

To adequately estimate the volume of a release to soils, a three step process will be utilized. Step 1: determining the spill area impacted by the release, Step 2: determining the soil porosity and Step 3: determining the soil saturation. Below is a brief description of each and an example calculation.

#### Step 1: Spill Area

First determine the total volume of soils impacted by a release. Measure the surface area and determine the depth of penetration. For the purposes of this calculation make all measurements in feet. If the depth is less than one foot, divide the depth in inches by 12 and that will give you the decimal equivalent.

Length (L) x Width (W) x Depth (D) = Cubic Feet (CF) impacted

Now convert the area volume to a liquid volume in barrels. This is done by dividing the CF by a conversion factor of 5.61.

$CF / 5.61 = \text{Barrels if no soil were present}$

#### Step 2: Soil Porosity

Soil porosity determines the maximum volume of liquid a specific soil type can hold. This is calculated using a percentage. Soil type information is not always readily available, so three basic soil types will be used in this calculation. Clay which has a porosity of 10%, Clay/Sand mix has a porosity of 15% and Sand has a soil porosity of 20%. Multiply the barrels calculated in Step 1 by the soil porosity that most closely represents the soil type impacted by the release.

$\text{Barrels} \times \text{Soil Porosity (SP) \%} = \text{Barrels if soil is 100\% saturated}$

#### Step 3: Saturation

Saturation determines the quantity of liquid in the soil. If liquids run from the soil during excavation with a shovel or backhoe assume 100% saturation. If liquids run from the soil after squeezing a sample by hand assume 50% saturation. If soils are damp but liquids cannot be squeezed out assume 10% saturation. Multiply the barrels calculated in Step 2 by percent saturation.

$\text{Barrels} \times \text{Saturation \%} = \text{ESTIMATED BARRELS OF RELEASE}$

**Example:** A release covered an area 100 feet by 50 feet at a depth of 8 inches. The soil type was Clay/Sand mix (15%) and the soil is damp but liquids could not be squeezed out by hand (10%). The calculation for estimating the amount of release is as follows:

Step 1:  $100' \times 50' \times (8''/12) = 3333.3 \text{ CF} / 5.61 = 594.1 \text{ Bls}$

Step 2:  $594.1 \text{ Bls} \times 15\% = 89.1 \text{ Bls}$

Step 3:  $89.1 \text{ Bls} \times 10\% = 8.9 \text{ Bls estimated release}$

<u>Length</u>	<u>Width</u>	<u>Depth</u>	<u>Soil porosity</u>	<u>saturation</u>	<u>Total spill volume</u>
150	3	0.5	20%	50%	4.010695187
180	3	0.5	20%	50%	4.812834225
220	100	0.5	20%	50%	196.0784314
					204.9019608

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

QUESTIONS

Action 413433

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 413433
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Prerequisites	
Incident ID (n#)	nAPP2434137511
Incident Name	NAPP2434137511 CAT LANTA FC 813H SPILL @ 0
Incident Type	Produced Water Release
Incident Status	Initial C-141 Received

Location of Release Source	
Please answer all the questions in this group.	
Site Name	CAT Lanta FC 813H Spill
Date Release Discovered	12/05/2024
Surface Owner	State

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Not answered.
Produced Water Released (bbls) Details	Cause: Equipment Failure   Other (Specify)   Produced Water   Released: 204 BBL   Recovered: 0 BBL   Lost: 204 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Layflat line for water transfer failed. Allowing release to pasture. NMOCD and SLO notified via email 12/6/2024

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**QUESTIONS (continued)**

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**QUESTIONS**

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	No, according to supplied volumes this does not appear to be a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	Yes
Reasons why this would be considered a submission for a notification of a major release	From paragraph A. "Major release" determine using: (1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

**Initial Response**

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.

The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	Not answered.

Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: James Raley Title: EHS Professional Email: jim.raley@dvsn.com Date: 12/18/2024
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**QUESTIONS (continued)**

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**QUESTIONS**

<b>Site Characterization</b>	
<i>Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.</i>	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Not answered.
What method was used to determine the depth to ground water	Not answered.
Did this release impact groundwater or surface water	Not answered.
<b>What is the minimum distance, between the closest lateral extents of the release and the following surface areas:</b>	
A continuously flowing watercourse or any other significant watercourse	Not answered.
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Not answered.
An occupied permanent residence, school, hospital, institution, or church	Not answered.
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Not answered.
Any other fresh water well or spring	Not answered.
Incorporated municipal boundaries or a defined municipal fresh water well field	Not answered.
A wetland	Not answered.
A subsurface mine	Not answered.
An (non-karst) unstable area	Not answered.
Categorize the risk of this well / site being in a karst geology	Not answered.
A 100-year floodplain	Not answered.
Did the release impact areas not on an exploration, development, production, or storage site	Not answered.

<b>Remediation Plan</b>	
<i>Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.</i>	
Requesting a remediation plan approval with this submission	No
<i>The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.</i>	

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CONDITIONS

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CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	None	12/18/2024