RESOLUTION 2014-31
RICE CREEK WATERSHED DISTRICT
BOARD OF MANAGERS

FINDINGS AND ORDER MODIFYING DRAINAGE SYSTEM RECORD OF ALIGNMENT, GRADE AND DIMENSION OF ANOKA COUNTY DITCH 53-62 (AS CONSTRUCTED AND SUBSEQUENTLY IMPROVED CONDITION)

Manager [Signature] offered the following Resolution and moved its adoption, seconded by Manager [Signature].

FINDINGS

1. The Rice Creek Watershed District (RCWD) is the Drainage Authority for Anoka County Ditch (ACD) 53-62.

2. By resolution 2012-06, dated March 14, 2012, the RCWD Board of Managers consolidated Anoka County Ditches 53 and 62 and corrected the drainage system record to reflect the functional alignment, dimension and grade of the combined system as detailed in the engineer’s Historical Review Memo dated October 19, 2011, and as revised on February 15, 2012. The consolidated system was designated by name as ACD 53-62.

3. By resolution 2013-39, dated November 13, 2013, based on further investigation, the RCWD Board of Managers revised the functional grade and alignment of Lateral 1 of Branch 6 of ACD 53-62.

4. By resolution 2013-27, dated September 11, 2013, the RCWD Board of Managers ordered the repair of Branch 1 of ACD 53-62.

5. During permitting for the repair, the U.S. Army Corps of Engineers challenged the As Constructed and Subsequently Improved Condition (ACSIC) of portions of Branch 1. In response to the Corps, the District performed additional investigation of drainage system grade, alignment and dimension, to include the sizing and placement of culverts. Based on the further investigation, the Engineer provided additional information to the Corps to support a revised ACSIC for portions of Branch 1.

6. The results of the investigation are documented in a technical memorandum produced by Houston Engineering, dated April 25, 2014. The technical memorandum is attached as Attachment A and incorporated into these findings by reference.
7. The Corps concurs that the revised grade, alignment and dimension as described and depicted in the engineer's technical memorandum is the accurate ACSIC for Branch 1 of ACD 53-62.

Therefore, based on the record herein, the RCWD Board of Managers makes the following:

ORDER

A. The Board of Managers hereby corrects the drainage system record to reflect the functional alignment, dimension and grade of Branch 1 of ACD 53-62 as detailed in the engineer's technical memorandum dated April 25, 2014 (Attachment A).

B. Future maintenance of Branch 1 of ACD 53-62, will restore, as nearly as is practicable, the ACSIC as corrected herein.

C. The Board of Managers directs its engineer to modify the official profile of ACD 53-62 to reflect the changes ordered herein and to file the modified official profile in the drainage system record along with this Order.

The question was on the adoption of the Resolution and there were 5 yeas and 0 nays as follows:

<table>
<thead>
<tr>
<th></th>
<th>Yea</th>
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<th>Abstain</th>
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<td>PREINER</td>
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Upon vote, the Chair declared the Resolution passed.

Harley Ogata, Secretary

Dated: September 24, 2014

* * * * * * * * * * * * * *

I, Harley Ogata, Secretary of the Rice Creek Watershed District, do hereby certify that I have compared the above resolution with the original thereof as the same appears of record and on file with the District and find the same to be a true and correct transcript thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand this 24th day of September 2014.

Harley Ogata, Secretary
MEMO
(External Correspondence)

To: Phil Belfiore
From: Nancy Stowe, P.E.

Date: April 25, 2014
Through: Chris Ottemess, P.E.

Cc: File (145555-205)
    Tom Schmidt
    Andy Beaudet

Subject: Reevaluation of As-Constructed and Subsequently Improved Profile through the Use of Test Pits
Anoka County Ditch (ACD) 53-62, Branch 1 and Lateral 1

Introduction

The purpose of this Memorandum is to describe the results from test pits completed on April 11, 2014 along Anoka County Ditch (ACD) 53-62 Branch 1 and Branch 1 Lateral 1. Prior analysis (see Anoka County Ditch 53-62 Historical Review Memorandum dated October 19, 2011) established the As Constructed and Subsequently Improved Condition (ACSIC) for Branch 1 and Branch 1 Lateral 1 of ACD 53 using three primary lines of evidence: 1) the mediated Main Trunk profile grade which fixed the grade from I 35W upstream to Branch lat 891.46; 2) existing structure elevations (culverts, storm sewer, etc.) where no profile documentation existed; and 3) soil borings showing the probable depth of accumulated sediment. Some soil borings previously completed by the District in the open channel corroborate the ACSIC, while other borings seem inconsistent with the profile, reflecting the inherent error in the borings. In October 2012, HEI and District staff reevaluated the ACSIC through the use of five test pits, completed in the downstream portions of Branch 1 and Lateral 1. These test pits were completed at the request of the Minnesota Department of Natural Resources and used to further evaluate the ACSIC.

On March 27, 2014 RCWD staff, engineer, and legal counsel met with the Army Corps of Engineers (COE) to review the ACSIC for ACD 53-62 and potential permitting/permission required from COE to complete the Branch 1 Repair Project. While COE staff were satisfied with the data utilized to confirm with ACSIC for portions of Branch 1 and Branch 1 Lateral 1, they expressed concerns that road culverts in the upper portions of Branch 1 and Lateral 1 were substantially higher than the determined ACSIC profile, and that a substantial grade break in the ACSIC profile was identified near County Road 14. Since test pits were not previously completed in these locations, COE staff requested that the RCWD complete additional analysis of the ACSIC profile to confirm the ACSIC profile.

Methods

Test pits were excavated along ACD 53-62 Branch 1 and Branch 1 Lateral 1 on April 11, 2014 by Roger Rydeen of Scandia Trucking and reviewed and surveyed by Nancy Stowe of Houston Engineering Inc. (HEI) and Tom Schmidt of the Rice Creek Watershed District (RCWD). Test pits
were completed at five locations, as shown in Figures 1 and 2 (numbered #6 - #10, as five test pits were also carried out in 2012 along Branch 1\(^1\)). Test pits were created by excavating a trench perpendicular to the existing open channel and adjacent spoil piles one bucket (approx. two feet) wide and deep enough to expose undisturbed mineral (non-organic) soils. Excavated root/vegetation mass and soils were separated into two piles and replaced once test pit analysis was completed. Test pits are preferred over soil borings to estimate the “as-built” excavation depth because the interface between sediment and native material can be seen.

Excavation of each test pit generally revealed a channel cross-section with a U-shaped interface between the native mineral (sand) layer and the organic soils above. Within the channel, the soils above the mineral layer generally were a mixture of peat, topsoil, and sand -- the accumulated sediment since the original excavation of the channel. In the adjacent spoil bank, the mineral layer was generally topped by a peat layer (native soils), and followed by a mixture of sand and peat from the historic excavation. The historic channel elevation was determined by surveying the elevation of the interface between the mineral and organic layers at the bottom of the historic channel.

Summary of Observations

The following is a summary of the observations at each test pit.

**Test Pit #6 (Branch 1, Station 152+00)**

Test Pit #6 was located in the southwest corner of a field currently used for agriculture (see Photo 1). The Minnesota Land Cover Classification System (MLCCS) shows this location to be within a Type 2 wetland. The historic excavated channel bottom could easily be identified as the top of native sands, under approximately 0.9 feet of accumulated sediment, at an elevation of 896.58\(^2\) (see Photo 2). This is approximately 0.2 feet lower than the previously determined ACSIC profile.

**Test Pit #7 (Branch 1, Station 147+50)**

Test Pit #7 was located approximately 1,400 feet upstream (or west) of Lever Street. The historic channel was well-defined in this cross-section, with the bottom at an elevation of 896.39 and with approximately 1.6 feet of accumulated sediment above this elevation (see Photos 3 and 4). The test pit indicates an ACSIC approximately 0.2 feet lower than the previously determined profile.

**Test Pit #8 (Lateral 1, Station 137+70)**

Test Pit #8 was located just downstream (east) of Lever Street along Branch 1 of ACD 53-62. Maintenance work had been carried out in this reach of Branch 1 during June of 2013, which included removal of organic sediments in the channel. District staff was present during the excavation of the channel in this location and confirmed that native mineral soils were not excavated. Therefore, we

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1 Memo from Houston Engineering, Inc. to RCWD regarding Reevaluation of As-Constructed and Subsequently Improved Profile through the Use of Test Pits, Anoka County Ditch (ACD) 53-62, Branch 1 and Lateral 1, dated October 10, 2012.
2 All elevations are NAVD 1988
believe the historic open channel has been preserved. The historic channel elevation was determined
to be 895.31 by surveying the interface between the mineral and organic layers. At the time of the test
pit, approximately 6 inches of accumulated sediment was found above the elevation of the historic
channel bottom (see Photos 5 and 6). The test pit indicates an ACSIC approximately 0.4 feet lower
than the previously determined profile.

Test Pit #9 (Branch 1, Station 116+00)
Test Pit #9 was located approximately 30 feet upstream (north) of Main Street (125th Ave. or CR 14).
Maintenance work had been completed in this reach of Branch 1 during June of 2013, which included
removal of organic sediments in the channel but no excavation into the native mineral soils. Thus, the
top of the sand interface can be assumed to be at or near the historic open channel bottom. A bottom
elevation of 894.07 was identified, with approximately 1.5 feet of accumulated sediment above this
elevation (see Photos 7 and 8). The test pit indicates an ACSIC approximately 0.4 feet higher than the
previously determined profile.

Test Pit #10 (Lateral 1, Station 63+00)
Test Pit #10 was located approximately 200 feet upstream (south) of Interstate 35W in a wooded
portion of a commercial site (indicating no land disturbance in this area for many years). The historic
channel was well-defined in this cross-section, with the bottom at an elevation of 895.94 and with
approximately 2.0 feet of accumulated sediment above this elevation (see Photos 7 and 8). The test
pit indicates an ACSIC approximately 0.5 feet higher than the previously determined profile.

Conclusions / Recommendations
Test Pits #6, #7, and #8 revealed lower ACSIC channel elevations than were previously determined,
while Test Pits #9 and #10 indicated higher ACSIC channel elevations. Based on these data, a revised
ACSIC profile has been determined, as shown in Figures 3 and 4. Modifications to the ACSIC
profile include raising the profile by 0.33' at County Road 14, removing breaks in the ACSIC grade at
Sta 142+00 and 150+00; raising the profile by 0.6 feet at Interstate 35W, and raising the upstream end
of Branch 1 Lateral 1 by 0.45 feet. These modifications to the ACSIC provide a reduced error when
compared to the previous ACSIC determination (see Table 1).
Table 1
Relative Error of Test Pit Data vs. ACSIC

<table>
<thead>
<tr>
<th>Test Pit No.</th>
<th>Test Pit Elev.</th>
<th>Previous ACSIC</th>
<th>New ACSIC</th>
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<tr>
<td></td>
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<tr>
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The selection of the locations of Test Pits #6 and #7 were prompted by a maintenance request from an adjacent landowner (Tony Capra) whose agriculture field was historically bisected by the public drainage system (it has since been filled in). Due to the proximity of adjacent wetlands (particularly those previously identified as high quality wetlands), we recommend that the District complete an analysis of potential wetland drainage impacts resulting from repair to the public drainage system prior to initiating maintenance activities in this location.

Based on the data provided by the test pit excavations, we recommend that the revised As-Constructed and Subsequently Improved profile for ACD 53-62 Branch 1 Lateral 1 (as shown in Figures 3 and 4) be forwarded to the COE for their concurrence. We then recommend that the Board formally adopt the revised profile.
Photo 1: Test Pit #6. View of test pit during excavation.

Photo 2: Test Pit #6. Note interface between sand and organic sediment.
Photo 3: Test Pit #7.

Photo 4: Test Pit #7. Note interface between sand and mixed sediment.
Photo 5: Test Pit #8 (east of Lever Street).

Photo 6: Test Pit #8. Note sand interface.
Photo 7: Test Pit #9 – North of Main Street

Photo 8: Test Pit #9. Note interface between native sand and sediment accumulation
Photo 7: Test Pit #10 – Southeast of Interstate 35W

Photo 8: Test Pit #10. Note interface between sand and mixed soils

Sand/Sediment interface
NOTE: APPEARANT BOUNDARIES FOR TYPE 3, 4, AND 5 WETLANDS AND PUBLIC WATER WETLANDS ARE SHOWN (SEE 7/6/12 DELINEATION REPORT). OTHER WETLAND TYPES NOT SHOWN MAY BE PRESENT.