District I District II

1301 W Grand Avenue, Artesia, NM 88210

District III

District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S St Francis Dr , Santa Fe, NM 87505

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

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.

For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application
Type of action:    X   Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method   Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method   Modification to an existing permit   Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request
Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.
ı. Operator: XTO Energy, Inc. OGRID #: 5380
Address. #382 County Road 3100, Aztec, NM 87410
Facility or well name: O'Kelley #1H
API Number: 30-045-35219 OCD Permit Number:
U/L or Qtr/Qtr G Section 8 Township 27N Range 12W County: San Juan .
Center of Proposed Design:         Latitude         36.59246         Longitude         108.13056         NAD.         □1927 ☒ 1983
Surface Owner:  Federal State Private X Tribal Trust or Indian Allotment
Pit: Subsection F or G of 19.15.17.11 NMAC
Below-grade tank: Subsection I of 19.15.17.11 NMAC  Volume:
Alternative Method:

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)  Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, institution or church)  Four foot height, four strands of barbed wire evenly spaced between one and four feet  Alternate. Please specify	hospital,
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)  Screen Netting Other	
Monthly inspections (If netting or screening is not physically feasible)	
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  ☑ Signed in compliance with 19.15.3.103 NMAC	
Administrative Approvals and Exceptions:  Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.  Please check a box if one or more of the following is requested, if not leave blank:  Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval. Fencing- Hogwire  Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	office for
10.  Siting Criteria (regarding permitting): 19.15.17.10 NMAC  Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accept material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the approoffice or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying above-grade tanks associated with a closed-loop system.	priate district pproval.
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to temporary, emergency, or cavitation pits and below-grade tanks)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	Yes No
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to permanent pits)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	Yes No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.  - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
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.  - Written confirmation or verification from the municipality; Written approval obtained from the municipality	Yes No
Within 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within the area overlying a subsurface mine.  - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	☐ Yes ☐ No
Within a 100-year floodplain FEMA map	☐ Yes ☐ No

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attached.  X Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC  X Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC  X Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  X Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  X Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 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 Number: or Permit Number:
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC  Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9  Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC  Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 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
<ul> <li>□ Previously Approved Design (attach copy of design)</li> <li>□ Previously Approved Operating and Maintenance Plan</li> <li>□ API Number:</li></ul>
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
Permanent Pits Permit Application Checklist: Subsection B of 19 15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Climatological Factors Assessment Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC Quality Control/Quality Assurance Construction and Installation Plan Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan Emergency Response Plan Oil Field Waste Stream Characterization Monitoring and Inspection Plan Erosion Control Plan Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Proposed Closure: 19.15.17.13 NMAC Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.
Type:  Drilling  Workover  Emergency  Cavitation  P&A Permanent Pit  Below-grade Tank  Closed-loop System  Alternative  Proposed Closure Method:  Waste Excavation and Removal  Waste Removal (Closed-loop systems only)  On-site Closure Method (Only for temporary pits and closed-loop systems)  In-place Burial  On-site Trench Burial  Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.  Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC  Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)  Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Groun Instructions: Please indentify the facility or facilities for the disposal of liquid facilities are required.		
Disposal Facility Name: Envirotech	Disposal Facility Permit Number: NM01-0	011
Disposal Facility Name: IEI	Disposal Facility Permit Number: NM01-0	D10B
Will any of the proposed closed-loop system operations and associated activities  ☐ Yes (If yes, please provide the information below) ☐ No	occur on or in areas that will not be used for future ser	vice and operations?
Required for impacted areas which will not be used for future service and operated Soil Backfill and Cover Design Specifications based upon the appropriate Re-vegetation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection Plan - based upon the appropriate requirements of Su	ate requirements of Subsection H of 19.15.17.13 NMA on I of 19.15.17.13 NMAC	С
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the provided below. Requests regarding changes to certain siting criteria may requested an exception which must be submitted to the Santa Fe Environment demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC	ne closure plan.  Recommendations of acceptable sou uire administrative approval from the appropriate dist tal Bureau office for consideration of approval.  Just	rict office or may be
Ground water is less than 50 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; D	ata obtained from nearby wells	☐ Yes ☒ No ☐ NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; D	ata obtained from nearby wells	X Yes No
Ground water is more than 100 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; D	ata obtained from nearby wells	Yes X No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other slake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	significant watercourse or lakebed, sinkhole, or playa	☐ Yes 🛭 No
Within 300 feet from a permanent residence, school, hospital, institution, or chur - Visual inspection (certification) of the proposed site; Aerial photo; Satell		☐ Yes 🖾 No
Within 500 horizontal feet of a private, domestic fresh water well or spring that I watering purposes, or within 1000 horizontal feet of any other fresh water well o  - NM Office of the State Engineer - iWATERS database; Visual inspectio	r spring, in existence at the time of initial application.	Yes 🛛 No
Within incorporated municipal boundaries or within a defined municipal fresh w adopted pursuant to NMSA 1978, Section 3-27-3, as amended  - Written confirmation or verification from the municipality; Written appr		☐ Yes 🛭 No
Within 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Vis	sual inspection (certification) of the proposed site	☐ Yes 🛛 No
Within the area overlying a subsurface mine.  - Written confirmation or verification or map from the NM EMNRD-Mini	ng and Mineral Division	☐ Yes 🛛 No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geold Society; Topographic map</li> </ul>	ogy & Mineral Resources; USGS; NM Geological	☐ Yes ☒ No
Within a 100-year floodplain FEMA map		☐ Yes 🛛 No
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of by a check mark in the box, that the documents are attached.  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements Proof of Surface Owner Notice - based upon the appropriate requirements Construction/Design Plan of Burial Trench (if applicable) based upon the Construction/Design Plan of Temporary Pit (for in-place burial of a drying Protocols and Procedures - based upon the appropriate requirements of 19 Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements Disposal Facility Name and Permit Number (for liquids, drilling fluids and Soil Cover Design - based upon the appropriate requirements of Subsection Re-vegetation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsections.	equirements of 19.15.17.10 NMAC of Subsection F of 19.15.17.13 NMAC appropriate requirements of 19.15.17.11 NMAC g pad) - based upon the appropriate requirements of 19. 15.17.13 NMAC equirements of Subsection F of 19.15.17.13 NMAC of Subsection F of 19.15.17.13 NMAC d drill cuttings or in case on-site closure standards can on H of 19.15.17.13 NMAC on I of 19.15.17.13 NMAC	.15.17.11 NMAC

Operator Application Certification:  I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.
Name (Print): Malia Villers Title: Permitting Tech.
Signature: Main Villers  Date: 9-30-11
e-mail address: malia_villers@xtoenergy.com Telephone: (505) 333-3100
20.  OCD Approval: Permit Application (including closure plan)  Closure Plan (only)  OCD Conditions (see attachment)
OCD Representative Signature: Danath D. Kelling Approval Date: 10/74/2011
Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC  Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.
Closure Completion Date:
Closure Method:  Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Removal (Closed-loop systems only)  If different from approved plan, please explain.
23. Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more that two facilities were utilized.  Disposal Facility Name: Disposal Facility Permit Number:  Were the closed-loop system operations and associated activities performed on or in areas that will not be used for future service and operations?  Yes (If yes, please demonstrate compliance to the items below) No  Required for impacted areas which will not be used for future service and operations:  Site Reclamation (Photo Documentation)  Re-vegetation Application Rates and Seeding Technique  24. Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.  Proof of Closure Notice (surface owner and division)  Proof of Deed Notice (required for on-site closure)  Plot Plan (for on-site closures and temporary pits)  Confirmation Sampling Analytical Results (if applicable)  Waste Material Sampling Analytical Results (required for on-site closure)
<ul> <li>□ Disposal Facility Name and Permit Number</li> <li>□ Soil Backfilling and Cover Installation</li> <li>□ Re-vegetation Application Rates and Seeding Technique</li> <li>□ Site Reclamation (Photo Documentation)</li> <li>On-site Closure Location: Latitude</li></ul>
25. Operator Closure Certification:
I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.
Name (Print): Title:
Signature: Date:
e-mail address: Telephone:



LT Environmental Inc. 2243 Main Avenue, Suite 3 Durango, Colorado 81301 T 970-385-1096

## Pit Permit Siting Criteria nformation Sheet

Client:	XTO Energy	
Project:	Pit Permits	
Revised:	1/25/2011	
Prepared by:	Dustin Held	

, 510.000	Information Sheet	Prepared by:	Dustin Held
API#:	NA	USPLSS:	T27N, R12W, S8G
Name:	O'Kelly #1H	Lat/Long:	36.59246, -108.13056
Depth to groundwater:	Between 50 and 100 feet	Geologic formation:	Nacimiento Formation
Distance to closest continuously flowing watercourse:	7.6 miles north to San Juan River		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	I 35X teet northwest to 1st order I		
المانوي والمالين المالين المستهدين يرام		Soil Type:	Entisols
Permanent residence, school, hospital, institution or church within 300'	NO		
		Annual Precipitation:	8.21" - Farmington; 10.41" Otis; 8.71" Bloomfield
Domestic fresh water well or spring within 500'		Precipitation Notes:	no significant precipitation events on record
Any other fresh water well or spring within 1000'	NO	The many particular and a second seco	
Within incorporated municipal boundaries	i N/O I	Attached Documents:	Hydrogeologic Report Figure 1: Topographic Map Figure 2: Aerial Photo
Within defined municipal fresh water well field	NO		Figure 2: Aerial Prioto Figure 3: Mines, Mills and Quarries Map Figure 4: Water Well and Surface Water Feature Figure 5: Municipal Boundaries Map Figure 6: FEMA Flood Zone Map iWaters Data
Wetland within 500'	NO	Mining Activity:	None identified in the vicinity
Within unstable area	NO		aliv sun helian et sanagal har su historium kondanagen agaditist et annan engantus agadise ada
Within 100 year flood plain	I NO I		
Additional Notes:		·	

DISTRICT 1 1825 N. Fench Dr., Hobbs, N.M. 88240

#### State of New Mexico Energy, Minerals & Natural Resources Department

Form C-102 Revised October 12, 2005 Instructions on back

DISTRECT 8
1301 ML Grand Avenue, Artesia, H.M. 88210

Submit to Appropriate District Office State Lease — 4 Copies Fee Lease — 3 Copies

DISTRICT IN 1000 Rio Brozos Rd., Aztec, N.M. 87410 OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87504-2088

☐ AMENDED REPORT

SAN JUAN

DISTRICT IV 1220 South St. Francis Dr., Sonto Fe, NN 87505

27-N 12-W

#### WELL LOCATION AND ACREAGE DEDICATION PLAT

¹AP <del>1</del>	Number			*Pool Code			<sup>3</sup> Pool Nam	•	
*Property Co	de				<sup>8</sup> Property 1	lame			Well Humber
	l				O'KELL	EY		į	1 <b>H</b>
70GRID No					*Operator	Name			<sup>®</sup> Elevation
					XTO ENERG	Y INC.			5729'
					<sup>10</sup> Surface	Location			
L or lot no.	Section	Township	Range	Lot Ide	Foet from the	North/South line	Feet from the	East/West II	ne County
G	8	27-N	12-W		1650	NORTH	1335	EAST	SAN JUAN
		,	" Bott	om Hole	Location	If Different Fr	om Surface		
il or lot no.	Section	Township	Range	Lot Ide	Feet from the	North/South line	Feet from the	East/West II	ne County

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

SOUTH

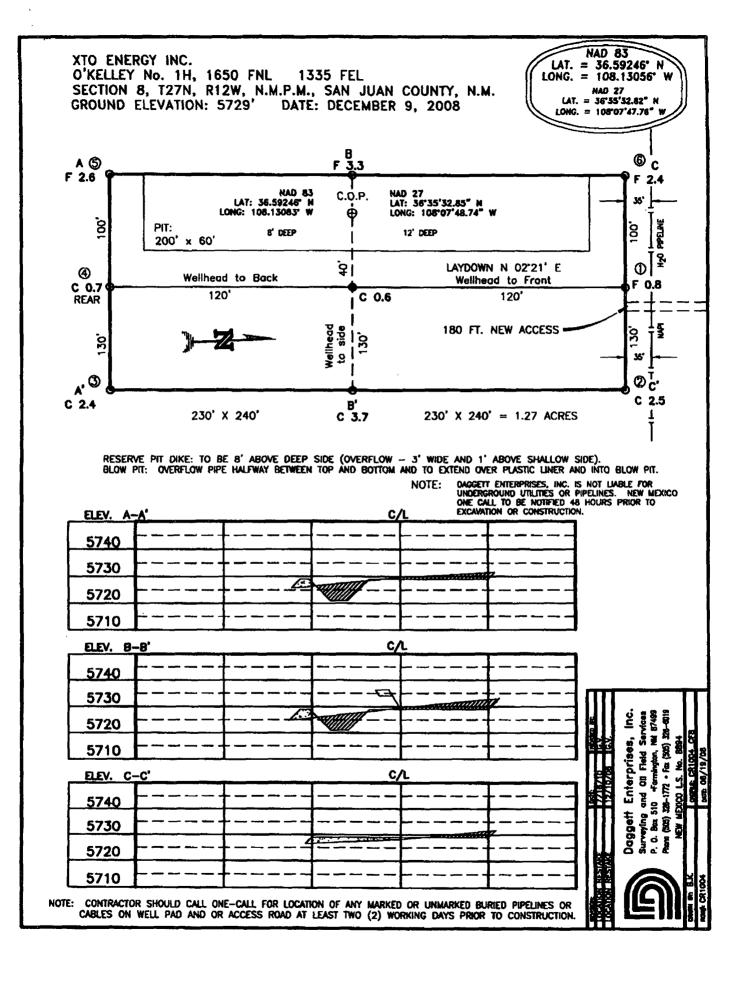
700

<sup>15</sup>Order No.

**EAST** 

700

15	OR A NON-STANDARD UNIT HAS	BEEN APPROVED BY	Y THE DIVISION
SET 1/2' REBAR WITH VELLOW CAP LS. 8894	N 89'56'34" W 5283.89' (M)	FD. 2 1/2" 8C. 1911 G.L.O.	17 OPERATOR CERTIFICATION  I hereby certify that the information contained herein is true and complete to the best of my investedge and belief, and that this organization atther owns a working intending the proposed bettom hale location or has a right to drill this sell at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a computatory pooling order heretolore entered by the
LONG:	SURFACE; : 36.59246° N. (NAD 83) 108.13056° W. (NAD 83) IT: 36'35'32.82° N. (NAD 27) IG:108'07'47.76' W. (NAD 27)	1335'	Signature Date Printed Name
LON	BOTTOM HOLE;  AT: 36.58440° N. (NAD 83) G: 108.12838° W. (NAD 83)  LAT: 36"35'03.84" N. (NAD 27)  DNG: 108"07'42.18" W. (NAD 27)	S 00'04'37" E \$282.76 (M)	18 SURVEYOR CERTIFICATION I hereby certify that the self location shows on this plot was plotted from field notes of actual surveys made by one or under may supervision, and that the same is true and correct to the best of my innovieuse and belief.  DECEMBER 9, 2008  Date of Survey 9 A.  Signoture of Survey 1 A.  Signoture of Survey 1 A.  ME 1/C
PRELIMINARY B.H.L. B.H.L. FOOTAGES ARE AND PROVIDED BY XTO FD. 2 1/2" BC. 1911 G.L.O.		B.H.L. 700°  FD. 2 1/2° BC. 1911/75 GLO.	Corollado Russo





2243 Main Avenue, Suite 3 Durango, Colorado 81301 T 970 385 1096 / F 970.385.1873

#### O'Kelly #1H

#### Hydrogeologic Report for Siting Criteria

#### General Geology and Hydrology

The San Juan Basin is a typical Rocky Mountain basin with a gently dipping southern flank and a steeply dipping northern flank. Asymmetrically layered Tertiary sandstones and shales, along with Quaternary alluvial deposits, dominate the surficial geology (Dane and Bachman, 1965). The proposed pit location will be in the Bisti region of the San Juan Basin (Figure 1). The predominant geologic formation is the Nacimiento Formation, which underlies surface soils or is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands also occur near the surface of the area, especially near streams and washes.

Cretaceous and Tertiary sandstones and Quaternary alluvial deposits serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). In most of the proposed area, the Nacimiento Formation lies at the surface and grades into the Animas Formation to the west. Thickness of the Nacimiento ranges from 418 to 2232 feet (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000 feet deep in this section of the basin (Stone et al., 1983). Groundwater within these aquifers flows regionally to the southwest, toward the San Juan River

The prominent soil types at the proposed site are entisols and aridisols, which are defined as soils exhibiting little to no profile development (www.emnrd.state.nm.us). Soils are basically unaltered from their parent rock. Miles of arroyos, washes and intermittent streams exist as part of the drainage network towards the San Juan River. These features often cut into soil and other unconsolidated materials, contributing to sedimentation downstream. The sudden influx of water from storm events easily erodes the soils that cover the area and prohibits effective recharge to the underlying aquifers.

The climate is arid, averaging just over 8 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. Most recharge occurs during the winter months during snowmelt periods within the upper elevations (Western Regional Climate Center, www.wrcc.dri.edu).

The predominant vegetation is sagebrush and grasses with a more restricted piñon-juniper association (Dick-Peddie, 1993).



#### Site-Specific Hydrology

Depth to groundwater at the site is estimated to be between 50 and 100 feet. This estimation is based on data from Stone and others (1983), the USGS Groundwater Atlas of the United States and depth to groundwater data published on the New Mexico State Engineer's iWaters Database website. Local topography, proximity to adjacent channels and springs are also taken into consideration.

Beds of water-yielding sandstone are present in the Nacimiento Formation, which are fluvial in origin and are interbedded with siltstone, shale and coal. Porous sandstones form the principal aquifers, while relatively impermeable shales form confining units between the aquifers (Stone et al., 1983). Local aquifers exist within the Nacimiento Formation at depths greater than 100 feet and thicknesses of the aquifer can be up to 3,500 feet (USGS, Groundwater Atlas of the US).

Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. The closest well (RG 76598) to the site is located 2.6 miles to the northeast and is 210 feet higher in elevation. Depth to groundwater within the well is 145 feet below ground surface. A map showing the location of wells in reference to the proposed pit location is attached.

The site in question is located at an elevation of approximately 5,729 feet and is approximately 3,000 feet east of Gallegos Canyon. Broad shalely hills are interspersed with occasional sandstone outcrops, and systems of dry washes and their tributaries are evident on the attached aerial image. The proposed well site is 95 feet higher in elevation than Gallegos Canyon, suggesting groundwater is between 50 and 100 feet deep at this site.

#### References

Dane, C.H. and Bachman, G. O., 1965, Geologic Map of New Mexico: U.S. Geological Survey, 1 sheet, scale 1:500,000.

Dick-Peddie, W.A., 1993, New Mexico Vegetation – Past, Present and Future: Albuquerque, New Mexico, University of New Mexico Press, 244 p.

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

USGS, Groundwater Atlas of the United States: Arizona, Colorado, New Mexico, Utah, HA 730-C: (http://www.pubs.usgs.gov).

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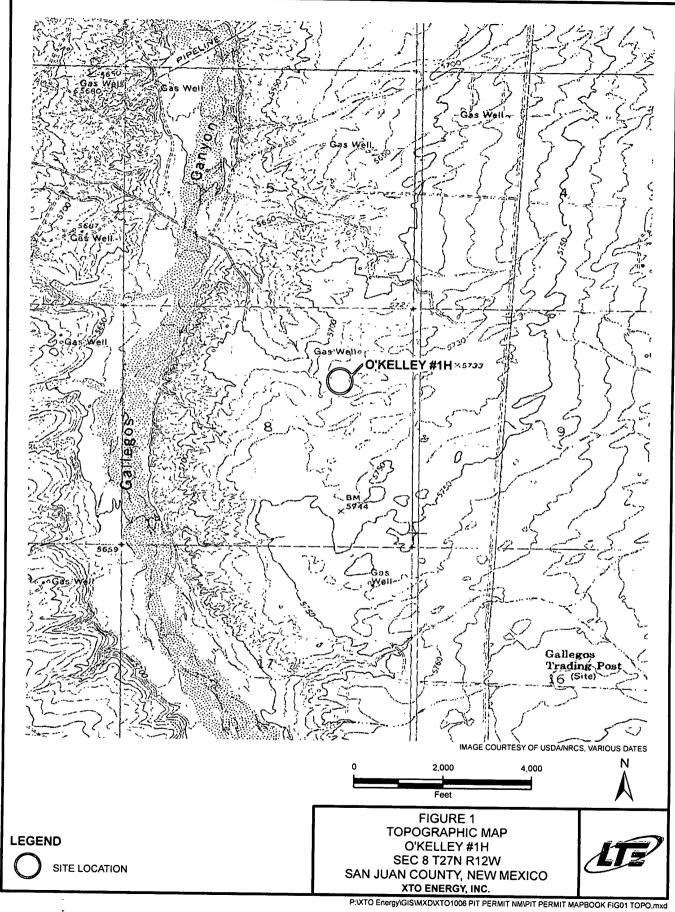
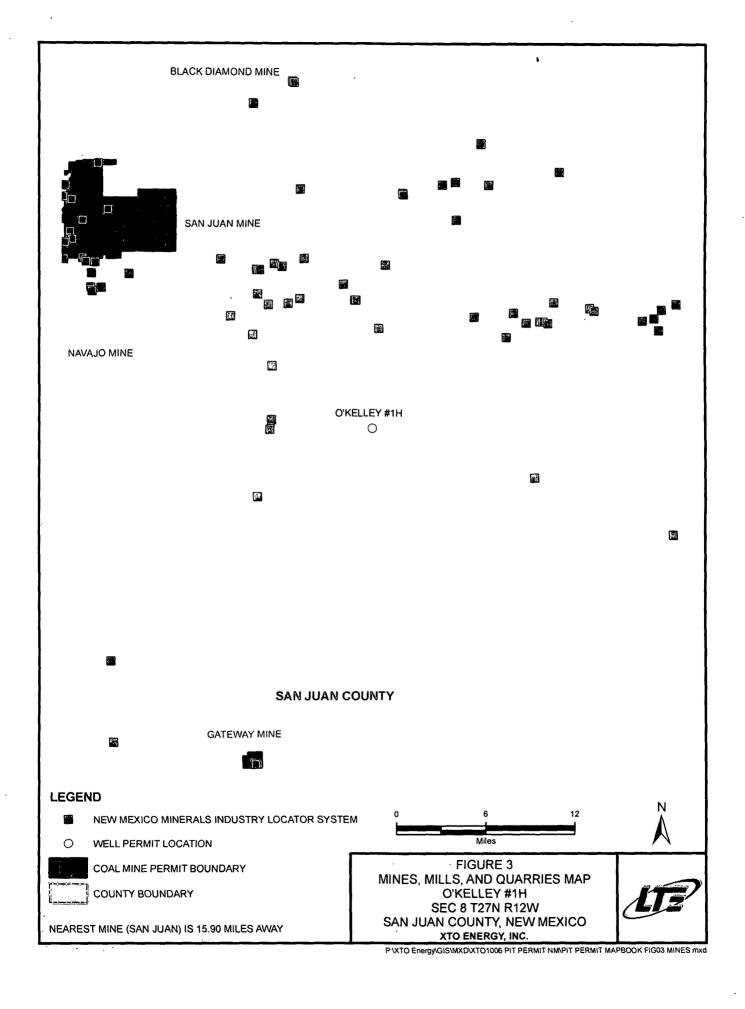
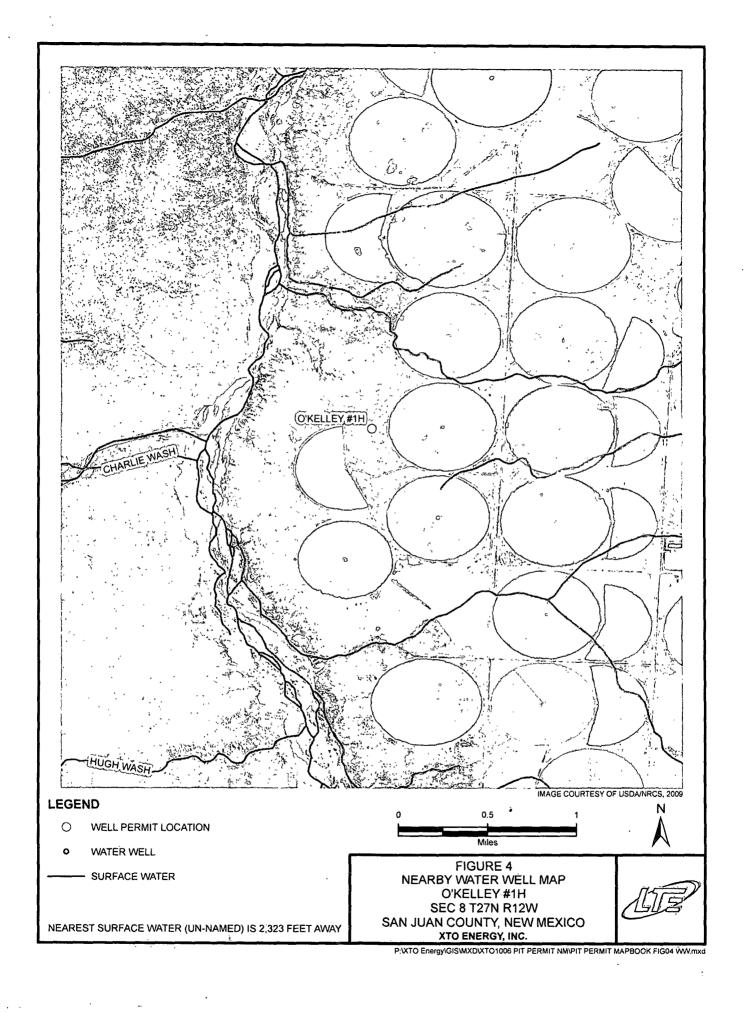


IMAGE COURTSEY OF USDAVNCS, 2009 200 400 Feet FIGURE 2 AERIAL PHOTOGRAPHIC MAP O'KELLEY #1H **LEGEND SEC 8 T27N R12W** SAN JUAN COUNTY, NEW MEXICO WELL PERMIT LOCATION XTO ENERGY, INC. P.IXTO EnergylGIS\MXDIXTO1006 PIT PERMIT NM\PIT PERMIT MAPBOOK FIG02 AERIAL mxd





/DO	and a great for the state of th			C	DLORADO
				NE	W MEXICO
		, FLORA VISTA			
		•	Y	RMINGTON	
~ NENAHNEZAD	KIRTLAND	-	AZTEC		
SHIPROCK	UPPER FRUITLAND	FARMINGTON	. BLO	DOMFIELD	
	OJO AMARILLO				
		NAPI HQ			
		O.KETTEA	#1H		
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		HUERFANO			
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WELL PERMIT LOCATION	N	o <b>J</b>	10	20	Ä
MUNICIPAL BOUNDARY			Miles		$\sim$
COUNTY BOUNDARY		MILINIA	FIGURE :	S ADIES MAD	
tema			O'KELLEY #	<b>‡1</b> H	IT.
			SEC 8 T27N F	R12W NEW MEXICO	

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### New Mexico Office of the State Engineer.

### **Wells with Well Log Information**

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

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

(in feet)

Depth Depth

POD Number RG 76598

basin Use County Source 6416 4 Sec Tws Rng

Y Start Date Finish Date Date

Well Water

DOM TA Shallow 1 4 3 02 27N 12W 224081 4054893\* 11/30/2001 12/03/2001 12/07/2001

**Record Count: 1** 

PLSS Search:

Section(s): 2

Township: 27N

Range: 12W

\*UTM location was derived from PLSS - see Help

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

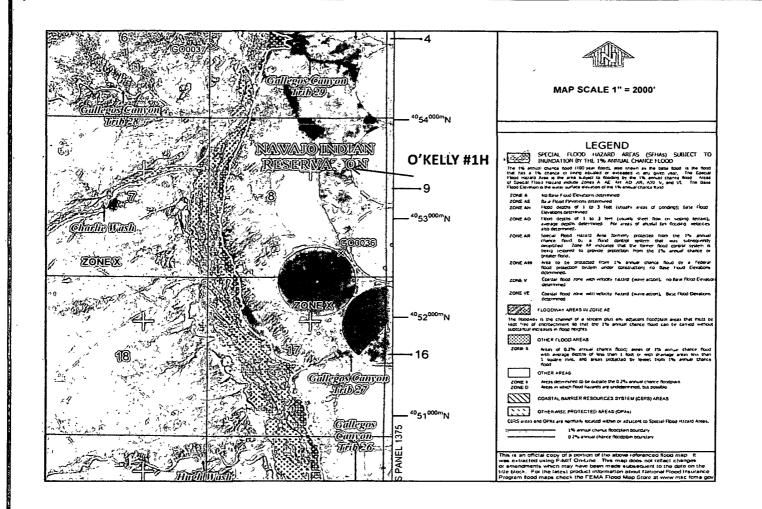


FIGURE 6
FEMA FLOOD ZONE MAP
O'KELLY #1H
SEC 8 T27N R12W
SAN JUAN COUNTY, NEW MEXICO
XTO ENERGY, INC.





#### Malia Villers/FAR/CTOC 02/04/2011 08:22 AM

To arvintrujillo@frontiernet.net

cc

bcc

Subject O'Kelley #1H Well Site

RE: O'Kelley #1H

Sec. 8 (G), T27N-R12W, San Juan County

Dear Mr. Trujillo,

This submittal is pursuant to Rule 19.15.17.13 requiring operators to notify surface owners of on site burial of temporary pits. XTO Energy Inc. (XTO) is hereby providing written documentation of our intention to close the temporary pit associated with the aforementioned location by means of in place burial.

Should you have any questions or require additional information please feel free to contact me at your earliest convenience (505) 333-3100.

Malia Villers Permitting Tech. XTO Energy Inc. 505-333-3100 Direct: 505-333-3698

Direct: 505-333-3698 Cell: 505-787-7700

malia\_villers@xtoenergy.com

# XTO Energy Inc. San Juan Basin Pit Design and Construction Plan

In accordance with Rule 19.15.17.11 NMAC the following information describes the design and construction of temporary pits on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit which does not conform to this plan.

#### General Plan

- 1. XTO will design and construct a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public heath and environment.
- Prior to constructing the pit, topsoil will be stockpiled in the construction zone for later use in restoration.
- XTO will post a well sign, in compliance with 19.15.3.103 NMAC, on the well site prior to
  construction of the temporary pit. The sign will list the Operator on record as the operator, the
  location of the well site by unit letter, section, township, range, and emergency telephone
  numbers.
- 4. XTO shall construct all new fences utilizing 48" steel mesh field-fence (hogwire) on the bottom with a single strand of barbed wire on top. T-posts shall be installed every 12 feet and corners shall be anchored utilizing a secondary T-post. Temporary pits will be fenced at all times excluding drilling or workover operations, when the front side of the fence will be temporarily removed for operational purposes.
- 5. XTO shall construct the temporary pit so that the foundation and interior slopes are firm and free of rocks, debris, sharp edges or irregularities to prevent liner failure.
- 6. XTO shall construct the pit so that the slopes are no steeper than two horizontal feet to one vertical foot
- 7. Pit walls will be walked down by a crawler type tractor following construction.
- 8. All temporary pits will be lined with a 20-mil, string reinforced, LLDPE liner, complying with EPA SW-846 method 9090A requirements.
- Geotextile will be installed beneath the liner when rocks, debris, sharp edges or irregularities cannot be avoided.
- All liners will be anchored in the bottom of a compacted earth-filled trench at least 18 inches deep.
- 11. XTO will minimize liner seams and orient them up and down, not across a slope. Factory seams will be used when possible. XTO will ensure all field seams are welded by qualified personnel. Field seams will be overlapped four to six inches and will be oriented parallel to the line of maximum slope. XTO will minimize the number of field seams in corners and irregularly shaped areas.
- 12. The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or a manifold system.
- 13. The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some areas.
- 14. The volume of the pit shall not exceed 10 acre-feet, including freeboard.

# XTO Energy Inc. San Juan Basin Maintenance and Operating Plan

In accordance with Rule 19.15.17.12 NMAC the following information describes the operation and maintenance of temporary pits on XTO Energy Inc. locations. This is XTO's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit which does not conform to this plan.

#### General Plan

- 1. XTO will operate and maintain a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment.
- 2. XTO will conserve drilling fluids by transmitting liquids to pits ahead of the rigs whenever possible. All drilling fluids will be disposed at Basin Disposal Inc, Permit # NM-01-005.
- 3. XTO will not discharge or store any hazardous waste in any temporary pit.
- 4. If any pit liner integrity is compromised, or if any penetration of the liner occurs above the liquid surface, then XTO shall notify the Aztec Division office by phone or email within 48 hours of the discovery and repair the damage or replace the liner.
- 5. If a leak develops below the liquid level, XTO shall remove all liquids above the damaged liner within 48 hours and repair the damage or replace the liner. XTO shall notify the Aztec Division office by phone or email within 48 hours of the discovery for leaks less than 25 barrels. XTO shall notify the Aztec Division office as required pursuant to Subsection B of 19.15.3.116 NMAC 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.
- 6. The liner shall be protected from any fluid force or mechanical damage through the use of mud pits slides, or a manifold system.
- 7. The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some cases.
- 8. XTO shall immediately remove any visible layer of oil from the surface of the temporary pit after cessation of a drilling or workover operation. Oil absorbent booms will be utilized to contain and remove oil from pits surface. An oil absorbent boom will be stored on-site until closure of pit.
- Only fluids generated during the drilling or workover process will be discharged into a temporary pit.
- 10. XTO will maintain the temporary pit free of miscellaneous solid waste or debris.
- 11. During drilling or workover operations, XTO will inspect the temporary pit at least once daily to ensure compliance with this plan. Inspections will be logged and logs maintained for review. XTO will file this log with the Aztec Division office upon closure of the pit.
- 12. After drilling or workover operations, XTO will inspect the temporary pit weekly so long as liquids remain in the temporary pit. A log of the inspections will be stored at XTO's office electronically and will be filed with the Aztec Division office upon closure of the pit.
- 13. XTO shall maintain at least two feet of freeboard for a temporary pit.
- 14. XTO shall remove all free liquids from a temporary pit within 30 days from the date the operator releases the drilling or workover rig.

### XTO Energy Inc. San Juan Basin Closure Plan

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of temporary pits on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit which does not conform to this plan.

All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of pit closure. Closure report will be filed on C-144 and incorporate the following.

- Details on Capping and Covering, where applicable.
- Plot Plan (Pit Diagram)
- Inspection Reports
- · Sampling Results
- C-105
- Copy of Deed Notice will be filed with County Clerk

#### General Plan:

- 1. All free standing liquids will be removed at the start of the pit closure process from the pit and disposed of in a division-approved facility or recycled, reused, or reclaimed in a manner that the Aztec Division office approves.
- 2. The preferred method of closure for all temporary pits will be on-site, in-place burial, assuming that all criteria listed in sub-section (B) of 19.15.17.13 are met.
- 3. The surface owner shall be notified of XTO proposed closure plan using a means that provides proof of notice i.e., Certified mail, return receipt requested.
- Within 6 months of the Rig Off status occurring XTO will ensure that temporary pits are closed, re-contoured, and reseeded.
- 5. Notice of Closure will be given to the Aztec Division office between 72 hours and one week of closure via email, or verbally. The notification of closure will include the following:
  - i. Operators Name
  - Location by Unit Letter, Section, Township, and Range. Well name and API number.
- 6. Liner of temporary pit shall be removed above "mud level" after stabilization. Removal of liner will consist of manually or mechanically cutting liner at mud level and removing all remaining liner. Care will be taken to remove "ALL" of the liner i.e., edges of liner entrenched or buried. All excessive liver will be disposed of at a licensed disposal facility.
- 7. Pit contents shall be mixed with non-waste containing, earthen material in order to achieve appropriate solidification. The solidification process will be accomplished using a combination of natural drying and mechanically mixing. Pit contents will be mixed with non-waste, earthen material to a consistency that is deemed a safe and stable. The mixing ratio shall not exceed 3 parts clean soil to 1 part pit contents.
- 8. A five point composite sample will be taken of the pit using sampling tools and all samples tested per Subsection B of 19.15.17.13(B)(1)(b). In the event that the criteria are not met, all contents will be handled per Subparagraph (a) of Paragraph (1) of Subsection B 0f 19.15.17.13 i.e., Dig and haul. Disposal facility to be utilized should this method be required will be Envirotech, Permit No. NM01-0011 or IEI, Permit No. NM01-0010B.

Components	Test Method	Limit (mg/Kg)
Benzene	EPA SW-846 8021B or 8260B	0.2
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	2500
GRO/DRO	EPA SW-846 8015M	500
Chlorides	EPA 300.1	500 or background

- 9. Upon completion of solidification and testing, the pit area will be backfield with compacted, non-waste containing, earthen material. 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.
- 10. Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, ponding prevention, and erosion prevention. Natural drainages will be unimpeded and water bars and/or silt traps will be placed 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. Notification will be sent to OCD when the reclaimed area is seeded.
- 12. XTO 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 of Forest Service stipulated seed mixes will be used on Federal 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. Repeat seeding or planting will be continued until successful vegetative growth occurs.
- 13. The temporary pit will be located with a steel marker, no less than four inches in diameter, cemented in a hole three feet deep in the center of the onsite burial upon the abandonment of all the wells on the pad. The marker will be flush with the ground to allow access of the active well pad and for safety concerns. The marker will include a threaded collar to be used for future abandonment. The top of the marker will contain a welded steel 12" square plate that indicates the onsite burial of the temporary pit. The plate will be easily removable and a four foot tall riser will be threaded into the top of the collar marker and welded around the base with the operator's information at the time all wells on the pad are abandoned. The operator's information will include the following: Operators Name, Lease Name, Well Name and Number, Unit Number, Section, Township, Range and an indicator that the marker is an onsite burial location.

# XTO Energy Inc. San Juan Basin Closed-Loop System Design and Construction Plan

In accordance with Rule 19 15.17.11 NMAC the following information describes the design and construction of closed-loop systems on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all closed-loop systems. A separate plan will be submitted for any closed-loop system which does not conform to this plan.

#### General Plan

Our closed-loop system will not entail a drying pad, temporary pit, below grade tank or sump. It will entail an above ground tank suitable for holding the cuttings and fluids for rig operations. The tank will be of sufficient volume to maintain a safe free board between disposal of the liquids and solids from rig operations.

- 1. Fencing is not required for an above ground closed-loop system.
- 2. It will be signed in compliance with 19.15.3.103 NMAC.

### XTO Energy Inc. San Juan Basin

### Closed-Loop Systems Maintenance and Operating Plan

In accordance with Rule 19.15.17.11 NMAC the following information describes the operation and maintenance of closed-loop systems on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all closed-loop systems. A separate plan will be submitted for any closed-loop system which does not conform to this plan.

#### **General Plan**

The closed-loop tank will be operated and maintained; to contain liquids and solids, to aid in the prevention of contamination of fresh water sources, in order to protect public health and the environment. To attain the goal the following steps will be followed:

- 1. The liquids will be vacuumed out and disposed of at the Basin Disposal, Inc. facility (Permit Number NM01-005). An alternative if available for liquids disposal, will be to move the liquids forward to a XTO temporary pit constructed in accordance with all specifications in NMAC Rule 19.15.17 for a well yet to be drilled. All specifications, limitations, and rules within the New Mexico Administrative Code regulating this transfer of liquids will be strictly adhered to. As a third alternative, if Basin Disposal turns away the fluids because of capacity reasons, and the second transfer option is not available, XTO may elect to haul fluids to IEI (Permit Number NM01-0010B) for final disposition
- Solids in the closed-loop tank will be vacuumed out and disposed of at Envirotech (Permit Number NM01-0011) or IEI (Permit Number NM01-0010B) on a periodic basis to prevent over topping.
- No hazardous waste, miscellaneous solids, waste, or debris will be discharged into, or stored in the tank. Only fluids or cutting used or generated by rig operations will be placed or stored in the tank
- 4. The division district office will be notified within 48 hours of the discovery of compromised integrity of the closed-loop tank. Upon discovery of the compromised tank, repairs will be enacted immediately.
- All of the above operations will inspected and a log will be signed and dated daily during rig
  operations.

# XTO Energy Inc. San Juan Basin Closed-Loop System Closure Plan

In accordance with Rule 19.15.17.11 NMAC the following information describes the closure requirements of closed-loop systems on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all closed-loop systems. A separate plan will be submitted for any closed-loop system which does not conform to this plan.

#### General Plan

XTO will close a drying pad used for a closed-loop system within six months from the date that XTO released the drilling or workover rig. XTO will not the date of the drilling or workover rig's release on form C-105 or C-103, riled with the division, upon the well's or workover's completion.

The closed-loop tank will be closed in accordance with 19.15.17.13 NMAC. This will be done by transporting cuttings and all remaining sludges to Envirotech (Permit Number NM01-0011) or IEI (Permit Number NM01-0010B) immediately following rig operations.

All remaining liquids will be transported and disposed of at the Basin Disposal, Inc facility (Permit Number NM 01-005). As an alternative (in the event Basin Disposal refused liquids because of capacity considerations, and if proper inventory space is available for liquids transfer while meeting free board requirements), the liquids will be moved forward to a XTO temporary pit constructed in accordance with all specifications in NMAC Rule 19.15.17 for a well yet to be drilled. All specifications, limitations, and rules within the New Mexico Administrative Codes regulating this transfer of liquids will be strictly adhered to. As a third alternative, if Basin Disposal turns away the fluids because of capacity reasons, and the second transfer option is not available, XTO may elect to haul the fluids to IEI (Permit Number 01-0010B) for final disposition.

The tanks will be removed from the location as part of the rig move. At the time of well abandonment the site will be reclaimed and re-vegetated to pre-existing conditions when possible.