| 1625 N. French Dr. Hob!   | bs. NM 88240   | State of N  | d Natural Dagauras  | Inly 21  |
|---|--|---|---|--|
| District  |  | Energy winnerars ar   | nu Ivaturar Resource  | For temporary pits, closed-loop sytems, and below-gra  |
| 1301 W  | REGIS  | TERED   | Division  | tanks, submit to the appropriate NMOCD District Office.  |
| District  |  |   | ancis Dr.   |  |
| District IV   |  |   | 87505   | For permanent pits and exceptions submit to the Santa I<br>Environmental Bureau office and provide a copy to the   |
| 1220 S. St. Francis Dr., S  | anta Fe, NM 87505  |   |   | appropriate NMOCD District Office.   |
|   |  | Pit, Closed-Loop Sys  | tem, Below-Gra  | ade Tank, or   |
|   | Propos   | d Alternative Method  | Permit or Clos  | ure Plan Application   |
|   | Type of action:  | X Permit of a pit, closed-loo   | p system, below-grad  | e tank, or proposed alternative method   |
|   |  | Closure of a pit, closed-lo   | op system, below-gra  | de tank, or proposed alternative method  |
|   |  | Modification to an existing   | g permit  |  |
|   |  | Closure plan only submitte  | ed for an existing per  | mitted or non-permitted pit, closed-loop system,   |
|   |  | below-grade tank, or prop   | osed alternative meth   | od   |
| Instructions: Ple   | ease submit one a  | plication (Form C-144) per i  | ndividual pit, closed-  | loop system, below-grade tank or alternative req   |
| Please be<br>environment  | advised that approval o<br>t. Nor does approval reli   | this request does not relieve the operato<br>ve the operator of its responsibility to co  | r of hability should operatio<br>omply with any other applica   | is result in pollution of surface water, ground water or the below below and the below and the surface of the s |
| 1   |  |   |   |  |
| Operator: Burling   | ton Resources Oi   | & Gas Company, LP   |   | OGRID#: 14538  |
| Address: PO Box   | 4289, Farmingto  | n, NM 87499   |   |  |
| racility or well nam  | ne: LODEWICK   | 13  |   |  |
| API Number:   | 3  | 004527717   | OCD Permit Nun  | nber:  |
| U/L or Qtr/Qtr:   | N Section  | n: <u>19</u> Township: <u>2</u>   | 7N Range:   | 9W County: San Juan  |
| Center of Proposed  | Design: Latitude   | 36.55589°N  | Longitude:  | -107.83221°W NAD: X 1927 1   |
|   |  |   | _   |  |
| Surface Owner:  | X Federal  | State Private [   | Tribal Trust or Inc   | lian Allotment   |
| Surface Owner:<br>2<br>Pit: Subsection<br>Temporary:<br>Permanent<br>Lined<br>String-Reinforce<br>Liner Seams:  | X Federal  | State Private [   | Tribal Trust or Inc   | HDPE       PVC       Other         bbl       Dimensions L       x W       x D  |
| Surface Owner:  | X Federal On F or G of 19.15.1 Drilling Word Emergency C Unlined Li ed Welded Fa   | State Private [   | Tribal Trust or Inc<br>mil LLDPE  | lian Allotment          HDPE       PVC       Other        bbl       Dimensions L       x W       x D   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         System:       Subsect  | State Private [   | Tribal Trust or Inc   | lian Allotment          HDPE       PVC       Other         bbl       Dimensions L       x W       x D  |
| Surface Owner:<br>Pit: Subsection<br>Temporary:<br>Permanent<br>Lined<br>String-Reinforce<br>Liner Seams:<br>Closed-loop<br>Type of Operation:  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Velded       Fa         Welded       Fa         System:       Subsect  | State Private [ .11 NMAC over ivitation P&A er type: Thickness ctory Other  | Tribal Trust or Inc   | Iian Allotment         HDPE       PVC         Other  |
| Surface Owner:  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         System:       Subsect         P&A       C  | State Private [   | mil LLDPE   | Iian Allotment         HDPE       PVC         Other  |
| Surface Owner:          2         Pit:       Subsection         Temporary:  | X       Federal         on F or G of 19.15.1         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         System:       Subsect         P&A       Index         Linined       Linined   | State Private [ .11 NMAC over vitation P&A er type: Thickness ctory Other on H of 19.15.17.11 NMAC Drilling a new well Worko notice d Steel Tanks Haul-off Bin type: Thickness  | mil LLDPE   | HDPE PVC Other   |
| Surface Owner:  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         OP&A       C         OP&A       C         Welded       Line         Welded       Fa  | State Private  State | Tribal Trust or Inc<br>mil LLDPE<br>Volume:<br>Volume:<br>of intent)<br>ns Other<br>mil LLDPE                   | Iian Allotment         HDPE       PVC         Other  |
| Surface Owner:  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Velded       Fa         System:       Subsect         P&A       C         Above Grout       Unlined       Line         Welded       Fa   | State Private  State Private  State Private  State Private  P&A P&A P&A P&A P&A P&A P&A P&A P&A P&  | Tribal Trust or Inc<br>mil LLDPE<br>Volume:<br>over or Drilling (Applies<br>of intent)<br>ns Other<br>mil LLDPE | HDPE PVC   Other   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          3       Closed-loop         Type of Operation:          Drying Pad  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency      C         Unlined       Li         ed       Welded       Fa         Welded       Fa   | State Private State Private State Private State Private Private State State Private Private State State Private Priva | Tribal Trust or Inc<br>mil LLDPE<br>Volume:<br>Volume:<br>of intent)<br>ns Other<br>mil LLDPE                   | HDPE PVC   Other   bbl   Dimensions   L   x W   x D   s to activities which require prior approval of a permit of a permi  |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          3       Closed-loop         Type of Operation:          Drying Pad  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       P&A       C         P&A       C         Welded       Fa         120       b   | State Private  State Private  State Private  State Private  NUMAC  Sover  State Private Priva | mil LLDPE   | HDPE PVC   Other   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          3       Closed-loop         Type of Operation:          Drying Pad  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Or Above Grout       Unlined       Line         Welded       Fa         Image: Subsection       Subsection         Image: Subsection       Fa         120       b  | State Private  State Private  State Private  State Private  State Private Pri | mil LLDPE   | HDPE PVC   Other  bbl   Dimensions   L   x   W   x   D   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          3       Closed-loop         Type of Operation:          Drying Pad  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Or Above Grout       Unlined       Line         Welded       Fa         1       Above Grout       Unlined         Unlined       Line         Welded       Fa         120       b         material:       ainment with leak data  | State Private  State Private  State Private  State Private  State Private Pri | mil LLDPE   | HDPE PVC   Other   |
| Surface Owner:          2       Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          3       Closed-loop         Type of Operation:          Drying Pad  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Or Above Grout       Unlined       Line         Welded       Fa         120       b         material:       ainment with leak data   | State Private  State Private  State Private  Story P&A er type: Thickness  Story Other  Thickness Story Other  Story Other Story Other  Story Other | mil LLDPE   | HDPE PVC   Other   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Lined          Jorgen Seams:          Closed-loop          Type of Operation:          Drying Pad   | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       P&A       C         Welded       Fa       C         120       b       material:         ainment with leak do       alls and liner       C   | State Private  State Private  II NMAC over  Avitation P&A er type: Thickness  Story Other  Thickness Correling a new well Worko notice  On H of 19.15.17.11 NMAC  Drilling a new well Worko notice  Story Other  Sto | mil LLDPE   | HDPE   PVC   Other   bbl Dimensions L   x W   x D   s to activities which require prior approval of a permit of   HDPE   PVD   Other   utomatic overflow shut-off  |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          Lined          String-Reinforce          Liner Seams:          Type of Operation:          Drying Pad          Liner Seams:          Volume:                        | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Or Above Grout       Unlined       Line         Welded       Fa         Welded       Fa         Welded       Fa         Metded       Fa         Image: Subsection       Image: Subsection         Metded       Fa         innment with leak data       Image: Subsection         alls and liner       Image: Subsection  | State       Private         .11 NMAC         over         witation       P&A         er type:       Thickness         ctory       Other         on H of 19.15.17.11 NMAC         Drilling a new well       Workonotice         od Steel Tanks       Haul-off Bir         type:       Thickness         ctory       Other         of 19.15.17.11 NMAC         of 19.15.17.11 NMAC         of Steel Tanks       Haul-off Bir         type:       Thickness         of 19.15.17.11 NMAC       Metal         tection       X Visible sidewalls         Visible sidewalls only       [         mil       HDPE  | mil LLDPE   | HDPE PVC   other   bbl   Dimensions   L   x   w   x   D   So to activities which require prior approval of a permit of HDPE PVD Other HDPE Other Other HDPE Other Unspecified  |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Lined          Type of Operation:          Drying Pad          Liner Seams:          Volume:  | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Pa       C         P&A       C       C         Welded       Fa       C         120       b       material:       C         ainment with leak data       C       C       C         Mathed:       Mathed:       C       C   | State Private  State Private  II NMAC over  Nitation P&A er type: Thickness  Story Other  Thickness Cory Other  Story Other Story Other  Story Other  Story Other Story Other | mil LLDPE   | HDPE PVC   Other     bbl   Dimensions   L   x   W   x   D   s to activities which require prior approval of a permit of HDPE PVD Other automatic overflow shut-off Unspecified   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          Lined          String-Reinforce          Liner Seams:          Orying Pad          Liner Seams:          Volume:          Tank Construction          Visible sidew: | X       Federal         on F or G of 19.15.17         Drilling       Word         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Or Above Grout       Unlined       Line         Welded       Fa         Image: Above Grout       Unlined       Line         Welded       Fa         Image: Above Grout       Unlined       Line         Image: Above Grout       Unlined       Line         Image: Above Grout       Unlined       Line         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout       Image: Above Grout       Image: Above Grout         Image: Above Grout | State Private  State Private  II NMAC over  NVITATION P&A er type: Thickness  Ctory Other  On H of 19.15.17.11 NMAC Drilling a new well Worko notice  of Steel Tanks Haul-off Bin type: Thickness ctory Other  of 19.15.17.11 NMAC I Type of fluid: Produ Metal Exection X Visible sidewall Visible sidewalls only mil HDPE   | mil LLDPE   | HDPE PVC   Other   |
| Surface Owner:          2         Pit:       Subsection         Temporary:          Permanent          Lined          String-Reinforce          Liner Seams:          Type of Operation:          Drying Pad          Liner Seams:          Volume:                                       | X       Federal         on F or G of 19.15.17         Drilling       World         Emergency       C         Unlined       Li         ed       Welded       Fa         Welded       Fa         Orallined       Line         Welded       Fa         Welded       Fa         Welded       Fa         Welded       Fa         Welded       Fa         Welded       Fa         Imaterial:       Imaterial:         ainment with leak da       alls and liner         hickness       Imaterial:         Subsection       Fa  | State Private  State Private  II NMAC over  Nitation P&A er type: Thickness  Tory Other  Thickness Cory Other  Story Other  Of 19.15.17.11 NMAC I Type of fluid: Produ  Metal Etection X Visible sidewalls only  mil HDPE  uired. Exceptions must be submit   | mil LLDPE   | HDPE PVC   Other   |



| 6. Subsection D of 19.15.17.11 NMAC (Applies to permanent pit, temporary pits, and below-grade tanks)   |                  |            |
|---|------------------|------------|
| Chain link, six feet in height, two strands of barbed wire at top ( <i>Required if located within 1000 feet of a permanent residence, school, hospital, ins</i>   | stitution or chu | rch)       |
| Four foot height, four strands of barbed wire evenly spaced between one and four feet   |                  | ,          |
| X Alternate. Please specify 4' hog wire fencing topped with two strands barbed wire.  |                  |            |
| 7   |                  |            |
| Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)  |                  |            |
| X Screen Netting Other  |                  |            |
|   |                  |            |
| 8 Signs: Subsection C of 19,15,17,11 NMAC   |                  |            |
| 12" X 24". 2" lettering, providing Operator's name, site location, and emergency telephone numbers  |                  |            |
| X Signed in compliance with 19.15.3.103 NMAC  |                  |            |
| 9   |                  |            |
| Administrative Approvals and Exceptions:<br>Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for suidance.   |                  |            |
| Please check a box if one or more of the following is requested, if not leave blank:  |                  |            |
| X Administrative approval(s): Requests must be submitted to the appropriate division district of the Santa Fe Environmental Bureau office for con:<br>(Fencing/BGT Liner)   | sideration of a  | pproval.   |
| Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.   |                  |            |
| 10  | T                |            |
| Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau Office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above grade-tanks associated with a closed-loop system. |                  |            |
| Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells  | Yes              | XNo        |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).<br>- Topographic map; Visual inspection (certification) of the proposed site  | Yes              | XNo        |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.   | Yes              | XNo        |
| (Applies to temporary. emergency, or cavitation pits and below-grade tanks)   | <b>NA</b>        | 1          |
| - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image   |                  |            |
| Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  | Yes              | No         |
| (Applied to permanent pits)   | XNA              |            |
| Within 500 horizonal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering   |                  | X No       |
| purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.  |                  | AIN        |
| - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site.  |                  |            |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended   | Yes              | XNo        |
| <ul> <li>written confirmation or verification from the municipality; Written approval obtained from the municipality</li> <li>Within 500 feet of a wetland.</li> </ul>  | TYes             | XNo        |
| - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site  |                  | <b>E</b> 0 |
| Within the area overlying a subsurface mine Written confirmation or verification or map from the NM EMNRD - Mining and Mineral Division   | Yes              | XNo        |
| Within an unstable area.  | Yes              | XNo        |
| - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map   |                  |            |
| Within a 100-year floodplain - FEMA map   | Yes              | XNo        |

| Temporary Pits, Emergency Pits and Below-grade Tanks Permit Application Attack<br>Instructions: Each of the following items must be attached to the application Please indicate by  | <b>iment Checklist:</b> Subsection B of 19.15.17.9 NMAC<br>a check mark in the boy, that the documents are attrached   |
|---|--|
| X Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Para  | eranh (4) of Subsection B of 19 15 17 9 NMAC   |
| Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirement  | ats of Paragraph (2) of Subsection B of 19.15.17.9 (MMAC   |
| X Siting Criteria Compliance Demonstrations - based upon the appropriate requirement  | nts of 10.15.17.10 NMAC  |
| X Design Plan - based upon the appropriate requirements of 10.15.17.11 NMAC   | ans of 19.13.17.10 NMAC.   |
| Operating and Maintenance Plan based upon the appropriate requirements of 10.1  | 5 17 13 NMAAC  |
| X Clocura Plan (Planet complete Power 14 descent 19, 16, 11, 11, 11, 11, 11, 11, 11, 11, 11   | 5.17.12 NMAC   |
| 19.15.17.9 NMAC and 19.15.17.13 NMAC  | appropriate requirements of Subsection C of  |
| Previously Approved Design (attach copy of design) API  | or Permit  |
| 12 Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15: Instructions: Each of the following items must be attached to the application. Please indicate, by a Geologic and Hydrogeologic Data (only for on-site closure) - based upon the require Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon t Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.  | 17.9 NMAC<br>a check mark in the box, that the documents are attached,<br>ements of Paragraph (3) of Subsection B of 19.15.17.9<br>the appropriate requirements of 19.15.17.10 NMAC  |
| Closure Plan (Please complete Boxes 14 through 18. if applicable) - based upon the  | appropriate requirements of Subsection C of 19.15.17.9   |
| NMAC and 19.15.17.13 NMAC   |  |
| Previously Approved Design (attach copy of design) API  |  |
| Previously Approved Operating and Maintenance Plan API  |  |
| 13  |  |
| <ul> <li>Hydrogeologic Report - based upon the requirements of Paragraph (I) of Subsection</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirement</li> <li>Climatological Factors Assessment</li> <li>Certified Engineering Design Plans - based upon the appropriate requirements of 19</li> <li>Dike Protection and Structural Integrity Design: based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NI</li> <li>Freeboard and Overtopping Prevention Plan - based upon the appropriate requirement of 19.15.17.11 NI</li> <li>Gli Field Waste Stream Characterization</li> <li>Monitoring and Inspection Plan</li> <li>Erosion Control Plan</li> <li>Closure Plan - based upon the appropriate requirements of 5 whereation C of 10.15.15.15</li> </ul>  | B of 19.15.17.9 NMAC<br>nts of 19.15.17.10 NMAC<br>0.15.17.11 NMAC<br>ments of 19.15.17.11 NMAC<br>MAC<br>puirements of 19.15.17.11 NMAC<br>5.17.12 NMAC<br>nts of 19.15.17.11 NMAC  |
|   | 9.9 NMAC and 19.15.17.13 NMAC  |
| Closure Fian Cosed upon the appropriate requirements of Subsection C of 19.15.17  Proposed Closure: 19.15.17.13 NMAC  nstructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose  ype: Drilling Workover Emergency Cavitation P&A Permaner   | 2.9 NMAC and 19.15.17.13 NMAC<br>sed closure plan.<br>nt Pit XBelow-grade Tank Closed-loop System  |
| Closure France obset upon the appropriate requirements of Subsection C of 19.13.17     Proposed Closure: 19.15.17.13 NMAC     nstructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed     (Sype: Drilling Workover Emergency Cavitation P&A Permaner     Alternative     Proposed Closure Method: XWests Execution and Permanel  | 9 NMAC and 19.15.17.13 NMAC  |
| Closure Frain Cosed upon the appropriate requirements of Subsection C of 19.13.17  Proposed Closure: 19.15.17.13 NMAC nstructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed  Sype: Drilling Workover Emergency Cavitation P&A Permaner  Alternative  Proposed Closure Method: XWaste Excavation and Removal (Below-Grade Tank  Waste Removal (Closed Joon Support Cavitation Cavitat | sed closure plan.<br>It Pit XBelow-grade Tank Closed-loop System   |
| Closure Frain Cosed upon the appropriate requirements of Subsection C of 19.13.17     Proposed Closure: 19.15.17.13 NMAC     nstructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     [Sype: Drilling Workover Emergency Cavitation P&A Permaner     Alternative     Proposed Closure Method: XWaste Excavation and Removal (Below-Grade Tank     Waste Removal (Closed-loop systems only)     [On-site Closure Method (only for temporary nix and closed below)   | 1.9 NMAC and 19.15.17.13 NMAC         sed closure plan.         nt Pit X Below-grade Tank Closed-loop System         k)  |
| Closure Frain® oased upon the appropriate requirements of Subsection C of 19.13.17     Proposed Closure: 19.15.17.13 NMAC     Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Construction: Please Burget     Construction: Please     Construction: Please     Construction: Plea     | 9 NMAC and 19.15.17.13 NMAC         sed closure plan.         nt Pit X Below-grade Tank Closed-loop System         k)         oop systems)   |
| Closure France obset upon the appropriate requirements of Subsection C of 19.13.17     Proposed Closure: 19.15.17.13 NMAC     Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the propose     Constructions of the proposed closed-loop systems only     Constructions of the proposed closed-loop systems only     Constructions of the proposed closed-loop systems only     Constructing the proposed closed-loop systems only     Constructions of the     | 2.9 NMAC and 19.15.17.13 NMAC  sed closure plan.  nt Pit X Below-grade Tank Closed-loop System  k)  oop systems)  o the Santa Fa Environmental Bureau for convideration)   |
| Id         Proposed Closure:       19.15.17.13 NMAC         Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed         Type:       Drilling         Workover       Emergency         Cavitation       P&A         Permaner         Alternative         Proposed Closure Method:       X Waste Excavation and Removal         (Below-Grade Tank)         Waste Removal (Closed-loop systems only)         On-site Closure Method (only for temporary pits and closed-loop suite for the proposed Closure Method (Exceptions must be submitted to alternative Closure Method   | 2.9 NMAC and 19.15.17.13 NMAC<br>sed closure plan.<br>Int Pit X Below-grade Tank Closed-loop System<br>(k)<br>oop systems)<br>o the Santa Fe Environmental Bureau for consideration)   |
| 14         Proposed Closure:       19.15.17.13 NMAC         Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed         Type:       Drilling         Workover       Emergency         Cavitation       P&A         Permaner         Alternative         Proposed Closure Method:       X Waste Excavation and Removal         (Below-Grade Tanl)         Waste Removal (Closed-loop systems only)         On-site Closure Method (only for temporary pits and closed-loop systems only)         On-site Closure Method (Exceptions must be submitted to         15         Waste Excavation and Removal Closure Plan Checklist:         (19.15.17.13 NMAC) Instruction         Please indicate, by a check mark in the box, that the documents are attached.         X       Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 f         X       Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements         X       Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cutti  | 2.9 NMAC and 19.15.17.13 NMAC         sed closure plan.         nt Pit X Below-grade Tank Closed-loop System         (k)         oop systems)         o the Santa Fe Environmental Bureau for consideration)         se: Each of the following items must be attached to the closure plan         NMAC         ts of Subsection F of 19.15.17.13 NMAC         ngs) |
| Image: Cost of the second point the appropriate requirements of Subsection C of 19.13.17         Image: Cost of Cost of the second point the appropriate requirements of Subsection C of 19.13.17         Image: Cost of Cost of Cost of Cost of the second point   | 2.9 NMAC and 19.15.17.13 NMAC  sed closure plan.  nt Pit X Below-grade Tank Closed-loop System  k)  oop systems)  o the Santa Fe Environmental Bureau for consideration)  s: Each of the following items must be attached to the closure plan NMAC  ts of Subsection F of 19.15.17.13 NMAC  ngs)  ents of Subsection H of 19.15.17.13 NMAC                         |

| 16<br>Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:<br>Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use atta<br>are required.  | (19.15.17.13.D NMAC)<br>when if more than two facilities  |
|--|---|
| Disposal Facility Name: Disposal Facility Permit #:  | ······  |
| Disposal Facility Name: Disposal Facility Permit #:  |   |
| Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will in Yes (If yes, please provide the information No         Required for impacted areas which will not be used for future service and operations:         Soil Backfill and Cover Design Specification - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC         Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC   | not be used for future service and operations?<br>H of 19.15.17.13 NMAC   |
| 17<br><u>Siting Criteria (Regarding on-site closure methods only:</u> 19.15.17.10 NMAC<br>Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source<br>certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception wh<br>for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC  | e material are provided below. Requests regarding changes to<br>tich must be submitted to the Santa Fe Environmental Bureau office<br>for guidance. |
| Ground water is less than 50 feet below the bottom of the buried waste.<br>• NM Office of the State Engineer - iWATERS database search; USGS: Data obtained from nearby wells  | Yes No  |
| Ground water is between 50 and 100 feet below the bottom of the buried waste   | Yes No  |
| - NM Office of the State Engineer - iWATERS database search; USGS: Data obtained from nearby wells   |   |
| Ground water is more than 100 feet below the bottom of the buried waste.   | Yes No  |
| - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells   |   |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkho (measured from the ordinary high-water mark).   | ole, or playa lake Yes No   |
| - Topographic map; Visual inspection (certification) of the proposed site  |   |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial applie<br>- Visual inspection (certification) of the proposed site; Aerial photo; satellite image   | ication. Yes No   |
| Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic purposes, or within 1000 horizontal fee of any other fresh water well or spring, in existence at the time of the initial applica - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site   | c or stock watering cation.   |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal pursuant to NMSA 1978, Section 3-27-3, as amended.   | ordinance adopted   |
| Within 500 feet of a wetland   |   |
| - US Fish and Wildlife Wetland Identification map: Topographic map: Visual inspection (certification) of the propose   | ed site   |
| Within the area overlying a subsurface mine.<br>- Written confiramtion or verification or map from the NM EMNRD-Mining and Mineral Division  | Yes No  |
| Within an unstable area.   | Yes No  |
| <ul> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geolo<br/>Topographic map</li> </ul>  | ogical Society;   |
| Within a 100-year floodplain.<br>- FEMA map  | Yes No  |
|  |   |
| by a check mark in the box, that the documents are attached.   | attached to the closure plan. Please indicate,  |
| Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 N   | MAC   |
| Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.1.   | 3 NMAC  |
| Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19  | 9.15.17.11 NMAC   |
| Construction/Design Plan of Temporary Pit (for in place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.13 NMAC  | riate requirements of 19.15.17.11 NMAC  |
| Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of  | f 19.15.17.13 NMAC  |
| Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13  | 3 NMAC  |
| Disposal Facility Name and Darmit Number (for liquids, deiling fluids and deiling and deil |   |

Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved) Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMAC

Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

| 19   |   |  |  |
|--|---|--|--|
| Operator Application   | Certification:  |  |  |
| Name (Drint):  | Created Perform   | complete to the  | best of my knowledge and belief.   |
| of the second se |   |  | Regulatory Technician  |
| Signature:   | Miplal Jafoya   | Date:  | 12/22/2008   |
| e mail address:  | <u>Arrstan Juloya Wildononoppilaps yum</u>  | Telephone:   | 505-326-9837   |
| 20   |   |  |  |
| OCD Approval:  | Permit Application (including closure plan)   | Closure Plan (only)  | OCD Conditions (see altachment)  |
| OCD Representative S   | Signature:  |  |  |
| or is in presentative s  |   |  | Approval Date:   |
| Title:   |   | OCD Pern   | nit Number:  |
|  | · · · · · · · · · · · · · · · · · · ·   |  |  |
| Classica Report (requi   | red within 60 dove of glowing completion).  |  |  |
| Instructions: Operators an   | red within by days of closure completion): s<br>re required to obtain an approved closure plan prio                             | ubsection K of 19:15:17:13 NMAC<br>r to implementing any close | re activities and submitting the closure report. The closure   |
| report is required to be su  | bmitted to the division within 60 days of the comple  | tion of the closure activitie                                  | s. Please do not complete this section of the form until an  |
| approved closure plan nas  | Speen optained and the closure activities have beer   | completed.   |  |
|  |   | Closure  | e Completion Date:   |
| 22   |   |  |  |
| Closure Method:  |   |  |  |
| Waste Excavation   | and Removal On-site Closure Method  | Alternative Closure  | Method Waste Removal (Closed-loop systems only)  |
|  | pproved plan, please explain.   |  |  |
| 23<br>Clowing Report Dependi-  | Wate Demond Classes For Charles I.  |  |  |
| Instructions: Please identi  | ify the facility or facilities for where the liquids, di  | ms Inat Utilize Above Gr                                       | ound Steel Tanks or Haul-off Bins Only:<br>nes were disposed. Use attachment if more than two facilities |
| were utilized.   |   |  |  |
| Disposal Facility Name   |   | Disposal Facility  | Permit Number:   |
| Disposal Facility Name   | :<br>   | Disposal Facility  | Permit Number:   |
| Ves (If ves_please   | demonstrate compliane to the items below)   | d on or in areas that will no                                  | t be used for future service and opeartions?   |
| Required for importad.   | areas which will not be used for forme comise and   |  |  |
| Site Reclamation (   | Photo Documentation)  | претанова:   |  |
| Soil Backfilling an  | d Cover Installation  |  |  |
| Re-vegetation App  | lication Rates and Seeding Technique  |  |  |
| 24   |   |  |  |
| Closure Report Atta  | chment Checklist: Instructions: Each of the fo  | llowing items must be attac                                    | ched to the closure report. Please indicate, by a check mark in  |
| The box, that the accum  | Notice (surface owner and division)   |  |  |
| Proof of Deed No   | tice (required for on-site closure)   |  |  |
| Plot Plan (for on-   | site closures and temporary pits)   |  |  |
| Confirmation San   | npling Analytical Results (if applicable)   |  |  |
| Waste Material Sa  | ampling Analytical Results (if applicable)  |  |  |
| Disposal Facility  | Name and Permit Number  |  |  |
| Soil Backfilling a   | nd Cover Installation   |  |  |
| Re-vegetation Ap   | plication Rates and Seeding Technique   |  |  |
| Site Reclamation   | (Photo Documentation)   |  |  |
| On-site Closure L  | ocation: Latitude:  | Longitude:   | NAD [] 1927 [] 1983  |
|  |   |  |  |
| 25   |   |  | ······································   |
| <b>Operator Closure Certi</b><br>Thereby certify that the info<br>the closure complies with a  | <b>fication:</b><br>prination and attachments submitted with this closu,<br>It applicable closure requirements and conditions s | re report is ture, accurate a                                  | nd complete to the best of my knowledge and belief. I also certify that                                  |
| Name (Print):  | n oppressions creating requirements and conditions s  | Title  | оптериин.  |
| Signature:   |   | Date:  |  |
| ······································   |   | Date   |  |
| e-mail address:  |   | Telephone:   |  |
|  |   |  |  |

| Page  | 1  | of  | 1  |
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| Λ                   | lew Mexico Office of the State<br>POD Reports and Down | e Engineer<br>loads   |            |
|---------------------|--|-----------------------|------------|
| Township: 27N       | Range: 09W Sections:                                   |                       |            |
| NAD27 X:            | Y: Zone:   | Search Radius:        |            |
| County:             | Basin:   | Number:               | Suffix:    |
| )wner Name: (First) | (Last)   | C Non-Domestic        | C Domestic |
| POD / Surfa         | ce Data Report Avg                                     | Depth to Water Report |            |
|                     | Water Column Report                                    | nu Help               |            |
| (quarters           | WATER COLUMN RE<br>are 1=NW 2=NE 3=SW 4=SE)            | PORT 09/06/2008       |            |

|     |        | (quarter | s are | big | ge  | st | to: | smallest) |   |   | Depth | Depth | Wate  |
|-----|--------|----------|-------|-----|-----|----|-----|-----------|---|---|-------|-------|-------|
| POD | Number | Tws      | Rng   | Sec | a e | q  | g   | Zone      | X | Y | Well  | Water | Colum |

No Records found, try again

# New Mexico Office of the State Engineer

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|-------------|---------------------|--|------------------------------------|----------------------|----------|-----------|----------|------|
| 1           | Fownship: 27N Range | 10W                                      | Sections:                          |                      |          |           |          |      |
| NAI         | D27 X: Y:           | n an a shing a sa an an an an an an an a | Zone:                              | - Sear               | ch Radiu | s:        |          |      |
| County:     | Basin:              |  | <b>_</b>                           | Number:              |          | Suffix:   | <u></u>  |      |
| Owner Name: | (First)             | (Last)                                   |                                    | C Non-J              | Domestic | ⊂ Dom     | estic 📀  | All  |
| POD / S     | urface Data Report  | Avg                                      | Depth to Water                     | Report               | Wat      | er Column | Report   |      |
|             |                     |  | IWA LERS Me                        | nu Heip              | ]        |           |          |      |
|             |                     | WATER                                    | COLUMN REPOR                       | T 08/20/20           | 808      | 61 mg     |          |      |
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| POD Number  | Tws Rng Sec o       | i a a                                    | Zone X                             | Y                    | Well     | Water     | Column   | (11) |
| SJ 00032    | 27N 10W 08 2        | 2 2 3                                    |                                    |                      | 235      | 60        | 175      |      |
| SJ 00033    | 27N 10W 08 2        | 2 2 3                                    |                                    |                      | 204      |           |          |      |
| SJ 00034    | 27N 10W 08 2        | 2 2 3                                    |                                    |                      | 235      | 170       | 65       |      |

Record Count: 3

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# Mines, Mills and Quarries Web Map

Unit Letter: N, Section: 19, Town: 027N, Range: 009W







### **LODEWICK 13**

### Site Specific Hydrogeology

A visual site inspection confirming the information contained herein was performed on the well 'LODEWICK 13', which is located at 36.55589 degrees North latitude and 107.83221 degrees West longitude. This location is located on the Huerfanito Peak 7.5' USGS topographic quadrangle. This location is in section 19 of Township 27 North Range 9 West of the Public Land Survey System (New Mexico Principal Meridian). This location is located in San Juan County, New Mexico. The nearest town is Blanco, located 11.6 miles to the north. The nearest large town (population greater than 10,000) is Farmington, located 24.1 miles to the northwest (National Atlas). The nearest highway is US Highway 550, located 6.8 miles to the southwest. The location is on BLM land and is 7,230 feet from the edge of the parcel as notated in the BLM land status layer updated January 2008. This location is in the Blanco Canyon. New Mexico, Sub-basin. This location is located 1984 meters or 6507 feet above sea level and receives 11 inches of rain each year. The vegetation at this location is classified as Colorado Plateau Pinon-Juniper Woodland as per the Southwest Regional Gap Analysis Program.

The estimated depth to ground water at this point is 409 feet. This estimation is based on the data published on the New Mexico Engineer's iWaters Database website and water depth data from ConocoPhillips' cathodic wells. Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. The nearest stream is 365 feet to the southeast and is classified by the USGS as an intermittent stream. The nearest perennial stream is 1,526 feet to the south. The nearest water body is 1,501 feet to the south. It is classified by the USGS as an intermittent lake and is 1.0 acres in size. The nearest spring is 14,875 feet to the northeast. All stream, river, water body and spring information was determined as per the USGS Hydrographic Dataset (High Resolution), downloaded 3/2008. The nearest water well is 14,242 feet to the southeast. The nearest wetland is a 131.9 acre Ravine located 5,609 feet to the southeast. The slope at this location is 3 degrees to the east as calculated from USGS 30M National Elevation Dataset. This information is also discerned from the aerial and topographic map included. The surface geology at this location is NACIMIENTO FORMATION--Shale and sandstone with a Shale dominated formations of all ages substrate. The soil at this location is 'Doak-Sheppard-Shiprock association, rolling' and is well drained and not hydric with moderate erosion potential as taken from the NRCS SSURGO map unit, downloaded January 2008. The nearest underground mine is 24.7 miles to the northwest as indicated on the Mines, Mills and Quarries Map of New Mexico provided.

### **Regional Geological context:**

The Nacimiento Formation is of Paleocene age (Baltz, 1967, p. 35). It crops out in a broad band inside the southern and western margins of the central basin and in a narrow band along the west face of the Nacimiento Uplift. The Nacimiento is a nonresistant unit and typically erodes to low, rounded hills or forms badland topography.

The Nacimiento Formation occurs in approximately only the southern two-thirds of the San Juan Basin where it conformably overlies and intertongues with the Ojo Alamo Sandstone (Fassett, 1974, p. 229). The Nacimiento Formation grades laterally into the main part of the Animas Formation (Fassett and Hinds, 1971, p. 34); thus, in this area, the two formations occupy the same stratigraphic interval.

Strata of the Nacimiento Formation were deposited in lakebeds in the central basin area with lesser deposition in stream channels (Brimhall, 1973, p. 201). In general, the Nacimiento consists of drab, interbedded black and gray shale with discontinuous, white, medium- to very coarse grained arkosic sandstone (Stone e al., 1983, p.30). Stone et al. indicated that the formation may contain more sandstone than commonly reported because some investigators assume the slope-forming strata in the unit area shales, whereas in many places the strata actually are poorly consolidated sandstones.

Total thickness of the Nacimiento Formation ranges from about 500 to 1,300 feet. The unit generally thickens from the basin margins toward the basin center (Steven et al., 1974). The sandstone deposits within the Nacimiento Formation are much thinner than the total thickness of the formation because their environment of deposition was localized stream channels (Brimhall, 1973, p. 201). The thickness of the combined San Jose, Animas, and Nacimiento Formations ranges from 500 to more than 3.500 feet.

### Hydraulic Properties:

Reported well yields for 53 wells completed in either the Animas or Nacimiento Formations range from 2 to 90 gallons per minute and the median yield is 7.5 gallons per minute. The primary use of water from Nacimiento and Animas Formations is domestic and livestock supplies. There are no known aquifer tests for the Animas or Nacimiento Formations, but specific capacities reported for six wells range from 0.24 to 2.30 gallons per minute per foot of drawdown (Levings et al., 1990).

The Animas and Nacimiento Formations are in many ways hydrologically similar to the San Jose Formation because sands in both units produce approximately the same quantities of water. However, the greater percentage of fine materials in the Animas and Nacimiento Formations may restrict downward vertical leakage to the Ojo Alamo Sandstone or Kirtland Shale. The poorly cemented fine material is highly erodible, forms a badland terrain, and supports only spotty vegetation. These conditions are more conductive to runoff than retention of precipitation.

### **References:**

Baltz, E.H., 1967, Stratigraphy and regional tectonic implications of part of Upper Cretaceous rocks, eastcentral San Juan Basin, New Mexico: USGS Professional Paper 552, 101 p.

Brimhall, R.M., 1973, Ground-water hydrology of Tertiary rocks of the San Juan Basin, New Mexico, in Fassett, J.E., ed., Cretaceous and Tertiary rocks of the Southern Colorado Plateau: Four Corners Geological Society Memoir, p. 197-207.

Fassett, J.E., 1974, Cretaceous and Tertiary rocks of the eastern San Juan Basin, New Mexico and Colorado, in Guidebook of Ghost Ranch, central-northern New Mexico: New Mexico Geological Society, 25th Field Conference, p. 225-230.

Fassett, J.E., and Hinds, J.S., 1971, Geology and fuel resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado: USGS Professional Paper 676, 76 p. Levings, G.W., Craigg, S.d., Dam, W.L., Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, and Animas Formations in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah: USGS Hydrologic Investigations Atlas HA-720-A, 2 sheets.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.

# Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Design and Construction

In accordance with NMAC 19.15.17 the following information describes the design and construction of below grade tanks on Burlington Resources Oil & Gas Company, LP (BR) locations. This is BR's standard procedure for all below grade tanks (BGT). A separate plan will be submitted for any BGT which does not conform to this plan.

### General Plan:

- 1. BR will design and construct a properly sized and approved BGT which will contain liquids and should prevent contamination of fresh water to protect the public health and environment.
- 2. BR signage will comply with 19.15.3.103 NMAC when BR is the operator. If BR is not the operator it will comply with 19.15.17.11NMAC. BR includes Emergency Contact information on all signage.
- 3. BR has approval to use alternative fencing that provides better protection. BR constructs fencing around the BGT using 4 foot hog wire fencing topped with two strands of barbed wire, or with a pipe top rail. A six foot chain link fence topped with three strands of barbed wire will be use if the well location is within 1000 feet of permanent residence, school, hospital, institution or church. BR ensures that all gates associated with the fence are closed and locked when responsible
- 4. BR will construct a screened, expanded metal covering, on the top of the BGT.
- 5. BR shall ensure that a below-grade tank is constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight as shown on design drawing and specification sheet.
- 6. The BR below-grade tank system shall have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom as shown on design drawing.
- 7. BR shall operate and install the below-grade tank to prevent the collection of surface water run-on. BR has built in shut off devices that do not allow a belowgrade tank to overflow. BR constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 8. BR will construct and use a below-grade tank that does not have double walls. The below-grade tank's side walls will be open for visual inspection for leaks, the below-grade tank's bottom is elevated a minimum of six inches above the underlying ground surface and the below-grade tank is underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected.

- 9. BR has equipped the below-grade tanks with the ability to detect high level in the tank and provide alarm notification and shutdown process streams into the tank. Once high level is detected RTU logic closes the inlet separator sales valve and does not permit vent valve to open. This shutdown of the sales valve and gagging of the vent valves prevents any hydrocarbon process streams from entering the pit tank once a high level is detected. Furthermore, an electronic page is sent to the BR MSO for that well site and to the designated contract "Water-Hauling" Company indicating a high level and that action must be taken to address this alarm. The environmental drain line from BR's compressor skid under normal operating conditions is in the open position. The environmental drain line is in place to capture any collected rain water or spilled lubricants from our compressor skids. The swab drain line is a manually operated drain and by normal operating procedures is in the closed position. The tank drain line is also a manually operated drain and during normal operations it is in the closed position.
- 10. The geomembrane liner consists of a 45-mil flexible LLDPE material manufactured by Raven Industries as J45BB. This product is a four layer reinforced laminated containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. The J45BB is reinforced with 1300 denier (minimum) tri-directional scrim reinforcement. It exceeds ASTMD3083 standard by 10%. J45BB has a warranty for 20 years from Raven Industries and is attached. It is typically used in Brine Pond, Oilfield Pit liner and other industrial applications. The manufacture specific sheet is attached and the design attached displays the proper installation of the liner.
- 11. The general specification for design and construction are attached in the BR document.



### PROPERTIES TEST METHOD J30BB J36BE **J45BE** Min. Roll Typical Roll Min. Roll Typical Roll Averages Min. Roll Typical Roll Averages Averages Averages Averages Appearance Averages Black/Black Black/Black Black/Black Thickness **ASTM D 5199** 27 mil 30 mil 32 mil 36 mil 40 mil 45 mil Weight Lbs Per MSF 126 lbs 140 lbs ASTM D 5261 151 lbs (oz/yd²) 168 lbs 189 lbs 210 lbs (18.14)(20.16)(21.74)(24.19)(27.21)(30.24)Construction \*\*Extrusion laminated with encapsulated tri-directional scrim reinforcement **Ply Adhesion ASTM D 413** 16 lbs 20 lbs 19 lbs 24 lbs 25 lbs 31 lbs 1" Tensile Strength 88 lbf MD 110 lbf MD **ASTM D 7003** 90 lbf MD 113 lbf MD 110 lbf MD 138 lbf MD 63 lbf DD 79 lbf DD 70 lbf DD 87 lbf DD 84 lbf DD 105 lbf DD 1" Tensile Elongation @ 550 MD 750 MD **ASTM D 7003** 550 MD Break, % (Film Break) 750 MD 550 MD 750 MD 550 DD 750 DD 550 DD 750 DD 550 DD 750 DD 1" Tensile Elongation @ 20 MD 33 MD **ASTM D 7003** Peak % (Scrim Break) 20 MD 30 MD 20 MD 36 MD 20 DD 33 DD 20 DD 31DD 20 DD 36 DD Tongue Tear Strength 75 lbf MD 97 lbf MD **ASTM D 5884** 75 lbf MD 104 lbf MD 100 lbf MD 117 lbf MD 75 lbf DD 90 lbf DD 75 lbf DD 92 lbf DD 118 lbf DD 100 lbf DD Grab Tensile 180 lbf MD 218 lbf MD ASTM D 7004 180 lbf MD 222 lbf MD 220 lbf MD 180 lbf DD 257 lbf MD 210 lbf DD 180 lbf DD 223 lbf DD 220 lbf DD 258 lbf DD Trapezoid Tear 120 lbf MD **ASTM D 4533** 146 lbf MD 130 lbf MD 189 lbf MD 160 lbf MD 120 lbf DD 193 lbf MD 141 lbf DD 130 lbf DD 172 lbf DD 160 lbf DD 191 lbf DD \* Dimensional Stability **ASTM D 1204** <1 <0.5 <1 <0.5 <1 < 0.5 Puncture Resistance **ASTM D 4833** 50 lbf 64 lbf 65 lbf 83 lbf 80 lbf 99 lbf Maximum Use Temperature

MD = Machine Direction

Minimum Use Temperature

DD = Diagonal Directions

Note: Minimum Roll Averages are set to take into account product variability in addition to testing variability between laboratories.

180° F

-70° F

180° F

-70° F

\*Dimensional Stability Maximum Value

180° F

-70° F

\*\*DURA-SKRIM J30BB, J36BB & J45BB are a four layer reinforced laminate containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. DURA-SKRIM J30BB, J36BB & J45BB are reinforced with a 1300 denier (minimum) tri-directional scrim

Note: RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, as guarantee of satisfactory results from reliance upon confained information or recommendations and



# PLANT LOCATION

180° F

-70° F

Sioux Falls, South Dakota

# SALES OFFICE

180° F

-70° F

P.O. Box 5107 Sioux Falls, SD 57117-5107 (605) 335-0174 (605) 331-0333 FAX 800-635-3456

180° F

-70° F

# RAVEN INDUSTRIES INC. EXPOSED GEOMEMBRANE LIMITED WARRANTY

Raven Industries Inc. warrants Dura-Skrim J30BB, J36BB, and J45BB to be free from manufacturing defects and to be able to withstand normal exposure to sunlight for a period of 20 years from the date of sale for normal use in approved applications in the U.S and Canada, excluding Hawaii. This warranty is effective for products sold and shipped from January 1, 2008 to December 31, 2008.

This Limited Warranty does not include damages or defects in the Raven geomembrane resulting from acts of God, casualty or catastrophe including but not limited to: earthquakes, floods, piercing hail, or tornadoes. The term "normal use" as used herein does not include, among other things improper handling during transportation, unloading, storage or installation, the exposure of Raven geomembranes to harmful chemicals, atypical atmospheric conditions, abuse of Raven geomembranes by machinery, equipment or people; improper site preparation or covering materials, excessive pressures or stresses from any source or improper application or installation. Raven geomembrane material warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson Moss Warranty or any similar federal, state, or local statues. The parties expressly agree that the sale hereunder is for commercial or industrial use only.

Should defects or premature loss of use within the scope of the above Limited Warranty occur, Raven Industries Inc. will, at its option, repair or replace the Raven geomembrane on a pro-rata basis at the then current price in such manner as to charge the Purchaser/User only for that portion of the warranted life which has elapsed since purchase of the material. Raven Industries Inc. will, at its will have the right to inspect and determine the cause of any alleged defect in the Raven geomembrane and to take appropriate steps to repair or replace the Raven geomembrane if a defect exists which is covered under this warranty. This Limited Warranty extends only to Raven's geomembrane, and does not extend to the installation service of third parties nor does it extend to materials furnished or installed by others in connection with the intended use of the Raven geomembranes.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail, to the General Manager of Engineered Films Division of Raven Industries Inc. within ten (10) days of becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have any rights under this warranty. Raven Industries Inc. shall not be obligated to perform repairs or replacements under this warranty unless and until the area to be replacement of Raven geomembrane to be free from all water, dirt, sludge, residuals and liquids of any kind. If after inspection it is associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the material as Raven Industries Inc. determines to have violated the warranty provided herein. Raven Industries Inc. shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to, damages for loss of production, lost profits, personal injury or property damage. Raven Industries Inc. shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser unless Raven Industries Inc. specifically authorized, in writing, said repairs, replacements, modifications or alteration in advance of them having been made. Raven Industry's liability under this warranty shall in no event exceed the replacement cost of the material sold to the Purchaser for the particular installation in which it failed.

Raven Industries Inc. neither assumes nor authorizes any person other than the undersigned of Raven Industries Inc. to assume for it any other or additional liability in connection with the Raven geomembrane made on the basis of the Limited Warranty. The Limited Warranty on the Raven geomembrane herein is given in lieu of all other possible material warranties, either expressed or implied, and by accepting delivery of the material; Purchaser waives all other possible warranties, except those specifically given. This Limited Warranty may only be modified by written document mutually executed by Owner and Raven Industries Inc.

Limited Warranty is extended to the purchaser/owner and is non-transferable and non-assignable; i.e., there are no third-party beneficiaries to this warranty.

Purchaser acknowledges by acceptance that the Limited Warranty given herein is accepted in preference to any and other possible materials warranties.

THIS LIMITED WARRANTY SHALL BE GOVERNED BY SOUTH DAKOTA LAW AND VENUE FOR ALL LEGAL PROCEEDINGS IN CONNECTION WITH THIS LIMITED WARRANTY SHALL BE IN MINNEHAHA COUNTY, SOUTH DAKOTA. RAVEN INDUSTRIES INC. MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESSED OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS IS THE ONLY WARRANTY THAT APPLIES TO THE MATERIALS REFERRED TO HEREIN AND RAVEN INDUSTRIES INC. DISCLAIMS ANY LIABILITY FOR ANY WARRANTIES GIVEN BY ANY OTHER PERSON OR ENTITY, EITHER WRITTEN OR ORAL.

RAVEN INDUSTRIES' WARRANTY BECOMES AN OBLIGATION OF RAVEN INDUSTRIES INC. TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT AND EXECUTION BY A DULY AUTHORIZED OFFICER OF RAVEN INDUSTRIES INC.

# Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Maintenance and Operating Plan

In accordance with Rule 19.15.17 the following information describes the operation and maintenance of Below Grade Tank (BGT) on Burlington Resources Oil & Gas Company, LP (BR) locations. This is BR's standard procedure for all BGT. A separate plan will be submitted for any BGT which does not conform to this plan.

## General Plan:

- BR will operate and maintain a BGT to contain liquids and solids and maintain the integrity of the liner, liner system and secondary containment system to prevent contamination of fresh water and protect public health and environment. BR will accomplish this by performing an inspection on a monthly basis, installing cathodic protection, and automatic overflow shutoff devices as seen on the design plan.
- 2. BR will not discharge into or store any hazardous waste in the BGT.
- 3. BR shall operate and install the below-grade tank to prevent the collection of surface water run-on. BR has built in shut off devices that do not allow a below-grade tank to overflow. BR constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 4. As per 19.17.15.12 Subsection D, Paragraph 3, BR will inspect the below-grade tank at least monthly reviewing several items which include 1) containment berms adequate and no oil present, 2) tanks had no visible leaks or sign of corrosion, 3) tank valves, flanges, and hatches had no visible leaks and 4) no evidence of significant spillage of produced liquids. In addition, BR's multi-skilled operators (MSOs) are required to visit each well location once per week. If detected on either inspection, BR shall remove any visible or measurable layer of oil from the fluid surface of a below-grade tank in an effort to prevent significant accumulation of oil overtime. The written record of the monthly inspections will include the items listed above and will be maintained for five years.
- 5. BR shall require and maintain a 10" adequate freeboard to prevent overtopping of the below-grade tank.
- 6. If the below grade tank develops a leak, or if any penetration of the pit liner or below grade tank, occurs below the liquid's surface, then BR shall remove all liquid above the damage or leak line within 48 hours. BR shall notify the appropriate district office. BR shall repair or replace the pit liner or below grade tank, within 48 hours of discovery. If the below grade tank or pit liner does not demonstrate integrity, BR shall promptly remove and install a below grade tank or pit liner that complies with Subsection I of 19.15.17.11 NMAC. BR shall notify the appropriate district office of a discovery of leaks less than 25 barrels as required pursuant to Subsection B of 19.15.3.116 NMAC shall be reported within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1), and Subparagraph (d) of 19.15.3.116 NMAC shall be reported to the division's Environmental Bureau Chief.

# Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Closure Plan

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of Below Grade Tanks (BGTs) on Burlington Resources Oil & Gas Company, LP locations hereinafter known as BR locations. This is BR's standard procedure for all BGTs. A separate plan will be submitted for any BGT which does not conform to this plan.

### General Requirements:

- BR shall close a below-grade tank within the time periods provided in Subsection A of 19.15.17.13 NMAC. This will include a) below-grade tanks that do not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC; b) permitted below-grade tanks within 60 days of cessation of the below-grade tank's operation., or c) an earlier date that the division requires because of imminent danger to fresh water, public health or the environment. For any closure, BR will file the C144 Closure Report as required.
- 2. BR shall remove liquids and sludge from a below-grade tank prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility. The facilities to be used will be Basin Disposal (Permit #NM-01-005) and Envirotech Land Farm (Permit #NM-01-011). The liner after being cleaned well (Subsection D, Paragraph 1, Subparagraph (m) of 19.15.9.712 NMAC) will be disposed of at the San Juan County Regional Landfill located on CR 3100.
- 3. BR will receive prior approval to remove the below-grade tank and dispose of it in a division-approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office approves. Documentation of how the below-grade tank was disposed of or recycled will be provided in the closure report.
- 4. If there is any on-site equipment associated with a below-grade tank, then BR shall remove the equipment, unless the equipment is required for some other purpose.
- 5. BR shall test the soils beneath the below-grade tank to determine whether a release has occurred. BR shall collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH division approves, does not exceed 100 mg/kg; and the chloride concentration, as determined by EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. BR shall notify the division of its results on form C-141.
- 6. If BR or the division determines that a release has occurred, then BR shall comply with 19.15.3.116 NMAC and 19.15.1.19 NMAC, as appropriate.

- 7. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then BR shall backfill the excavation with compacted, nonwaste containing, earthen material; construct a division-prescribed soil cover; recontour and re-vegetate the site.
- 8. Notice of Closure will be given prior to closure to the Aztec Division office between 72 hours and one week via email or verbally. The notification of closure will include the following:
  - i. Operator's name
  - ii. Location by Unit Letter, Section, Township, and Range. Well name and API number.
- 9. The surface owner shall be notified of BR's closing of the below-grade tank prior to closure as per the approved closure plan via certified mail, return receipt requested.
- 10. Re-contouring of location will match fit, shape, line, form and texture of the surrounding. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be place in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
- 11. BR shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM stipulated seed mixes will used on federally jurisdicted lands and division-approved seed mixtures (administratively approved if required) will be utilized on all State or private lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. If alternate seed mix is required by the state, private owner or tribe, it will be implemented with administrative approval if needed. BR will repeat seeding or planting will be continued until successful vegetative growth occurs.
- 12. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater.
- 13. All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of closure of the belowgrade tank. Closure report will be filed on C-144 and incorporate the following:
  - Soil Backfilling and Cover Installation
  - Re-vegetation application rates and seeding techniques
  - Photo documentation of the site reclamation
  - Confirmation Sampling Results
  - Proof of closure notice •