

January 16, 2017

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

Re: 2016 Annual Inspection of Bottom Ash Pond

The Bottom Ash Pond (BAP) inspection was conducted on November 8th, 2016 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 in 2015 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 August 2015, 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. In 2016, the maximum water level was maintained at an elevation of 976 (MSL) until late May to promote bottom ash material deposition, then lowered to a minimum elevation of 970 (MSL) allowing access to deposited material by excavation equipment. Stop-logs were added following excavation to a present elevation of 976 (MSL).

Deposited CCR in the BAP was at an approximate elevation of 974 (MSL) prior to excavation, and 970 (MSL) in the lowest point after excavation. The liner at the bottom of the BAP is at elevation 946

(MSL), therefore the minimum and maximum impounded water depths are 24 and 30 feet, respectively, and the minimum and maximum CCR depths are 24 and 28 feet, respectively.

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

The remaining capacity of the BAP to elevation 998 (top of clay liner) at the time of the inspection was 539,200 Cubic Yards.

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

There was approximately 206,200 Cubic Yards of impounded water and 484,800 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 decreases in water level are attributed to the removal 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.

The BAP was designed for long-term stability and there are no observed deviations from the design. I have reviewed the weekly/monthly inspections performed by qualified personnel and concur with their conclusions.

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





FIGURE 1
BOTTOM ASH POND
2016 ANNUAL INSPECTION
POND LAYOUT



FIGURE 2
BOTTOM ASH POND
2016 ANNUAL INSPECTION
PHOTO LOCATIONS

Bottom Ash Pond Annual Inspection – November 2016



Photo 1	Bottom ash and scrubber pipes, looking south
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Photo 2	North embankment and perimeter ditch, looking west

Bottom Ash Pond Annual Inspection – November 2016



Photo 3	North embankment and riprap toe drain, looking west.
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Photo 4	North embankment and toe drain, looking east.
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Bottom Ash Pond Annual Inspection – November 2016



Photo 5	Bottom Ash Pond secondary outlet to Recycle Basin (Primary outlet is below the water level of the Recycle Basin).
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Photo 6	Northwest embankment riprap toe drain, looking southwest.
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Bottom Ash Pond Annual Inspection – November 2016



Photo 7	Northwest embankment, looking northeast.
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Photo 8	Pond interior, looking north
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Bottom Ash Pond Annual Inspection – November 2016



Photo 9	Photo from inside of discharge structure. Bottom of photo depicts stop-log metal channels and water flowing over concrete stop-log at the bottom of the channel.
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Photo 10	Mid slope of northwest embankment, looking southwest
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Bottom Ash Pond Annual Inspection – November 2016



Photo 11	Pond interior, looking southwest



Photo 12	Pond interior, looking southeast

Bottom Ash Pond Annual Inspection – November 2016



Photo 13	Upper slope of north embankment, looking east
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Photo 14	Interior of east embankment, looking south
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Bottom Ash Pond Annual Inspection – November 2016



Photo 15	East embankment, looking north
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Photo 16	CCR Unit identification marker placed in accordance with Section 257.73
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