Water Control Structure Replacement Plan For Carver CV6, CV7, CV8, CV9, CV10

Crosby Chain Water Control
Carver County, MN

Prepared: March 2020
Steven Hogg
Replacement Plan for

**Carver Park Reserve – CV6,7,8,9,10 Crosby Chain Water Control**

T116N R24W, (SE 1/4) S3

Three Rivers Park District
Section of Wildlife

April 2020

**Crosby Lake Chain General Information and Water Control Structure**

Crosby Lake and Chain of Wetlands consists of five separate water control structures that manage water on state water inventory, 10-135P (Crosby Lake) and 10-136P (Chain of Wetlands). These wetlands make up 35 acres of wetland area that is managed for both outdoor recreation through the Lowry nature center and to manage wetland wildlife habitat. Crosby Lake is managed by water control structure CV9 and makes up 20 acres of the wetland area. Four wetlands are managed by CV 6, CV7, and CV8 and these flow into Crosby Lake. One wetland managed by CV10 is found below Crosby Lake.

Crosby Lake watershed also flows in into wetland 10-56P which is Stone Lake and a small wetland created by control structure CV11. Stone Lake is currently held back by a beaver dam but flows into and through this small wetland. The CV11 control structure was replaced in 2019. The timeline to replace these five structures is tentatively planned for Late August and September of 2020. These control structures are currently galvanized steel “tin whistle” designs and they have failed and are no longer functioning properly. This plan proposes to install five new inline water level control structures at the same style and dimensions, but made from aluminum manufactured by Wisconsin FlowGate & Culvert Co., Inc. CV 6 is currently a culvert with a flap gate, but this will also be replaced with a whistle design type structure. All elevations will be maintained.

After the CV11 control structure water flows into Sunny Lake, PWI 10-134P. The Park District owns the entire shoreline around these wetlands and downstream until water flows into either Lake Zumba Or Auburn Lake. We also own a significant portion of the property around these two lakes. The current drawdowns are being conducted to replace these water control structures. In the future these structures will allow staff to manage water levels on the wetland basins for Lowry Nature Center Programing and for wetland wildlife management.

**Scope of the Replacement Project:**

Three Rivers Parks will contract the replacement through our internal informal bid process. The request to replace the control structure is necessary because it is rusted out and is no longer functioning properly. The structure was surveyed, and elevations can be found below.

The Park District is requesting a permit to replace this structure with the same length, diameter of outlet and inflow pipe, and design of the structure. A new seep collar will also be installed with the pipe to
prevent erosion under the structure and through the dike. The structure will be replaced with corrugated aluminum to prevent future rusting. The structure will be installed at the same elevations.

**The Contractor shall complete all work and provide all equipment necessary to perform the work, including but not limited to the following:**

- Provide a suitable coffer dam and pump to prevent washout of the work site (incidental)
- Remove and dispose of the old structure and then replace with the new aluminum structure provided.
- Use a suitable clay material for the installation. Properly tamp the structure and seep collar with clay. Install the base with a packed clay floor and install a 64” pre-cast concrete cookie to prevent the structure from sinking over time.
- Remove any leftover dirt material from the site. The Contractor may not place stock material within the wetland bed
- Provide proper erosion control around stock piles and open excavation sites if left overnight or with rain forecasted.
- Revegetate the site using biodegradable erosion control matting and a turf grass and wetland forb seed mix provided by the owner. The size of the site to revegetate will be approximately .5 acres and will include any and all excavated and disturbed areas. The erosion control matting needs to be 100% biodegradable including the thread material and conform to the requirements of MNDOT 3885.

**Erosion Control during Replacement Project:**

The Crosby Lake and Chain of Wetlands PWI (10-135P) and (10-136P) will be drawn down to the lowest elevations that the control structures allow prior to replacement. A coffer dam will be constructed to prevent sedimentation downstream. Any material excavated to remove the old structure or any clay material brought onto the site in order to install the new structures and seep collars will have erosion fencing placed around the piles if material if left overnight and rain is forecasted. This material will not be placed in the beds of public waters or areas subject to flooding. Any material excavated to remove the pipe will also be used to backfill once the new pipes are put in place. When all of the work is done a grass seeding along with erosion matting will be placed on the dike to prevent any erosion until vegetation once again covers the site. Once the work is done boards will be placed back inside the control structure at the same elevations prior to the replacement. If needed, I am requesting the ability for a contractor to construct a soil coffer dam if required to install the structure. A turf trail runs over top of the structures, the contractor will have to repair the trail to as found conditions after construction.

**Alternatives to the Replacement Project:**

Alternatives to this project include filling in and abandoning the water control structure. This will not be a viable option because of the amount of water that comes through this system. During periods of significant rainfall water will need the ability to pass under the bike trail or we risk flooding and damage to the trail. Another alternative is to simply install a culvert, this is not recommended as Three Rivers Park District Wildlife section wants to maintain the ability to conduct management drawdowns. The last
possible alternative is to do nothing. This is not an acceptable option because of the current condition of the structure. This will lead to future damage on our trail and will reduce our ability to manage the wetland for wildlife.

**Hydrological Study**

Not applicable. This is an in-kind installation and the size of the pipes, riser, and elevations installed at will not change.

*Please see the map (figure 1) to give the location of the water control structure and wetland to be replaced, the latest inventory assessment (figure 2) that was completed to show the size of the structure and pictures of the site, and our in house survey (figure 3) to show the elevation of the structure.*
Figure 1 – Location Map
Figure 2 – Current Structure Elevations

BENCH MARKS (BM)
(TWO 000 FT UTM)

1) WYHR 27044
   SURVEY DATE 02/22/01; AS RACED ALONG TRUNK
   VALLEY 7.76 FT NORTH OF TRUNK VALLEY 7.76 AND
   CENTER LINE OF CONSTRUCTION LINE OF TRUNK
   VALLEY, 7.76 FT NORTH OF TRUNK VALLEY 7.76 AND
   CENTER LINE OF CONSTRUCTION LINE OF TRUNK
   VALLEY.

ELEVATION = 947.387 feet

GENERAL NOTES

1) Survey coordinate and bearing basis: Carver County Coordinates

2) No indication of wetland delineation by a qualified wetland
   specialist has been located or observed on site.

Three Rivers
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3000 Ojibwe Lane North
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Outlet Control Structure CV6
Carver Park Reserve
Survey

Proj. No. N/A
Issue Date 12/6/2016
Survey By NS, AB
Drawn By NS
Checked By NS
V001 Sheet 01 of 01
GENERAL NOTES:

1. Survey coordinates and bearing base: Carver County Coordinates
2. No indication of wetland delineation by a qualified wetland specialist has been located or observed on site.
3. Loose board in structure lodged slightly in weir area, presumably for weir measurement not to this board, but to actual in-place boards.
4. Downstream invert was completed submerged in muddy water. Survey points were based off of feeling, and not visually verified.

Bench Marks (BM) (NAD 83 Datum):

- INV = 958.03
- CMP CV7: 24" DIA. CMP OCS
  - Top of Structure = 958.23
  - Top of Wier = 952.32
  - INV IN = 950.25
  - INV OUT = 950.08

Benchmark 957.0

- In Structure Measured = 957.52
- Control Flange in Open Position

Utility Note:

The subsurface utility information in this plan is utility level quality "T", unless otherwise noted. This quality level was determined according to the guidelines of Class B, entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data."

The location and type of private utilities shown on the drawings are for general information only. Three Rivers Park District does not warrant this information to be accurate or complete. The contractor, in cooperation with the appropriate private utility company, is responsible to verify the location and depth of all underground utilities.

Project No: N/A
Issue Date: 12/6/2016
Survey By: NS, AB
Drawn By: NS
Checked By: NS

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Outlet Control Structure CV7
Carver Park Reserve
Survey

V001
Sheet 01 of 01
GENERAL NOTES

1.) Survey coordinate and bearing basis: Carver County Coordinates

2.) No indication of wetland delineation by a qualified wetland specialist has been located or observed on site.

3.) At the time field work was performed for this survey, there was snow on the ground. Physical features were located to the best of our ability, but there may be additional features that were not visible and, therefore, not shown hereon.

BENCH MARKS (BM)

1.) MDOT 27048

UTILITY NOTE:
THE SUBSURFACE UTILITY INFORMATION IN THE PLAN IS UTILITY LEVEL QUALITY "D", UNLESS OTHERWISE NOTED. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE 36-02, ENTITLED "STANDARDS AND GUIDELINES FOR THE COLLECTION AND REFLECTION OF EXISTING SUBSURFACE UTILITY DATA:"

THE LOCATION AND TYPE OF PRIVATE UTILITIES SHOWN ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. THREE RIVERS PARK DISTRICT DOES NOT WARRANT THIS INFORMATION TO BE ACCURATE OR COMPLETE. THE CONTRACTOR IN COOPERATION WITH THE APPROPRIATE PRIVATE UTILITY COMPANY IS RESPONSIBLE TO VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES.

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Outlet Control Structure CV9
Carver Park Reserve
Survey

Proj. No. Issue Date N/A 11/28/2016
Survey By: NS, AB NS
Drawn By: NS
Checked By: NS

V001 Sheet 01 of 01