<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 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

Form C-144 Revised April 3, 2017

For temporary pits, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office. For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

## Pit Relow-Grade Tank or

r it, below-Grade Talik, or
Proposed Alternative Method Permit or Closure Plan Application
Type of action:  Below grade tank registration Permit of a pit or proposed alternative method Closure of a pit, below-grade tank, or proposed alternative method Modification to an existing permit/or registration Closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank,
or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, 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: Simcoe, LLC OGRID #: 329736
Address: 1199 Main Ave, Suite 101 Durango, CO 81301
Facility or well name: Northeast Blanco Unit 341
API Number: 30-045-33613 OCD Permit Number:
API Number: 30-045-33613         OCD Permit Number:
Center of Proposed Design: Latitude <u>36.903401</u> Longitude <u>-107.5721667</u> NAD83
Surface Owner: ☐ Federal ☑ State ☐ Private ☐ Tribal Trust or Indian Allotment
☐ Pit:       Subsection F, G or J of 19.15.17.11 NMAC         Temporary:       ☐ Drilling       ☐ Workover         ☐ Permanent       ☐ Emergency       ☐ Cavitation       ☐ P&A       ☐ Multi-Well Fluid Management       Low Chloride Drilling Fluid       ☐ yes       ☐ no         ☐ Lined       ☐ Unlined       Liner type:       Thickness      mil       ☐ LLDPE       ☐ HDPE       ☐ PVC       ☐ Other          ☐ String-Reinforced       Liner Seams:       ☐ Welded       ☐ Factory       ☐ Other        x W       x D
3.    Below-grade tank: Subsection I of 19.15.17.11 NMAC Tank ID A   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
✓ Visible sidewalls and liner □ Visible sidewalls only □ Other
Liner type: Thickness 60 mil  HDPE PVC Other
4.
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, 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 (hogwire) 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)	
7.  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 19.15.16.8 NMAC	
Variances 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:  Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.  Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	
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. Siting criteria does not apply to drying pads or above-grade tanks.	ptable source
General siting	
Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☑ No ☐ NA
Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit. NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☑ NA
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. ( <b>Does not apply to below grade tanks</b> )  - Written confirmation or verification from the municipality; Written approval obtained from the municipality	Yes No
Within the area overlying a subsurface mine. ( <b>Does not apply to below grade tanks</b> ) - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
<ul> <li>Within an unstable area. (Does not apply to below grade tanks)</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. ( <b>Does not apply to below grade tanks</b> ) - FEMA map	Yes No
Below Grade Tanks	
Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☑ No
Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;.  - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☑ No
Temporary Pit using Low Chloride Drilling Fluid (maximum chloride content 15,000 mg/liter)	
Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.)  - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application.	☐ Yes ☐ No
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	
Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application.  NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No

Within 100 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No						
Temporary Pit Non-low chloride drilling fluid							
Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any 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 spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application; - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ☐ No						
Within 300 feet of a wetland US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No						
Permanent Pit or Multi-Well Fluid Management Pit							
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa							
<ul><li>lake (measured from the ordinary high-water mark).</li><li>Topographic map; Visual inspection (certification) of the proposed site</li></ul>	☐ Yes ☐ No						
Within 1000 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 spring or a fresh water well used for domestic or stock watering purposes, 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 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site							
Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 Naturations: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the do 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 19.15.17.12 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 and 19.15.17.13 NMAC ☐ Previously Approved Design (attach copy of design) API Number: or Permit Number:	O NMAC  15.17.9 NMAC						
11.  Multi-Well Fluid Management Pit 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 do attached.  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  A List of wells with approved application for permit to drill associated with the pit.  Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19 and 19.15.17.13 NMAC  Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC							
Previously Approved Design (attach copy of design) API Number: or Permit Number:							

12.	
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 attached.	documents are
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 ☐ Multi-well Fl	luid Management Pit
Alternative	idid Management I it
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	
Anteniative Closure Method	
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be a	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 C of 19.15.17.13 NMAC	
<ul> <li>✓ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)</li> <li>✓ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC</li> </ul>	
✓ Soft Backfir 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 H of 19.15.17.13 NMAC	
✓ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC	
15. Citing Critaria (magnifica en cita alcuma mothe de culta). 10 15 17 10 NMAC	
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 sour	eco material are
provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. F	
19.15.17.10 NMAC for guidance.	rease rejer to
Ground water is less than 25 feet below the bottom of the buried waste.	☐ Yes ☐ No
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	□ NA
Ground water is between 25-50 feet below the bottom of the buried waste	☐ Yes ☐ No
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	□ NA □ 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	│
Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).	☐ Yes ☐ No
- Topographic map; Visual inspection (certification) of the proposed site	
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence	Yes No
at the time of initial application.  - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	
Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within 300 feet of a wetland.	
US Fish and Wildlife Wetland Identification map; Topographic map; 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	<b></b>
	l

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 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.	
<ul> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	
Within a 100-year floodplain.	☐ Yes ☐ No
- 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 E of 19.15.17.13 NMAC  Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.13 Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.13 NMAC  Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC  Waste Material Sampling Plan - based upon the appropriate requirements 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 H of 19.15.17.13 NMAC	11 NMAC 15.17.11 NMAC
17. 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 believe	ef.
Name (Print): Sabre Beebe Title: Environmental Coordinator	
Signature: Sabra Besbe Date: June 30, 2022	
e-mail address: sabre.beebe@ikavenergy.com Telephone: 970-852-5172	
18.  OCD Approval:  Permit Application (including closure plan)  Closure Plan (only)  OCD Conditions (see attachment)	
OCD Representative Signature: Shelly Wells Approval Date: 7/18/20	22
Title: Environmental Specialist-A OCD Permit Number: BGT2 Modification	n
19. Closure Report (required within 60 days of closure completion): 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 is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not section of the form until an approved closure plan has been obtained and the closure activities have been completed.  Closure Completion Date:	
20.  Closure Method:  Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-lo ☐ If different from approved plan, please explain.	op systems only)
21.  Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please incommark 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 for private land only)  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)  Disposal Facility Name and Permit Number  Soil Backfilling and Cover Installation  Re-vegetation Application Rates and Seeding Technique	dicate, by a check
Site Reclamation (Photo Documentation)  On-site Closure Location: Latitude  NAD: 1927	_

22.	
Operator Closure Certification:	
	omitted with this closure report is true, accurate and complete to the best of my knowledge and opplicable closure requirements and conditions specified in the approved closure plan.
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:

# NEBU #341 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 2.00 miles away from Navajo Lake, and over 400 feet higher in elevation than the surface of the lake water. To the east lies Dick Earl 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 1.72 miles east (SJ 03426). The water is for domestic use in one household. 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 400 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.

Lodestar Services, Inc.		Pit Permit Siting Criteria	Client: Project: Revised:	Devon Energy Pit Permits 4/30/2009
V		Information Shee	Prepared by:	Brooke Herb
API#:		30-045-33613	USPLSS:	T31N, R07W, S16B
Name:		NEBU #341	Lat/Long:	36.903401, -107.5721667
Depth to groundwater:		>100'	Geologic formation:	San Jose Formation
Distance to closest continuously flowing watercourse:	2.00 mile	s E of Navajo Reservoir/ Los Pinos River		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	1.35 m tirbutary W o	iles S-SE of 1st order to the Reservoir; 1025' f Dick Earl Canyon		
Permanent residence, school, hospital, institution or church within 300'		NO	Soil Type:	Entisols
	2.8 m		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	den , deriver	NO	Attached Documents:	Site Visit Survey Hydrogeologic Report Topographic Map
Within defined municipal fresh water well field		NO	n	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		ocated within Zone X 00-yr floodplain)		
Additional Notes:	aerial phor	to and confirmed during a	site visit. The aerial 007), but show lower	geologic features were measured from the photo is dated July 30, 2005. More lake levels. The 2005 photo aids ons.

## 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)

(đơ	arter	s are	e bi	gge	st	to	smallest	)		Depth	Depth	Water	(in	feet)
POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Well	Water	Column		
SJ 03685 POD1	31N	06W	0.7	1	2	4				460	3.1.0	1,50		
SJ 00011	31N	06W	32							610				
SJ 03649	31N	07W	0.2	1	4					600	300	300		
SJ 03426	31N	0.7W	1.4	1	2	4				540	420	1,20		
SJ 03355	31N	07W	28	1	1	1				570	470	100		
SJ 03117	32N	07W	0.7	2	2	2				240				
SJ 01612	32N	07W	34	3						800				



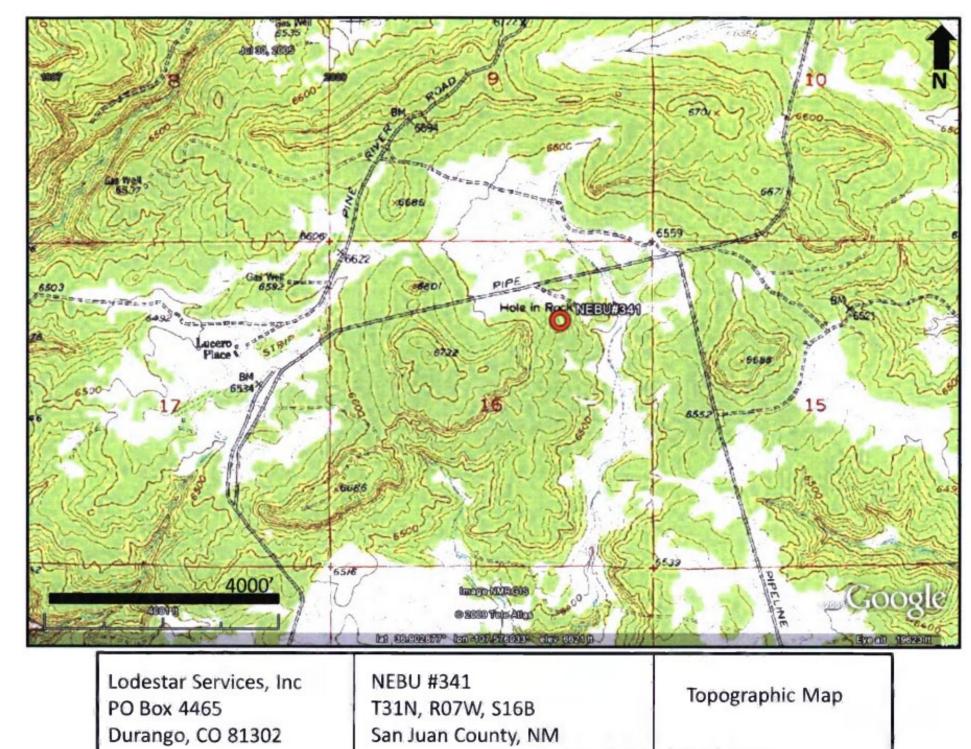
Lodestar Services, Inc PO Box 4465

Durango, CO 81302

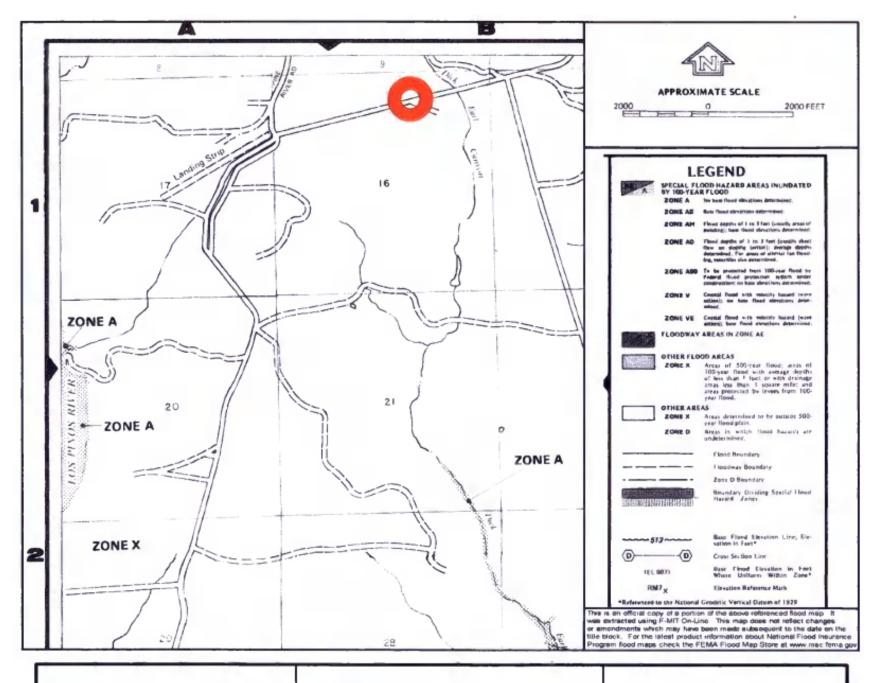
Released to Imaging: 7/18/2022 4-38-01 PM

NEBU #341 T31N, R07W, S16B San Juan County, NM

Aerial Photograph

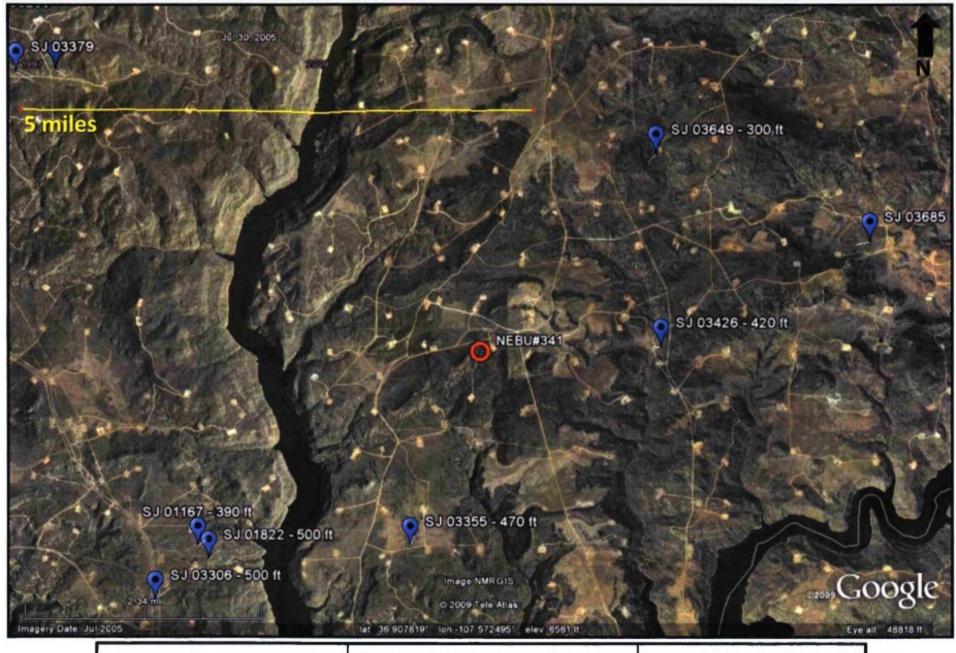


Released to Imaging: 7/18/2022 4:38:01 PM



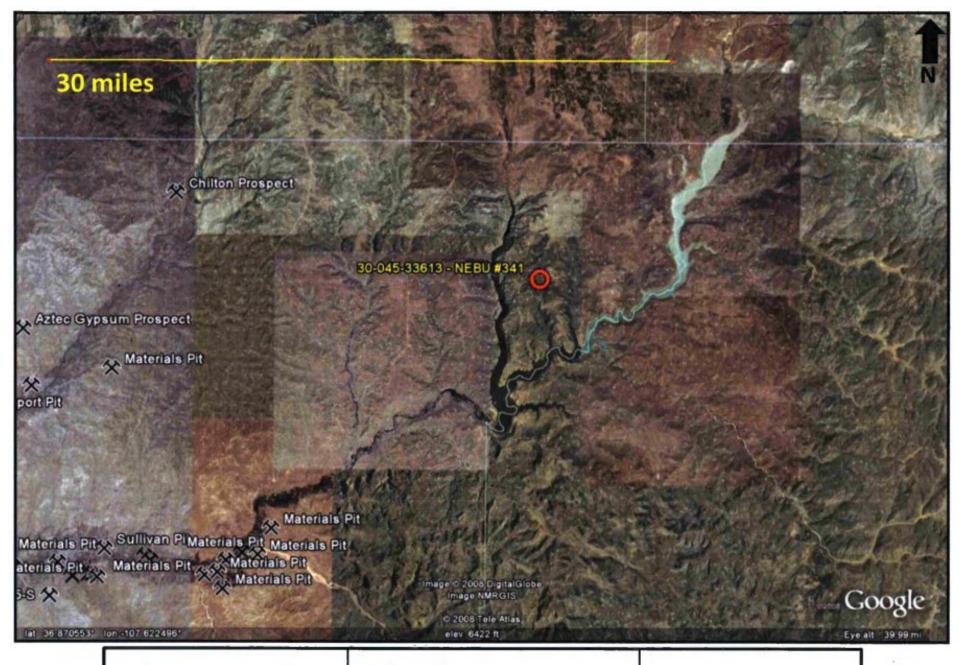
Lodestar Services, Inc PO Box 4465 Durango, CO 81302 Released to Imaging: 7/18/2022 4:38:01 PM NEBU #341 T31N, R07W, S16B San Juan County, NM

FEMA Flood Zone Map



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 NEBU #341 T31N, R07W, S16B San Juan County, NM

iWaters Groundwater Data Map



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 NEBU #341 T31N, R07W, S16B San Juan County, NM

Mines, Mills, and Quarries Map

#### SIMCOE LLC

#### SAN JUAN BASIN, NORTHWEST NEW MEXICO

#### BELOW-GRADE TANK DESIGN AND CONSTRUCTION PLAN

Pursuant to Rule 19.15.17.11 NMAC, SIMCOE LLC (SIMCOE) shall construct a below-grade tank (BGT) or modify an existing permitted BGT according to the following plan. Any deviations from this plan will be addressed on the New Mexico Oil Conservation Division's (NMOCD) form C-144 at the time of submittal.

#### **Design and Construction Plan**

- 1. SIMCOE will design and construct a BGT which will be constructed to contain liquids and prevent contamination of fresh water and protect public health and the environment.
- 2. SIMCOE as the well operator shall install and maintain a well sign that adheres to 19.15.16.8 NMAC. The sign will be posted at the well site to address, at a minimum;
  - a. Well Number
  - b. Property name
  - c. Operators name
  - d. Location by footage, quarter-quarter section, township and range (or unit letter)
  - e. API number
  - f. Emergency contact information
- 3. SIMCOE will fence or enclose its BGTs in a manner that prevents unauthorized access and shall maintain its fence in good repair.
- 4. SIMCOE will fence or enclose a BGT located within 1,000 feet of a permanent residence, school, hospital, institution or church with, at a minimum a chain link security fence at least six (6) feet in height with at least two (2) strands of barbed wire at the top. SIMCOE will ensure that all gates associated with the fence are closed and locked when responsible personnel are not on-site.
- 5. SIMCOE is requesting NMOCD's approval for an alternative fence design that provides, at a minimum, equivalent protection to the design specified in Paragraph 3 of Subsection D of 19.15.17.11 NMAC for BGTs beyond the stated distance in paragraph 4 of this document. SIMCOE's proposed design for its BGTs will utilize 48" steel mesh field-fence (hog wire) with a metal or steel top rail. Perimeter T-post will be installed roughly every 10 feet.
- 6. SIMCOE will construct an expanded metal covering that completely covers the top of the BGT. The covering will be constructed such that it will prevent hazardous conditions to wildlife, including migratory birds
- 7. SIMCOE shall construct the BGT of materials that are resistant to produced water, any contained liquids, and damage from sunlight. SIMCOE's BGTs will be constructed of fiberglass or carbon steel that meets the requirements of ASTM A36.
- 8. SIMCOE's BGTs shall have a properly constructed earthen foundation consisting of a level base free of rocks, debris, sharp edges, or irregularities as to prevent punctures, cracks or indentations to the tank bottom as demonstrated on the design drawing.
- 9. SIMCOE will construct and operate the BGT to prevent surface water run-on by using both earthen berms and leaving a portion of the BGT above the original grade as demonstrated on the design drawing.
- 10. SIMCOE will construct and operate the BGT to prevent overflow and overfilling of the BGT. Overflow will be prevented by use of either a manual shut off valve or an electronic high fluid level detector that will automatically engage an electronic shut-off valve when a one (1) foot freeboard is reached. The high-level automatic alarm notifies well optimizers when liquid level has reached within a pre-set distance to the top of the BGT. The high-level alarm will trigger the automatic shutdown valve which will close in the well until the liquid level can be lowered.

- 11. SIMCOE will construct and install a double-walled tank design per Subparagraph (b) of Paragraph (4) of Subsection I of19.15.17.11 NMAC with a two (2) inch diameter leak detection port. The floor supports located in the annular space of the tank bottom will be channeled to allow outward movement of liquid between the walls. Leak detection will be monitored per SIMCOE's Operating and Maintenance Plan. The walls of the BGT will be constructed of fiberglass or carbon steel that meets the ASTM A36 standard. SIMCOE's BGT design will ensure containment of tank contents and protect underlying groundwater. The production equipment line drain is manual or automated drain that allows water level in production equipment (generally the separator) to be maintained within the equipment's operating parameters. The environmental drain is a manually operated drain that is used to drain liquids off of equipment. The tank drain is a manually operated drain, typically in the closed position that is used to rid the condensate tank of any water accumulation. The vent drain is a manually operated drain off the discharge of production equipment (usually the separator) and is used to blowdown the wellsite. The swab drain line is a manually operated drain originating between the wellhead and separator and is used during well workovers when large amounts of liquid are removed from the well and sent straight to the BGT.
- 12. SIMCOE owned and operated single walled BGTs constructed and installed prior to June 16, 2008 that has the side walls open for visual inspection and that does not meet all the requirements in Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC is not required to equip or retrofit the BGT to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC so long as it demonstrates integrity. If the existing BGT does not demonstrate integrity, SIMCOE shall promptly drain the BGT and remove it from service and comply with the closure requirements of 19.15.17.13 NMAC.
- 13. SIMCOE owned and operated single walled BGTs constructed and installed prior to June 16, 2008 and where any portion of the tank sidewall is below the ground surface and not visible shall equip or retrofit the BGT to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC, or close it, by June 16, 2013. If the existing BGT does not demonstrate integrity, SIMCOE shall promptly drain the BGT, remove it from service and comply with the closure requirements of 19.15.17.13 NMAC.
- 14. SIMCOE owned and operated double walled BGTs constructed and installed prior to June 16, 2008 and which does not meet all the requirements in Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC is not required to equip or retrofit the BGT to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC so long as it demonstrates integrity. If the existing BGT does not demonstrate integrity, SIMCOE shall promptly drain the BGT, remove it from service and comply with the closure requirements of 19.15.17.13 NMAC.
- 15. The general specifications for the design and construction of the BGT have been provided in the attached SIMCOE design and construction schematic.

#### SIMCOE LLC

SAN JUAN BASIN, NORTHWEST NEW MEXICO

#### BELOW-GRADE TANK OPERATING AND MAINTENANCE PLAN

Pursuant to Rule 19.15.17.12 NMAC, SIMCOE LLC (SIMCOE) shall maintain and operate a below-grade tank (BGT) by following the plan shown below. Deviations from this plan will be addressed with a submittal to the New Mexico Oil Conservation Division (NMOCD) using form C-144 at the time of the BGT registration or modification to an existing BGT registration.

### **Operating and Maintenance Plan**

- 1. SIMCOE's BGTs will be operated to contain liquids and solids. SIMCOE will maintain the integrity of the BGT and secondary containment system as to prevent impacts to fresh water and to protect public health and the environment. SIMCOE will use automated high fluid level alarms and automated shut-off valves to ensure that liquids are contained within the vessel and that the vessel does not overflow. These alarms and shut-off valves will be consistent with those demonstrated in the design plan.
- 2. SIMCOE will not knowingly discharge to or store any hazardous waste in a BGT.
- 3. If a BGT develops a leak below the liquid surface, SIMCOE shall remove all liquid above the damage or leak within 48 hours of discovery, notify the appropriate division office pursuant to 19.15.29 NMAC and repair the damage or replace the BGT as applicable.
- 4. SIMCOE will adhere to Subsection D of 19.15.17.12 NMAC. The requirements are as follows;
  - a. SIMCOE shall not allow a below-grade tank to overflow or allow surface water run-on to enter the BGT.
  - b. SIMCOE shall remove any measurable layer of oil from the fluid surface of a BGT.
  - c. SIMCOE shall inspect the BGT for leakage and damage at least monthly and will document the integrity of each tank at least annually and maintain record of the integrity for five years.
  - d. SIMCOE shall maintain adequate freeboard to prevent overtopping of the below-grade tank.
  - e. If SIMCOE discovers that the BGT tank does not demonstrate integrity or that the BGT develops any of the conditions identified in Paragraph (5) of Subsection A of 19.15.17.12 NMAC, SIMCOE shall repair the damage or close the existing BGT pursuant to the closure requirements of 19.15.17.13 NMAC.
  - f. If any of SIMCOE's BGTs are equipped or retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC, then SIMCOE shall visually inspect the area beneath the BGT during the retrofit and document any areas that are wet, discolored or showing other evidence of a release on form C-141. SIMCOE will attempt to measure and report to the division the concentration of contaminants in the wet or discolored soil with respect to the standards set forth in Table I of 19.15.17.13 NMAC. If there is no wet or discolored soil or if the concentration of contaminants in the wet or discolored soil is less than the standard set forth in Table I of 19.15.17.13 NMAC, then SIMCOE shall proceed with the closure requirements of 19.15.17.13 NMAC prior to initiating the retrofit or replacement.



### **Technical Data Sheet**

### HDPE Series, 60 mil Black, Smooth

PROPERTY	TEST METHOD	FREQUENCY(1)	UNIT Imperial	1054428
SPECIFICATIONS				
Thickness (min. avg.) Thickness (min.)	ASTM D5199 ASTM D5199	Every roll Every roll	mils mils	60.0 54.0
Resin Density Melt Index - 190/2.16 (max.)	ASTM D1505 ASTM D1238	1/Batch 1/Batch	g/cc g/10 min	> 0.932 1.0
Sheet Density Carbon Black Content Carbon Black Dispersion OIT - standard (avg.)	ASTM D792 ASTM D4218 ASTM D5596 ASTM D3895	Every 10 rolls Every 2 rolls Every 10 rolls 1/Batch	g/cc % Category min	≥ 0.940 2.0 - 3.0 Cat. 1 & Cat. 2 100
Tensile Properties (min. avg) (2) Strength at Yield Elongation at Yield Strength at Break Elongation at Break	ASTM D6693	Every 2 rolls	ppi % ppi %	132 13 243 700
Tear Resistance (min. avg.) Puncture Resistance (min. avg.)	ASTM D1004 ASTM D4833	Every 5 rolls Every 5 rolls	lbf lbf	42 120
Dimensional Stability Stress Crack Resistance (SP-NCTL) Oven Aging - % retained after 90 days	ASTM D1204 ASTM D5397 ASTM D5721	Certified 1/Batch Per formulation	% hr	± 2 500
HP OIT (min. avg.) UV Res % retained after 1600 hr HP-OIT (min. avg.) Low Temperature Brittleness	ASTM D5885 ASTM D7238 ASTM D5885 ASTM D746	Per formulation  Certified	% % °F	80 50 - 106
SUPPLY SPECIFICATIONS(Roll dime	nsions may vary ±1%)			
Roll Dimension - Width	<u>-</u>		ft	22.3
Roll Dimension - Length	-		ft	520
Area (Surface/Roll)	-		ft²	11596

#### **NOTES**

- 1. Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
- 2. Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

<sup>\*</sup> All values are nominal test results, except when specified as minimum or maximum.

<sup>\*</sup> The information contained herein is provided for reference purposes only and is not intended as a warranty of guarantee. Final determination of suitability for use contemplated is the sole responsibility of the user. SOLMAX assumes no liability in connection with the use of this information.

## SIMCOE LLC (Previously BP America) SAN JUAN BASIN, NORTHWEST NEW MEXICO

#### **Below-Grade Tank Closure Plan**

This plan will address the standard protocols and procedures for closure of below-grade tanks (BGTs) on this SIMCOE, LLC well sites. As stipulated in Paragraph A of 19.15.17.13 NMAC, SIMCOE, LLC shall close a BGT within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the New Mexico Oil Conservation Division (NMOCD) requires because of imminent danger to fresh water, public health, safety, or the environment. If deviations from this plan are necessary, any specific changes will be included on form C-144 and approved by the NMOCD. SIMCOE, LLC shall close an existing BGT that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofit with a BGT that complies with the SIMCOE, LLC NMOCD approved BGT design attached to the SIMCOE, LLC Design and Construction Plan. SIMCOE, LLC shall close an existing BGT that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC, if not previously retrofitted to comply with the SIMCOE, LLC NMOCD approve BGT Design attached to the SIMCOE, LLC Design and Construction Plan, prior to any sale or change in operator pursuant to 19.15.9.9 NMAC. SIMCOE, LLC shall close the permitted BGT within 60 days of cessation of the BGTs operation or as required by the transitional provisions of Subsection B, D, or E of 19.15.17.17 NMAC.

#### **General Closure Plan**

- 1. SIMCOE, LLC shall notify the surface owner by certified mail that it plans to close a BGT. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records demonstrates compliance with this requirement.
- 2. SIMCOE, LLC shall notify the division District III office verbally or by other means at least 72 hours, but not more than one (1) week, prior to any closure operation. The notice shall include the operator's name, and the location to be closed by unit letter, section, township, and range. If the BGT closure is associated with a particular well, then the notice shall also include the well's name, number, and API number.
- 3. SIMCOE, LLC shall remove liquids and sludge from the BGT prior to implementing a closure method and dispose of the liquids and sludge in a NMOCD's division-approved facility. The facilities to be utilized are:
  - a. JFJ Land farm, Permit NM-01-010(B) (Solids and Sludge)
  - b. Basin Disposal, Permit NM-01-0005 (Liquids)
  - c. Envirotech Inc Soil Remediation Facility, Permit NM-01-0011 (Solids and Sludge)
  - d. Simcoe, LLC Operated 13 GCU SWD # 1, API 30-045-28601 (Liquids)
  - e. Simcoe, LLC Operated GCU 259 SWD, API 30-045-20006(Liquids)
  - f. Simcoe, LLC Operated GCU 306 SWD, API30-045-24286 (Liquids)
  - g. Simcoe, LLC Operated GCU 307 SWD, API30-045-24248 (Liquids)
  - h. Simcoe, LLC Operated GCU 328 SWD, API 30-045-24735(Liquids)
  - i. Simcoe, LLC Operated Pritchard SWD #1, API 30-045-28351 (Liquids)

- 4. Simcoe, LLC shall remove the BGT and dispose of it in a NMOCD approved facility or recycle, reuse, or reclaim it in a manner that the NMOCD approves. If a liner is present and must be disposed of it will be cleaned by scraping any soils or other attached materials on the liner to a de minimus amount and disposed at a permitted solid waste facility, pursuant to Subparagraph (m) of Paragraph (1) of Subsection C of 19.15.35.8 NMAC. Documentation as to the final disposition of the removed BGT will be provided in the final closure report.
- 5. Simcoe, LLC shall remove any on-site equipment associated with a BGT unless the equipment is required for well production.
- 6. Simcoe, LLC shall sample the soils beneath the BGT to determine whether a release has occurred. Simcoe, LLC shall collect at a minimum: a five (5) point composite sample and analyze for BTEX, TPH and chlorides. The testing methods for those constituents are as follows.

Table 1         Closure Criteria for Soils Beneath Below-Grade Tanks							
Depth below bottom of pit to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**				
	Chloride	EPA 300.0	600 mg/kg				
≤50 feet	TPH	EPA SW-846 Method 418.1	100 mg/kg				
_	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg				
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg				
	Chloride	EPA 300.0	10,000 mg/kg				
	ТРН	EPA SW-846 Method 418.1	2,500 mg/kg				
51 feet-100 feet	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg				
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg				
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg				
	<b>Chloride</b>	EPA 300.0	20,000 mg/kg				
> 100 feet	TPH	EPA SW-846 Method 418.1	2,500 mg/kg				
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg				
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg				
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg				

Notes:

mg/Kg = milligram per kilogram

BTEX = benzene, toluene, ethylbenzene, and total xylenes

**TPH = totalpetroleum hydrocarbons** 

TDS = total dissolved solids.

- \* Or other test methods approved by the division
- \*\* Numerical limits or natural background level, whichever is greater
- 7. Simcoe, LLC shall notify the division District III office of its results on form C-141.

- 8. If it is found that a release has occurred, then Simcoe, LLC will comply with 19.15.30 NMAC and 19.15.29 NMAC, as appropriate.
- 9. If the sampling demonstrates that a release has not occurred or that any release does not exceed the concentrations specified above, then BP shall backfill the excavation, with compacted, non-waste containing, earthen material; construct a division-prescribed soil cover, re-contour and revegetate the location. The location will be reclaimed if it is not with in the active process area.
- 10. Simcoe, LLC shall reclaim the BGT location, and all areas associated with the BGT including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. Simcoe, LLC shall substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Subsection H of 19.15.17.13 NMAC, re-contour the location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and revegetate according to Subsection I of 19.15.17.13 NMAC. 11. The soil cover for closures where the BGT has been removed or remediated to the NMOCD's satisfaction shall consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.
- 12. Simcoe, LLC shall seed the disturbed area the first growing season after closure of the BGT. Seeding will be conducted by drilling on the contour whenever practical or by other division-approved methods. Vegetative cover will be, at a minimum, 70% of the native perennial vegetative cover (un-affected by overgrazing, fire or other intrusion damaging to native vegetation), consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintenance of that cover through two successive growing seasons. During the two growing seasons that prove viability, there shall be no artificial irrigation of the vegetation.
- 13. Simcoe, LLC shall seed, plant and re-seed pursuant to Paragraph (3) of Subsection I of 19.15.17.13 NMAC, until the location successfully achieves the required vegetative cover.
- 14. Pursuant to Paragraph (5) of Subsection I of 19.15.17.13 NMAC, Simcoe, LLC shall notify the NMOCD when it has seeded or planted and when it successfully achieves revegetation.
- 15. Within 60 days of closure completion, Simcoe, LLC shall submit a closure report on NMOCD's form C-144, and will include the following:
  - a. proof of closure notification (surface owner and NMOCD)
  - b. sampling analytical reports: information required by 19.15.17 NMAC.
  - c. disposal facility name and permit number
  - d. details on back-filling, capping, covering, and where applicable re-vegetation application rates and seeding techniques and
  - e. site reclamation, photo documentation. Disposal Facility Name and Permit Number
- 16. Simcoe, LLC shall certify that all information in the report and attachments is accurate, truthful, and compliant with all applicable closure requirements and conditions specified in the approved closure plan.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II 811 S. First St., Artesia, NM 88210 Phone:(575) 748-1283 Fax:(575) 748-9720

District III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 121745

#### **CONDITIONS**

Operator:	OGRID:
SIMCOE LLC	329736
1199 Main Ave., Suite 101 Durango, CO 81301	Action Number: 121745
Durango, CO 61301	Action Type:
	[C-144] Below Grade Tank Plan (C-144B)

#### CONDITIONS

Created By		Condition Date
swells	None	7/18/2022