

Oil Field Environmental Incident Summary

Incident: 20160307110201 **Date/Time of Notice:** 03/07/2016 11:02

Responsible Party: Zavanna, LLC

Well Operator: ZAVANNA, LLC

Well Name: CHEETAH 10-10H & LION 1-14H

Field Name: STONY CREEK

Well File #:

Date Incident: 3/6/2016 **Time Incident:** 10:00 **Facility ID Number:** 218067-01

County: WILLIAMS **Twp:** 155 **Rng:** 100 **Sec:** 10 **Qtr:** SE SE

Location Description:

Submitted By: Kimberly Gutierrez

Received By:

Contact Person: Kimberly Gutierrez
1200 17TH STREET STE 1100
DENVER, CO 80202

General Land Use: Pasture

Affected Medium: Topsoil

Distance Nearest Occupied Building: 0.5 Mile

Distance Nearest Water Well: 0.5 Mile

Type of Incident: Valve/Piping Connection Leak

Release Contained in Dike: No

Reported to NRC: Unknown

| | Spilled | Units | Recovered | Units | Followup | Units |
|--------------|----------------|--------------|------------------|--------------|-----------------|--------------|
| Oil | | | | | | |
| Brine | 2733 | Barrels | 215 | Barrels | 215 | barrels |
| Other | | | | | | |

Description of Other Released Contaminant:

Inspected:

Written Report Received: 4/5/2016

Clean Up Concluded: 3/25/2016

Risk Evaluation:

Topsoil

Areal Extent:

10 acres

Potential Environmental Impacts:

Currently being assessed.

Action Taken or Planned:

Contacted Garner Environmental Services Inc for containment and contacted the NDIC & NDDH for clean up.

Wastes Disposal Location: Corcoran & Garner Environmental Services will dispose of wastes.

Agencies Involved:

Updates

Date: 3/7/2016 **Status:** Inspection

Author: Souder, Taylor

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on site at 08:30. Zavanna was figuring out a plan for delineating the spill. They marked visible staining with flags and put out plastic white booms. Later they added straw wattles. Water samples were taken at the landowner's personal well and the spring that watered the cattle. Soil samples were taken at three locations: one right off of the well pad at the "hottest" spot, one at the "end" of the spill, and one as a background. A meeting was held later that evening with the landowner. He gave everyone the okay to start the cleanup under two conditions:

- 1) no cattle are harmed
- 2) there is one track into the site and one track out

Test holes that were about 18 inches deep down at the "end" of the release. The end of release was not found until later that week and was farther than previously thought.

Date: 3/7/2016 **Status:** Reviewed - Follow-up Required

Author: O'Gorman, Brian

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Release, due to a valve/piping connection leak, impacted soils off the well pad. NDDoH inspector on location 3/6/16. More follow-up will be needed.

Date: 3/8/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 3/8/2016.

Spill originated at a valve that malfunctioned, where produced water was collected via a gathering line. The spill washed out the dikes and flowed onto the wellpad, washed out the secondary containment, and flowed off of location down the drainage to the SW. It continued down the drainage going under the township road, and then it continued down the drainage and collected in a small depression where it saturated into the ground. The spill then ran another couple hundred yards down the drainage before terminating.

During this inspection, the responsible party was instructed to establish sampling points along the impacted drainage to delineate the extent of vertical contamination.

While on location, the responsible party brought an excavator to begin determining the vertical extent of the contamination.

Samples Collected: 16-C67 to 16-C74

More follow-up is necessary.

Date: 3/9/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 8:15 AM 3/9/2016.

Upon arriving at the location, the responsible party had four excavators excavating the test pits and working on delineating the vertical extent of the impact.

The lateral extent was lengthened after it was determined that the spill spread another couple hundred yards down the drainage.

Vertical contamination varied throughout the extent of the spill with a maximum contamination depth at 12 feet below surface grade (BSG) at the beginning of the spill and reaching 15'+ BSG in two other test locations.

The depression where the produced water held up was excavated to a depth of approximately 4' BSG, at which point impacted water began to fill in the excavation. A vacuum truck is on location removing the impacted water.

The responsible party is going to determine the extent of the impacts and propose a remedial plan going forward.

More follow-up is necessary.

Date: 3/14/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 3/14/2016.

Met with responsible party and their contractors and environmental consultants. Walked the spill area which continues to be excavated throughout the extent of the spill. Established three areas where soil borings should be conducted.

More follow-up is necessary.

Date: 3/16/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 3/16/2016.

Excavation of impacted materials continues. During the excavation, the responsible party ran into the aquatard blue clay layer on the far SW corner of the spill impact area. The responsible party has firm orders to stop excavation when it reaches this clay layer to protect any contamination of aquifers underneath the aquatard. The number of soil bores were reduced to two after the discovery of the blue clay layer at roughly 7-8' BSG.

More follow-up is necessary.

Date: 3/18/2016 **Status:** Correspondence

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Meeting with responsible party, NDDoH and vested parties regarding Lion/Cheetah spill.

Soil borings discovered aquatard at 34' below surface grade (BSG) and 57' BSG. Responsible party has site 95% excavated and will begin to backfill areas where they have confirmed clean samples.

More follow-up is necessary.

Date: 4/4/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location at 11:30 4/4/2016.

Remediation appears complete at the location. Erosion control has been installed on the upper end of the spill, with a minimal amount of erosional buffers south of the road. Awaiting incident summary with all applicable samples from company.

More follow-up is necessary.

Date: 6/27/2016 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 6/27/2016.

Impacted area that was excavated is coming in with new vegetation. Coco matting was laid down throughout the extent of the excavation.

More follow-up is necessary to ensure proper cleanup.

Date: 8/28/2017 **Status:** Inspection

Author: Stockdill, Scott

Updated Oil Volume:

Updated Salt Water Volume:

Updated Other Volume:

Updated Other Contaminant

Notes:

Arrived on location 2:09 8/22/2017.

Majority of impacted area has been reseeded with one small area with sparse vegetation.

Request all closure data from company.

More follow-up is necessary.