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January 4, 2020

Xcel Energy, Inc.
Sherburne County Generating Station
13999 Industrial Blvd.
Becker, MN, 55308

Re: 2019 Annual Inspection of Bottom Ash Pond

The Bottom Ash Pond (BAP) inspection was conducted on October 24th, 2019 by Daniel J. Riggs, a professional engineer licensed in the State of Minnesota. Prior inspections were conducted in 1996, 2008, 2009, 2013 by the Minnesota Department of Natural Resources (DNR); in August 2009 by the EPA; annually from 2010 to 2014 by Qualified Professional Engineers in accordance with the DNR and Minnesota Pollution Control Agency (MPCA) inspection requirements; and annually since 2015 by a Qualified Professional Engineer in accordance with Coal Combustion Residual (CCR) Rules.

The following items were evaluated as a part of the section 257.83 inspection:

i) Any changes in geometry of the impounding structure since the previous inspection

Periodic topographic surveys, most recently in July 2018, have been conducted on the BAP since the final phase of construction was completed in 1982. During that time, no changes in pond geometry or embankment alignment have been observed.

ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection

There is no instrumentation for water level or dike stability, however water level elevation in the BAP is controlled by stop-logs as described in section iii.

iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection

The BAP discharges to the Recycle Basin over concrete stop-logs located in the discharge structure. These stop-logs are added or removed to raise or lower the impounded water level in the BAP. Since the last inspection in October 2018, the stop-logs and water level were raised from an elevation of 974 feet mean sea level (MSL) to present/maximum level of 982 feet MSL to promote bottom ash material deposition. The liner at the bottom of the BAP is at elevation 946 feet MSL, therefore the minimum and maximum impounded water depths are 28 and 36 feet, respectively.

The lowest elevation of deposited CCR in the BAP since the last inspection was approximately 962 feet MSL. The maximum elevation of deposited CCR in the BAP was at approximately 983 feet MSL during the inspection. The minimum and maximum CCR depths equate to 8 and 37 feet, respectively.

iv) The storage capacity of the impounding structure at the time of the inspection

The remaining capacity of the BAP from the surface of CCR during the 2019 inspection to an elevation of 998 feet MSL (top of clay liner) was approximately 437,000 Cubic Yards. The remaining capacity of the BAP from the present water level elevation of 982 feet MSL to top of clay liner (elevation 998 feet MSL) is approximately 408,000 Cubic Yards.

v) The approximate volume of the impounded water and CCR at the time of the inspection

There was approximately 101,000 Cubic Yards of impounded water and 510,000 Cubic Yards of CCR in the BAP at the time of the inspection.

vi) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures

The exterior of the BAP was inspected for structural weakness in the form of seepage by walking a traverse at the base, mid-slope, and top of the embankment. Signs of seepage would include moss or marshy vegetation at the toe-drain along the base, soft or saturated areas, patches of grass more lush than the surrounding area, or flowing “springs”. There were no signs that seepage had previously or is presently occurring on the BAP.

The discharge pipe corridor was inspected for signs of a leakage, such as saturated areas or sinkholes. No signs of leakage were observed along the pipe corridor between the BAP and the Recycle Basin.

The water level in the BAP is controlled by concrete stop-logs in the discharge. All changes in water level are attributed to the addition of stop-logs.

vii) Any other changes(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection

There have not been any changes that have affected the stability of the pond. I have reviewed the CCR Unit Design and Construction information and have observed no deviations from those documents.

Sincerely,

Daniel J. Riggs, PE
License No. 49559
Senior Engineer
Carlson McCain, Inc.

12/17/2019

P:\Projects\XCEL\3404-01 Sherco Ash Management\CCR Assistance\Annual Inspections\2019\figures\Figure 1 - BAP inspection.dgn

Co Road 52

RECYCLE BASIN
(INCISED AND DOES
NOT RECEIVE DIRECT
CCR DEPOSITS)

BOTTOM ASH POND

DISCHARGE STRUCTURE

POND 3 DISCHARGE PIPE
(UNDERGROUND)

F-COV

EDGE OF FINAL COVER
(APPROXIMATE)

POND 3 DISCHARGE STRUCTURE

POND 1 (CLOSED)

POND 2 (CLOSED)

SCRUBBER PIPES

P-162

P-163

P-164

P-165

POND 3

PROPERTY BOUNDARY

MEQB

Sherburne Ave

140th Ave SE

N

0 500 1000

SCALE IN FEET

NOTE: AERIAL PHOTO FROM GOOGLE EARTH
MAY, 2018

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FIGURE 1

BOTTOM ASH POND
2019 ANNUAL INSPECTION

POND LAYOUT

12/17/2019

P:\Projects\XCEL\3404-01 Sherco Ash Management\CCR Assistance\Annual Inspections\2019\figures\Figure 2 - BAP photos.dgn

RECYCLE BASIN (INCISED AND RECEIVES NO DIRECT CCR DISCHARGE)

BOTTOM ASH POND OUTLET (UNDERGROUND PIPE)

DISCHARGE STRUCTURE

POND SCRUBBER SOLID PIPES (WHITE)

BOTTOM ASH DISCHARGE PIPES (ORANGE)

BOTTOM ASH POND

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

N

0 100 200

SCALE IN FEET

NOTE: AERIAL PHOTO FROM GOOGLE EARTH MAY, 2018

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FIGURE 2

BOTTOM ASH POND
2019 ANNUAL INSPECTION

PHOTO LOCATIONS

Bottom Ash Pond Annual Inspection - October 2019

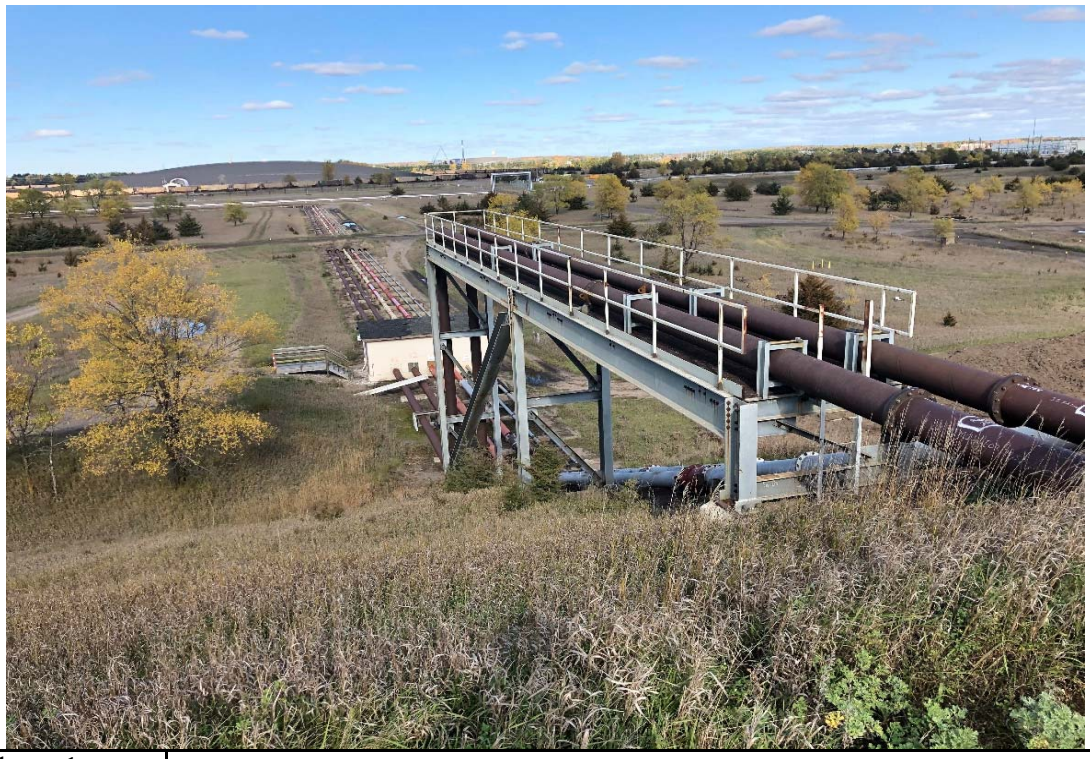

Photo 1 10/24/2019	Bottom ash and scrubber pipes, looking northeast.

Photo 2 10/24/2019	Interior of east embankment, looking south.

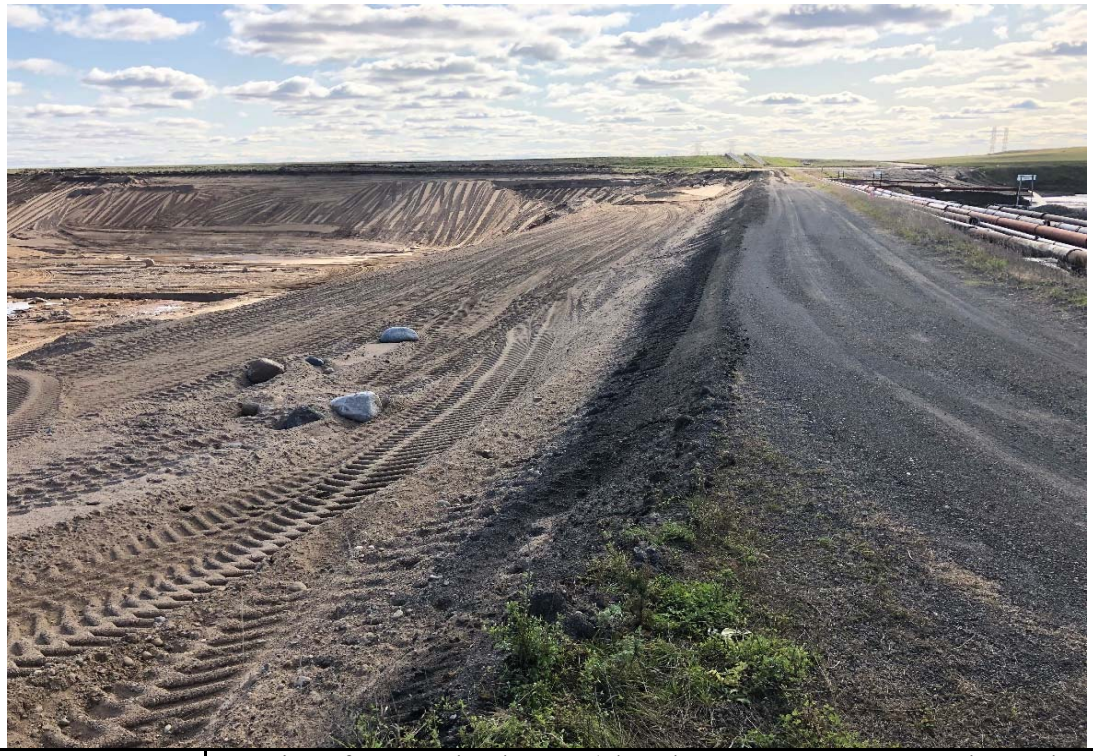

Photo 3 10/24/2019	Exterior of east embankment (also shown: New Bottom Ash Pond under construction), looking south.

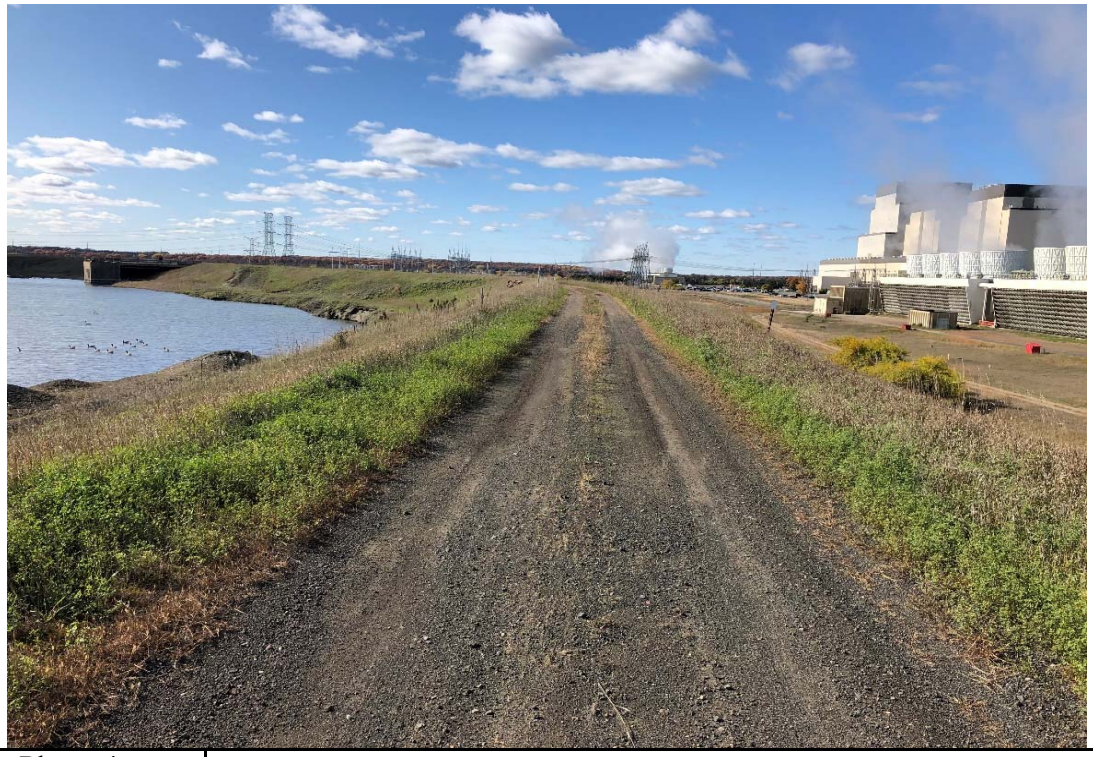

Photo 4 10/24/2019	Top of north embankment, looking west.

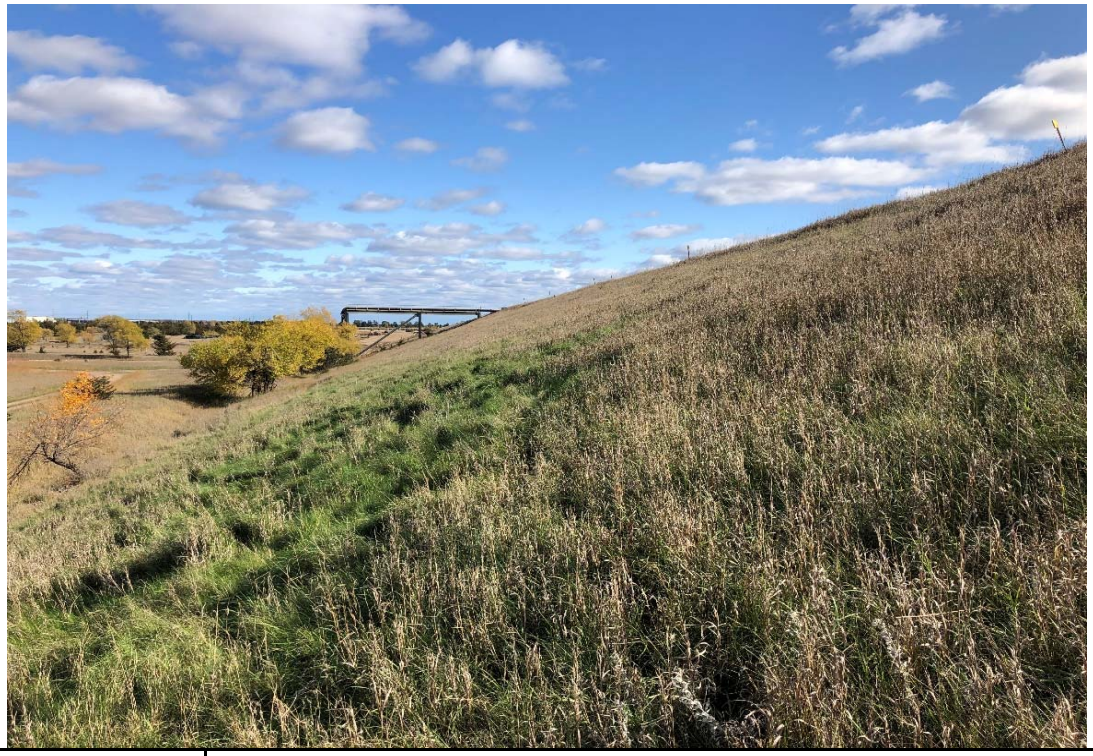

Photo 5 10/24/2019	Exterior of north embankment, looking east.

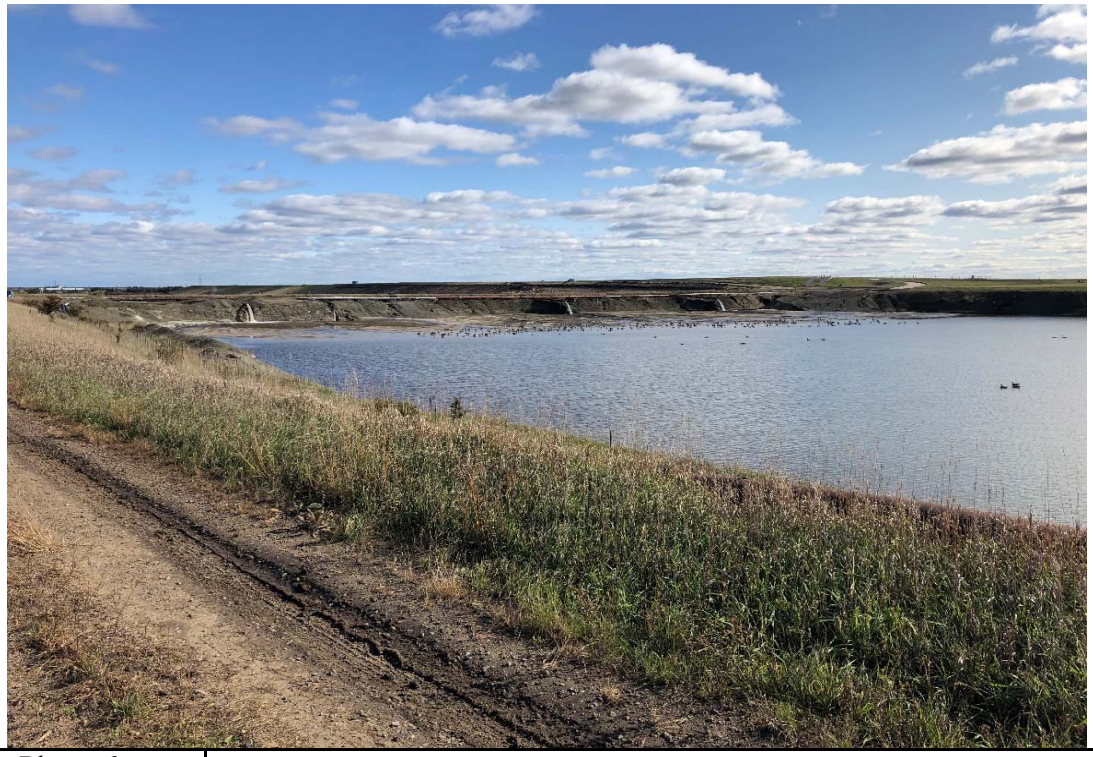

Photo 6 10/24/2019	Interior of pond, looking southeast.

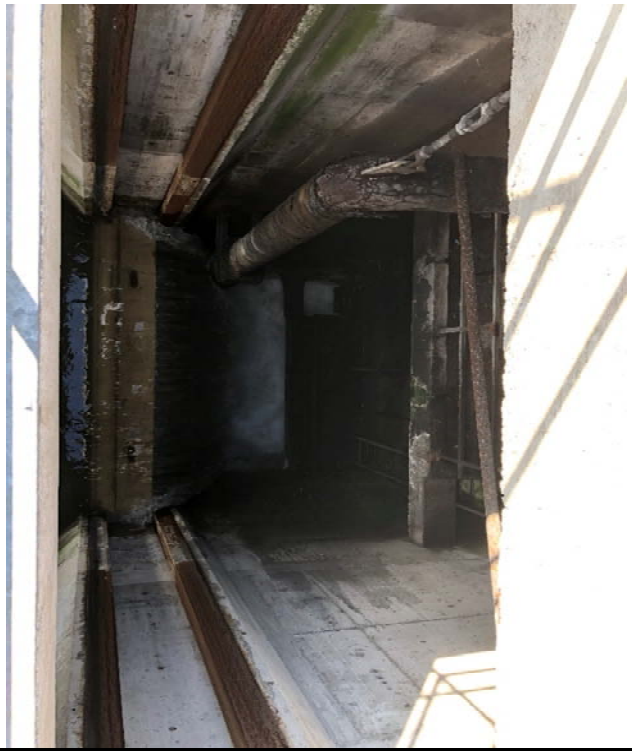

Photo 7 10/24/2019	Interior of discharge structure.

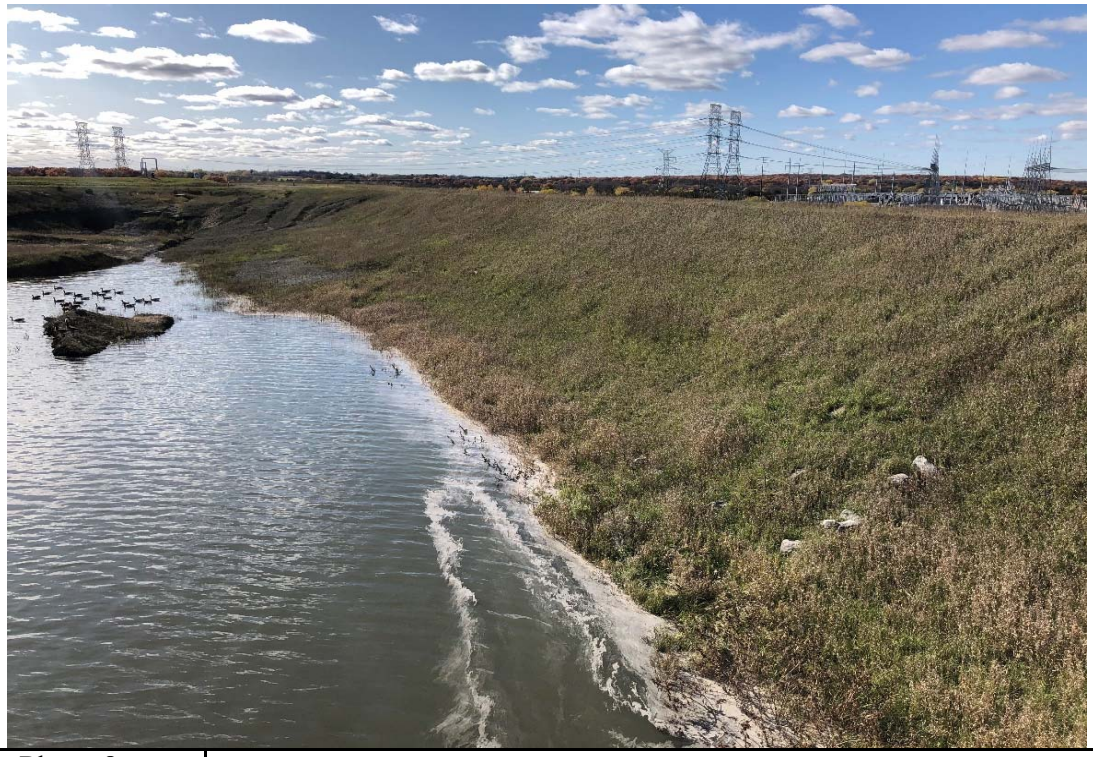

Photo 8 10/24/2019	Pond interior, looking southwest.

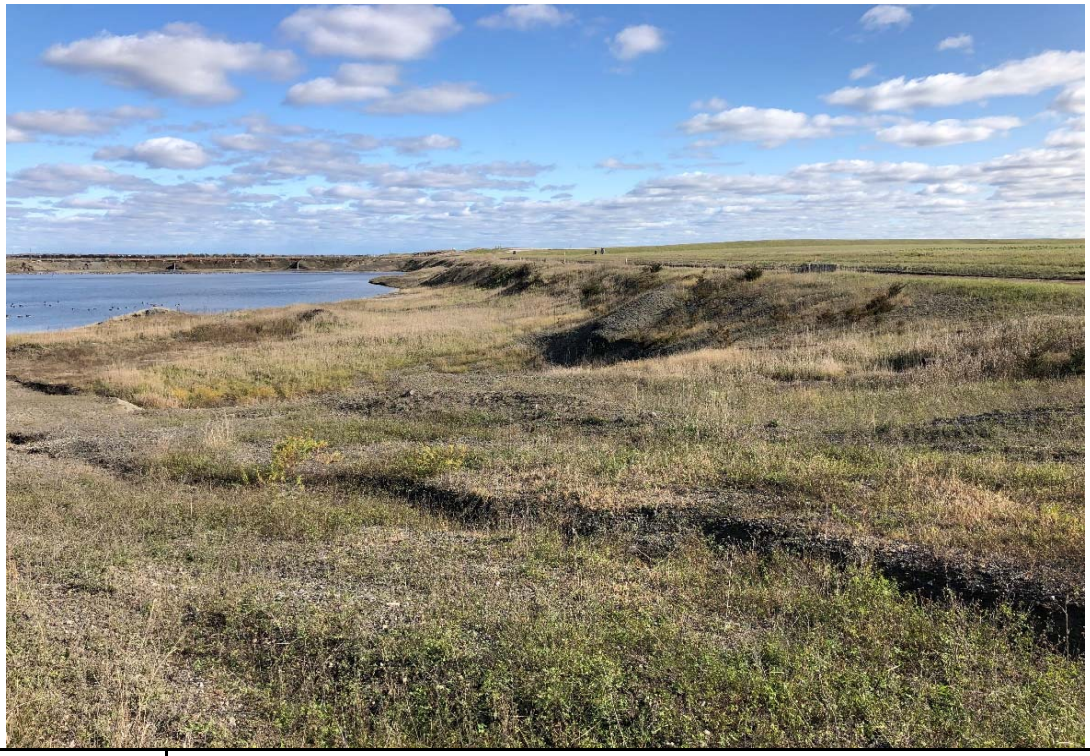

Photo 9 10/24/2019	Interior of south embankment, looking east.

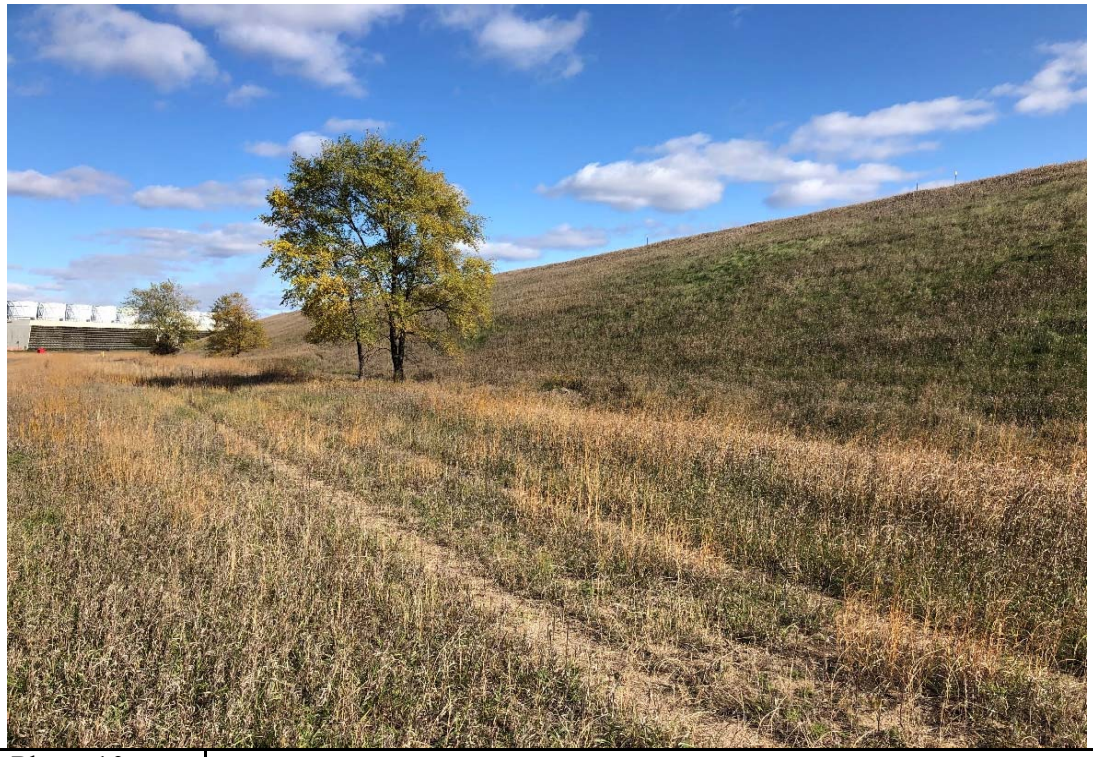

Photo 10 10/24/2019	Exterior of northwest embankment, looking northwest.

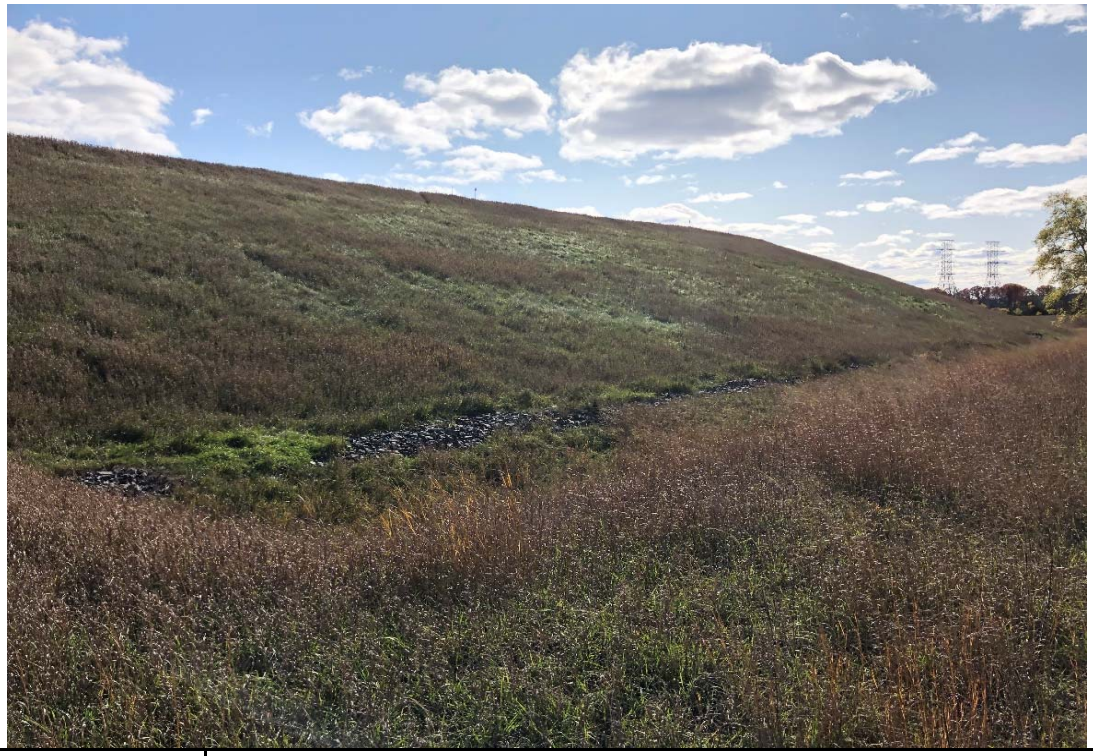

Photo 11 10/24/2019	Exterior of northwest embankment, looking southwest.

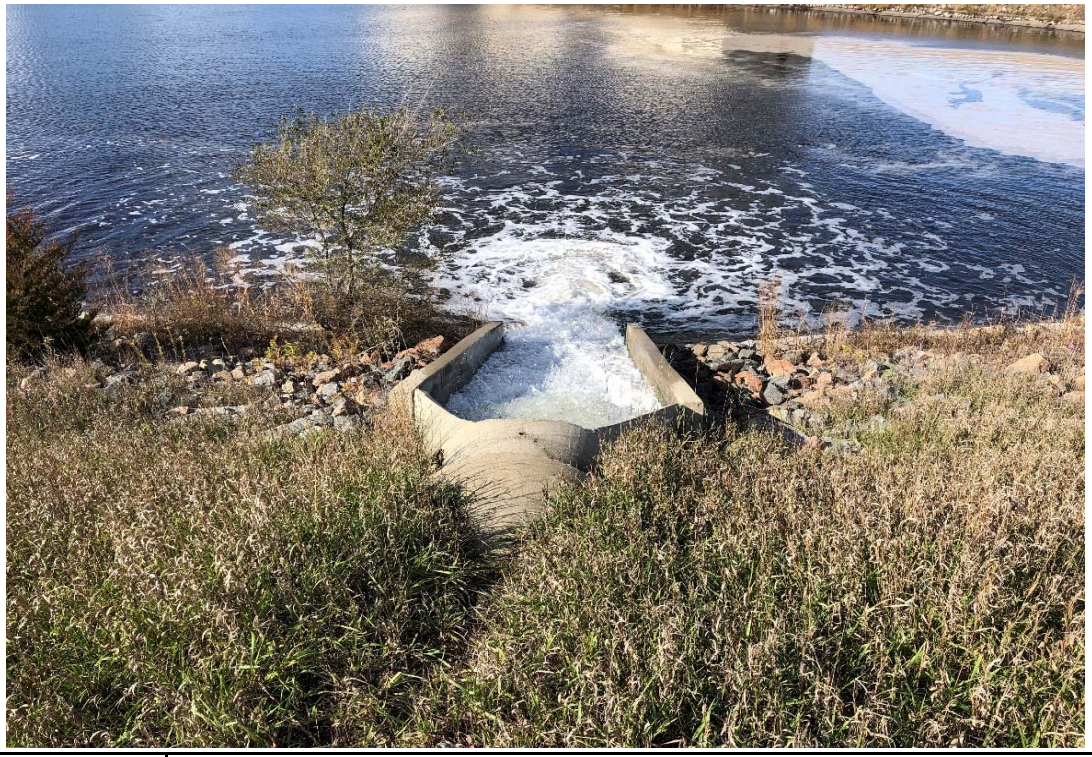

Photo 12 10/24/2019	Bottom Ash Pond outlet.

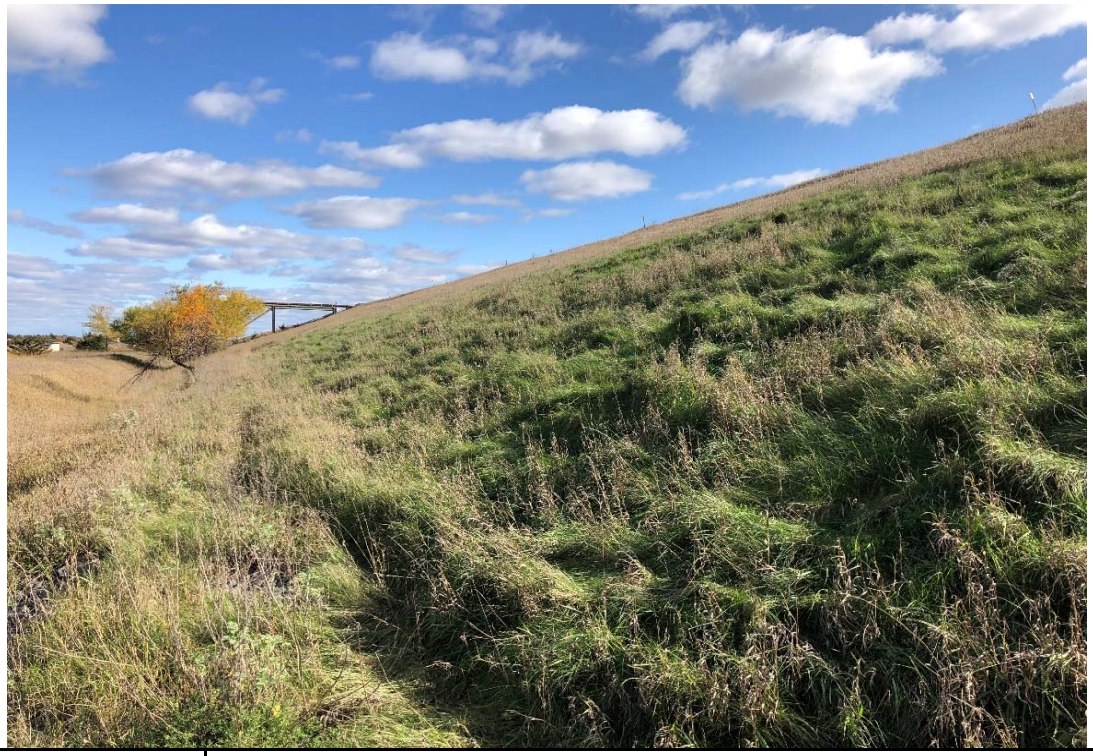

Photo 13 10/24/2019	Mid-slope of north embankment, looking east.

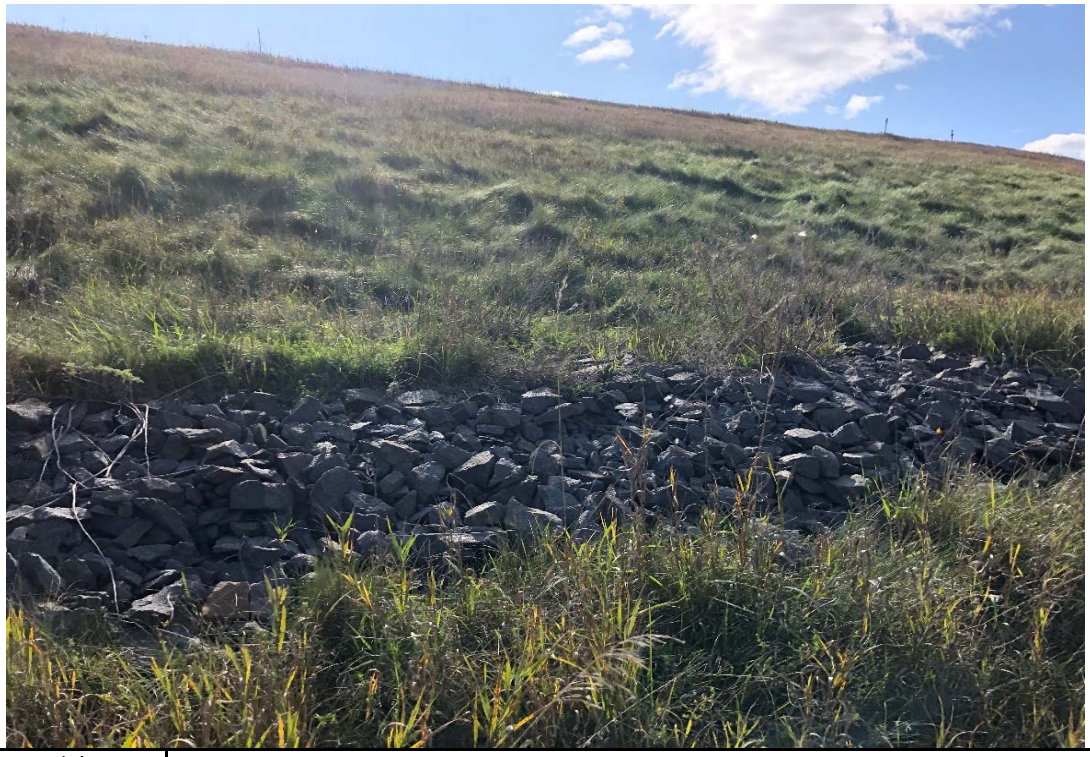

Photo 14 10/24/2019	Toe drain of north slope, looking south.

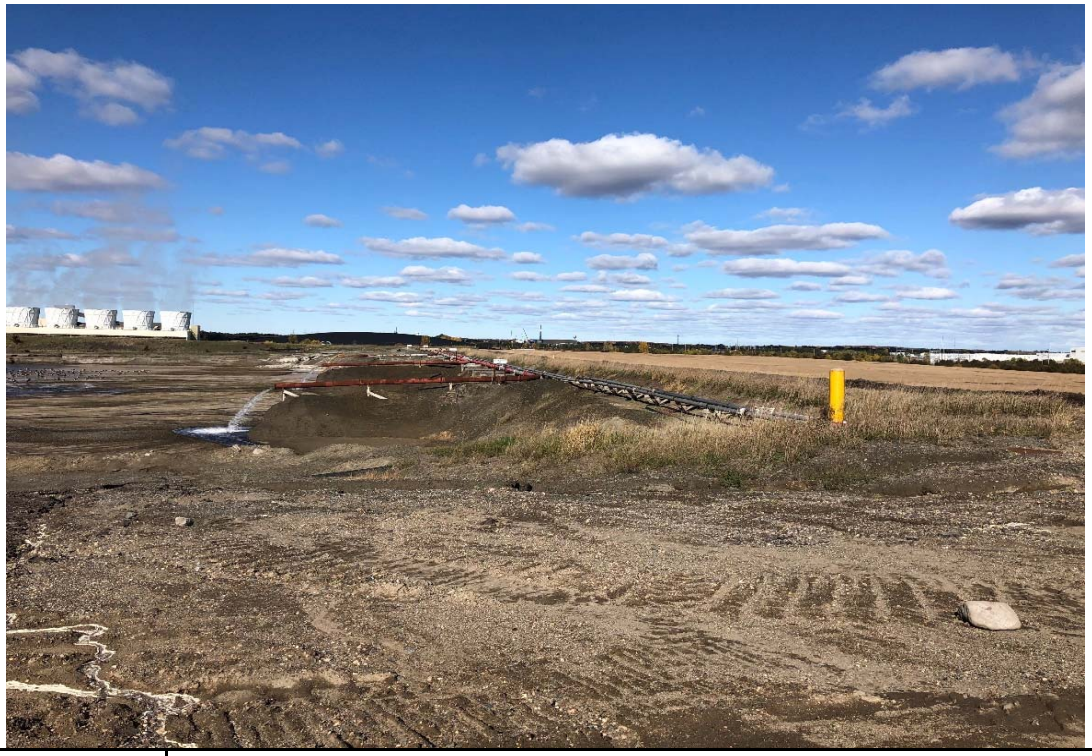

Photo 15 10/24/2019	Bottom ash sluice pipes, looking north.

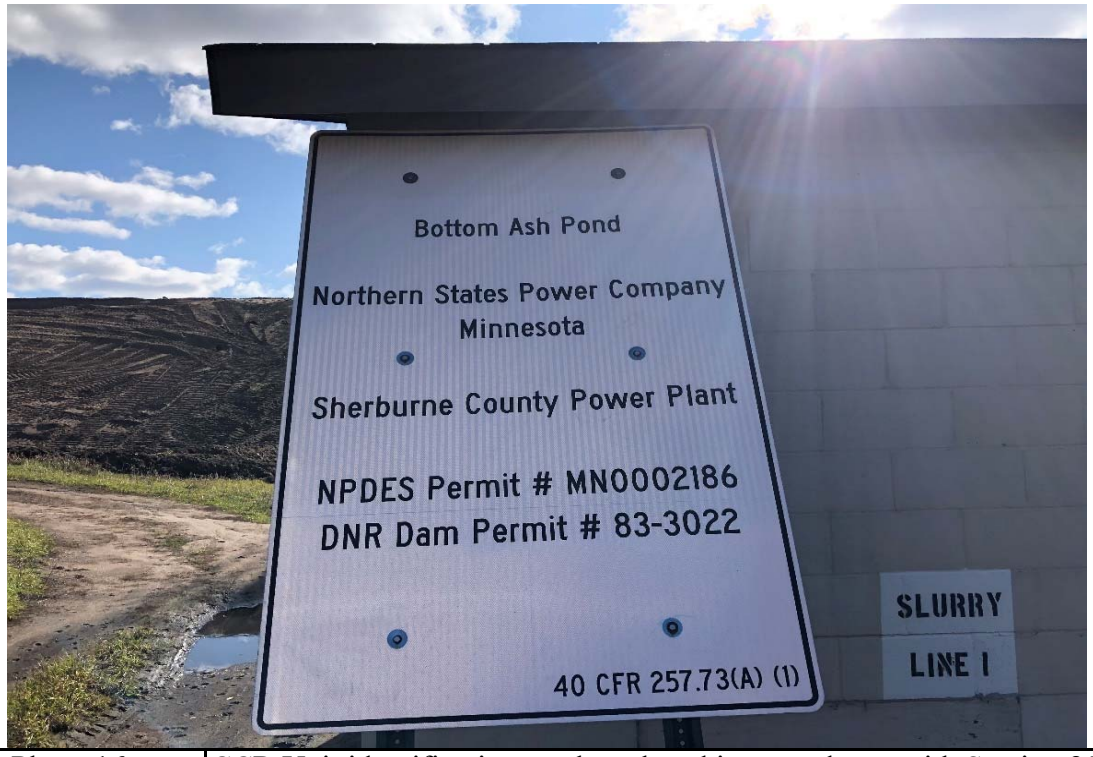

Photo 16 10/24/2019	CCR Unit identification marker placed in accordance with Section 257.73 (temporary location during construction)