

Initial Structural Stability Assessment

Scrubber Solids Pond No. 3

Sherburne County Generating Plant

Introduction

This report presents the assessment and certification of structural stability for Scrubber Solids Pond No. 3 (Pond 3) at the Sherburne County Generating Plant (Sherco) in Becker, Minnesota. Pond 3 is an “existing” surface impoundment. This document addresses the requirements of 40 CFR Section 257.73(d), Periodic structural stability assessments.

Compliance with §257.73(d)

Assess if Pond 3 was designed, constructed, operated and maintained with:

(i) *Stable foundations and abutments:*

Pond 3 is located in the Anoka sand plain region and the native soils consist of coarse sand with some gravel near the surface and intermittent glacial till approximately 20 to 30 feet below ground. This surficial geology provides a stable foundation and good source of dike construction materials.

(ii) *Adequate slope protection to protect against surface erosion, wave action, and adverse effect of sudden drawdown.*

Pond 3 was designed and constructed with a minimum of 5 feet of cover soils to protect against surface erosion and wave action. Pond 3 does not experience sudden drawdown during normal operation, however, the thickness of the interior cover soils is uniform from the bottom to the top of the pond and would remain stable during sudden drawdown. Details of the design and surveyed thickness verification during construction can be found in the referenced construction certification reports.

(iii) *Dikes mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit*

The dikes were designed and analyzed to withstand the range of loading conditions from the initial to maximum water elevation. All soils used to construct the Pond 3 dike were mechanically compacted a minimum to 95% standard proctor density and tested to verify adherence to the Pond 3 Construction Quality Assurance Plan featured in the referenced Permit Application. Results of the in-place density tests and safety factor assessment can be found in the reference documents.

- (iv) *Vegetated slopes of dikes and surrounding areas not to exceed a height of six inches above the slope of the dike, except for slopes which have an alternate form or forms of slope protection*

The Pond 3 exterior slopes are mowed to prevent the growth of woody or deep-rooted vegetation. Vegetation is dense enough to prevent erosion of the dike exterior.

- (v) *A single spillway or a combination of spillways configured as specified in paragraph (d)(1)(v) of this section.*

Pond 3 does not utilize a spillway to discharge water. All pond water is returned to the plant by a discharge pipe.

- (vi) *Hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit that maintain structural integrity and are free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris which may negatively affect the operation of the hydraulic structure.*

There are no hydraulic structures underlying Pond 3; however, a 24-inch discharge pipe passes through the north dike near the discharge structure, approximately 20 feet above the bottom of the pond. The pipe penetration through the dike begins as a steel pipe and transitions to a high density polyethylene (HDPE) pipe in the dike. The crushing resistance factor of safety on the steel and HDPE is adequate for the depth of soil and maximum CCR load. The discharge velocity through the pipe is enough to limit the accumulation of sedimentation and debris. Sluice gates located on the discharge structure can be closed to restrict flow from Pond 3 if needed.

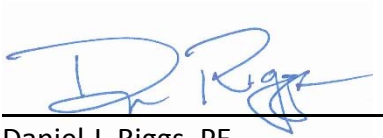
- (vii) *For CCR units with downstream slopes which can be inundated by the pool of an adjacent water body, such as a river, stream or lake, downstream slopes that maintain structural stability during low pool of the adjacent water body or sudden drawdown of the adjacent water body.*

Pond 3 does not have downstream slopes that can be inundated by fluctuating water levels.

The CCR unit is designed, constructed, operated and maintained with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded.

Certification

I hereby certify under penalty of law that this report was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



Daniel J. Riggs, PE
License No. 49559

October 17, 2016

Date

References (included in Operating Record and Website)

Carlson McCain, Inc. (October 2016). "Scrubber Solids Pond 3 Safety Factor Assessment, Sherburne County Generating Plant", CCR Compliance Document, Plymouth, Minnesota.

Carlson McCain, Inc. (October 2016). "Scrubber Solids Pond 3 Initial Hazard Potential Assessment, Sherburne County Generating Plant", CCR Compliance Document, Plymouth, Minnesota.

Carlson McCain, Inc. (October 2016). "Scrubber Solids Pond 3 History of Construction, Sherburne County Generating Plant", CCR Compliance Document, Plymouth, Minnesota.