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21 August 2017

Mr. Cole Loewen

District Administrator
Clearwater River Watershed District
75 Elm Street East, Box 481
Annandale, MN 55302

RE: School Section Lake Outlet 2017 Engineers Report, Response to MNDNR and BWSR Comments

Dear Mr. Loewen:

We have reviewed the comments provided by the Board of Water and Soil Resources and the Minnesota DNR in regards to School Section Lake Engineer's Report on the proposed outlet. Their comments are provided in accordance with Minnesota Statutes Section 103D.711. This letter and the attached revised Engineer's Report is provided in response. In addition to this letter, I also had a discussion with Al Kean regarding agency comments and the proposed design.

DNR Comments:

1. We have revised the language within the Engineer's Report to reflect what Mr. Lais has indicated was the DNR's position on the outlet.
2. Regarding adding a "sedimentation sump" on the downstream side of the sheetpile weir: We have some concerns regarding lowering the ground surface elevation on the downstream side of the weir relative to the elevation on the upstream side in the face of ice jacking pressure. The proposed elevation of the 4-foot weir notch weir is at the DNR approved outlet elevation. Given that we do not expect significant littoral drift, this measure in itself should eliminate sediment migration into the pipe. We have however, in consultation with Al Kean at BWSR, determined that we will recommend to the board that we over excavate the area within the sheetpile weir and will use rip rap, keyed into the bank and installed to match existing ground surface elevation. This should provide energy dissipation for flow over the weir notch and minimize erosion on the downstream side of the weir structure.
3. Regarding leaving the weir within the manhole downstream, we have reservations about this for a number of reasons:
 - a. Since the weir notch elevation will match the weir elevation, leaving the downstream weir in the manhole would reduce outlet capacity due to there being no slope between the two.
 - b. Zero slope in that section would mean a 100' stretch of pipe that was essentially a sump. Water in that pipe during the winter would potentially freeze and cause capacity issues.
 - c. We estimate the savings of leaving the weir in place to be at most \$1,000 given the amount of site work required to install the sheetpile weir.
 - d. Regarding the DNR suggestion to install a screen on the pipe instead of the sheetpile weir: We believe a screen would not provide the level of protection afforded by the currently proposed weir.

Mr. Loewen
District Administrator
CRWD
8/21/17



BWSR Comments:

1. We have added some documentation to the Engineer's Report per BWSR's comments to document the existing shoreline characteristics near the outlet, as well as the existing outlet and the adequacy of the remainder of the conveyance for the outlet, and to augment the record and document our decision process including a discussion on similarities/ differences between School Section & Pleasant Lake outlets.
2. Per my 8/9/17 discussion with Al Kean where we discussed his comments as well as DNR comments, we propose to over excavate and add rip rap within the sheetpile weir, to match the existing ground surface elevation which should address any DNR concern over a "sediment sump".
3. We updated costs on p5-3.

Please don't hesitate to call me to discuss the comments, responses, changes to the report. Also please feel free to provide my contact information to our state agency partners for additional direct communication as needed.

Sincerely,

Wenck Associates, Inc.

A handwritten signature in purple ink that reads 'R. Carlson'.

Rebecca Carlson
Principal

[enc: updated Engineer's Report]