

Inspection Photos

10/01/2018

Operator: SWN PRODUCTION COMPANY LLC -
10396

Location ID: 427955

Inspection Doc. Number: 682504013
Adams County, CO

Aaron Trujillo
NE Reclamation Specialist
COGCC

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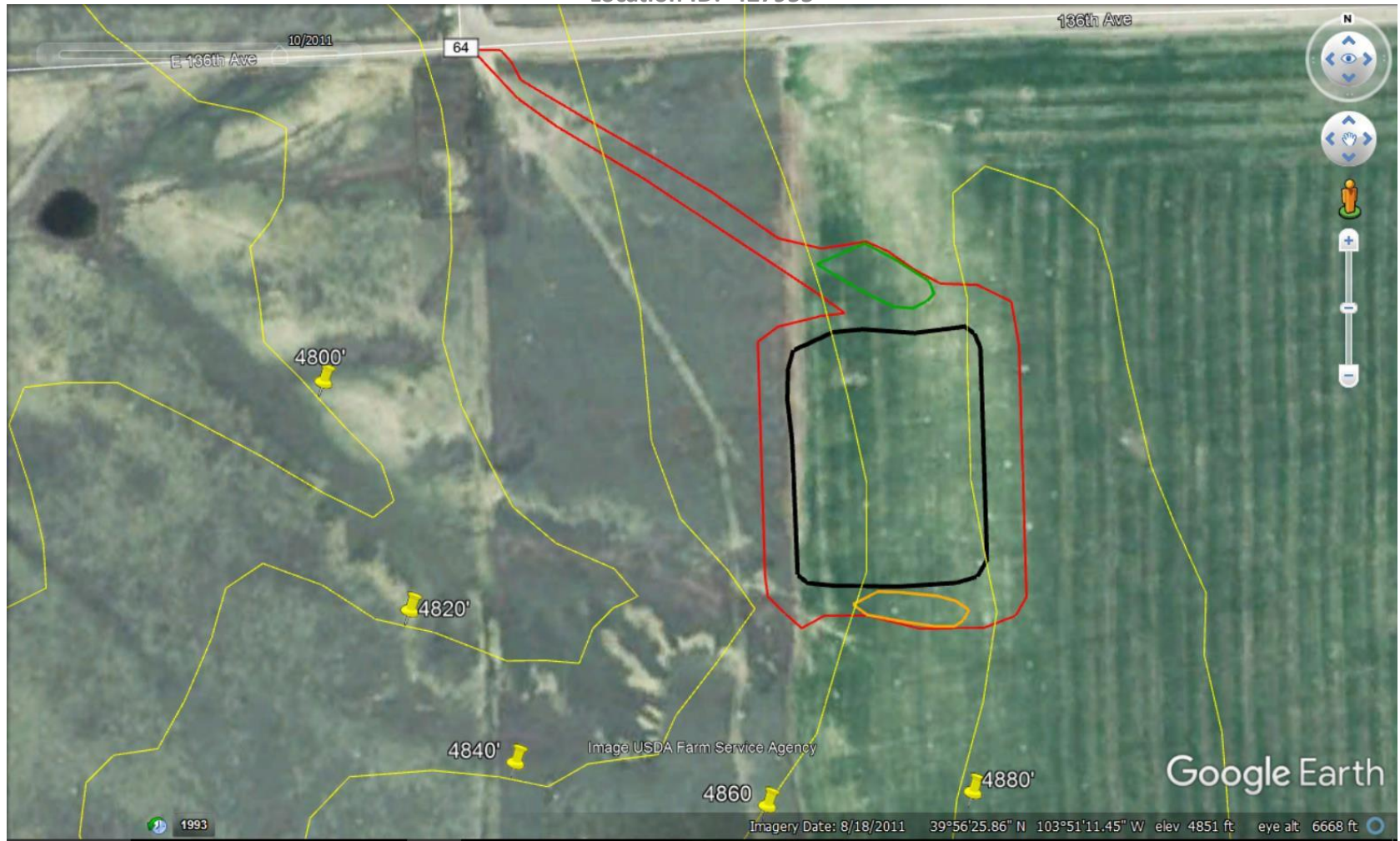


Photo 1: 2011 aerial imagery. Photo shows the location prior to oil and gas disturbances. Yellow lines indicate elevation/topography. Red polygon represents total disturbance (location+access road). Total disturbance is ~4.9 acres (4.5 acres excluding access road). Black polygon represents pad/production area size. Pad size is ~2.43 acres. Green polygon represents area of the topsoil stock pile and orange polygon represents area of “spoils” stockpile based on location drawing, “Exhibit A”, of document #401313989.

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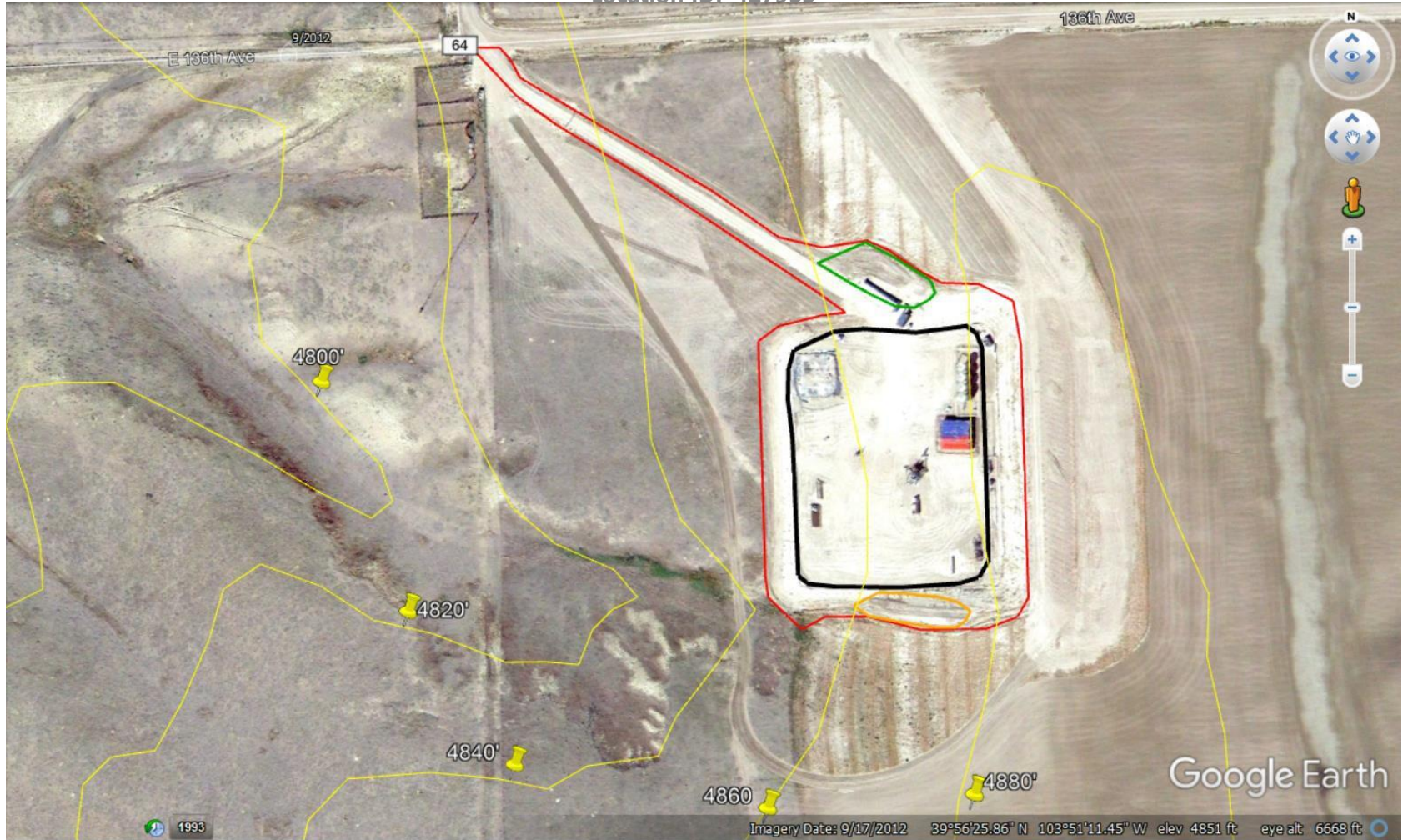


Photo 2: 9/17/2012 Aerial imagery. Well was SPUD 4/11/2012. COGCC records show first production date on 07/2012. COGCC 1003 reclamation rules require operator to perform interim reclamation (IR) on areas no longer reasonably needed for production to occur no later than three (3) months on cropland after drilling operations. Date IR would need to have been conducted is 10/2012. Photo shows location prior to when IR would need to have been conducted. 2A doc. # 400252948 states disturbance size during construction is 3.67 acres. Total disturbance size is ~4.5 acres (4.92 with access road).

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Photo 3: 9/06/2013 aerial imagery. 2A doc. #400252948 states size of location after IR is 0.92 acres, with IR estimated to begin on 9/1/2012. Based on production records, interim reclamation (IR) on areas no longer reasonably needed for production should have occurred no later than 10/2012. Photo image date is 11 months after when IR should have occurred. Photo shows location does not appear to have been reduced in size; IR does not appear to have been conducted. Total disturbance remains ~4.9 acres with pad/production area ~2.43 acres.

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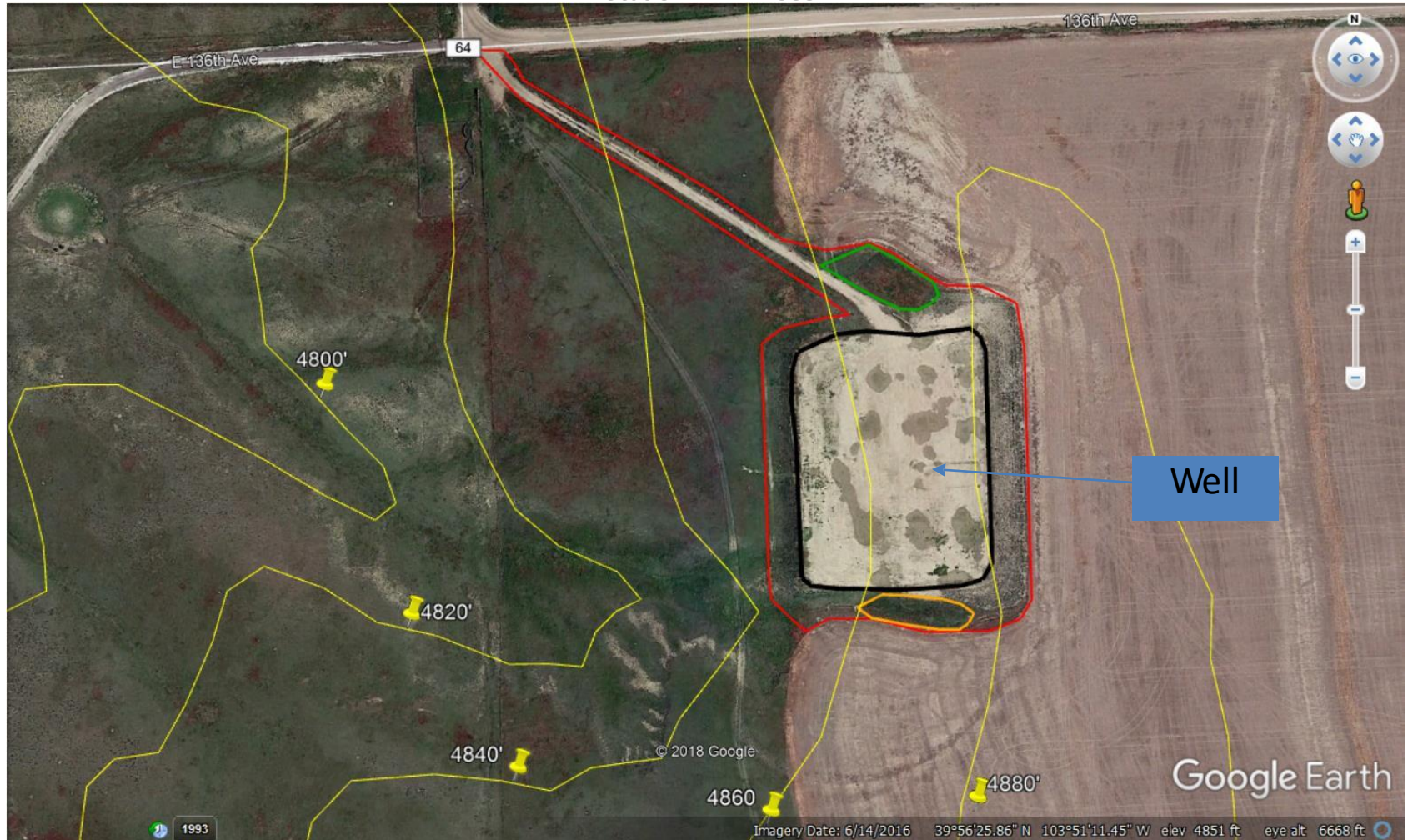


Photo 4: Current available aerial imagery dated 06/14/2016. 6(s) doc. #400900611 states well was PA'd on 8/28/2015. Photo shows well and equipment appear to have been removed. Location would now have been subject to 1004 reclamation rules which require final reclamation to be completed within 3 months on crop land after plugging a well. Final reclamation should have been completed by 11/28/2015. Photo shows location/disturbance size

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Photo 5: Photo from where the access road meets 136th avenue, facing southeast towards the location. Photo shows access road.



Photo 6: Photo of the eastern end of the culvert at the access road.

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Photo 3: Photo of the western end of the culvert at the access road.



Photo 4: Photo taken from the access road, facing southeast. Photo shows velocity checks and ditch along access road. BMPs appear to be in proper functioning condition.

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Photo 5: Photo taken from the north end of the location, facing east. Photos 5-8 provide an overview of the location from east, to south to west.



Photo 6:

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Photo 7:



Photo 8:

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Photo 9: Photo from the northwest end of the pad, facing west. Photo shows patch of Canada thistle observed on location. This is a Colorado state listed noxious weed that needs to be managed.



Photo 10: Photo from the northwest end of the pad, facing southwest. Photo shows a second patch of Canada thistle observed on the location. This is a Colorado state listed noxious weed that needs to be managed.



Photo 11: Photo from the northeast corner of the location, facing northeast. Photo shows cut slopes on the location do not appear to be stabilized; vegetation has not achieved a uniform establishment and stormwater erosion degradation is forming rill/gully erosion on the slopes. These areas remain predominantly bare and exposed soil and are at risk for further erosion degradation.

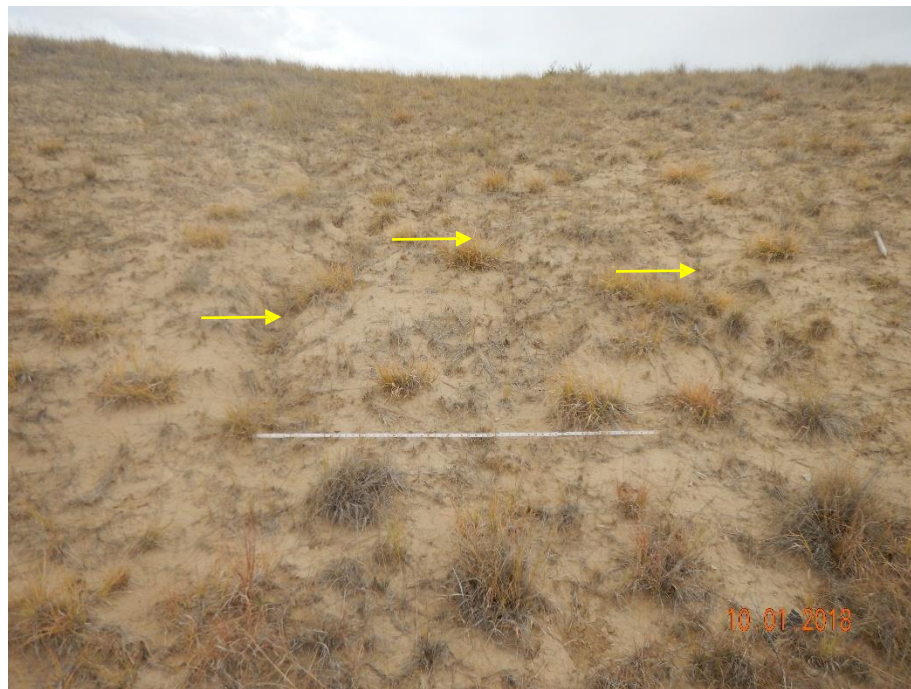


Photo 12: Continued from photo 11. Photo shows closer image of stormwater erosion occurring on the cut slopes of the location

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Photo 13: Photo taken from the north end of the location, facing west. Photo shows area designated as the “topsoil stockpile” based on location drawing, “Exhibit A”, of document #401313989. Photo also shows stormwater ditch on the north end of the stockpile.



Photo 14: Photo from the east end of the location, facing south. Photos 14-16 provide an overview of the location from south, to west, and north. Photos also show that large areas of the pad is predominantly undesirable weedy plant species, or bare and exposed soil, and is not graveled/stabilized.

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Photo 15:



Photo 16:



Photo 17: Photo taken from the southeast end of the location. Photo shows cut slopes on the location do not appear to be stabilized; stormwater erosion degradation is forming rill/gully erosion on the slopes and creating pedestal formations around what vegetation has established. 6 foot measuring stick for reference.



Photo 18: Photo taken from the southeast end of the location, facing east. See comments under photo 17.



Photo 19: Photo taken from area of the “spoils” stockpile on the south end of the location, facing northwest. Photo shows areas of bare and exposed soil with large furrows. These furrows are similar to those seen after a ripper has roughened soils. This surface roughening has not been performed along the contour of the slope and has created channels to promote stormwater gully erosion degradation. Stockpile is not sufficiently stabilized.



Photo 20: Photo taken from the south end of the location, facing west. Photo shows slopes on the south of the location appear to be largely bare and exposed soil, or predominantly undesirable weedy plant species.

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Photo 21: Photo taken from the south end of the location, facing south. See comment under photo 19. Vegetation seen in photo is predominantly undesirable weedy plant species.



Photo 22: Photo from the south end of the location, facing northwest. Photos 22-24 provide an overview of the location from northwest, northeast, to east. Photos also show that large areas of the pad is predominantly undesirable weedy plant species, or bare and exposed soil, and is not graveled/stabilized.

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Photo 23:



Photo 24:

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Photo 25: Photo taken from the south end of the location, facing southwest. Photo shows wood-mulch wattle stormwater ponding BMP. BMP showing signs of degradation,



Photo 26: Photo from the southwest end of the location, facing north. Photos 22-24 provide an overview of the location from north, northeast, to east. Photos also show that large areas of the pad is predominantly undesirable weedy plant species, or bare and exposed soil, and is not graveled/stabilized.

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Photo 27:



Photo 28:

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Photo 29: Photos taken from the stormwater ditch on the west end of the location. Photos shows stormwater runoff has incised the ditch along the west end of the pad. Photo on left (facing west) taken during a site visit 2/27/2018. Photo on right (facing north) shows progression of the degradation since February 2018. 6 foot measuring stick for reference.



Photo 30: Continued from photo 29. 6 foot measuring stick for reference.



Photo 31: Photo date 2/27/2018. Photo taken from the west end of the location, facing north. Photo shows stormwater incision within the ditch.



Photo 32: Continued from photo 31. Photo shows progression of the stormwater degradation since February 2018. Please note: water appears to be focusing within this area of the ditch. There is not evidence to suggest stormwater is flowing out of the ditch onto the pad, or off the location. Water appears to be traveling sub-gradient into what appears to be a sinkhole. Pad does not appear to be stable.



Photo 33: Continued from photo 31. Photos shows stormwater incision within the ditch has cut underneath the pad itself. Photo on left dated 2/27/2018 shows inspector inserted a 6 foot measuring stick to determine how far/deep the stormwater sinkhole has undercut into the pad. The sinkhole exceeded the length of the measuring stick and it was unclear how deep the undercut went at this time. The photo on the right shows the progression of the degradation since February, 2018. The depth at which the sinkhole has cut under the pad appears to exceed 10 feet down at this point.



Photo 34: Continued from photo 33. Photo shows depth at which stormwater has created a sinkhole and cut under the pad, appears to exceed 10 feet down.



Photo 35: Continued from photo 32. Photo shows erosion degradation occurring, and sinkhole forming within the ditch on west end of the pad.



Photo 36: Continued from photo 32. Photo shows erosion degradation occurring, and sinkhole forming within the ditch on west end of the pad.

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Photo 37: Photo taken from the west end of the pad, facing north. Photos 37-40 provide an overview of the location from north, east, so south. Photos also show stormwater runoff from the pad into the ditch has created rill formations on the slopes of the ditch.



Photo 38:

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Photo 39:



Photo 40:

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Photo 41: Photo taken from the west end of the location, facing east. Photo shows areas of the pad that do not appear to have been stabilized with gravel or vegetation.



Photo 42: Photo taken from the ditch on the west end of the pad. Photos show stormwater runoff from the pad into the ditch has created rill erosion.

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Photo 43: Photos taken from the stormwater ditch on the west end of the pad. Photo on the left dated 2/27/2018 shows stormwater runoff from the pad was creating rill and gully erosion that was beginning to cut eastward into the pad. Photo on the right shows erosion degradation has progressed further into the pad. 6 foot measuring stick for reference.

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Photo 44: Photo taken from the northwest corner of the pad, facing east. Photo shows erosion degradation within the ditch. Stormwater runoff has blown out controls (erosion blanket, velocity checks) and has created a large gully on the north end of the pad.



Photo 45: Photo taken from the northwest corner of the pad, facing. Photo shows erosion degradation within the ditch.

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Photo 46: Photos taken from the gully erosion on the northwest end of the pad. Photo to left dated 2/27/2018 shows rill/gully erosion beginning to cut eastward into the pad. Photo on the right shows erosion degradation has progressed further into the pad. 6 foot measuring stick for reference.



Photo 47: Photo taken from the northwest end of the pad, facing west. Photo shows stormwater runoff from the pad has blown out the ditch, velocity checks and erosion control blanket, creating a large gully.

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Photo 48: Photos taken from the gully erosion on the northwest end of the pad. Photo to left dated 2/27/2018 shows stormwater runoff erosion from the pad has blown out the ditch, velocity checks and erosion control blanket, creating a large gully. Photo on the right shows progression of the erosion degradation. 6 foot measuring stick for reference.

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Photo 49: Photos taken from the gully erosion on the northwest end of the pad, facing south. Photo to left dated 2/27/2018 shows stormwater runoff erosion from the pad has blown out the ditch, velocity checks and erosion control blanket, creating a large gully. Photo on the right shows progression of the erosion degradation. 6 foot measuring stick for reference.



Photo 50: See comments under photo 49.



Photo 51: Photo taken from the north end of the location, facing west. Photo velocity check has filled with sediment and is not longer in proper functioning condition.



Photo 52: See comments under photo 51.

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Photo 53: Photo taken from the northwest corner of the location, facing south. Photo shows stormwater ditch along the western perimeter of the location.



Photo 54: Photo taken from the west end of the location, facing east and upslope. Photo shows areas of the slope that remain predominantly bare and exposed soil. Operator has indicated that these areas had work conducted to repair erosion in 2016.

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Photo 55: Continued from photo 54. Photo shows that though some vegetation has established on slope, areas remain predominantly bare and exposed soils. 6 foot measuring stick for reference.



Photo 56: Photo taken from the west end of the location, facing west. Photo shows stormwater ditch along perimeter of location has filled with sediment and is no longer in proper functioning condition.

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Photo 57: Photo taken from the west end of the location, facing south. Photo shows stormwater ditch along perimeter of location has filled with sediment and is no longer in proper functioning condition.



Photo 58: Photo taken from the west end of the location, facing east and upslope. Photo shows areas of the slope that remain predominantly bare and exposed soil. Operator has indicated that these areas had work conducted to repair erosion in 2016.

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Photo 59: Photo taken from the southwest end of the location, facing south. Photo shows the corner of the location and a portion of the adjacent reference areas. There appears to be a drainage to the immediate north of the location.



Photo 60: Photo taken from the southwest end of the location, facing southwest. Photo shows the corner of the location and a portion of the adjacent reference areas. There appears to be a drainage to the immediate north of the location.