

Photo log for Response to August 17, 2017 Inspection

Document 682402641

COGCC conducted an inspection of the LC 11-16 Multi location (Location ID 433936) on August 17, 2017 (Document 682402641). During that inspection, COGCC made the following observations:

Storm Water: Operator has installed more sediment traps to control sediment discharge; however, the sediment traps do not appear to be installed with good engineering practices. Sediment trap embankment berms do not appear to be properly constructed, as it appears unconsolidated embankment berms are contributing to sediment loss. Sediment trap outlet areas do not appear to be properly constructed to capture outlet flows. Some of the sediment traps have been enlarged but could still be enlarged because it appears flows have discharged over the embankment berms. Also, shallow ditches have been installed along outlet areas that do not appear to be a sufficient depth. Sediment discharge was observed along the west, east, and production facility pads. Install or repair required BMPs per Rule 1002.f. in accordance with good engineering practices. Corrective actions from the previous inspections were not resolved therefore the corrective action dates on this inspection remain the same from the previous inspections. See attached inspection photos for more details.

Name: LC 11-16 Multi

Location ID: 433936

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Storm Water: Operator has installed more sediment traps to control sediment discharge; however, the sediment traps do not appear to be installed with good engineering practices. Sediment trap embankment berms do not appear to be properly constructed, as it appears unconsolidated embankment berms are contributing to sediment loss. Sediment trap outlet areas do not appear to be properly constructed to capture outlet flows. Some of the sediment traps have been enlarged but could still be enlarged because it appears flows have discharged over the embankment berms. Also, shallow ditches have been installed along outlet areas that do not appear to be a sufficient depth. Sediment discharge was observed along the west, east, and production facility pads. Install or repair required BMPs per Rule 1002.f. in accordance with good engineering practices. Corrective actions from the previous inspections were not resolved therefore the corrective action dates on this inspection remain the same from the previous inspections. See attached inspection photos for more details.

COGCC – 8/17/17

Photo 1. Photo taken from the east well pad, east entrance along the west side, facing Northeast. Operator has installed a second sediment trap near the entrance of the location. A discharge point was observed at the cattle guard as shown above. Embankment material and embankment construction does not appear to be sufficiently compacted, as it appears unconsolidated material could be contributing to sediment loss. Sediment trap outlet area does not appear to be properly constructed to capture outlet flows. Sediment trap size could be enlarged to help capture sediment laden stormwater runoff.

Noble Energy – 9/19/2017

Photo NBL1. A berm was installed to help catch sediment from the cattle guard and a straw wattle was installed to direct runoff into the sediment trap. Bare soil at entrance was seeded and crimped.

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COGCC – 8/17/17

Photo 2. Photo taken from the previous sediment trap, facing North. Operator has installed a shallow ditch from the outlet area of the upgradient sediment trap to the inlet area of the downgradient sediment trap. Operator has installed filtrex wattles along the shallow ditch. Appears stormwater flows are going around the embankment berm of the downgradient sediment trap.

Noble Energy – 9/19/2017

Photo NBL2. A straw wattle was installed to help direct runoff from the upgradient sediment trap into the secondary sediment trap. The area between the traps was cut lower as well to contain runoff between the traps.

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COGCC – 8/17/17

Photo 3. Photo taken from the previously mentioned upgradient sediment trap, facing West. Appears the Operator has enlarged the sediment trap size with a stabilized outlet area. Embankment material and embankment construction does not appear to be sufficient compacted, as it appears unconsolidated material could be contributing to sediment loss. Appears the Operator has re-installed surface roughening along the southern perimeter of the location. Refer to Photo 4 for a picture taken of the sediment trap from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL3. The sediment trap was enlarged and berms around the trap were built up.

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COGCC – 8/17/17

Photo 4. Photo taken of the sediment trap in Photo 3 from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL4. This photo illustrates that the sediment trap was enlarged

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COGCC – 8/17/17

Photo 5. Photo taken from the east well pad, east entrance along the east side, facing Northwest. Operator has installed a second sediment trap near the entrance of the location. Embankment material and embankment construction does not appear to be sufficiently compacted, as it appears unconsolidated material could be contributing to sediment loss. Sediment trap outlet area does not appear to be properly constructed to capture outlet flows. Appears sediment laden stormwater is discharging from the western outlet area (red circle). Sediment trap size could be enlarged to help capture sediment laden stormwater runoff.

Noble Energy – 9/19/2017

Photo NBL5. The sediment trap inside the disturbance area was enlarged and the area outside of the disturbance was seeded and crimped for stabilization

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COGCC – 8/17/17

Photo 6. Photo taken from the ditch area between the two sediment traps, facing West. Operator has installed a shallow ditch from the outlet area of the upgradient sediment trap to the inlet area of the downgradient sediment trap. Ditch size may not be a sufficient depth to contain both outlet flows from the upgradient sediment trap and stormwater runoff from the access road.

Noble Energy – 9/19/2017

Photo NBL6. The sediment trap was enlarged and the berms were built up to help contain sediment. The area was seeded and crimped as well

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COGCC – 8/17/17



Photo 7. Photo taken from the previously mentioned upgradient sediment trap, facing Northwest. Appears the Operator has enlarged the sediment trap size with a stabilized outlet area. Embankment material and embankment construction does not appear to be sufficient compacted, as it appears unconsolidated material is contributing to sediment loss (red circle). Refer to Photo 8 for a picture taken of the sediment trap from the July 11, 2017 inspection.

Noble Energy – 9/19/2017



Photo NBL7. The berms were compacted around the sediment trap and sediment loss was captured

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COGCC – 8/17/17

Photo 8. Photo taken of the sediment trap in Photo 7 from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL8. This photo illustrates the current state of the sediment trap from COGCC Photos 7 and 8.

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COGCC – 8/17/17

Photo 9. Photo taken from the northeast east well pad, facing West. Appears the Operator has enlarged the sediment trap size with a stabilized outlet area. Embankment material and embankment construction does not appear to be sufficient compacted, as it appears unconsolidated material could be contributing to sediment loss. Refer to Photo 10 for a picture taken of the sediment trap from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL9. The sediment trap was enlarged and berms around the trap were compacted.

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COGCC – 8/17/17

Photo 10. Photo taken of the sediment trap in Photo 9 from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL10. This photo illustrates the current state of the sediment trap from COGCC Photos 9 and 10

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COGCC – 8/17/17

Photo 11. Photo taken from the southwest east well pad, facing West. Appears the Operator has enlarged the sediment trap size with two stabilized outlet areas. However, the sediment trap size could be enlarged because it appears flows have discharged over the embankment berms. Embankment material and embankment construction does not appear to be sufficiently compacted, as it appears unconsolidated material is contributing to sediment loss.

Noble Energy – 9/19/2017

Photo NBL11. The sediment trap was enlarged even more and the embankment was raised and compacted

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COGCC – 8/17/17

Photo 12. Photo taken from the east well pad, west entrance along the east side, facing Northeast. Operator has installed a shallow ditch from the outlet area of the sediment trap to a shallow depression area- refer to Photo 13. Because the sediment trap size is too small sediment would not have enough time to settle out before discharging out of the outlet. Wattles are intended to pool sheet flow (not filter sediment) and it appears the volume of stormwater sheet flow, likely sediment laden flow, is overtopping the wattles.

Noble Energy – 9/19/2017

Photo NBL12. The upgradient sediment trap was enlarged, and the depression in this area was filled to prevent water from the adjacent lease road from ponding here. This area was then seeded and crimped.

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COGCC – 8/17/17

Photo 13. Photo taken from the previously mentioned shallow depression area, facing East. Does not appear the depression area with the wattles are pooling stormwater runoff. Appears the volume of stormwater sheet flow, likely sediment laden flow, is overtopping the wattle as shown in this photo.

Noble Energy – 9/19/2017

Photo NBL13. Ponding in this area was due mainly to run-on from the lease road. To address this issue, the elevation of the area was raised to remove the low spot where water would pool. The wattles were removed, and the area was seeded and crimped

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COGCC – 8/17/17

Photo 14. Photo taken from the southeast production facility pad, facing West. Appears the Operator has enlarged the sediment trap size. However, the sediment trap size could be enlarged because it appears flows have discharged over the embankment berms. Embankment material and embankment construction does not appear to be sufficiently compacted, as it appears unconsolidated material is contributing to sediment loss. Sediment trap outlet area does not appear to be properly constructed to capture outlet flows.

Noble Energy – 9/19/2017

Photo NBL14. The sediment trap was further enlarged, the berms were re-compacted, the outfall was enlarged, and the area outside the outfall was seeded and crimped

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COGCC – 8/17/17

Photo 15. Photo taken from the previously shown sediment trap, facing Southwest. Does not appear the wattles are pooling stormwater runoff. Appears the volume of stormwater sheet flow is overtopping the wattle as shown in this photo. Sediment deposition is observed between the wattles and outside of the wattles as shown in this photo.

Noble Energy – 9/19/2017

Photo NBL15. Ponding in this area was due mainly to run-on from the lease road. To address this issue, the elevation of this area was raised to remove the low spot where water would pool. The wattles were removed, and the area was seeded and crimped

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COGCC – 8/17/17

Photo 16. Photo taken from the west well pad, east entrance along the east side, facing North. Does not appear the sediment trap size has been enlarged. It appears the Operator has moved the position of the sediment trap outlet and constructed an embankment berm. However, embankment does not appear to be sufficiently compacted, as it appears unconsolidated material could be contributing to sediment loss.

Noble Energy – 9/19/2017

Photo NBL16. The sediment trap was extended and enlarged, and the berms were re-compacted

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COGCC – 8/17/17

Photo 17. Photo taken from the west well pad, east entrance along the east side, facing Northwest. Appears the Operator has made repairs and re-installed wattles along the entrance.

Noble Energy – 9/19/2017

Photo NBL17. The rock socks and wattles were maintained

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COGCC – 8/17/17

Photo 18. Photo taken from the west well pad, east entrance along the west side, facing West. Appears the Operator has installed a sediment trap. However, the sediment trap size could be enlarged because it appears flows have discharged over the embankment berms- see Photo 20. Embankment material and embankment construction does not appear to be sufficiently compacted, as it appears unconsolidated material is contributing to sediment loss. Refer to Photo 18 for a picture taken of this area from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL18. The sediment trap was enlarged and extended, and the embankment was raised and re-compacted.

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COGCC – 8/17/17

Photo 19. Photo taken from the area in Photo 18 from the July 11, 2017 inspection.

Noble Energy – 9/19/2017

Photo NBL19. This photo illustrates the current state of the sediment trap from COGCC Photo 19.

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COGCC – 8/17/17

Photo 20. Photo taken east of the previously shown sediment trap in Photo 17. Photo illustrates sediment loss from stormwater overflowing from the sediment trap. Does not appear the wattles installed along the outer perimeter of the sediment trap are preventing sediment discharge. Wattles are intended to pool sheet flow (not filter sediment).

Noble Energy – 9/19/2017

Photo NBL20. The straw wattle was maintained and rock was installed at cattle guard. Sediment was also recovered.