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 19th, 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

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.

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.

12/21/2015

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

BOTTOM ASH POND

POND 3 DISCHARGE PIPE
(UNDERGROUND)

EDGE OF FINAL COVER
(APPROXIMATE)

POND 3 DISCHARGE STRUCTURE

POND 1 (CLOSED)

POND 2 (CLOSED)

SCRUBBER PIPES

POND 3

PROPERTY BOUNDARY

F-COV

MEQB

N

0 500 1000

SCALE IN FEET

NOTE: AERIAL PHOTO FROM NOVEMBER, 2014
LIDAR SURVEY

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FIGURE 1
POND 3 ANNUAL INSPECTION
POND LAYOUT

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2015 inspection\figures\Figure 1 - Pond 3 inspection.dgn

12/21/2015

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2015 inspection\figures\Figure 2 - Pond 3 photos - north.dgn

POND 3 DISCHARGE PIPE (UNDERGROUND)

SOIL BORROW AREA

POND 3 DISCHARGE STRUCTURE

POND 2 (CLOSED)

POND 3

SCRUBBER PIPES

0 200 400

SCALE IN FEET

N

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FIGURE 2
POND 3 ANNUAL INSPECTION
PHOTO LOCATIONS - NORTH HALF

12/21/2015

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2015 inspection\figures\Figure 3 - Pond 3 photos - south.dgn

P

38

40

39

SOIL BORROW AREA

SCRUBBER PIPES

POND 2 (CLOSED)

POND 3

21

42

41

31

22

28

30

29

24

25

23

27

26

MEQB

PROPERTY BOUNDARY

N

0 200 400

SCALE IN FEET

NOTE: AERIAL PHOTO FROM NOVEMBER, 2014 LIDAR SURVEY

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FIGURE 3
POND 3 ANNUAL INSPECTION
PHOTO LOCATIONS - SOUTH HALF

Pond 3 Annual Inspection – October 2015

Photo 1 10/19	Outer east slope of north embankment, looking north

Photo 2	Outer east slope of north embankment, looking south (hard hat used to show length of grass, approximately 6 inches). Left, beginning of eroded channel.

Photo 3	Erosion depicted on photo 2

Photo 4	Outer slope of north embankment, looking west

Photo 5	North embankment ramp, stormwater ditch and infiltration pond. Minor erosion on south side of class 5 road, looking west.

Photo 6	Pond 3 Discharge pipe valve stem riser and north embankment, looking south.

Photo 7	Discharge pipe valve stem riser and underground pipe corridor, looking northwest

Photo 8	Pond vault, looking east.

Photo 9	Pond vault looking through manhole shown on photo 8. Left pipe is from Pond 3, middle pipe is from Pond 2 (closed). Water depth in vault was estimated at less than 6 inches. Source of water is shown on photo 10.

Photo 10	Steel cover over pipes shown on photo 9. Trace amounts of rainwater that falls on the cover will drip through and enter vault.

Photo 11	North infiltration pond outlet, looking north

Photo 12	Pond 3 north embankment at midslope, looking east. Longer grass at the foreground is on the Pond 2 embankment.

Photo 13	Pond 3 underground discharge pipe corridor from the top of the embankment.

Photo 14	Erosion blanket installed on new pond veritcal expansion, looking east

Photo 15	Erosion in the bench between the pond embankment and borrow area.

Photo 16	Gopher hole on north embankment

Photo 17	Midslope of pond 3 east embankment, looking south.

Photo 18	Pond east ramp, looking south

Photo 19	East embankment, looking southwest

Photo 20	East embankment along base, looking south

Photo 21	Pond southeast ramp and infiltration pond, looking south

Photo 22	South end of east embankment, looking north.

Photo 23	South embankment, looking northwest

Photo 24	Blanket installed to fix erosion on upper portion of south embankment

Photo 25	Pond south embankment and infiltration pond.

Photo 26	Left: Pond 2 south embankment. Right: Mowed Pond 3 embankment.

Photo 27	Pond 2 south slope and infiltration pond.

Photo 28	Gopher mounds, south embankment looking west

Photo 29	Areas of sparse vegetation on south slope, looking east.

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

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

Photo 32	Pond discharge structure in northwest corner of pond. Water level indicates an elevation of 993.2

Photo 33	West interior embankment of pond, looking south

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

Photo 35	Top of north embankment, looking east

Photo 36	Top of north embankment, looking west.

Photo 37	Top of east embankment, looking south

Photo 38	Left: dike between north and south halves of pond. Right: stainless steel scrubber pipes.

Photo 39	Dike between north and south half of Pond 3 at weir, looking west.

Photo 40	East interior embankment of pond, looking north

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