

December 11, 2015

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

## Re: Initial Annual Inspection of Scrubber Solids Pond No. 3

The Scrubber Solids Pond No. 3 (Pond 3) inspection was conducted on October 19<sup>th</sup>, 2015 by Daniel J. Riggs, a professional engineer licensed in the State of Minnesota. This was the first inspection done in accordance with the EPA's published Coal Combustion Residual (CCR) Rules under section 257.83. Prior inspections were conducted in 2008, 2009, 2013 by the Minnesota Department of Natural Resources (DNR); in August 2009 by the EPA; and annually from 2010 to 2014 by Qualified Professional Engineers in accordance with the DNR and Minnesota Pollution Control Agency (MPCA) inspection requirements.

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

Annual topographic surveys have been conducted on the Pond since initial construction in 2004. 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

The only instrumentation on Pond 3 is a staff gauge used to determine water surface elevation, located on the west side of the discharge structures. The minimum elevation measured since the last inspection was 990.5 mean sea level (MSL) (October 2014), and the maximum elevation was 993.2 MSL (October 2015). The top of clay liner elevation from October 2014 to August 2015 was 998, and 1004 following the August 2015 construction event.

No instrumentation is needed for dike stability.

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

The minimum depth of water impounded since the previous annual inspection was 52.5 feet (measured from the lowest elevation of the Pond liner), and is 55.2 at the maximum/present.

Two forms of CCR are deposited or placed in Pond 3. Solid bottom ash is excavated and hauled from the Bottom Ash Pond (see figure 1) and used above the water level in Pond 3 and compacted as a

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structural fill, or deposited in the pond, and not compacted. The highest elevation of bottom ash is elevation 1004. This equates to a depth of 66 feet. The scrubber solids are sluiced to the Pond and create a delta that is approximately 2 feet above the water level, therefore the minimum and maximum depths 54.5 and 57.2 feet, respectively.

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

The remaining capacity of Pond 3 to elevation 1004 (top of currently-constructed clay liner) is:

- 3.95 Million Cubic Yards (from the surface of CCR)
- 1.38 Million Cubic Yards (from top of water, elevation 993.2 to 1004)
- v) The approximate volume of the impounded water and CCR at the time of the inspection

There was approximately 2.57 Million Cubic Yards of impounded water and 3 Million Cubic Yards of CCR in the Pond at the time of 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 Pond 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 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 Pond 3.

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 or in the vault located north of Pond 3.

The water level in Pond 3 has remained static or increased throughout the past year. Increases can be attributed to scrubber solid deposition and water accumulation from storm events.

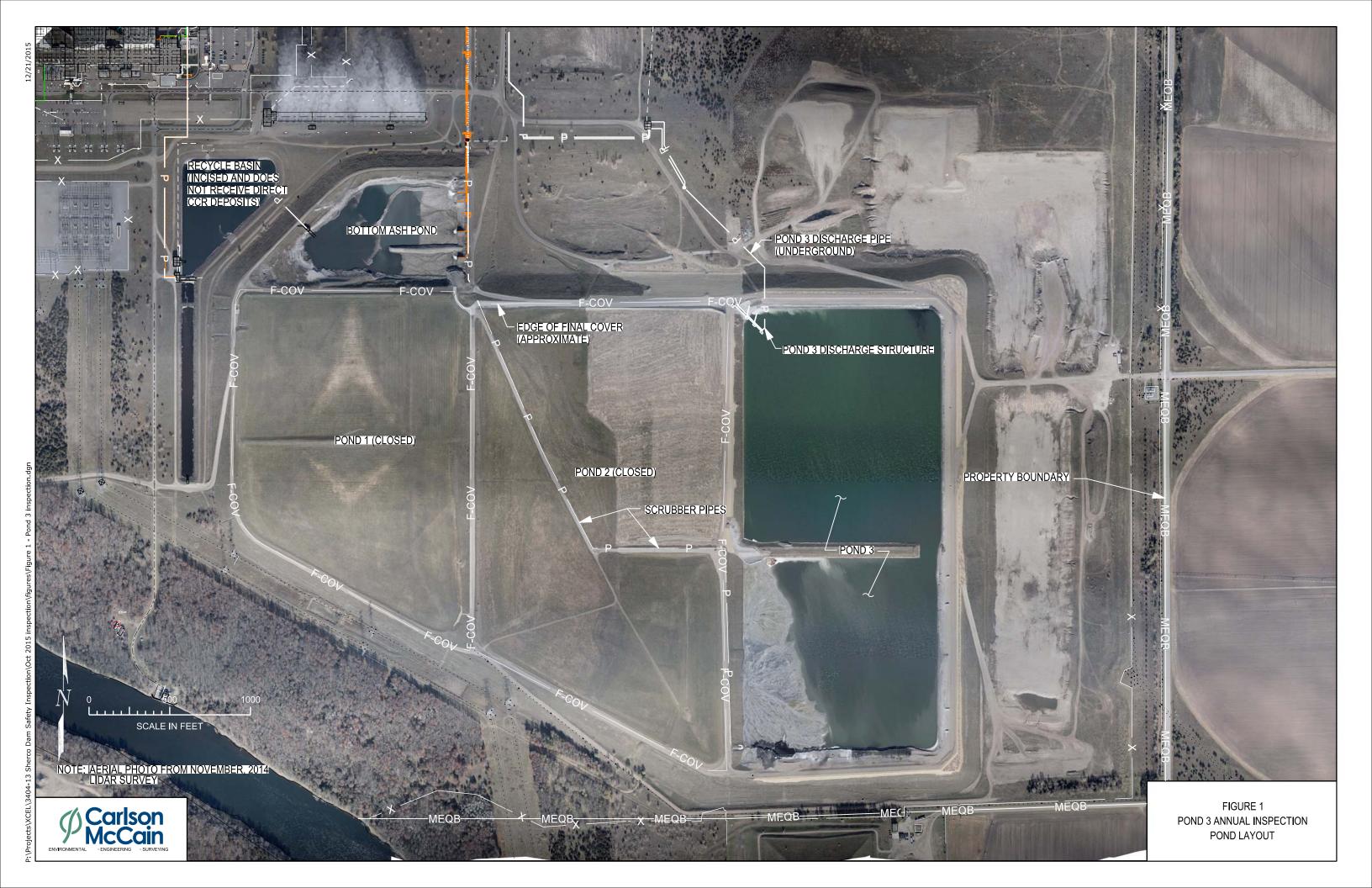
vii) Any other changes(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection

There have not been any changes that have affected the stability of the pond.

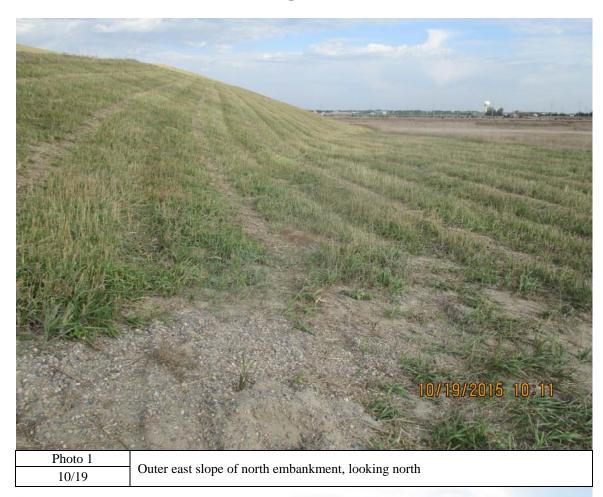
John Kyger

The Pond was designed for long-term stability and there are no observed deviations from the design. I have reviewed the CCR Unit Design, Construction information and 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.



**Pond 3 Annual Inspection – October 2015** 





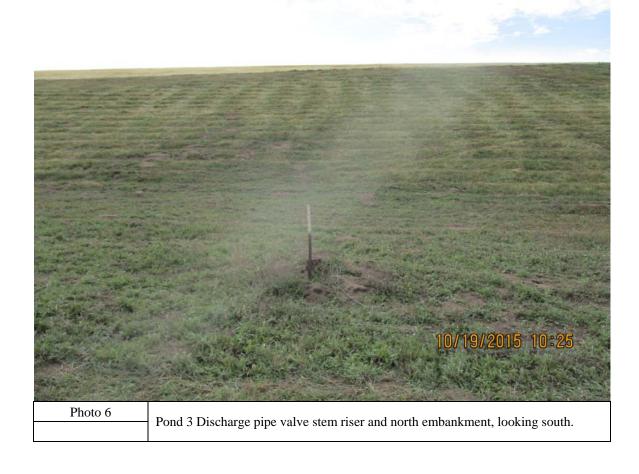
**Pond 3 Annual Inspection – October 2015** 





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North infiltration pond outlet, looking north



Pond 3 north embankment at midslope, looking east. Longer grass at the foreground is on the Pond 2 embankment.

**Pond 3 Annual Inspection – October 2015** 



Pond 3 underground discharge pipe corridor from the top of the embankment.



## **Pond 3 Annual Inspection – October 2015**



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Pond east ramp, looking south

**Pond 3 Annual Inspection – October 2015** 



Photo 20 East embankment along base, looking south

**Pond 3 Annual Inspection – October 2015** 



Photo 22 South end of east embankment, looking north.

**Pond 3 Annual Inspection – October 2015** 





Blanket installed to fix erosion on upper portion of south embankment

**Pond 3 Annual Inspection – October 2015** 





Left: Pond 2 south embankment. Right: Mowed Pond 3 embankment.

**Pond 3 Annual Inspection – October 2015** 



Pond 2 south slope and infiltration pond.



**Pond 3 Annual Inspection – October 2015** 



Photo 30 Left: newly constructed vertical expansion. Middle: disturbed vegetation caused by construction acitivities.

## **Pond 3 Annual Inspection – October 2015**



Photo 31 Pond east embankment at mid-slope, looking north.





Photo 34 North interior embankment of pond (taken from discharge structure), looking northeast. Freeboard at time of photo: 10.1 feet to top of clay liner, 14.1 feet to top of embankment

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pipes.

**Pond 3 Annual Inspection – October 2015** 



Photo 40 East interior embankment of pond, looking north

## **Pond 3 Annual Inspection – October 2015**



Photo 41 Left: Stainless steel scrubber pipes. Right: west interior embankment, looking north



Photo 42 Scrubber pipe (after transition from stainless steel to high density polyethylene) discharging in to south end of pond