Form C-144 July 21, 2008

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztee, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
COUD JUN II HI 11 22

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: 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.									
Operator: Devon Energy Production Company, L.P. OGRID #: 6137									
Address: 20 N. Broadway, Oklahoma City, OK 73102									
Facility or well name: NEBU 237									
API Number: 30-045-33139 OCD Permit Number:									
U/L or Qtr/Qtr P/SESE Section 26 Township 31N Range 7W County: San Juan									
Center of Proposed Design: Latitude 36.86578 Longitude -107.53463 NAD: □1927 ⋈ 1983									
Surface Owner: Federal State Private Tribal Trust or Indian Allotment									
Pit: Subsection F or G of 19.15.17.11 NMAC									
Temporary: Drilling Workover									
Permanent Emergency Cavitation P&A									
Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other									
☐ String-Reinforced									
Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D									
3. Closed-loop System: Subsection H of 19.15.17.11 NMAC									
Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)									
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other									
☐ Lined ☐ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other									
Liner Seams: Welded Factory Other									
4. Subsection I of 19.15.17.11 NMAC									
Volume: 80 bbl Type of fluid: Produced Water									
Tank Construction material: Steel									
Secondary containment with leak detection Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off									

Alternative Method:

Liner type: Thickness _

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

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☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other

·							
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, hospital, institution or church) Four foot height, four strands of barbed wire evenly spaced between one and four feet Alternate. Please specify: Four Foot high, steel mesh field fence (hog wire) with pipe top railing.							
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks) Screen Netting Other: Expanded metal or solid vaulted top Monthly inspections (If netting or screening is not physically feasible)							
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: Fencing Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval. Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	office for						
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 appropriate 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 ☐ NA						
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 ☑ NA						
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						
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ 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. □ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC □ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC □ Siting Criteria Compliance Demonstrations - 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 □ Previously Approved Design (attach copy of design) API Number: or Permit Number:
12.
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
Previously Approved Design (attach copy of design) API Number:
☐ Previously Approved Operating and Maintenance Plan API Number:(Applies only to closed-loop system that use
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 ₂ 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 (Below Grade Tank) 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 Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.) Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if facilities are required.								
Disposal Facility Name: Disposal Facility Permit Number:								
Disposal Facility Name: Disposal Facility Permit Number:								
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future service and operations? Yes (If yes, please provide the information below) No								
Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13 NMA Re-vegetation Plan - 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	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 closure plan. Recommendations of acceptable south provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate disting considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Just demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	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; Data 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; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA							
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA							
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. - 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; 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							
 Within an unstable area. Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map 	☐ Yes ☐ No							
Within a 100-year floodplain FEMA map	☐ Yes ☐ No							
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan by a check mark in the box, that the documents are attached. Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19. 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 Waste Material Sampling Plan - 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 or in case on-site closure standards cannot 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 G 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): Katie Baird	-	
Signature: Watie Baird	Date: DS	0.05-09
e-mail address: katie.baird@dvn.com	Telephone:	(505) 324-5621
OCD Approval: Permit Application (including closure plan)	sure Plan (only) OCD Co	onditions (see attachment)
OCD Representative Signature:		Approval Date:
Title:	OCD Permit Number	r:
Closure Report (required within 60 days of closure completion): Substitutions: Operators are required to obtain an approved closure plan The closure report is required to be submitted to the division within 60 days ection of the form until an approved closure plan has been obtained and	prior to implementing any closurys of the completion of the clo	sure activities and submitting the closure report. osure activities. Please do not complete this
	☐ Closure Comple	tion Date:
Closure Method: Waste Excavation and Removal On-Site Closure Method If different from approved plan, please explain.	Alternative Closure Method	☐ Waste Removal (Closed-loop systems only)
Closure Report Regarding Waste Removal Closure For Closed-loop Sy Instructions: Please indentify the facility or facilities for where the liquid two facilities were utilized.		
Disposal Facility Name:	Disposal Facility Perm	nit Number:
Disposal Facility Name:	Disposal Facility Perm	nit Number:
Were the closed-loop system operations and associated activities performed Yes (If yes, please demonstrate compliance to the items below)		used for future service and operations?
Required for impacted areas which will not be used for future service and of Site Reclamation (Photo Documentation) Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique	operations:	х,
24. Closure Report Attachment Checklist: Instructions: Each of the follow 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 closures and Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique Site Reclamation (Photo Documentation) On-site Closure Location: Latitude		
25.		
Operator Closure Certification: I hereby certify that the information and attachments submitted with this clobelief. I also certify that the closure complies with all applicable closure re	osure report is true, accurate an quirements and conditions spec	nd complete to the best of my knowledge and cified in the approved closure plan.
Name (Print):	Title:	
Signature:	Date:	
e-mail address:	Telephone:	

NEBU #237 Below Ground Tank 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 surficial geology (Dane and Bachman, 1965). The proposed pit location will be located in the north-central San Juan Basin near Navajo Lake. The predominant geologic formation is the San Jose Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur near the surface of the area, especially near streams and washes.

Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits, serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). In most of the proposed area, the San Jose Formation lies at the surface and overlies the Nacimiento Formation. Thickness of the San Jose ranges from 200 to 2700 feet, thickening from west to east across the region of interest (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the San Jose Formation are between 0 and 2700' 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. More locally, groundwater flow is controlled by Navajo Lake. Little specific hydrogeologic data is available for the San Jose Formation system, but "numerous wells and springs used for stock and domestic supplies" draw their water from the San Jose Formation (Stone et al, 1983).

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.

Regional weather further prohibits active recharge. The climate is arid, averaging almost 13 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from July through September. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. September through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. The most active recharge occurs during the winter snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu).

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

Site Specific Hydrogeology

Depth to groundwater at the site is estimated to be greater than 100'. 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 and observations made during a site visit are also taken into consideration.

The region is dominated by Navajo Lake and its associated canyons and gullies as evidenced on the attached topographic map and aerial photo. Relatively large, flat-topped mesas composed of thick sandstone sequences surround the perimeter of the lake and are often over 200 feet higher in elevation than the lake. Canyons and gullies erode into the sandstone and are filled with alluvium. This particular site is located on a mesa top only 877 feet away from the main channel of Navajo Lake, but is over 250 feet higher in elevation than the surface of the lake water. To the west lies Negro Andy Canyon, a first order tributary to the lake.

The massive sandstone outcrops, upon which the site in question is situated, is part of the San Jose Formation. Beds of water-yielding sandstone are present in the San Jose Formation, which are fluvial in origin and are interbedded with mudstone, siltstone & shale. Porous sandstones form the principal aquifers in the area, while relatively impermeable shales and mudstones form confining units between the aquifers (Stone et al., 1983). "Extensive intertonguing" of different members of this formation is reported (Stone et al, 1983). Local aquifers exist within the San Jose Formation at depths greater than 100 feet and thicknesses of the aquifer can be up to several hundred feet (USGS, Groundwater Atlas of the US; Stone et al, 1983).

Depth to groundwater data is extremely limited in this region. Groundwater data available from the NM State Engineer's iWaters Database for wells near the below grade tank are attached and are plotted on the iWaters Groundwater Data Map. The nearest permitted well lies 2.64 miles to the north-northwest (SJ 03426). The water is used for livestock watering, as are many others in the surrounding area. Depth to groundwater in the permitted water well is recorded as 420 feet. Other wells located near Navajo Lake at similar elevations to the site in question contain groundwater at depths in excess of 400 feet.

The elevation difference of over 200 feet between the site and Navajo Lake, the lack of other surface water features and groundwater depths greater than 400 feet deep in nearby permitted water wells is enough to suggest that groundwater at the site is greater than 100 feet.

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 Vegeation – 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).

Western Region Climate Center, 2008, New Mexico climate summaries: Desert Research Institute at http://www.wrcc.dri.edu/summary/climsmnm.html.

New Mexico Energy, Minerals and Natural Resources Department, www.emnrd.state.nm.us



Pit Permit Siting Criteria Information Sheet

Client:	Devon Energy
Project:	Pit Permits
Revised:	4/28/2009
Prepared by:	Brooke Herb

V	iniormation since	r repared by.	Brooke Herb
API#:[30-045-33139	USPLSS:	T31N, R07W, S26P
Name:	NEBU #237	Lat/Long:	36.86578, -107.53463
Depth to groundwater:	>100'	Geologic formation:	San Jose Formation
Distance to closest continuously flowing watercourse:	877' W of main body of Navajo Reservoir		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	1760' E of Negro Andy Canyon		
		Soil Type:	Entisols
Permanent residence, school, hospital, institution or church within 300'	NO		
		Annual Precipitation:	12.95 inches (weather station at Navajo Dam)
Domestic fresh water well or spring within 500'	NO	Precipitation Notes:	no significant precipitation events on record
Any other fresh water well or spring within 1000'	NO		
Within incorporated municipal boundaries	NO	Attached Documents:	Site Visit Survey Hydrogeologic Report Topographic Map
Within defined municipal fresh water well field	NO		Aerial Photo Mines, Mills and Quarries Map FEMA Flood Zone Map
Wetland within 500'	NO	Mining Activity:	None identified in the vicinity
Within unstable area	NO		
Within 100 year flood plain	NO - located within Zone X (500-yr floodplain)		

Additional Notes: All ranges and bearings from the site to identified hydrogeologic features were measured from the aerial photo and confirmed during a site visit. The aerial photo is dated July 30, 2005. More recent aerial photos are available (2007), but show lower lake levels. The 2005 photo aids reviewers by allowing assessment during wetter conditions.

New Mexico Office of the State Engineer POD Reports and Downloads

Township: 30h Range: 07V Sections:

WATER COLUMN REPORT 12/06/2008

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

		(quarter	s are	e bi	gge	est	to	smal!	lest)		Depth	Depth	Water	(in feet)
POD	Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Well	Water	Column	
SJ	02698	30N	07W	15	3	1					402	255	147	
SJ	02366	30N	07W	15	3	1		C	114800	2117300	345	225	120	
SJ	03640	30N	07W	15	3	1	1				433	241	192	
SJ	00837	30N	07W	17	4	4					400			
SJ	03385	30N	07W	17	4	4	4				520	460	60	
SJ	03006	30N	07W	24	1	3	3				100			
SJ	03082	30N	07W	24	3	1	1				98	61	37	
SJ	03485	30N	07W	24	3	1	1				126	60	66	
SJ	02818	30N	07W	24	3	1	2				86	42	44	
SJ	03773 POD	1 30N	07W	24	3	1	2		126639	2112238	120	70	50	
	03053	30N	07W	24	3	4	4				200			
SJ	03075	30N	07W	25	1	2	1				165	78	87	
SJ	03774 POD	1 30N	07W	25	1	3	3		126554	2107670	300	220	80	
SJ	02983	30N	07W	25	1	4	3				262	40	222	
SJ	00035	30N	07W	33	4	2	2				547	467	80	
SJ	03301	30N	07W	34	4	4	4				21	10	11	

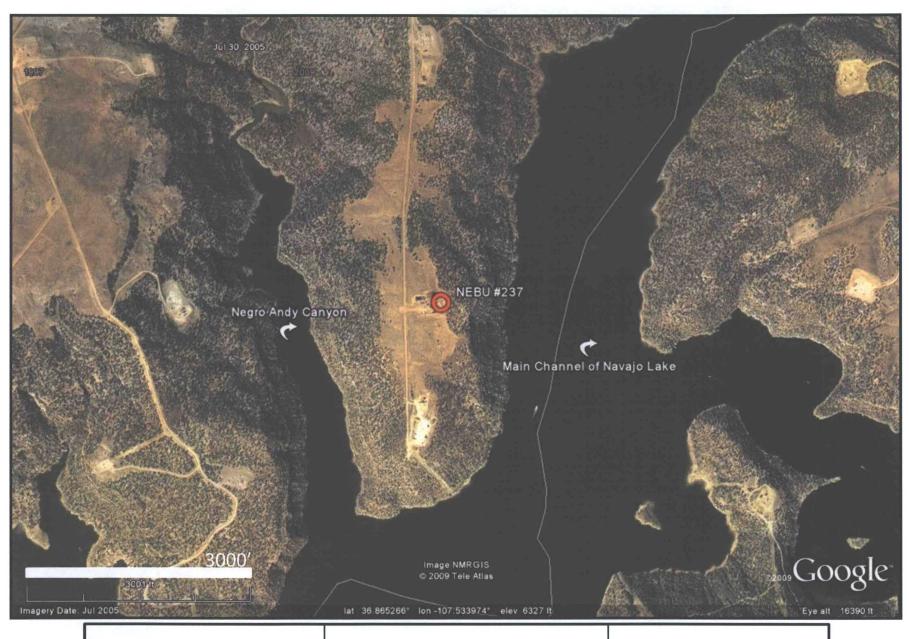
Record Count: 16

New Mexico Office of the State Engineer POD Reports and Downloads

WATER COLUMN REPORT 12/05/2008

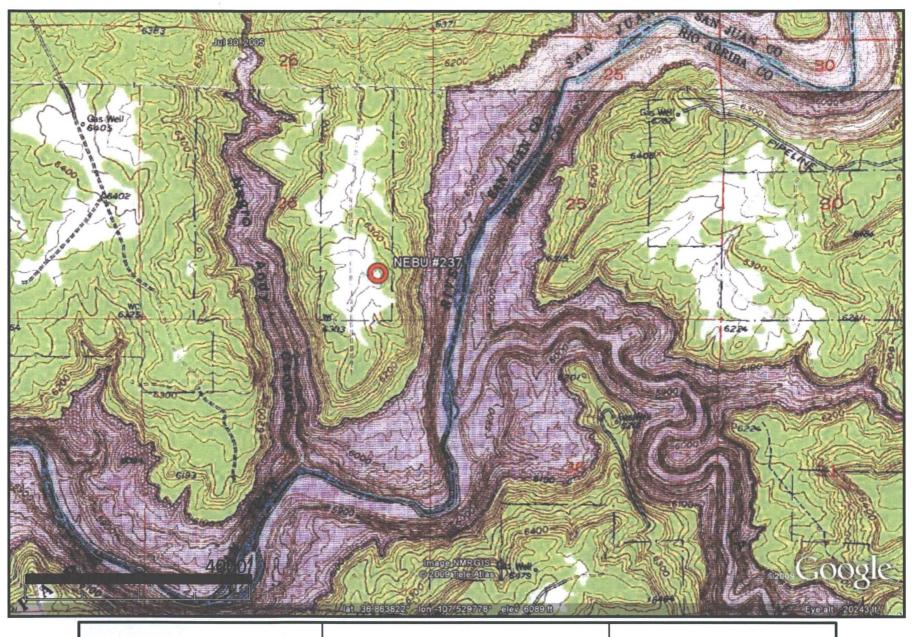
(quarters are 1=NW 2=NE 3=SW 4=SE)

	(quarter	s are r-	-NW Z-NE	3-3M 4-3E	,				
	(quarter	s are b	iggest to	smallest)		Depth	Depth	Water (in feet)
POD Number	Tws	Rng Sed	cqqq	Zone	X	Y	Well	Water	Column
SJ 03685 POD1	31N	06W 07	1 2 4				460	310	150
SJ 00011	31N	06W 32					610		
SJ 03649	31N	07W 02	1 4				600	300	300
SJ 03426	31N	07W 14	1 2 4				540	420	120
SJ 03355	31N	07W 28	1 1 1				570	470	100
SJ 03117	32N	07W 07	2 2 2				240		
SJ 01612	32N	07W 34	3				800		



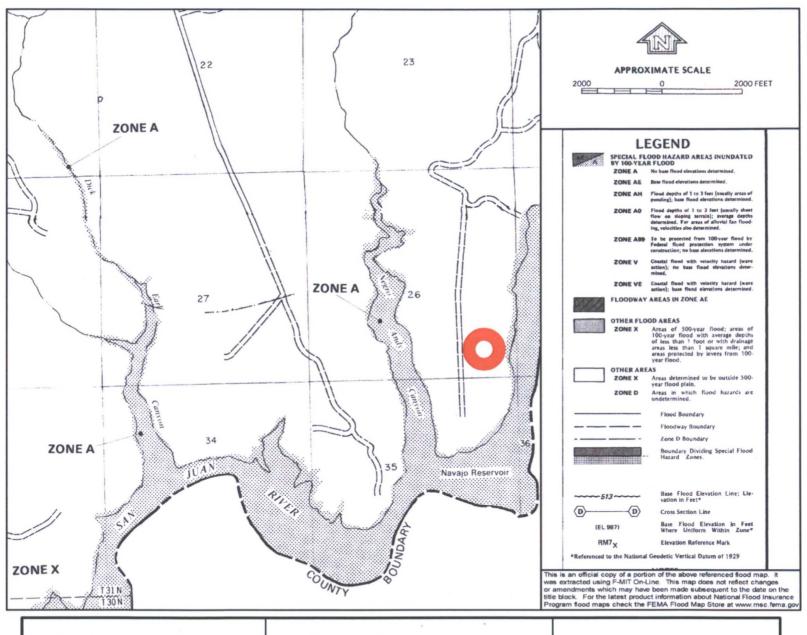
NEBU # 237 T31N, R07W, S26P San Juan County, NM

Aerial Photograph



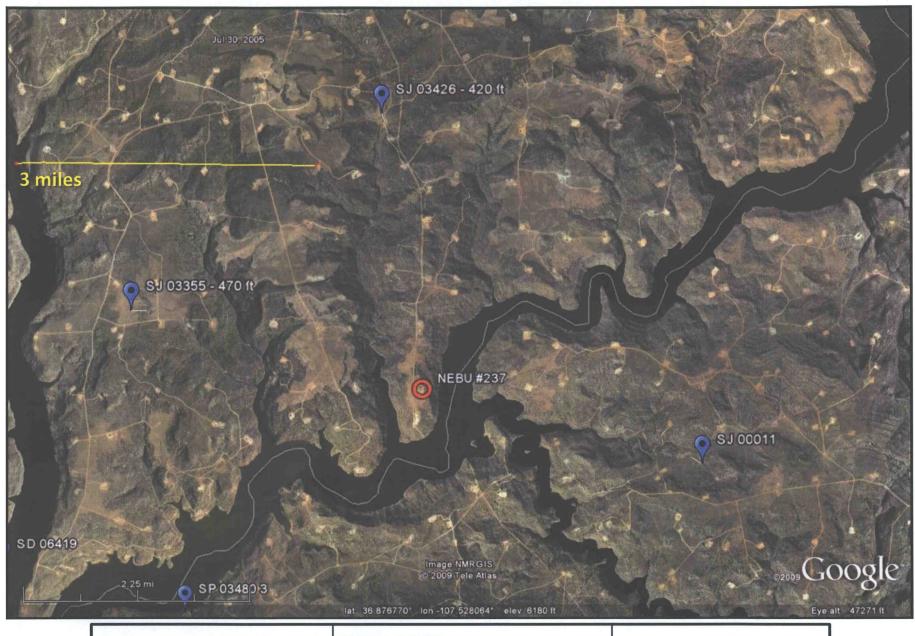
NEBU # 237 T31N, R07W, S26P San Juan County, NM

Topographic Map



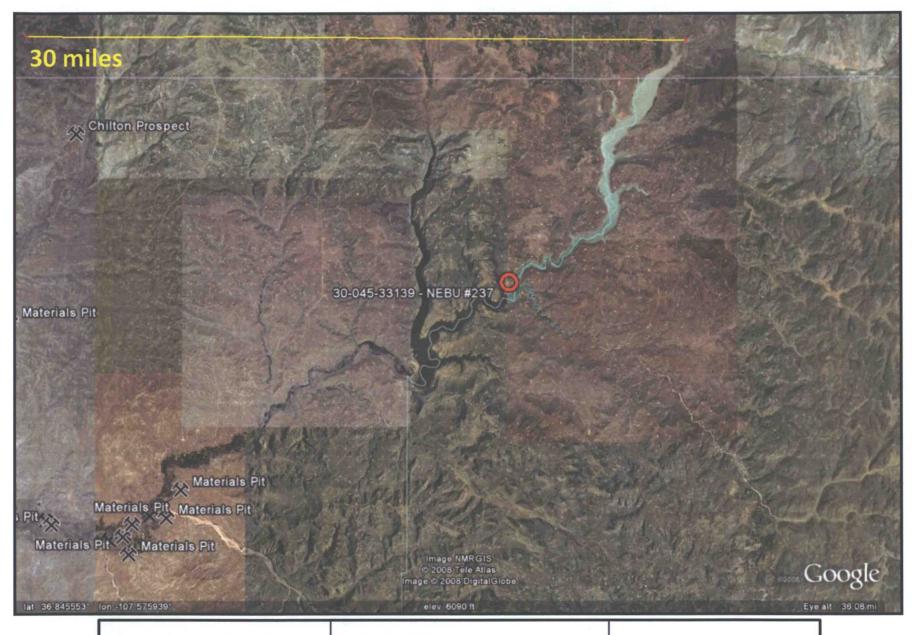
NEBU # 237 T31N, R07W, S26P San Juan County, NM

FEMA Flood Zone Map



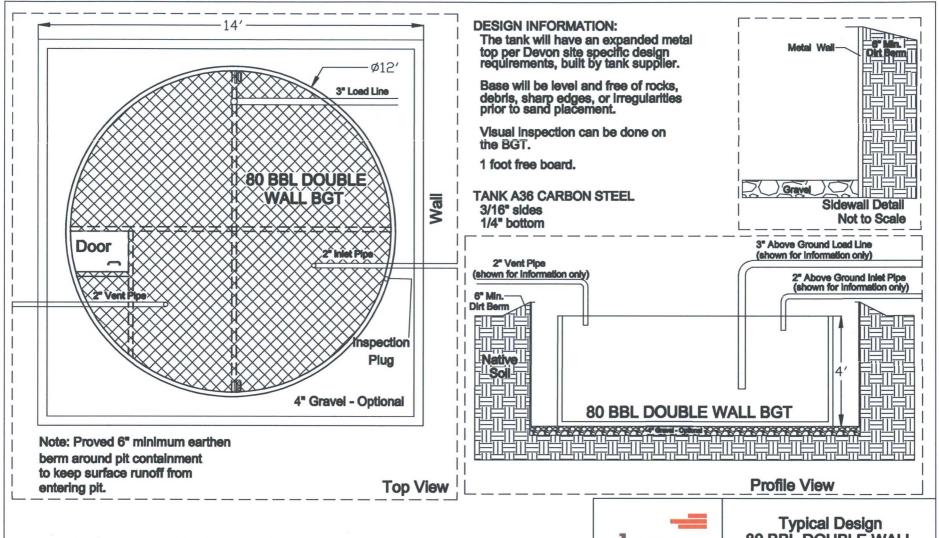
NEBU # 237 T31N, R07W, S26P San Juan County, NM

iWaters Groundwater Data Map



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Mines, Mills, and Quarries Map



Note: Outer edge of BGT will be left open and unobstructed to allow for visual inspection of secondary containment for evidence of leaks.



Typical Design 80 BBL DOUBLE WALL **BGT**

NEBU

Prepared by:

HOPKINS MAP SERVICE

P. O. BOX 536

FARMINGTON, NM 87499

Devon Energy Production Company, L.P. San Juan Basin Below Grade Tank Design and Construction Plan

In accordance with Rule 19.15.17 NMAC the following information describes the design and construction of below grade tanks on Devon Energy Production Company, L.P. locations. This is Devon Energy'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) Devon will design and construct a BGT to contain liquids to prevent contamination of fresh water and protect public health and the environment.
- 2) Devon will post a well sign, in compliance with 19.15.16.8 NMAC, on the existing well site operated by Devon Energy where the existing BGT is located. 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.
- 3) Devon is requesting approval of an alternative fencing to be used on BGT locations. BGT locations will be fenced utilizing 48" steel mesh field-fence (hog wire) with pipe railing along the top. A 6' chain link fence will be utilized around the well pad if the well site is within a city limit or 1/4mile of a permanent residence, school, hospital, institution, or church. BGTs located within 1000' of a permanent residence, school, hospital, institution, or church will be fenced by a 6' chain link fence with at least 2 strands of barbed wire at the top. All gates associated with BGTs will remain closed when responsible individuals are not on site.
- 4) Devon will construct BGT with an expanded metal covering or solid vaulted top on the top of the BGT.
- 5) Devon shall ensure that a BGTs are constructed of materials resistant to the BGT's particular contents and resistant to damage from sunlight. Tanks will be constructed of A36 carbon steel with 3/16" sides and 1/4" bottom. (see attached drawing)
- 6) Devon 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 tank bottom
- 7) Devon shall construct a BGT to prevent overflow and the collection of surface water runon. Devon Energy's free board is set at 1 foot from the top of the tank. We have berms set to prevent any surface water run-on.
- 8) Devon will construct and use BGT's having double walls. The BGT side walls will be open with a plug for visual inspection for leaks. The bottom shall be elevated with the use of gravel to raise the BGT above the underlying ground surface to prevent damage to the bottom of the BGT.
- 9) The general specification for design and construction are attached in the Devon document.

Devon Energy Production Company, L.P. San Juan Basin Below Grade Tank Maintenance and Operating Plan

In accordance with Rule 19.15.17 NMAC the following information describes the maintenance and operation of below grade tanks on Devon Energy Production Company, L.P. locations. This is Devon Energy's standard procedure for all below grade tanks. A separate plan will be submitted for any BGT which does not conform to this plan.

General Plan

- Devon will operate and maintain a BGT to contain liquids and solids as well as prevent contamination of fresh water to protect public health and the environment. Fluid levels will be monitored weekly and high levels will be removed as necessary. Monthly inspections will be conducted to monitor integrity of BGT systems.
- 2) Devon shall not allow a BGT to overflow or allow surface water run-on to enter the BGT. See attached drawing of vault design and placement of diversion berms.
- 3) Devon shall continuously remove any visible or measurable layer of oil from the fluid surface of a BGT in an effort to prevent significant accumulation of oil overtime.
- 4) Devon shall inspect the BGT at least once a month and maintain a written record of each inspection for five years. Monthly inspections will consist of documenting the following: (see attached template)
 - Well name
 - Section, Township, Range
 - Latitude longitude coordinates
 - Signature of inspector
 - Inspection date
 - Plug in place
 - Outer side wall ok
 - Fluid between walls
 - Measurable quantity oil
 - Comments
- 5) Devon shall maintain 1 foot free board to prevent overtopping of the BGT.
- 6) Devon will not discharge into or store any hazardous waste in any BGT.
- 7) If a BGT develops a leak or if any penetration of a BGT below the liquid surface on the outer wall, Devon will remove all liquids above the damage or leak within 48 hours, notify the appropriate division district office within 48 hours of the discovery and repair the damage or replace the BGT.

Devon Energy Production Company, L.P. 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 a below grade tank on Devon Energy Production Company, L.P. locations. This is Devon Energy'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) Devon shall close a BGT within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
- 2) Devon will close a BGT that does not meet the requirements of Paragraphs 1-4 of the 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 after June 16, 2008, if not retrofitted to comply with Paragraphs 1-4 of the Subsection I of the 19.15.17.11 NMAC.
- 3) Devon shall close a permitted BGT within 60 days of cessation of the BGT operation or as required by the transitional provisions of Subsection B of 19.15.17.17 NMAC in accordance with a closure plan that the appropriate division district office approves. The closure report will be filed on C-144.
- 4) 72 Hour notice of Closure will be given via email, or verbally to the Aztec Division office prior to any closure activity. The notification of closure will include the following:
 - > Operator's Name
 - Location by Unit Letter, Section, Township, and Range. Well name and API number

The Surface owner shall be notified prior to the implementation of any closure operations of BGT's as per the approved closure plan using certified mail, return receipt requested.

- 5) Devon shall remove liquids and sludge from a BGT prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility.
 - Envirotech Permit No. NM01-0011 and IEI Permit No. NM 01-0010B
 Soil contamination by exempt petroleum hydrocarbons
 Produced sand, pit sludge and contaminated bottoms from storage of exempt wastes
 - Basin Disposal Permit No. NM01-005
 Produced water
 - Middle Mesa SWD#1 30-045-27341

Produced water

• Middle Mesa SWD #2 30-045-28553

Produced water

Pump Mesa SWD 30-045-27340

Produced water

Sims Mesa SWD 30-039-24236

Produced water

- 6) Devon will obtain prior approval from the OCD to dispose, recycle, reuse or reclaim the BGT and provide documentation of the final disposition of the BGT in the closure report.
- 7) If there is any on-site equipment associated with a BGT, then Devon shall remove the equipment, unless the equipment is required for some other purpose.
- 8) Devon will test the soils beneath the BGT to determine whether a release has occurred. At a minimum a five point composite soil sample will be taken. As well as notifying the Aztec

District office of the results on form C-141. Devon Energy will take separate individual discrete soil samples from any area that is wet, discolored or showing any other visible signs of release. All samples will be tested for the items listed in the chart below. Should it be determined that a release has occurred Devon shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.

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	100		
Chlorides	EPA 300.1	250 or Background		

- 9) If the sampling results demonstrate that there has been no release or that a release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then Devon shall backfill the excavation with compacted, non-waste containing, earthen material; construct a division prescribed soil cover; re-contour and re-vegetate the site.
- 10) Re-contouring of the location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control to prevent ponding, and prevent erosion. 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) 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. Soil cover will be constructed to the site's existing grade and ponding of water and erosion of the cover material will be prevented with drainage control, natural drainages and silt traps where needed.
- 12) Devon shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling when topography permits. BLM of Forest Service stipulated seed mixes will be used on all 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. Devon Energy will notify the Division of Seeding and Revegetation when we have seeded and when we have achieved revegitation. Repeat seeding or planting will be continued until successful vegetative growth occurs.
- 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 BGT. Closure report will be filed on C-144 and incorporate the following:
 - > Proof of the closure notice to the division and the surface owner
 - > Inspection Reports
 - > Sampling Results
 - > Disposal facility and permit/API numbers
 - > Soil backfilling and cover installation
 - Re-vegetation application rates and reseeding techniques (or approved alternative to re-vegetation requirements if applicable)
 - > Photo documentation of the site reclamation

Monthly Below Grade Pit Inspection

NEBU 237 Pit Number 1

80bbl Steel DW

Sec. 26, 31N, 7W

Lat. N36° 86578 - Long W107° 53463

Date	Plug in Place	Outer Sidewall Ok	Fluid Between Walls	Measurable Qty Oil	Comments	Signature of Inspector
	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	□ Yes □ No	☐ Yes ☐ No		
	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	Г Yes Г No	·	
	☐ Yes ☐ No	□ Yes □ No □ N/A	☐ Yes ☐ No	☐ Yes ☐ No		
	□ Yes □ No	□ Yes □ No □ N/A	☐ Yes ☐ No	☐ Yes ☐ No		
	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	□ Yes □ No		
	□ Yes □ No	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	☐ Yes ☐ No	·	
	☐ Yes ☐ No	ГYes ГNo ГN/A	☐ Yes ☐ No	☐ Yes ☐ No		
	☐ Yes ☐ No	Г Yes Г No Г N/A	☐ Yes ☐ No	□ Yes □ No		
	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	□ Yes □ No		
	☐ Yes ☐ No	「 Yes □ No □ N/A	☐ Yes ☐ No	☐ Yes ☐ No		
	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No	☐ Yes ☐ No		
	☐ Yes ☐ No	Г Yes Г No Г N/A	☐ Yes ☐ No	□ Yes □ No		

PROPOSED PIT/BELOW GROUND TANK LOCATION

SITE VISIT OBSERVATIONS **NEBU 237**

GROUNDWATER	
Estimate depth to groundwater (if possible)	☐ less than 50 feet☐ between 50 and 100 feet☐ greater than 100 feet☐ unknown
Comments:	
SURFACE WATER	
Distance to continuously flowing watercourse	☐ less than 300 feet ☐ greater than 300 feet
Name of Water Feature: Navajo Lake	
Distance to other <i>significant</i> watercourse, lakebed, sinkhole or playa lake	☐ less than 200 feet ☐ greater than 200 feet
Name of Water Feature (if known):	
Distance to wetlands (look for clusters of cottonwoods, green shrubbery, reeds)	☐ less than 500 feet ☐ greater than 500 feet
Comments: None observed.	
PUBLIC FACILITIES	
Distance to permanent residence, school, hospital, institution or church	☐ less than 300 feet ☐ greater than 300 feet
Distance to private or domestic fresh water well or spring (look for windmills, pump houses or small structures with power running to them)	☐ less than 500 feet ☐ greater than 500 feet
Distance to freshwater well or spring (look for clusters of cottonwoods, green shrubbery, reeds)	☐ less than 1000 feet ☐ greater than 1000 feet
Is site located within an incorporated municipal boundary or municipal fresh water field?	☐ yes ⊠ no
Comments:	
SITE STABILITY	
Are there any known mines in the vicinity?	☐ yes ⊠ no
If yes, how close?	
Mine Name: Mine Type:	
Does the site appear to be unstable? (any loose rocks, boulders, evidence of landslide)	□ yes ⊠ no
Comments:	
Additional Comments:	
<u> </u>	
I certify the above observations are true and accurate to the best of Signature: Date:	my knowledge.
Printed Name: Steve Zink Title:	Superintendent

OCD Aztec District III Devon Production Checklist Below Grade Tank Registration

19.15.17.9 Permit application Signed C-144 (Page 5 of C-144) Site Specific Hydrogeology Figure Citation List
Pit Siting Criteria Ground water (NM State Engineer) Proximity to Water courses (Topo Map) Proximity to Flood Plain map (Aerial Map) Proximity to Water Wells (Aerial Map) Proximity to Wetlands (Aerial Map) Proximity to Subsurface Mines Map (Aerial Map) Proximity to Municipal Boundary (Structure Map)
19.15.17.11 Design Plan Contents Below Grade Tank Design and Construction Plan.
19.15.17.12 Operating and Maintenance Plan Below Grade Tank Operating and Maintenance Plan
19.15.17.13 Closure Plan Below Grade Tank Closure Plan
Requirements:

Registration Date: 5/15/2018