂S CAN REASONABLY BE EXPECTED.
3. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H₂S EXISTS.
4. WHEN WORKING IN AREAS WHERE OVER 100 PPM H₂S HAS BEEN DETECTED.
5. AT ANY TIME THERE IS A DOUBT AS TO THE H₂S LEVEL IN THE AREA TO BE ENTERED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****POTENTIALLY HAZARDOUS VOLUMES**

THIS IS THE VOLUME OF H₂S GAS OF SUCH CONCENTRATION THAT:

1. THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE INCLUDES A PUBLIC AREA;
2. THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE INCLUDES A PUBLIC ROAD;
3. THE 100-PPM RADIUS OF EXPOSURE EXCEEDS 3000 FEET.

(1) RADIUS OF EXPOSURE MEANS THE RADIUS CONSTRUCTED WITH THE POINT OF ESCAPE AS ITS STARTING POINT AND ITS LENGTH.

(2) PUBLIC AREA IS A BUILDING OR STRUCTURE THAT IS NOT ASSOCIATED WITH THE WELL, FACILITY OR OPERATION FOR WHICH THE RADIUS OF EXPOSURE IS BEING CALCULATED AND THAT IS USED AS A DWELLING, OFFICE, PLACE OF BUSINESS, CHURCH, SCHOOL, HOSPITAL OR GOVERNMENT BUILDING, OR A PORTION OF A PARK, CITY, TOWN, VILLAGE OR DESIGNATED SCHOOL BUS STOP OR OTHER SIMILAR AREA WHERE MEMBERS OF THE PUBLIC MAY REASONABLY BE EXPECTED TO BE PRESENT.

(3) PUBLIC ROAD MEANS A FEDERAL, STATE, MUNICIPAL OR COUNTY ROAD OR HIGHWAY.

RADIUS OF EXPOSURE

THE RADIUS OF EXPOSURE IS CALCULATED USING THE FOLLOWING PASQUILL-GIFFORD DERIVED EQUATION (OR BY OTHER SUCH METHOD) AS FOLLOWS:

A. FOR DETERMINING THE 100-PPM (LEVEL 3) RADIUS OF EXPOSURE:

$$X = [(1.589)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

B. FOR DETERMINING THE 500-PPM (LEVEL 2) RADIUS OF EXPOSURE:

$$X = [(0.4546)(H_2S \text{ CONCENTRATION})(Q)]^{(0.6258)}$$

WHERE "X" IS THE RADIUS OF EXPOSURE IN FEET, THE H₂S CONCENTRATION IS THE DECIMAL EQUIVALENT OF THE MOLE OR VOLUME FRACTION OF H₂S IN THE GASEOUS MIXTURE;

AND "Q" IS THE ESCAPE RATE EXPRESSED IN CUBIC FEET PER DAY (CORRECTED FOR STANDARD CONDITIONS OF 14.73 PSI ABSOLUTE AND 60 DEGREES FAHRENHEIT)

C. FOR A WELL BEING DRILLED, COMPLETED, RECOMPLETED, WORKED OVER OR SERVICED IN AN AREA WHERE INSUFFICIENT DATA EXISTS TO CALCULATE A RADIUS OF EXPOSURE BUT WHERE H₂S COULD REASONABLY BE EXPECTED TO BE PRESENT IN CONCENTRATIONS IN EXCESS OF 100 PPM IN THE GASEOUS MIXTURE, A 100 PPM RADIUS OF EXPOSURE EQUAL TO 3000 FEET IS ASSUMED.

H₂S Contingency Plan (continued)**APPENDIX 'C' (continued)****REGULATORY THRESHOLD****A. DETERMINATION OF H₂S CONCENTRATION**

1. THE H₂S CONCENTRATION IN THE GASEOUS MIXTURE WITHIN WELLS, FACILITIES OR OPERATIONS SHALL BE DETERMINED EITHER BY TESTING, TESTING A REPRESENTATIVE SAMPLE OR USING PROCESS KNOWLEDGE IN LIEU OF TESTING. IF THE PERSON USES A REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE, THE CONCENTRATION DERIVED FROM THE REPRESENTATIVE SAMPLE OR PROCESS KNOWLEDGE SHALL BE REASONABLY REPRESENTATIVE OF THE H₂S CONCENTRATION WITHIN THE WELL OR FACILITY.
2. THE TESTS USED TO MAKE THE DETERMINATION SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE ASTM OR GPA STANDARDS OR BY STANDARDLY ACCEPTED METHOD.
3. IF A CHANGE OR ALTERATION MAY MATERIALLY INCREASE THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION, TESTING SHALL BE CONDUCTED TO MAKE A NEW DETERMINATION.

B. CONCENTRATIONS DETERMINED TO BE BELOW 100 PPM - IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS LESS THAN 100 PPM, NO FURTHER ACTIONS SHALL BE REQUIRED **EXCEPT AS PROVIDED IN THIS H₂S CONTINGENCY PLAN CONCERNING "NORMAL / LOW H₂S CONDITIONS"**.

C. CONCENTRATIONS DETERMINED TO BE ABOVE 100 PPM

1. IF THE H₂S CONCENTRATION IN A GIVEN WELL, FACILITY OR OPERATION IS DETERMINED TO BE 100 PPM OR GREATER, THEN THE RADIUS OF EXPOSURE SHALL BE CALCULATED TO COMPLY WITH APPLICABLE REQUIREMENTS OF STATE AND FEDERAL LAW.
2. IF CALCULATION OF THE RADIUS OF EXPOSURE REVEALS THAT A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS OF THE H₂S CONCENTRATION DETERMINATION AND THE CALCULATION OF THE RADIUS OF EXPOSURE SHALL BE PROVIDED TO NMOCD AND BLM. FOR A WELL, FACILITY OR OPERATION, THE ACCOMPLISH THE DETERMINATIONS, CALCULATIONS AND SUBMISSIONS WILL BE MADE BEFORE OPERATIONS BEGIN.

D. RECALCULATION - OF THE RADIUS OF EXPOSURE SHALL BE PERFORMED IF:

1. THE H₂S CONCENTRATION IN A WELL, FACILITY OR OPERATION INCREASES TO 100 PPM OR GREATER.
2. THE CONCENTRATION OF H₂S INCREASES BY A FACTOR OF 25% IN AN AREA THAT PREVIOUSLY HAD A H₂S CONCENTRATION OF 100 PPM OR GREATER.

IF A POTENTIALLY HAZARDOUS VOLUME IS PRESENT, THE RESULTS SHALL BE PROVIDED TO THE NMOCD AND BLM (IF APPLICABLE) WITHIN 60 DAYS.

This plan was developed exclusively for Solaris Water Midstream, LLC
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H2S Contingency Plan (continued)

APPENDIX 'D'

INCIDENT RESPONSE PROTOCOL

FOLLOW THE PLAN

!!! AN EMERGENCY HAS OCCURRED !!!

- 1. **IMPLEMENT PLAN** - COMPANY FOREMAN OR DESIGNATED PERSON IS IMMEDIATE INCIDENT COMMANDER. (SAFETY CONSULTANT IF ON SITE.)
- 2. **ASSESS SITUATION** - DIRECT ALL PERSONNEL TO REPORT TO SAFETY BREIFING AREA. NOTIFY TO EVACUATE PUBLIC IF APPLICABLE.
- 3. **CONTROL SITUATION IF POSSIBLE** - DON BREATHING AND SAFETY APPARTUS; SHUT DOWN OPERATIONS AND WELL.

BACK-UP DESIGNEE SHOULD: (EMERGENCY NUMBERS PAGES 8 & 9)

- A. REPORT INCIDENT TO COUNTY EMERGENCY RESPONSE & STATE POLICE.
 - B. CALL 911 OR MEDICAL IF NECESSARY. (GIVE FIRST AID, PAGE 12)
 - C. CALL COUNTY SHERIFF, OTHER EMERGENCY AGENCIES.
 - D. CALL SAFETY COMPANY, COMPANY REPS IF NOT ALREADY ON SITE.
 - E. ESTABLISH RADIO COMMUNICATION WITH EMERGENCY RESPONDERS.
- 4. **ATTEMPT RESCUE IF REQUIRED** - QUALIFIED PERSONNEL MUST BE MASKED UP AND BUDDY SYSTEM ONLY. (PER TRAINING AND CERTIFICATION.)
 - 5. **CONTROL OR PARTIAL CONTROL**
 - A. MAKE DECISION TO IGNITE WELL IF REQUIRED. (PAGE 6)
 - B. BRIEF PERSONNEL ASSEMBLY IN SAFETY AREA - GIVE INSTRUCTIONS TO EVACUATE NON-ESSENTIAL PERSONNEL.
 - 6. **BRIEF LAW ENFORCEMENT AND COUNTY EMERGENCY RESPONDERS.**
 - A. STATE POLICE WILL BE IN CONTROL OF INCIDENT BEYOND LOCATION.
 - B. COMPANY PERSONNEL WILL FOLLOW INSTRUCTIONS OF STATE POLICE, LOCAL EMERGENCY PERSONNEL AND COOPERATE WITH ALL PARTIES TO ENSURE SAFE OPERATIONS MOVING FORWARD.
 - C. IF WELL IS OUT OF CONTROL (BLOWOUT), A NEW INCIDENT COMMANDER MAY BE DESIGNATED FOR THE DURATION OF THE EVENT.
 - 7. **INCIDENT IS CONTROLLED** AND SHUT DOWN OR, INCIDENT OPERATIONS WILL CONTINUE UNTIL RESOLVED.
 - 8. **REGULATORY REPORTING & PAPERWORK** IS COMPLETED AS APPLICABLE - DETERMINE CAUSE OF FAILURE, VOLUMES, ETC. EVENT IS TERMINATED.

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

DRILLING PLAN

1. GENERAL WELL INFORMATION

Operator: Solaris Water Midstream, LLC

Well Name: Moonwalk Fed SWD #1

Well Type: Saltwater Disposal

Surface Hole Location:

- Latitude/Longitude: 32.2722574, -103.6720262 (NAD83)
- Legal Location: Section 28 T23S R32E

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS

Formation	Expected Top (TVD) (ft)	Lithology	Mineral Resources (Hydrocarbon / Salt / Water)
Quaternary	0	Alluvium	Useable Water
Rustler	1,249	Anhydrite	None
Salado (Top of Salt)	1,557	Salt	None
Lamar (Base of Salt)	4,880	Limestone, Shale	None
Bell Canyon	4,919	Sandstone	Natural Gas, Oil
Cherry Canyon	5,775	Sandstone	Natural Gas, Oil
Brushy Canyon	7,072	Sandstone	Natural Gas, Oil
Bone Spring Lime	8,692	Limestone, Shale	Natural Gas, Oil
1st Bone Spring Sand	9,855	Sandstone	Natural Gas, Oil
2nd Bone Spring Carb	10,142	Limestone, Shale	Natural Gas, Oil
2nd Bone Spring Sand	10,486	Sandstone	Natural Gas, Oil
3rd Bone Spring Carb	11,020	Limestone, Shale	Natural Gas, Oil
3rd Bone Spring Sand	11,770	Sandstone	Natural Gas, Oil
Wolfcamp A	12,098	Shale	Natural Gas, Oil
Wolfcamp B	12,760	Shale	Natural Gas, Oil
Wolfcamp C	13,173	Shale	Natural Gas, Oil
Wolfcamp D	13,650	Shale	Natural Gas, Oil
Strawn	14,180	Limestone	Natural Gas, Oil
Morrow	14,555	Shale, Limestone	Natural Gas, Oil
Barnett	16,405	Shale	Natural Gas, Oil
Mississippian	16,855	Limestone	Natural Gas, Oil
Woodford	17,175	Shale	Natural Gas, Oil
Devonian	17,680	Limestone, Dolomite, Chert	None
Total Depth	18,830		
Montoya	19,030	Dolomite, Limestone	None

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

3. PRESSURE CONTROL

3.1 Equipment

A 10,000 psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below surface casing to TD. See **Appendix A** for Diagrams of a Representative BOP and BOP/Manifold Closed Loop System Equipment Schematic.

Pipe Rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per Title 43 CFR 3172.

A conventional wellhead assembly will be used.

3.2 Testing Procedure

BOP will be inspected and operated as required in Title 43 CFR 3172. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position.

A third-party company will test the BOPs.

A full BOP test will be performed whenever any seal subject to test pressure is broken. For each test, the BOP will be tested with a test plug at a low pressure of 250 psi for a minimum of 10 minutes. This test shall be performed prior to testing the BOP at full stack pressure of 5,000 psi for the 5M annual preventer and 10,000 psi for the 10M ram stack.

3.3 Variances

Solaris is requesting the following variances:

- Variance to drill this well using a co-flex line between the BOP and choke manifold. Certification of compliance with API 16C and spec sheet for proposed co-flex hose is included as **Appendix B**. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.
- Variance to drill this well using a 5M annular preventer with a 10M BOP ram stack. The “Well Control Plan” for 10M MASP Section of Wellbore is attached as **Appendix C**.

4. CASING PROGRAM

The proposed casing program is described below. All casing will be new.

Casing String	Hole Size (in)	Casing							Depth (Top – Bottom)		
		O.D. (in)	I.D. (in)	Wt. (lb/ft)	Grade	Conn.	API?	Clearance (in)		TVD (ft)	MD (ft)
								Casing-Casing	Casing - Wellbore		
Surface	26	20	19.0	106.5	J-55	BTC	Yes	N/A	2.50	0 - 1,274	0 - 1,274
1 st Int.	17.5	13.375	12.415	68	L-80	BTC	Yes	2.3125	1.5625	0 - 4,919	0 - 4,919
2 nd Int.	12.25	9.625	8.755	43.5	P-110	BTC	Yes	0.895	0.8125	0 – 12,200	0 – 12,200
Liner	8.75	7.625	6.625	39	P-110	FJ	No	0.565	0.5625	12,000 – 17,680	12,000 – 17,680

Notes:

- Per 43 CFR 3172.7(a)(4), each casing string will have at least 0.422” clearance on all sides between the outside of the casing and the wellbore wall and/or next casing string. (See **Appendix D** for Casing Clearance Detail).
- Per 43 CFR 3172.7(a)(4), each string of casing will be cemented to surface, with the exception of the Liner. Cement specifications, including top of cement (TOC) for each casing string are detailed in Section 5 below.
- All casing strings will be tested in accordance with Title 43 CFR 3172.7(b)(8).
- Rustler formation top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed to ensure surface casing is set 25 ft below the top of the Rustler formation.
- Casing/Coupling Specification Sheets for non-API casing are included as **Appendix E**.

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

5. CEMENTING PROGRAM

The proposed cementing program is described below.

Casing String	Type	Sacks	Yield (ft ³ /sk)	Weight (lb/gal)	Excess (%)	Top of Cement (ft)	Cement Class and Slurry Description
Surface	Lead	1,756	1.72	13.5	100	0	Class C: +Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
	Tail	560	1.33	14.8	50	990	Class C: +C-45, CaCl
1 st Intermediate	Lead	2,922	2.13	12.7	100	0	Class C: 65:10:25 Class C Premium: Compass Poz-Mix: CPO-18; Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
	Tail	856	1.2	14.8	50	3,933	Class C: 50:50 Class C Premium: Compass Poz-Mix; Salt, C-51, STE, C-23
2 nd Intermediate	Lead	1,766	3.66	10.6	75	0	Class C: 100% HSLD 9420 Cement; Salt, C-45 Econolite, Citric Acid, CSA-1000-Fluid Loss Additive, C-49 Expanding Gas Flow Control
	Tail	268	1.32	15	50	11,447	Class H - 100% Class H Premium Cement; STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
Liner	Lead	1,091	1.3	15.6	40	12,000	Class C - STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand
	Tail	N/A	N/A	N/A	N/A	N/A	N/A

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM

An electronic Pason mud monitoring system complying with Title 43 CFR 3172 will be used. All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

A description of the mud characteristics at their associated drilling depths is included in the table below:

Interval MD (ft)	Mud Type	Density (lb/gal)	Viscosity	Fluid Loss
0 – 1,274	Spud Mud with Native Water	8.4 – 9.2	28-30	NC
1,274 – 4,919	Brine Emulsion	9.5 - 10	28-30	NC
4,919 – 12,200	Brine Emulsion	9 – 10	28-30	NC
12,200 – 17,680	Oil-Based Mud	12.5 – 13.5	50-65	<20
17,680 – 18,830	Water-Based Mud	8.4 – 8.8	29	NC

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7. Cores, Tests, & Logs

Mud logging unit (2 Man) below 20" casing (surface) to TD of the injection section. Will record drilling parameters (including rate), cuttings lithology, mud gas, and hydrocarbon shows.

A triple combo (gamma, resistivity/induction, density, compensated neutron, caliper) will be run over the injection section to confirm that hydrocarbons cannot be produced in economic quantities.

Through casing GR/Neutron or MWD GR will provide final as drilled tops above the injection zone. A CBL will be run over the cased-hole sections of the well to ensure injection zone isolation.

No core or drill stem testing is planned.

A Mechanical Integrity Test (MIT) will be performed annually.

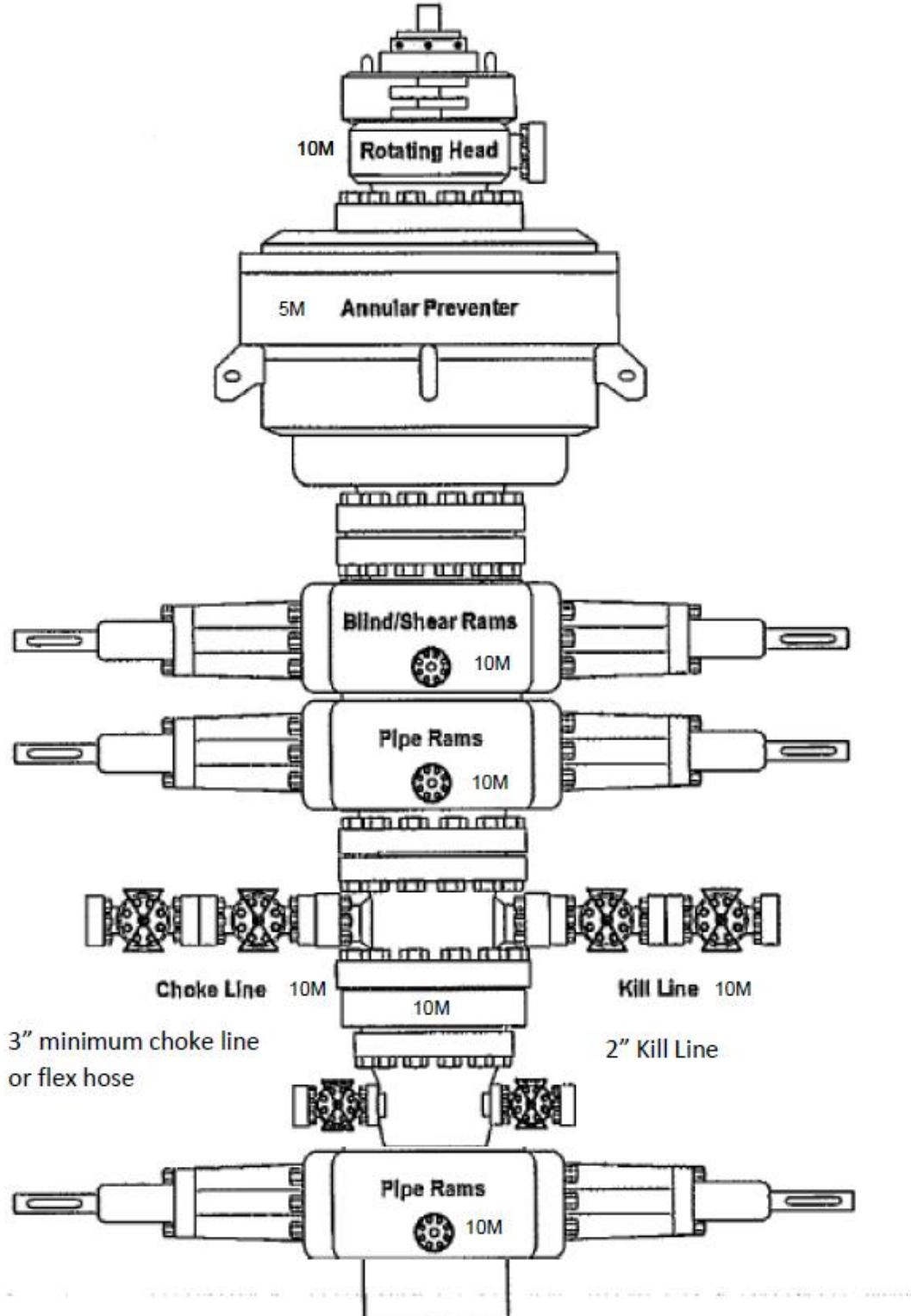
8. QUESTIONNAIRE

Casing	Y/N
Is casing new? If used, attach certification as required in 43 CFR 3171.	Y
Is casing API approved? If no, attach casing specification sheet. (see Appendix E)	N
Is premium or uncommon casing planned? If yes attach casing specification sheet. (see Appendix E)	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Capitan Reef / KPLA R-111-P Area / Secretary Potash Area	Y/N
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N/A
Is well within the designated 4-string boundary?	N
Is well located within the R-111-P boundaries?	N
If yes, are the first three strings cemented to surface?	N/A
Is the 2 nd string set 100' to 600' below the base of salt?	N/A
Is well located within the Secretary Potash Area boundaries?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N/A
Cave and Karst	Y/N
Is well located in High Cave/Karst area?	N
If yes, are there two strings cemented to surface?	N/A
Is well located in critical Cave/Karst area?	N
If yes, are there three strings cemented to surface?	N/A

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

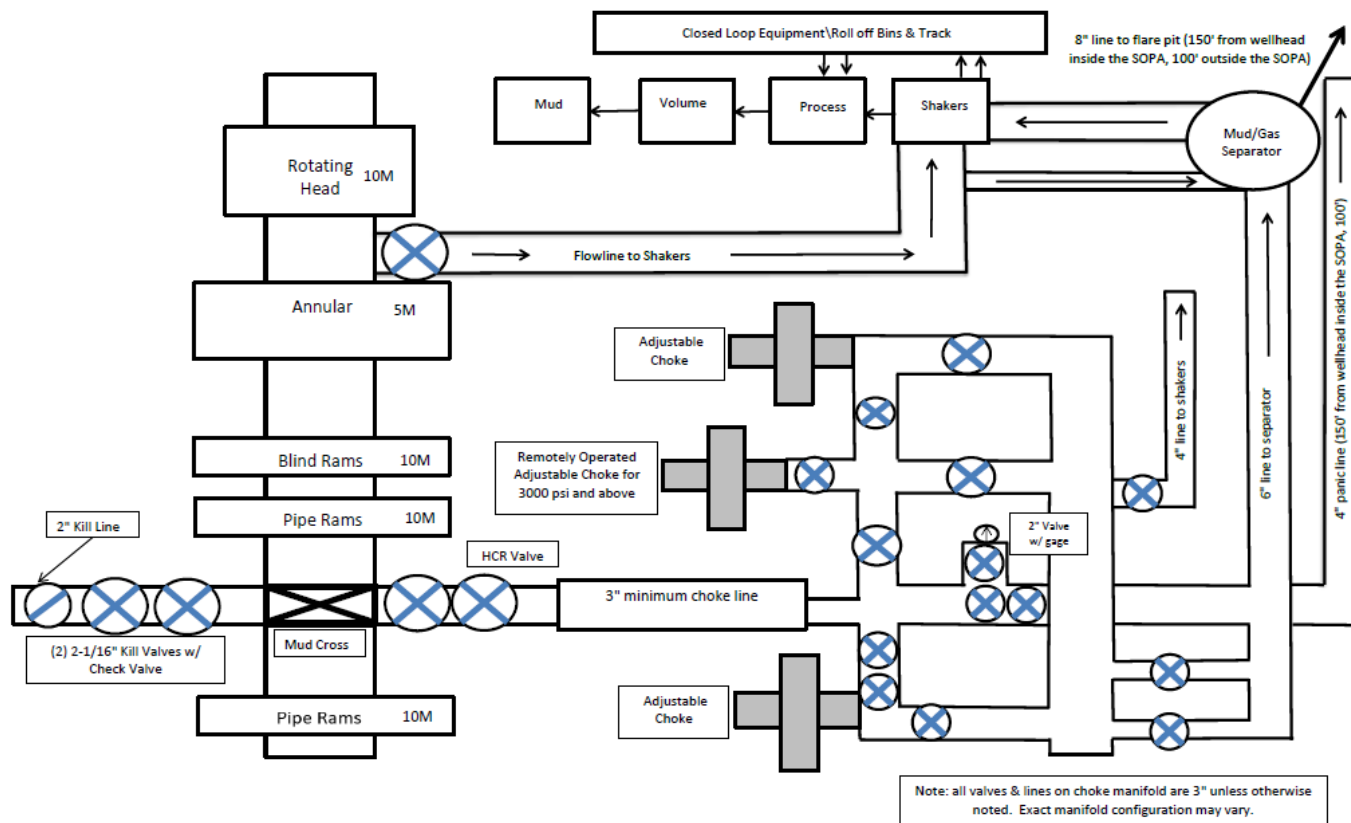
Representative BOP Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

BOP/Manifold & Closed Loop System Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Certification



Certificate of Authority to use the Official API Monogram

License Number: 16C-0383

ORIGINAL

The American Petroleum Institute hereby grants to
COPPER STATE RUBBER, INC.
10485 W. Roosevelt Street
Avondale, AZ
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines at FSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: **APRIL 21, 2022**

Expiration Date: **APRIL 21, 2025**

Senior Vice President of Global Industry Services

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Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

2 ▼ COPPER STATE RUBBER

API 16C Monogrammed Choke & Kill Product Diagram

1 Copper State Rubber Full Flow Choke & Kill Coupling
No protruding parts on coupling available with API Hubs/Flanges, Unions, Grayloc Hubs. Couplings are built-in as an integral part of the hose, reducing flexing fatigue at the end connection, thus making the hose less susceptible to damage if the bend radius is exceeded. All Copper State Rubber hoses are built as a single unit. To maintain our quality control after sale, no Copper State Rubber hoses are coupled outside our plant.

2 Steel Cable
Spirally wound at each end of hose for additional reinforcement at coupling.

3 Abrasive Resistant Fire Retardant Cover
Neoprene-base synthetic compounded to be extra tough to assure greater resistance to oil, cuts, abrasion, weather, and temperature extremes. Guide stripe provided for easy alignment. Also available with ¼ full round stainless steel armor.

4 Secondary Carcass
Gives added strength and safety with one ply of specially woven fabric and layer of protective rubber.

5 4, 6 and 8 Layer Wire Reinforcement
This all-important section assures maximum safety, strength, and flexibility with the use of four, six or eight spirally wound layers of special fatigue resistant, high-tensile steel wires, each embedded in a thick layer of rubber and tough fabric.

6 Primary Carcass
Provides greater flexibility through scientifically constructed multiple plies of premium grade high-tensile fabric impregnated with rubber. Our flexible liner prevents any sudden rupture without warning at the hose ends.

7 Tube
Copolymer suitable for hydrocarbons, resistant to H2S and gas permeation.

Choke & Kill Hose is surge tested at 15,000 PSI in .75 of a second.

--- • CERTIFIED FACTORY TEST REPORTS WITH GRAPH FURNISHED WITH EVERY HOSE • ---
(WE TEST 100% OF OUR HOSES BEFORE SHIPMENT)

copperstaterubber.com / sales@copperstaterubber.com

Solaris Water Midstream, LLC
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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

OIL FIELD PRODUCTS
CHOKER & KILL HOSES / SPECIFICATIONS

Regular Choke & Kill Hose

SPEC 090-1915C

10,000 PSI Working Pressure

Master Choke & Kill Hose

SPEC 090-1910C

5,000 PSI Working Pressure



Hose and coupling are suitable for H2S service. Couplings are Ni-Kanigen plated for salt water resistance.

Application:

- Choke & Kill Suitable for H2S
- Working Temperature -20F to 212F
- Max Length; 200 ft.

Non API16 C Monogrammed 4" 10,000 Working Pressure and 2" Through 3" 15,000PSI Working Pressure Choke & Kill Hoses Available



API 16C Choke & Kill Hose

ID (inches)	OD (inches)	MBR (inches)	Straight Ends (inches)	Working Pressure (PSI)	Test Pressure (PSI)	Hose Body Weight (lbs/ft)		Coupling Weight (lbs)
						Armored	Unarmored	
2	4.3	36	40	5,000	10,000	20	16	65
	4.5	36	42	10,000	15,000	22	16	104
2 ½	5.0	36	42	10,000	15,000	36	28	100
3	5.7	36	40	5,000	10,000	25	20	81
	6.3	36	42	10,000	15,000	35	31	110

Choke & Kill Hose
 API 16C LICENSED, CERTIFICATE No API-0383 FSL3

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Solaris Water Midstream, LLC
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APPENDIX C: WELL CONTROL PLAN

1. INTRODUCTION

Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, while pipe is not in the hole and moving the BHA through the BOP's. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the Permian Oilfield Partners drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore Oil & Gas Order No. 2 with the exception of the 5M annular which will be tested to 100% of its RWP. *Note: HCR valve and choke manifold will remain close during all normal operations. Manipulation of such equipment will occur as part of the general well control procedures.

2. GENERAL WELL CONTROL PROCEDURE WHILE DRILLING

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

3. GENERAL PROCEDURE WHILE TRIPPING

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

4. GENERAL PROCEDURE WHILE RUNNING PRODUCTION CASING

Solaris Water Midstream, LLC
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Drilling Plan

APPENDIX C: WELL CONTROL PLAN

1. Sound alarm (alert crew)
 2. Stab crossover and full-opening safety valve and close
 3. Space out string
 4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
 5. Confirm shut-in
 6. Notify toolpusher/company representative
 7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
 8. Regroup and identify forward plan
 9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.
- 5. GENERAL PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)**
1. Sound alarm (alert crew)
 2. Shut-in with blind rams (HCR & choke will already be in the closed position)
 3. Confirm shut-in
 4. Notify toolpusher/company representative
 5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
 6. Regroup and identify forward plan
- 6. GENERAL PROCEDURES WHILE PULLING BHA THROUGH STACK**
1. PRIOR to pulling last joint of drillpipe through stack:
 - a. Perform flow check. If flowing, continue to (b).
 - b. Sound alarm (alert crew)
 - c. Stab full-opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper variable bore rams
 - e. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
 2. With BHA in the stack and compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full-opening safety valve and close
 - c. Space out drill string with upset just beneath the upper variable bore rams
 - d. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)

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Moonwalk Fed SWD #1
Drilling Plan

APPENDIX C: WELL CONTROL PLAN

- e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combination immediately available:
- a. Sound alarm (alert crew)
 - b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
 - c. If impossible to pull string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe and full-opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper variable bore ram
 - f. Shut-in using upper variable bore ram (HCR & choke will already be in the closed position)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX D: CASING CLEARANCE DETAIL

Casing String	Moonwalk SWD #1									
	Hole	Casing				Collar		Clearance (in)		API
		Size		Weight (lb/ft)	Grade	Type	Size OD (in)	Casing-Casing	Casing-Wellbore	
		OD (in)	ID (in)							
Surface	26	20	19	106.5#	J-55	BTC	21	N/A	2.50	Yes
1st Intermediate	17.5	13.375	12.415	68#	L-80	BTC	14.375	2.3125	1.5625	Yes
2nd Intermediate	12.25	9.625	8.755	43.5#	P-110	BTC	10.625	0.895	0.8125	Yes
Liner	8.75	7.625	6.625	39#	P-110	FJ	7.625	0.565	0.5625	No

Clearance Calculations:


Casing-Casing: $(\text{Outer Casing I.D.} - \text{Inner Casing Collar O.D.}) / 2$

Wellbore - Casing: $(\text{Hole Size} - \text{Casing Collar O.D.}) / 2$

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
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APPENDIX E: CASING - COUPLING SPECIFICATION


7.625 39# P-110 FJ



U. S. Steel Tubular Products

7.625" 39.00lb/ft (0.500" Wall) P110 HC USS-LIBERTY FJM®

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MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM®	--
Minimum Yield Strength	110,000	--	psi
Maximum Yield Strength	140,000	--	psi
Minimum Tensile Strength	125,000	--	psi

DIMENSIONS	Pipe	USS-LIBERTY FJM®	--
Outside Diameter	7.625	7.625	in.
Wall Thickness	0.500	--	in.
Inside Diameter	6.625	6.539	in.
Standard Drift	6.500	6.500	in.
Alternate Drift	--	--	in.
Nominal Linear Weight, T&C	39.00	--	lb/ft
Plain End Weight	38.08	--	lb/ft

SECTION AREA	Pipe	USS-LIBERTY FJM®	--
Critical Area	11.192	6.665	sq. in.
Joint Efficiency	--	59.5	%

PERFORMANCE	Pipe	USS-LIBERTY FJM®	--
Minimum Collapse Pressure	12,180	12,180	psi
Minimum Internal Yield Pressure	12,640	12,640	psi
Minimum Pipe Body Yield Strength	1,231,000	--	lb
Joint Strength	--	733,000	lb
Compression Rating	--	733,000	lb
Reference Length	--	12,843	ft
Maximum Uniaxial Bend Rating	--	39.4	deg/100 ft

MAKE-UP DATA	Pipe	USS-LIBERTY FJM®	--
Make-Up Loss	--	4.75	in.
Minimum Make-Up Torque	--	14,700	ft-lb
Maximum Make-Up Torque	--	20,750	ft-lb

Notes

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4. USS-LIBERTY FJM™ connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
5. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
6. Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
7. Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

Legal Notice

USS-LIBERTY FJM® is a trademark of U. S. Steel Corporation. All material contained in this publication is for general information only. This material should not therefore be used or relied upon for any specific application without independent competent professional examination and verification of accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use. U. S. Steel disclaims any and all expressed or implied warranties of fitness for any general or particular application.

U. S. Steel Tubular Products
 460 Wildwood Forest Drive, Suite 300S
 Spring, Texas 77380

1-877-893-9461
 connections@uss.com
 www.usstubular.com

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

DRILLING PLAN

1. GENERAL WELL INFORMATION

Operator: Solaris Water Midstream, LLC

Well Name: Moonwalk Fed SWD #1

Well Type: Saltwater Disposal

Surface Hole Location:

- Latitude/Longitude: 32.2722574, -103.6720262 (NAD83)
- Legal Location: Section 28 T23S R32E

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS

Formation	Expected Top (TVD) (ft)	Lithology	Mineral Resources (Hydrocarbon / Salt / Water)
Quaternary	0	Alluvium	Useable Water
Rustler	1,249	Anhydrite	None
Salado (Top of Salt)	1,557	Salt	None
Lamar (Base of Salt)	4,880	Limestone, Shale	None
Bell Canyon	4,919	Sandstone	Natural Gas, Oil
Cherry Canyon	5,775	Sandstone	Natural Gas, Oil
Brushy Canyon	7,072	Sandstone	Natural Gas, Oil
Bone Spring Lime	8,692	Limestone, Shale	Natural Gas, Oil
1st Bone Spring Sand	9,855	Sandstone	Natural Gas, Oil
2nd Bone Spring Carb	10,142	Limestone, Shale	Natural Gas, Oil
2nd Bone Spring Sand	10,486	Sandstone	Natural Gas, Oil
3rd Bone Spring Carb	11,020	Limestone, Shale	Natural Gas, Oil
3rd Bone Spring Sand	11,770	Sandstone	Natural Gas, Oil
Wolfcamp A	12,098	Shale	Natural Gas, Oil
Wolfcamp B	12,760	Shale	Natural Gas, Oil
Wolfcamp C	13,173	Shale	Natural Gas, Oil
Wolfcamp D	13,650	Shale	Natural Gas, Oil
Strawn	14,180	Limestone	Natural Gas, Oil
Morrow	14,555	Shale, Limestone	Natural Gas, Oil
Barnett	16,405	Shale	Natural Gas, Oil
Mississippian	16,855	Limestone	Natural Gas, Oil
Woodford	17,175	Shale	Natural Gas, Oil
Devonian	17,680	Limestone, Dolomite, Chert	None
Total Depth	18,830		
Montoya	19,030	Dolomite, Limestone	None

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3. PRESSURE CONTROL

3.1 Equipment

A 10,000 psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and one annular preventer will be utilized below surface casing to TD. See **Appendix A** for Diagrams of a Representative BOP and BOP/Manifold Closed Loop System Equipment Schematic.

Pipe Rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include an upper and lower Kelly cock, floor safety valve (inside BOP), wellhead wear bushing, press gauges, remote choke, choke lines, choke manifold, and all items as per Title 43 CFR 3172.

A conventional wellhead assembly will be used.

3.2 Testing Procedure

BOP will be inspected and operated as required in Title 43 CFR 3172. Kelly cock and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor in the open position.

A third-party company will test the BOPs.

A full BOP test will be performed whenever any seal subject to test pressure is broken. For each test, the BOP will be tested with a test plug at a low pressure of 250 psi for a minimum of 10 minutes. This test shall be performed prior to testing the BOP at full stack pressure of 5,000 psi for the 5M annual preventer and 10,000 psi for the 10M ram stack.

3.3 Variances

Solaris is requesting the following variances:

- Variance to drill this well using a co-flex line between the BOP and choke manifold. Certification of compliance with API 16C and spec sheet for proposed co-flex hose is included as **Appendix B**. The hose is not required by the manufacturer to be anchored. If the specific hose is not available, then one of equal or higher rating will be used.
- Variance to drill this well using a 5M annular preventer with a 10M BOP ram stack. The "Well Control Plan" for 10M MASP Section of Wellbore is attached as **Appendix C**.

4. CASING PROGRAM

The proposed casing program is described below. All casing will be new.

Casing String	Hole Size (in)	Casing							Depth (Top – Bottom)		
		O.D. (in)	I.D. (in)	Wt. (lb/ft)	Grade	Conn.	API?	Clearance (in)		TVD (ft)	MD (ft)
								Casing-Casing	Casing - Wellbore		
Surface	26	20	19.0	106.5	J-55	BTC	Yes	N/A	2.50	0 - 1,274	0 - 1,274
1 st Int.	17.5	13.375	12.415	68	L-80	BTC	Yes	2.3125	1.5625	0 - 4,919	0 - 4,919
2 nd Int.	12.25	9.625	8.755	43.5	P-110	BTC	Yes	0.895	0.8125	0 – 12,200	0 – 12,200
Liner	8.75	7.625	6.625	39	P-110	FJ	No	0.565	0.5625	12,000 – 17,680	12,000 – 17,680

Notes:

- Per 43 CFR 3172.7(a)(4), each casing string will have at least 0.422" clearance on all sides between the outside of the casing and the wellbore wall and/or next casing string. (See **Appendix D** for Casing Clearance Detail).
- Per 43 CFR 3172.7(a)(4), each string of casing will be cemented to surface, with the exception of the Liner. Cement specifications, including top of cement (TOC) for each casing string are detailed in Section 5 below.
- All casing strings will be tested in accordance with Title 43 CFR 3172.7(b)(8).
- Rustler formation top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed to ensure surface casing is set 25 ft below the top of the Rustler formation.
- Casing/Coupling Specification Sheets for non-API casing are included as **Appendix E**.

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

5. CEMENTING PROGRAM

The proposed cementing program is described below.

Casing String	Type	Sacks	Yield (ft ³ /sk)	Weight (lb/gal)	Excess (%)	Top of Cement (ft)	Cement Class and Slurry Description
Surface	Lead	1,756	1.72	13.5	100	0	Class C: +Premium Gel, C-51, Kol Seal, CaCl, Phenoseal
	Tail	560	1.33	14.8	50	990	Class C: +C-45, CaCl
1 st Intermediate	Lead	2,922	2.13	12.7	100	0	Class C: 65:10:25 Class C Premium: Compass Poz-Mix: CPO-18; Premium Gel, Salt, Citric Acid, CSA-1000, Kol Seal, Phenoseal
	Tail	856	1.2	14.8	50	3,933	Class C: 50:50 Class C Premium: Compass Poz-Mix; Salt, C-51, STE, C-23
2 nd Intermediate	Lead	1,766	3.66	10.6	75	0	Class C: 100% HSLD 9420 Cement; Salt, C-45 Econolite, Citric Acid, CSA-1000-Fluid Loss Additive, C-49 Expanding Gas Flow Control
	Tail	268	1.32	15	50	11,447	Class H - 100% Class H Premium Cement; STE, C-45 Econolite, CSA-1000-Fluid Loss Additive, CFL-1, C-49 Expanding Gas Flow Control
Liner	Lead	1,091	1.3	15.6	40	12,000	Class C - STE, CSA-1000, CFL-1, C-23, C-49, C-24, 100 Mesh Sand
	Tail	N/A	N/A	N/A	N/A	N/A	N/A

6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM

An electronic Pason mud monitoring system complying with Title 43 CFR 3172 will be used. All necessary mud products (barite, bentonite, LCM) for weight addition and fluid loss control will be on location at all times. Mud program is subject to change due to hole conditions.

A description of the mud characteristics at their associated drilling depths is included in the table below:

Interval MD (ft)	Mud Type	Density (lb/gal)	Viscosity	Fluid Loss
0 – 1,274	Spud Mud with Native Water	8.4 – 9.2	28-30	NC
1,274 – 4,919	Brine Emulsion	9.5 - 10	28-30	NC
4,919 – 12,200	Brine Emulsion	9 – 10	28-30	NC
12,200 – 17,680	Oil-Based Mud	12.5 – 13.5	50-65	<20
17,680 – 18,830	Water-Based Mud	8.4 – 8.8	29	NC

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7. Cores, Tests, & Logs

Mud logging unit (2 Man) below 20" casing (surface) to TD of the injection section. Will record drilling parameters (including rate), cuttings lithology, mud gas, and hydrocarbon shows.

A triple combo (gamma, resistivity/induction, density, compensated neutron, caliper) will be run over the injection section to confirm that hydrocarbons cannot be produced in economic quantities.

Through casing GR/Neutron or MWD GR will provide final as drilled tops above the injection zone. A CBL will be run over the cased-hole sections of the well to ensure injection zone isolation.

No core or drill stem testing is planned.

A Mechanical Integrity Test (MIT) will be performed annually.

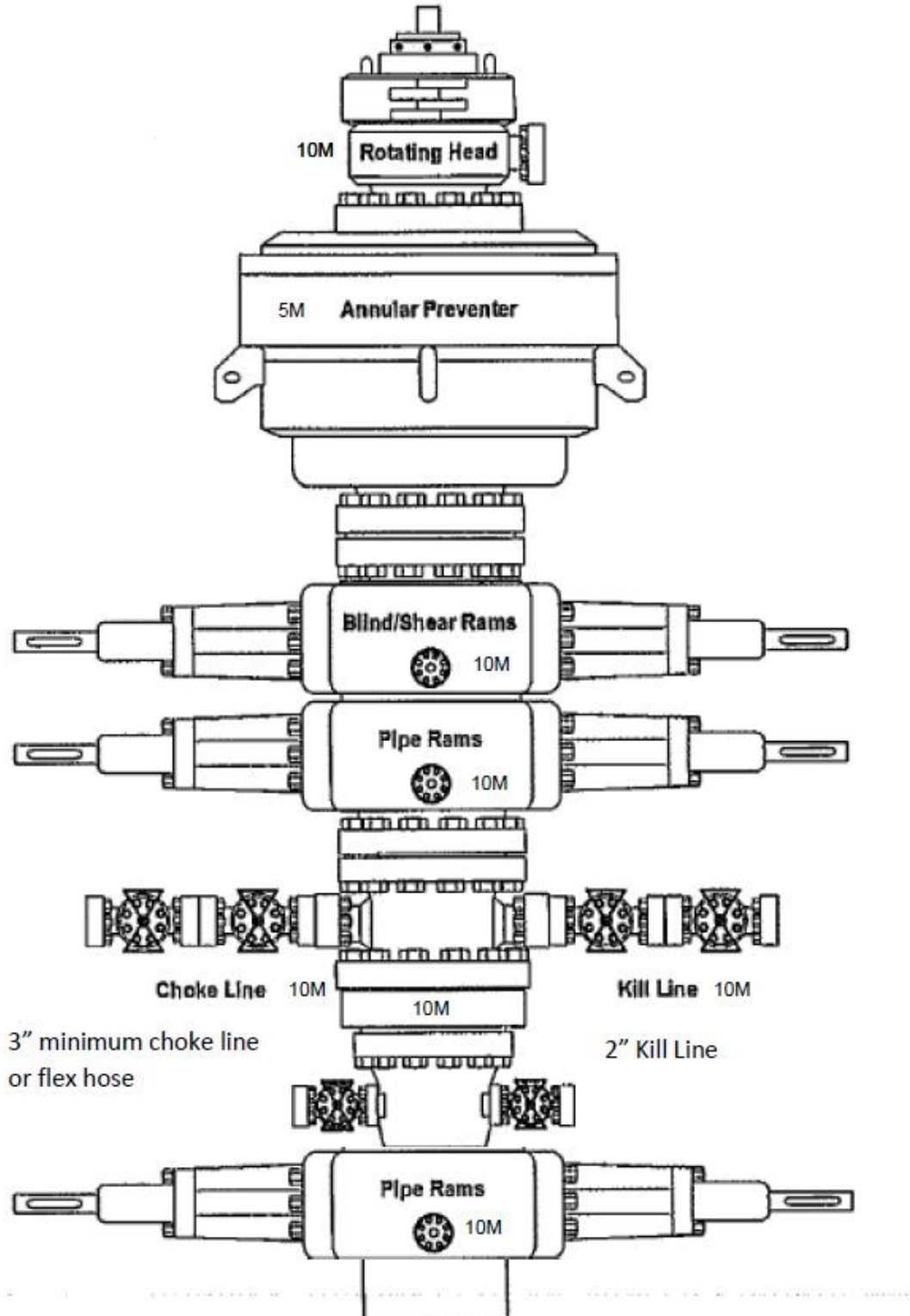
8. QUESTIONNAIRE

Casing	Y/N
Is casing new? If used, attach certification as required in 43 CFR 3171.	Y
Is casing API approved? If no, attach casing specification sheet. (see Appendix E)	N
Is premium or uncommon casing planned? If yes attach casing specification sheet. (see Appendix E)	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Capitan Reef / KPLA R-111-P Area / Secretary Potash Area	Y/N
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N/A
Is well within the designated 4-string boundary?	N
Is well located within the R-111-P boundaries?	N
If yes, are the first three strings cemented to surface?	N/A
Is the 2 nd string set 100' to 600' below the base of salt?	N/A
Is well located within the Secretary Potash Area boundaries?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N/A
Cave and Karst	Y/N
Is well located in High Cave/Karst area?	N
If yes, are there two strings cemented to surface?	N/A
Is well located in critical Cave/Karst area?	N
If yes, are there three strings cemented to surface?	N/A

Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

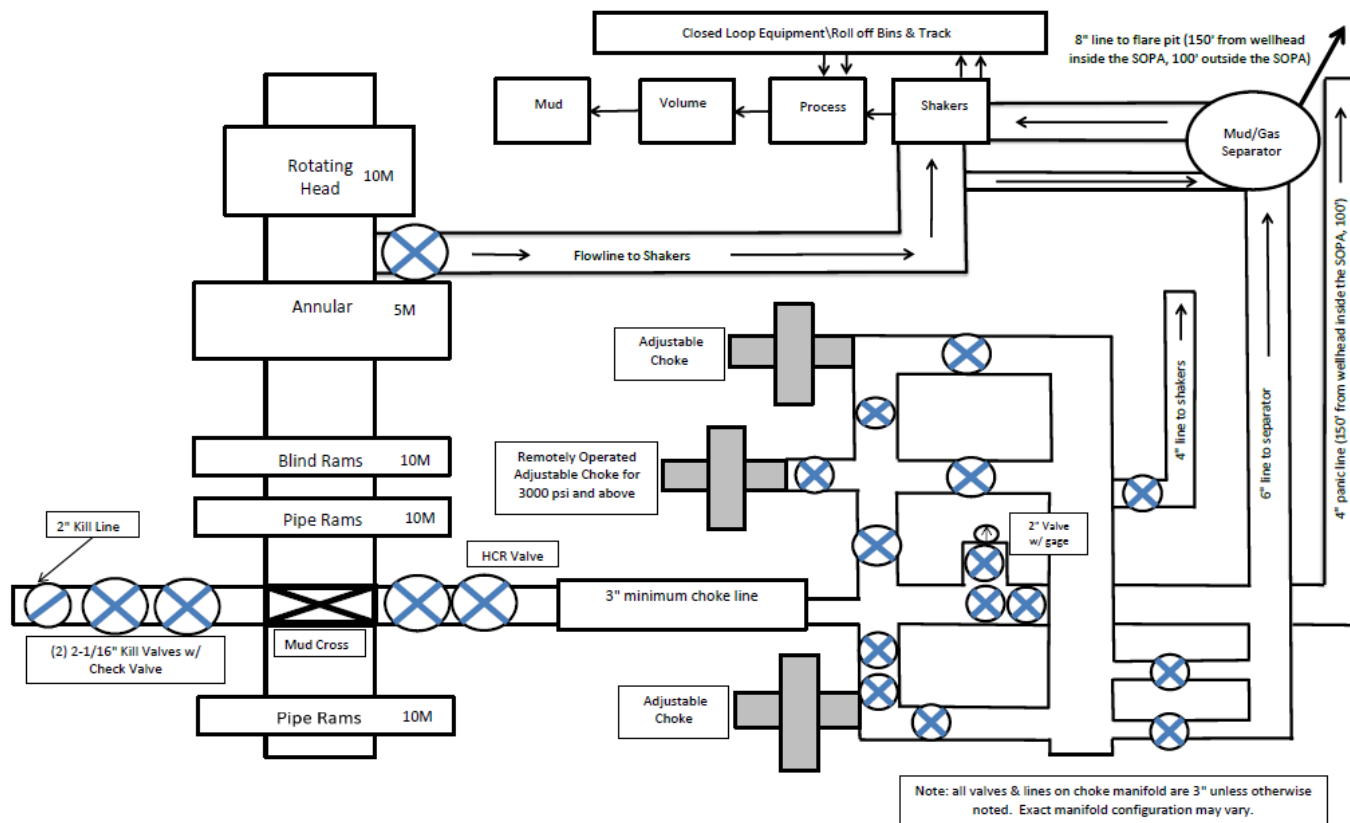
Representative BOP Diagram



Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
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APPENDIX A

BOP/Manifold & Closed Loop System Diagram



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APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Certification



Certificate of Authority to use the Official API Monogram

License Number: 16C-0383

ORIGINAL

The American Petroleum Institute hereby grants to
COPPER STATE RUBBER, INC.
10485 W. Roosevelt Street
Avondale, AZ
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-16C** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **16C-0383**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Flexible Choke and Kill Lines at FSL 0, FSL 1, FSL 2, FSL 3

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: **APRIL 21, 2022**
Expiration Date: **APRIL 21, 2025**

Senior Vice President of Global Industry Services

To verify the authenticity of this license, go to www.api.org/compositelist.


Solaris Water Midstream, LLC
Moonwalk Fed SWD #1
Drilling Plan

APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

2 ▼ COPPER STATE RUBBER

API 16C Monogrammed Choke & Kill Product Diagram



1 2 3 4 5 6 7

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Neoprene-base synthetic compounded to be extra tough to assure greater resistance to oil, cuts, abrasion, weather, and temperature extremes. Guide stripe provided for easy alignment. Also available with ¼ full round stainless steel armor.

4 Secondary Carcass
Gives added strength and safety with one ply of specially woven fabric and layer of protective rubber.

5 4, 6 and 8 Layer Wire Reinforcement
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Choke & Kill Hose is surge tested at 15,000 PSI in .75 of a second.

--- • CERTIFIED FACTORY TEST REPORTS WITH GRAPH FURNISHED WITH EVERY HOSE • ---
(WE TEST 100% OF OUR HOSES BEFORE SHIPMENT)

copperstaterubber.com / sales@copperstaterubber.com

Solaris Water Midstream, LLC
 Moonwalk Fed SWD #1
 Drilling Plan

APPENDIX B: FLEX LINE CERTIFICATION & SPECIFICATIONS

Flex Line Specifications

OIL FIELD PRODUCTS
CHOKER & KILL HOSES / SPECIFICATIONS

Regular Choker & Kill Hose

SPEC 090-1915C

10,000 PSI Working Pressure

Master Choker & Kill Hose

SPEC 090-1910C

5,000 PSI Working Pressure



Hose and coupling are suitable for H2S service. Couplings are Ni-Kanigen plated for salt water resistance.

Application:

- Choker & Kill Suitable for H2S
- Working Temperature -20F to 212F
- Max Length; 200 ft.

Non API16 C Monogrammed 4" 10,000 Working Pressure and 2" Through 3" 15,000PSI Working Pressure Choker & Kill Hoses Available



API 16C Choker & Kill Hose

ID (inches)	OD (inches)	MBR (inches)	Straight Ends (inches)	Working Pressure (PSI)	Test Pressure (PSI)	Hose Body Weight (lbs/ft)		Coupling Weight (lbs)
						Armored	Unarmored	
2	4.3	36	40	5,000	10,000	20	16	65
	4.5	36	42	10,000	15,000	22	16	104
2 1/2	5.0	36	42	10,000	15,000	36	28	100
3	5.7	36	40	5,000	10,000	25	20	81
	6.3	36	42	10,000	15,000	35	31	110

Choker & Kill Hose
 API 16C LICENSED, CERTIFICATE No API-0383 FSL3

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APPENDIX C: WELL CONTROL PLAN

1. INTRODUCTION

Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, while pipe is not in the hole and moving the BHA through the BOP's. At least one well control drill will be performed weekly per crew to demonstrate compliance with the procedure and well control plan. The well control drill will be recorded in the daily drilling log. The type of drill will be determined by the ongoing operations, but reasonable attempts will be made to vary the type of drill conducted (pit, trip, open hole, choke, etc.). This well control plan will be available for review by rig personnel in the Permian Oilfield Partners drilling supervisor's office on location and on the rig floor. All BOP equipment will be tested as per Onshore Oil & Gas Order No. 2 with the exception of the 5M annular which will be tested to 100% of its RWP. *Note: HCR valve and choke manifold will remain close during all normal operations. Manipulation of such equipment will occur as part of the general well control procedures.

2. GENERAL WELL CONTROL PROCEDURE WHILE DRILLING

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

3. GENERAL PROCEDURE WHILE TRIPPING

1. Sound alarm (alert crew)
2. Stab full-opening safety valve & close
3. Space out drill string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

4. GENERAL PROCEDURE WHILE RUNNING PRODUCTION CASING

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APPENDIX C: WELL CONTROL PLAN

1. Sound alarm (alert crew)
2. Stab crossover and full-opening safety valve and close
3. Space out string
4. Shut-in well (uppermost applicable BOP, typically annular preventer, first. HCR & choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP&SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach 70% or greater of the RWP of the annular preventer, confirm spacing and close the upper variable bore rams.

5. GENERAL PROCEDURE WITH NO PIPE IN HOLE (OPEN HOLE)

1. Sound alarm (alert crew)
2. Shut-in with blind rams (HCR & choke will already be in the closed position)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
6. Regroup and identify forward plan

6. GENERAL PROCEDURES WHILE PULLING BHA THROUGH STACK

1. PRIOR to pulling last joint of drillpipe through stack:
 - a. Perform flow check. If flowing, continue to (b).
 - b. Sound alarm (alert crew)
 - c. Stab full-opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper variable bore rams
 - e. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combination immediately available:
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full-opening safety valve and close
 - c. Space out drill string with upset just beneath the upper variable bore rams
 - d. Shut-in using upper variable bore rams (HCR & choke will already be in the closed position)

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APPENDIX C: WELL CONTROL PLAN

- e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combination immediately available:
- a. Sound alarm (alert crew)
 - b. If possible, pull string clear of the stack and follow "Open Hole" procedure.
 - c. If impossible to pull string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe and full-opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper variable bore ram
 - f. Shut-in using upper variable bore ram (HCR & choke will already be in the closed position)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP & SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan

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APPENDIX D: CASING CLEARANCE DETAIL

Casing String	Moonwalk SWD #1									
	Hole	Casing				Collar		Clearance (in)		API
		Size		Weight (lb/ft)	Grade	Type	Size OD (in)	Casing-Casing	Casing-Wellbore	
		OD (in)	ID (in)							
Surface	26	20	19	106.5#	J-55	BTC	21	N/A	2.50	Yes
1st Intermediate	17.5	13.375	12.415	68#	L-80	BTC	14.375	2.3125	1.5625	Yes
2nd Intermediate	12.25	9.625	8.755	43.5#	P-110	BTC	10.625	0.895	0.8125	Yes
Liner	8.75	7.625	6.625	39#	P-110	FJ	7.625	0.565	0.5625	No

Clearance Calculations:


Casing-Casing: $(\text{Outer Casing I.D} - \text{Inner Casing Collar O.D.}) / 2$

Wellbore - Casing: $(\text{Hole Size} - \text{Casing Collar O.D.}) / 2$

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APPENDIX E: CASING - COUPLING SPECIFICATION


7.625 39# P-110 FJ



U. S. Steel Tubular Products

7.625" 39.00lb/ft (0.500" Wall) P110 HC USS-LIBERTY FJM[®]

4/1/2025 1:53:21 PM



MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM [®]	--
Minimum Yield Strength	110,000	--	psi
Maximum Yield Strength	140,000	--	psi
Minimum Tensile Strength	125,000	--	psi
DIMENSIONS	Pipe	USS-LIBERTY FJM [®]	--
Outside Diameter	7.625	7.625	in.
Wall Thickness	0.500	--	in.
Inside Diameter	6.625	6.539	in.
Standard Drift	6.500	6.500	in.
Alternate Drift	--	--	in.
Nominal Linear Weight, T&C	39.00	--	lb/ft
Plain End Weight	38.08	--	lb/ft
SECTION AREA	Pipe	USS-LIBERTY FJM [®]	--
Critical Area	11.192	6.665	sq. in.
Joint Efficiency	--	59.5	%
PERFORMANCE	Pipe	USS-LIBERTY FJM [®]	--
Minimum Collapse Pressure	12,180	12,180	psi
Minimum Internal Yield Pressure	12,640	12,640	psi
Minimum Pipe Body Yield Strength	1,231,000	--	lb
Joint Strength	--	733,000	lb
Compression Rating	--	733,000	lb
Reference Length	--	12,843	ft
Maximum Uniaxial Bend Rating	--	39.4	deg/100 ft
MAKE-UP DATA	Pipe	USS-LIBERTY FJM [®]	--
Make-Up Loss	--	4.75	in.
Minimum Make-Up Torque	--	14,700	ft-lb
Maximum Make-Up Torque	--	20,750	ft-lb

Notes

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4. USS-LIBERTY FJM[™] connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
5. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
6. Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
7. Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

Legal Notice

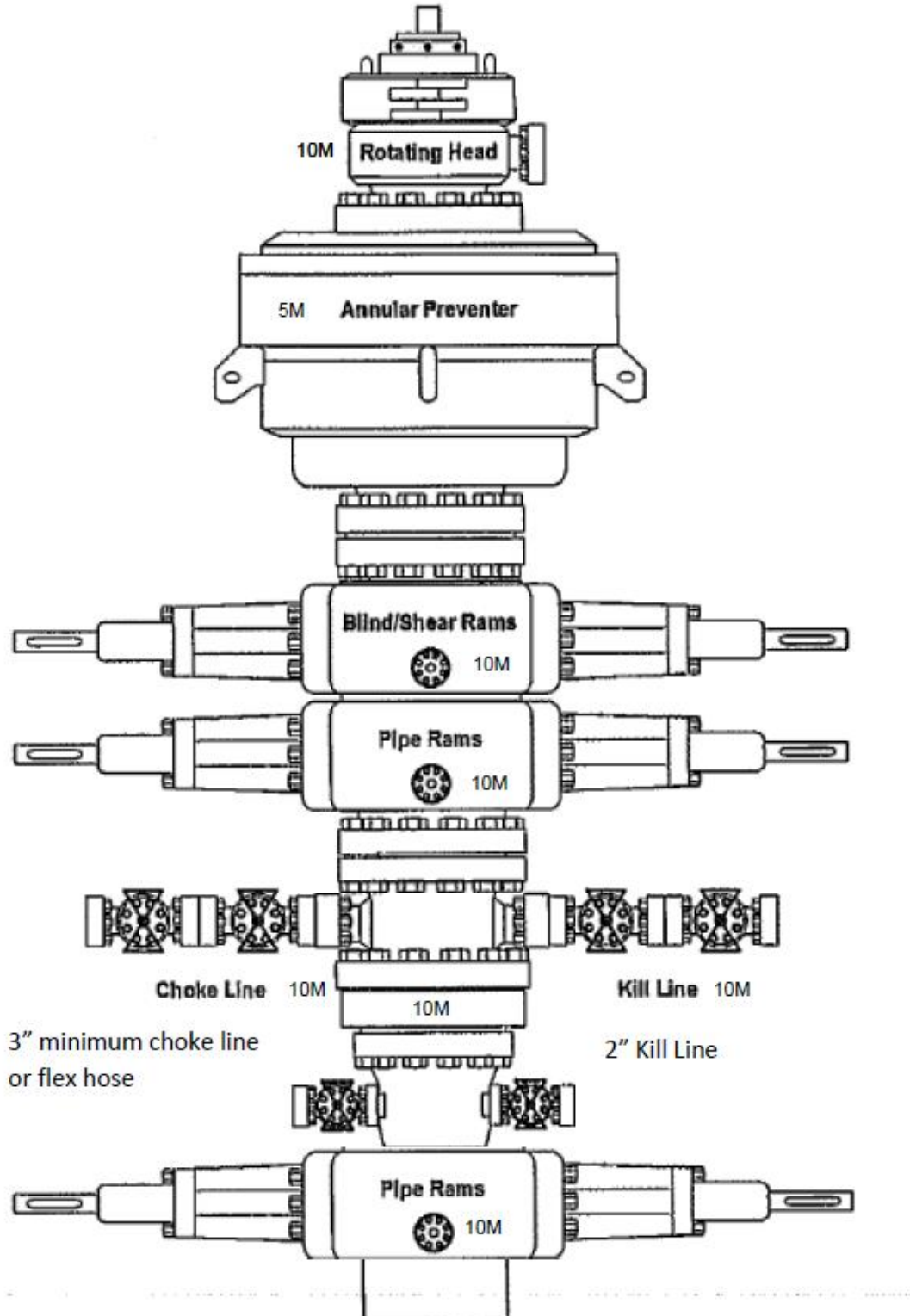
USS-LIBERTY FJM[®] is a trademark of U. S. Steel Corporation. All material contained in this publication is for general information only. This material should not therefore be used or relied upon for any specific application without independent competent professional examination and verification of accuracy, suitability and applicability. Anyone making use of this material does so at their own risk and assumes any and all liability resulting from such use. U.S. Steel disclaims any and all expressed or implied warranties of fitness for any general or particular application.

U. S. Steel Tubular Products 1-877-893-9461
 460 Wildwood Forest Drive, Suite 300S connections@uss.com
 Spring, Texas 77380 www.usstubular.com

Solaris Water Midstream, LLC
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APPENDIX A

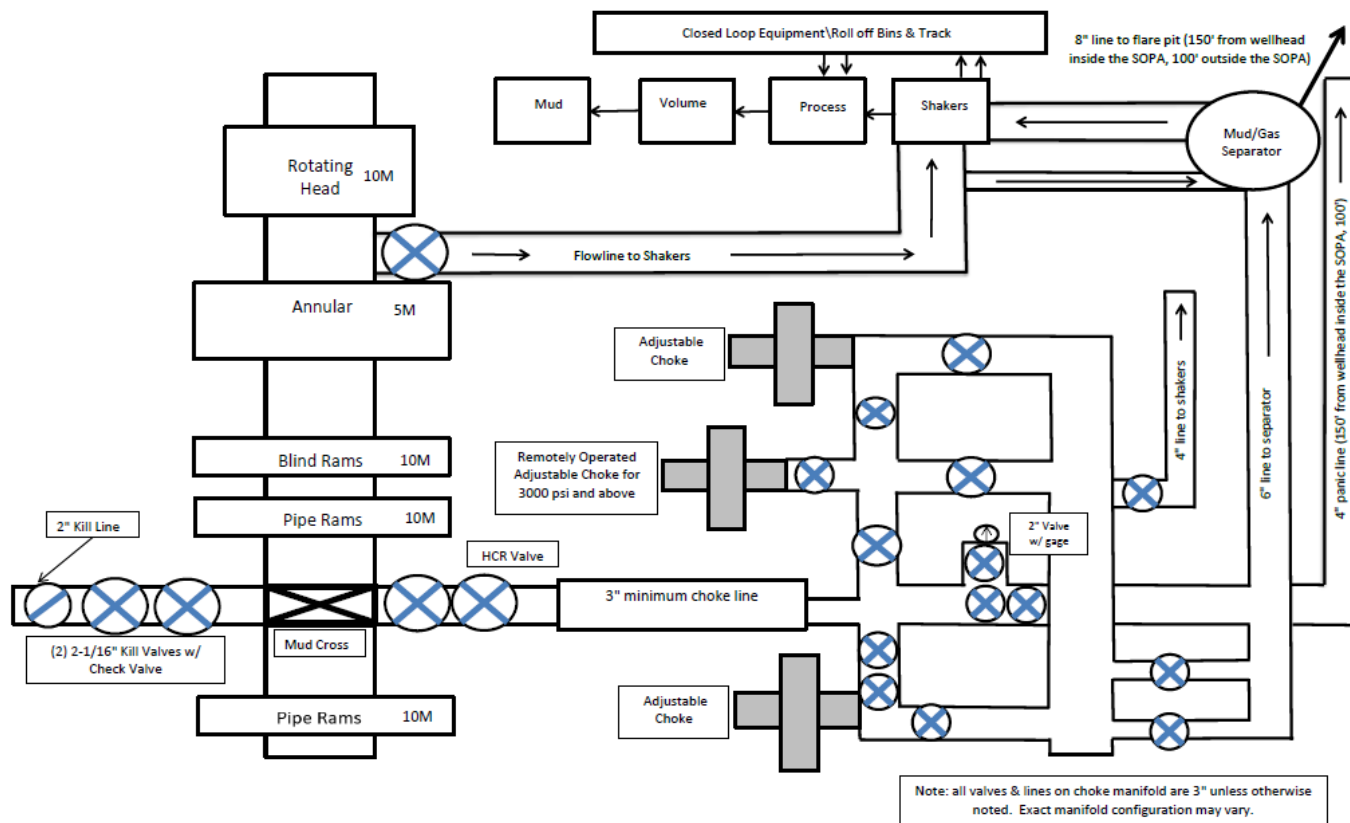
Representative BOP Diagram



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APPENDIX A

BOP/Manifold & Closed Loop System Diagram



Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

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

ACKNOWLEDGMENTS

Action 523584

ACKNOWLEDGMENTS

Operator: SOLARIS WATER MIDSTREAM, LLC 9950 WOODLOCH FOREST DR THE WOODLANDS, TX 77380	OGRID: 371643
	Action Number: 523584
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

ACKNOWLEDGMENTS

<input checked="" type="checkbox"/>	I hereby certify that no additives containing PFAS chemicals will be added to the completion or recompletion of this well.
-------------------------------------	--

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CONDITIONS

Action 523584

CONDITIONS

Operator: SOLARIS WATER MIDSTREAM, LLC 9950 WOODLOCH FOREST DR THE WOODLANDS, TX 77380	OGRID: 371643
	Action Number: 523584
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
fmalton	Cement is required to circulate on both surface and intermediate strings of casing.	11/5/2025
jeffrey.harrison	If the method of isolation was not by circulation, a CBL must be performed; if strata isolation is not achieved, then remediation will be required before further operations.	3/9/2026
jeffrey.harrison	Permittee to follow all terms and conditions outlined in the SWD-2251 disposal permit	3/9/2026
jeffrey.harrison	Prior to commencing disposal, the operator shall submit mudlog and geophysical logs information, to the Division's District geologist and Santa Fe Engineering Bureau, showing evidence agreeable that only the permitted formation is open for disposal including a summary of depths (picks) for contacts of the formations	3/9/2026
jeffrey.harrison	If significant hydrocarbon shows occur while drilling, the operator shall notify the Division's District office and the operator shall be required to receive written permission prior to commencing disposal	3/9/2026
jeffrey.harrison	If cement did not tie back into the next higher casing shoe, the operator shall perform remedial cement job to bring cement, at a minimum, 200 feet above the next higher casing shoe	3/9/2026
jeffrey.harrison	The operator shall run a CBL (or equivalent) for the 7?-inch liner to demonstrate the placement of cement and the cement bond with the tie-in with 9?-inch production casing string. The operator shall provide a copy of the CBL to the Division's District I office prior to commencing disposal	3/9/2026
jeffrey.harrison	Prior to commencing disposal, the operator shall obtain a bottom-hole pressure measurement representative of the open-hole completion. This information shall be provided with the written notice of the date of commencement of disposal	3/9/2026
jeffrey.harrison	The wellhead injection pressure on the well shall be limited to no more than 3,400 psi. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.	3/9/2026
jeffrey.harrison	If static bottomhole temperatures of 230 degF or higher is observed, the cement blend must include additives (silica flour, silica sand or equivalent) to mitigate Strength Retrogression of the set cement.	3/9/2026
jeffrey.harrison	Each casing string and liner shall be adequately centralized to facilitate efficient mud removal and placement of cement around the entire circumference of the casing / liner	3/9/2026
jeffrey.harrison	The use of stage tools (DV tool / External casing Packers) shall be evaluated and employed to mitigate the potential for cement losses across known loss-circulation zones, and to prevent formation fracturing during cementing operations.	3/9/2026
jeffrey.harrison	File As Drilled C-102 and a directional Survey with C-104 completion packet.	3/9/2026
jeffrey.harrison	Notify the OCD 24 hours prior to casing & cement.	3/9/2026
jeffrey.harrison	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string.	3/9/2026
jeffrey.harrison	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.	3/9/2026